Hub Zwart

Tales of Research Misconduct

A Lacanian Diagnostics of Integrity Challenges in Science Novels

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A Lacanian Diagnostics of Integrity
Challenges in Science Novels

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Chapter 1
Introduction: An Oblique Perspective on Research Misconduct

1.1 Research Misconduct Novels and Integrity Challenges in Science

Research misconduct (*fabricating*, *falsifying* or *plagiarising* research, also known as FFP),[1] has become an object of concern, not only for scientists and scholars, but also for managers, funders and publishers of research (Fanelli 2009; European Science Foundation 2010; Drenth 2010; Horbach and Halffman 2016). FFP and other "questionable research practices" (QRP) are discussed in various types of discourse, such as reports, guidelines and codes of conduct, but also in a plethora of scholarly publications, ranging from empirical studies (often from a sociology of science or scientometrics perspective) via normative and/or conceptual analyses (often from a science ethics or philosophy of science perspective) up to editorials. This monograph proposes to study research misconduct from a somewhat different, *oblique* perspective, namely by analysing *research misconduct novels*, i.e. novels about contemporary research practices, focussing on FFP, but against the backdrop of a more extended research integrity landscape. Such novels, I will argue, help us to understand, but also to open-up and broaden the issues involved. They often entail a multidimensional approach, focussing on individual experiences, but sensitive to the wider systemic context, allowing us to study research misconduct from multiple viewpoints and to see the current wave of scientific misconduct deliberations as symptomatic for fundamental transformations in the ways in which knowledge is currently produced and valued. As Lex Bouter (former Rector and now professor of methodology and integrity at the *Free University of Amsterdam*) phrases it, "Scientists are exposed to temptations and … it would make a wonderful theme for an exciting movie or a compelling book. The novel is perhaps the best form for investigating the essence of what scientists do, and why they do it" (Bouter 2015, p. 148).

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[1] https://ori.hhs.gov/definition-misconduct

In my experience, a significant part of standard "misconduct discourse" tends to be fairly repetitive and predictable, notably because researchers and their work "are usually treated very much as an abstraction, removed from the time and place of the local laboratory situation and with strong emphasis on formal aspects" (Miedema 2012, p. 71). Many contributors therefore try to open up alternative, bottom-up perspectives. My approach to the integrity crisis analyses a series of literary case studies from a continental philosophical perspective, using Lacanian psychoanalysis as my frame of reference. Both dimensions (the literary case study as well as the continental psychoanalytical perspective) require some introduction.

First of all, to strengthen the quality and relevance of the discourse, it is important to combine proximity (i.e. input from actual research practices) with critical distance and reflection. For that reason, many contributors to the research misconduct debate opt for a case study approach, as exemplified for instance by David Goodstein's *Cautionary tales from the front lines of science* (2010), written by a physics researcher who later became a research administrator at Caltech. His book focusses on a series of real life cases ("tales") in which the author had been "personally involved during his career" (p. xi). Although likewise opting for a case studies approach, my case studies will be science novels, so that this monograph can be seen as part of the "literature and science movement" (Peterfreund 1990; Caudill 2011). But whereas many contributions to "science and literature studies" focus on popular *images* of scientists and science in the public realm, I rather use science novels as windows into actual research practices, as imaginative laboratories for probing the epistemological and ethical quandaries of technoscience. Science novels, also known as "lablit" (Rohn 2006; Rohn 2010) or "campus literature" (Miedema 2012, p. 74), purport to describe research dilemmas or questionable practices emerging in contemporary scientific settings in a convincing and realistic manner (Caudill 2011, p. 3; Zwart 2014a, p. 1). Moreover, I regard literary case studies as *case histories*, using a novel as a *Fallgeschichte* in the psychoanalytic sense of the term. Integrity issues emerging in science novels will be addressed from a "European" (Huxtable and ter Meulen 2015) or "continental" perspective. Continental philosophy (dialectics, phenomenology, psychoanalysis, etc.) of science may contribute to a critical diagnostics of the techno-scientific present (Zwart et al. 2016), a conviction which is also endorsed by the *Library of Ethics and Applied Philosophy* in which this volume is published.[2]

Seven FFP novels have been selected for this purpose,[3] namely: *Arrowsmith* by Sinclair Lewis (1925), *The affair* by C.P. Snow (1960), *Cantor's dilemma* by Carl Djerassi (1989), *Perlmann's Silence* by Pascal Mercier (1995), *Intuition* by Allegra Goodman (2006), *Solar* by Ian McEwan (2010) and *Derailment* by Diederik Stapel (2012). Although *Derailment* is actually an autobiographical case study (which "reads like a novel"), my reasons for including this ego-document will be explained

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[2] http://www.springer.com/series/6230

[3] My analyses of *Arrowsmith*, *Perlmann's Silence* and *Solar* are revised versions of previous publications (Zwart 2015b, 2016c). A list of scientific misconduct novels can be found at the website of the *Netherlands Research Integrity Network* (https://www.nrin.nl/library/books/fiction).

in more detail in Chap. 11. These novels offer intriguing windows into contemporary research practices and may be regarded as imaginative laboratories for exploring the various ethical, philosophical and psychological dimensions involved. They allow us to develop a more comprehensive view of integrity challenges emerging in the contemporary academic research landscape.

To each of these case studies a separate chapter has been devoted. In addition, some other examples of literary documents concerning research integrity and misconduct will be discussed in the introductory chapters of this monograph. These introductory analyses will allow me to develop my methodology and explore the terrain. They include some fairly recent novels, such as *Limitless* (2001/2011) by Allan Glynn (discussed below), but also historical examples discussed in Chaps. 3 and 4, namely *Hamlet* by Shakespeare (1600), *Carmen* by Prosper Mérimée (1845/1965), *An Enemy of the People* by Henrik Ibsen (1882/1978), *Dr. Ox's Experiment* by Jules Verne (1872/1875) and *The Man who would be God* by Haakon Chevalier (1959).

In terms of conceptual framework, these literary documents (the seven literary FFP case studies in combination with the five introductory readings) will be analysed and assessed from a Lacanian perspective. Whereas mainstream ethical discussions tend to focus either on FFP infractions by individual researchers or on solutions (optimal or more acceptable scenarios for addressing the integrity challenges at hand), a Lacanian reading emphasises that the individuals involved often face more fundamental and devastating forms of crisis, which available codes and guidelines fail to address and for which available norms and concepts fail to provide credible or workable solutions.

Lacan grafted his theories on multiple precursors (standing on the shoulders of multiple others), but Hegelian dialectics and Freudian psychanalysis stand out as his most decisive sources of inspiration. From a Hegelian perspective, integrity dilemmas challenge our basic normative and epistemological convictions in a very fundamental way, often revealing the one-sidedness and naivety of the very principles from which we started. From a Freudian-psychoanalytical perspective, moreover, scientific research emerges as an "impossible profession" (Freud 1925/1948; Freud 1937/1950). Researchers are spurred on by demanding but often conflicting imperatives and may easily become tormented subjects, driven by a pervasive desire to know, but challenged and frustrated by intractable, disconcerting or even toxic objects, as well as by the increasingly compelling expectations of the knowledge production system (the scientific super-ego). Special attention will be given to the paradoxes and tensions of what Lacan refers to as "university discourse". Thus, the basic objective of this monograph is to explain how a close reading of research misconduct novels (as a "genre of the imagination") may add depth, detail and even realism to the current conceptual and normative quandaries of integrity discourse.

1.2   Between Two Worlds: From Plato's Cave to Emile Zola's Experimental Novel

This effort to initiate a dialogue between scientific research practices on the one hand and science novels on the other positions itself against the backdrop of a long history of reflection on the relationship between rationality and imagination. The cradle of this debate is Plato's famous simile of the cave: a paradoxical story (or imaginative experiment) intended to demonstrate that an insurmountable epistemological rupture separates story-telling from rational inquiry. The simile (incorporated in Plato's magnum opus: *Republic*, Book VII) involves a group of humans, dwelling in a subterranean cavern, whose legs and necks are fettered from childhood, so that they can only stare at the wall in front of them (Plato 1935/2000, 514–518). A fire is burning higher up, at a distance behind them, and between the fire and the prisoners a low wall has been built, and behind that wall human images and shapes of humans and animals are carried about, as in puppet-shows, whose shadows are cast onto the wall. Moreover, Plato also mentions revolving triangular wooden devices (περίακτοι), used in ancient Greek drama for displaying (and rapidly changing) theatre scenes (518C).

At a certain point, one of the prisoners is freed from his chains and dragged away towards the light. He is literally "educated" (from *educere*: to lead out) and "converted" away from the world of stories, images and opinions (δόξα) up to the world

of true knowledge (ἐπιστήμη). The ambiance suddenly changes and the scene-shifting device (περίακτος) is turned towards the light. Notably, the former prisoner is initiated into astronomy and cosmology. He begins his academic career by gazing at the stars and the moon at night, not yet sufficiently habituated to withstand the painful, glittering light of the sun itself. Emancipation (enlightenment) is a traumatic experience, a birth trauma, an intellectual awakening.

In Plato's scene we may discern the contours of a Palaeolithic facility for keeping domesticated humans: a domesticated human "herd" as Plato phrases it in another dialogue (*Politikos*), hypnotized and entranced by the moving images projected on a screen: a Flintstone-like cinema based on pyro-technology (Zwart 2010). But perhaps we may also see it as an anticipatory vision of passengers on a transatlantic flight. The simile adheres to a three-step procedure in which three *moments* can be distinguished. Initially (M_1), the cave-dwellers seem perfectly at home in their world of images and stories: their prehistoric, cinematic womb. The second moment (M_2) is a situation of increased intensity and tension: the (involuntary) liberation from the cave, a *negation* (dialectically speaking) of the comfortable world of opinion (δόξα), an experience of struggle and emancipation. But it also introduces a basic contradiction or rupture into the lives of the individuals involved, as well as into human culture as such, namely between the rational and the narrative (or imaginative) realm.

This contradiction can only be overcome (*sublated*, dialectically speaking) by constructing a rational world-view ($\rightarrow M_3$), allowing us to replace the traditional mythological cosmology of the initial cave scene by a more advanced and comprehensive view, in which the newly acquired research-based experiences are incorporated. This worldview builds on rational components, but complemented by (enlightened) imagination, so that the rational, but fragmentary knowledge components are coagulated into an encompassing vision. This third moment (M_3) can be discerned in another tale by Plato, told towards the end of *Republic* (Book X, 614–621), about a soldier named Er who was slain in battle, a story that was later retold (in a slightly adapted version) by Cicero in his *Somnium Scipionis* ("Scipio's dream"), the final chapter of his treatise *De re publica* (Cicero 1928; Zwart 2012). Er's body is already deposited on a funeral pyre, ready to be burned, when he suddenly revives to tell the story of his journey through space which, besides an account of divine judgement and the rebirth of souls, contains a vision of the Platonic cosmos. His soul, unchained (released from earthly existence) enters and floats through heavenly regions, as a detached, disembodied astronomer as it were, discerning the supra-lunar cosmos, consisting (in Cicero's version) of nine spheres: the sphere of the supreme deity, of the stars, of Saturn, of Jupiter, Mars, the sun, Venus, Mercury and the moon. The sounds produced by the impetus and movement of the spheres (in Plato's version: by Sirens standing on the rims of the celestial circles, borne around in revolution, uttering one single note, 617B) is audible as a celestial symphony. The story not only conveys a model of the universe, but actually represents a dialectical synthesis of rational inquiry and (astronomically-informed) imagination (M_3).

But this was written long ago and science has evolved into a modern, decidedly experimental and technology-driven phenomenon. The term scientist is of recent origin in fact, coined in the nineteenth century by Whewell (Ross 1962). How to envision the relationship between rationality and imagination under modern conditions? In his treatise *The Experimental Novel* (1880/1923), Emile Zola determines the relationship between experimental research and literary imagination in a different manner. Zola's ambition as a novelist was to move away from the romantic novel of the early nineteenth century and to produce a different genre: the *realistic*, *physiological*, or *naturalistic* novel: science-compatible as it were. *Le Ventre de Paris* [*The Fat and the Thin*] for instance is a novel which reflects the physiology of digestion. For Zola, a basic rupture between science and literary imagination (as suggested in Plato's simile) does not exist. After reading the influential textbook *Introduction to the Study of Experimental Medicine* by physiologist/vivisectionist Claude Bernard (1865/1966), Zola concludes that novels are basically laboratories and adhere to an experimental design. Protagonists are basically research subjects exposed to various challenges (i.e. experimental conditions) and the question is: how will they respond (given their background, temperament, psychic characteristics, physiology, etc.) to the stimuli, the environmental factors that are consciously manipulated by the experimental author? Indeed, even the literary characters themselves conduct experiments upon one another. According to Zola, such an approach will put the art and practice of novel-writing on a scientific footing. Rather than *describing* the world as it presents itself to us, experimental novelists actively *intervene*, in order to expose their characters to specific circumstances and events. The novel is a laboratory where social phenomena may be analysed accurately and systematically. Naturalistic novels must therefore display the same measure of detachment and precision as scientific research reports (Zwart 2008a, 2014a).

Again, a three-step (dialectical) dynamics can be discerned in Zola's argument. Initially, readers feel perfectly at home in romantic stories, which convey a romanticized (imaginary) view of the world (M_1). Romantic novels are like Plato's puppet shows, projected onto the wall of the socio-cultural cave, hypnotising their audience. The intrusion of the scientific style of thinking allows us to escape from this "prison", so that a rupture is introduced between two worlds or cultural realms: the world of experimental research and the world of romantic fantasy and imagination (M_2). This rupture can be overcome ("sublated"), however, in the form of the experimental novel, combining the experimental method of modern science with the powers of literary imagination (M_3), adding realism and relevance to both and allowing us the address the complexities of human socio-cultural existence on a more advanced level of understanding. In short: novel-writing as the science of every-day societal existence. To reach this plateau, Zola argues, novelists must familiarise themselves with scientific research, by reading scientific textbooks and attending scientific lectures, so as to acquaint themselves with the logic of the experimental method.

The literary documents that will be analysed in this monograph all reflect the experimental design. In each case, the key protagonist (a scholar or scientist) is

exposed to unexpected challenges, to a novelty, a *novum* (a new discovery, enabled by certain technological innovations for instance), or to a frustrating epistemological obstacle. These novelties or obstacles function as literary *stimuli*, and the science novel basically describes and analyses the protagonist's responses. In fact, a science novel entails two types of experiments. In the first place, it describes scientific experiments as the core activity of laboratory life, conducted with the help of research equipment and focussed on viruses, microbes, model organisms, human research subjects, and so on. But the second experiment involves the researchers themselves, who now become research subjects as well, exposed to existential challenges and disruptive disturbances. In science novels, the experiment evolves into a case history, a *Fallgeschichte* in the psychoanalytical sense of the term, bridging the gap between experimental practice and narrative discourse (M_3).

In terms of conceptual framework, the literary documents studied in this monograph (the seven FFP case histories plus the introductory readings concerning research integrity in a somewhat broader sense) will be analysed from a Lacanian perspective, building on Freudian psychoanalysis and Hegelian dialectics. Before introducing the basic Lacanian framework as such (in Chap. 2), I will therefore first outline Lacan's two major sources of intellectual inspiration, starting with Hegelian dialectics and subsequently proceeding to Freudian psychoanalysis.

1.3   Hegelian Dialectics and the Hwang Case

Dialectics refers to a ("continental") philosophical method which was developed by Georg Wilhelm Friedrich Hegel (1770–1831), but inspired by ancient (Socratic) and medieval (scholastic) traditions[4] and further developed by more recent authors (including Jacques Lacan, but also for instance Slavoj Žižek). Dialectics builds on the conviction that a dialectical logic (λόγος) can be discerned in the history of human thinking, which not only allows us to come to terms with and understand the present (against the backdrop of an extended historical past), but also to anticipate (and actively contribute to the unfolding of) the emerging future. In other words, dialectics combines intellectual with practical ambitions: it not only entails reflection and self-reflection, but also praxis and engagement (options for action).

The logic of dialectics builds on series of trichotomies: triadic patterns or sequences of *moments*, which will be referred to here as M_1, M_2 and M_3. Indeed, I already employed this dialectical pattern in my concise analyses of Plato's dialogue and Zola's essay above. A first example of a dialectical understanding of research misconduct may be the following. Initially, we seem to have a clear (albeit abstract)

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[4] The *Summa Theologica* by Thomas Aquinas may count as an exemplification of medieval dialectics. Each article starts with an initial conviction: *Videtur* (it seems to be the case that…, M_1), which is subsequently challenged: *Sed contra est* (M_2), so that a tension unfolds between contradictory positions, leading up to a more robust conclusion, on a higher level of comprehensiveness (M_3).

understanding (*Begriff*) of what integrity *is* and how misconduct is to be avoided (M_1). But as soon as researchers become actively involved in concrete research practices (as soon as they really become entangled in the vicissitudes of laboratory life), things may prove not as transparent and unequivocal as was initially expected. Contradictions and anomalies begin to emerge, involving tensions between codes of conduct and actual practices, between "backstage" and "frontstage", between the "context of discovery" (the daily research activities in which researchers are actually involved) and the "context of justification" (a cleansed and standardised version of their methods and results, as reported in academic papers, suggesting a straightforward trajectory leading from question and hypothesis via experiment to conclusion). In their efforts to apply the formal procedures of the scientific method to concrete situations, researchers inevitably experience the recalcitrance and messiness of the complex realities they purport to study (M_2). The empirical cycle, neatly described in methodological textbooks, begins to hamper and researchers may experience all kinds of compromising frustrations. Real research may seem chaotic and deficient in comparison with the normative methodological ideal. Theoretical expectations (hypotheses) are confronted with instances of "negation", and it may prove impossible to replicate initial results. Even the conceptual framework or research methodology *as such* may become challenged.

Gradually, however, researchers will realise that this actually constitutes a crucial, inevitable and formative *experience*; that these frustrations and complications contribute to the Bildung process, the socialisation and edification of the scientists involved. In the long run, such problematic experiences may strengthen the robustness of their approach. The scientists' "metal" is being tested, and these frustrations and disappointments are an inevitable part of being *in science*, basic predicaments of the scientific profession as such. Challenges may then be redefined as opportunities, allowing scientists to transform ("sublate") their initial (abstract) conception of the scientific method into a genuine understanding of what research is about (reality-compatible as it were, and building on experience). Thus, they have reached a higher level of comprehension and performance (in dialectical terms: the "negation of the negation"), where abstract methodological standards evolve into robust research practices as part of a viable epistemological culture, or *Sittlichkeit* as Hegel phrases it, so that formal standards and actual practices (which at a certain point seemed to contradict one another) may become reconciled, in the context of best practices ($M_2 \rightarrow M_3$). In order to reach this "third moment", however, researchers have to expose themselves to and *work through* the painful experiences of the "second moment", so that actual empirical research constitutes an important *experience* (food for reflection). But all this requires effort, labour and perseverance, and in real life, as obstacles and anomalies begin to accumulate, this "third" moment may prove horrendously difficult to attain ($M_2 \rightarrow | M_3$).

Instead of facing these challenges, inevitably involved in real-life research practices, researchers ("subjects" of science) may become reluctant to expose themselves to the multiple tensions and frustrations emerging within the "context of discovery". They may *deplore* the various problematic aspects of actual research practices to such an extent that they *abstain* from committing themselves to this

type of work, withdrawing into the safe haven of "clean" methodological convictions (keeping their hands and conscience clean), retreating into abstract, theoretical reflections about how the world *should* be, or sticking to the predictable, standardised and repetitive pathways of normal science. This is what Hegel refers to as the position of the beautiful soul (*schöne Seele*): the desire to avoid dirty hands at all costs, which Hegel considers a form of hypocrisy and deflection. In order for the scientific method to *realise* itself, the confrontation with concrete research practices (frustrating as this may be, even compromising at times) is unavoidable.

Another possibility, emerging in this force field of concrete research practices, is to opt for the short-cut, the aberration, in other words: misconduct as a desperate effort to release the tension between what the subjects involved actually manage to achieve and what is expected of them. From a dialectical perspective, all individual scientists, left to their own devices, are potential frauds. Every scientific individual feels haunted by the superego of science, by the harsh and apparently "impossible" expectations entailed in the scientific method: a position of tension and conflict which Hegel refers to as "morality" (M_2). Yet, for Hegel, the only genuine solution is to move from this situation of chronic tension on the *individual level* (i.e. tension between the formal normative standards of proper conduct on the one hand and the practical problems and limited possibilities of concrete research projects on the other) towards the development of a *collective practice*, where this tension is sublated by Bildung, by developing practices of virtue, giving rise to a culture of self-reflection, where proper conduct is facilitated, encouraged and institutionalised, a situation which Hegel refers to as *Sittlichkeit* (M_3).

Allow me to use a well-known example (a case history of research misconduct) to elucidate the dialectical approach. On 12 March 2004 the prominent South-Korean scientist Woo-Suk Hwang announced that he had succeeded in cloning human stem cells (Hwang et al. 2004). Western commentators regarded Hwang's publication as evidence that South-Korea and other countries in the Far East (the "Wild" East) were quickly evolving into scientific "superpowers" (science tigers) notably because, compared to their Western competitors, they were much less hampered by ethics committees and ethical constraints (Zwart 2008b). To put it in literary terms: for Western researchers, Hwang acted as a *foil*, reflecting and highlighting the frustrations involved in the plethora of ethical regulations and constraints they were facing.

Soon, however, rumours began to emerge, notably concerning the claim that Hwang had recruited his female Ph.D. students to act as egg donors, a highly questionable research practice, raising serious concerns regarding health risks, gender issues, power relationships and the voluntary nature of the donation. In fact, a competition between two top journals evolved. Whereas Hwang and his team had published their paper in *Science*, many of the subsequent rumours and concerns were voiced in *Nature*. And things became even more dramatic when Hwang was forced to admit that his findings had been fabricated, so that his papers had to be retracted (Kennedy 2006; Gottweis and Triendl 2006). His name became associated, not with a major breakthrough, but with a highly visible case of fraud.

In this case study, the three dialectical moments are easily discernible. Initially, scientific ambitions and ethics requirements seem to go quite well together (M_1), for in his *Science* paper, Hwang and his co-authors assure their readership of the ethical soundness of their research, stressing that it had been done in compliance with ethical rules and standards. Notably, they state that "before beginning any experiments we obtained approval for this study from the Institutional Review Board on Human Subjects Research" (Hwang et al. 2004, 1669). Wang also stressed that donors had donated oocytes and cumulus cells voluntarily, and that they had been "fully aware of the scope of our study and signed an informed consent form" (idem). Initially, this concordance of research and research ethics seemed something to be expected. Qualities such as veracity, reliability, conscientiousness, carefulness, responsibility, transparency, etc. are not only regarded as moral virtues, but also as important ingredients of proper scientific research, as crucial methodological skills. In other words, scientific research is initially presented as an inherently *moral* practice, conducted in a conscientious manner, and directed at addressing important societal concerns (the potential societal relevance of stem cell research, for instance in the context of transplantation medicine, where stem cells could be employed to replace faltering organs). Indeed, Hwang claimed that his breakthrough could have important clinical implications, that it was likely to have a major impact for the war against degenerative disorders such as diabetes and Parkinson's disease (Hwang et al. 2004).

But as soon as critics and sceptics began to take a closer look at the way in which the research was actually conducted, in other words: at the backstage rather than the frontstage of the research, at the context of discovery rather than the context of justification, things proved to be much less smooth (M_2). Remarkable tensions came into view between ethical requirements on the one hand and actual research practices on the other, for instance concerning the way in which the stem cells (oocytes) had been procured. The research proved to be decidedly unethical. It represented a *negation* or violation of ethical standards (M_2). The actual experiments contradicted (Western?) requirements. Moreover, the Hwang case revealed that the global arena of stem cell research is actually a highly competitive landscape, involving fierce competition, between top journals for instance (*Nature* versus *Science*) but also between global regions (the *West* versus the *Far East*). Comments included the concern that in the West, scientific progress was delayed and frustrated by research ethics and distrust in science (technophobia), whereas in the East scientific progress was encouraged by a science-friendly climate and a supportive cultural environment, including well-funded laboratories and legislation that permitted cloning of human embryos for research. Again, Hwang acted as a foil for highlighting some of the challenges Western researchers were facing. In other words, the Hwang case not only reflected ethical issues, but also pointed to conflicts of power, between principal investigators (such as Hwang) and early stage researchers (his female Ph.D.'s), as well as between the scientific establishment (*Nature* as an elite scientific forum) and the newly emerging Asian scientific "tigers" (including South Korea).

Finally, however, Hwang's exposure and downfall resulted in another remarkable dialectical turn ($M_2 \rightarrow M_3$). Now it was argued that "Sound ethics and good research practice go hand in hand…", that ethics is not a nuisance but an indispensable

infrastructure for quality management and science governance (cf. Zwart 2008b). Indeed, "good governance is crucial for research… Absence of regulation is not beneficial for research… Regulatory oversight adds another layer to the web of quality control in research" (Gottweis and Triendl 2006). In other words, in this third round of comments, the ethical infrastructure was suddenly regarded as an integral part of excellence in science: "Have your ethics in place!" In dialectical terms: on a more advanced level of comprehension, science and ethics became reconciled again. Both were acknowledged as complementary dimensions of good scientific practice (academic *Sittlichkeit*). Hwang still functioned as a foil, but now for highlighting the (self-perceived) ethical robustness of Western research practices.

From a macro-perspective, the Hwang case must be regarded as symptomatic for a broader, even global development. Frank Miedema (2012) professor of immunology and Dean of the Medical Faculty of Utrecht University, distinguishes three stages in the recent history of science. Science 1.0 (M_1, dialectically speaking) was a type of research that was autonomous and curiosity driven. Increasingly however, a different type of research seems called for (Science 2.0: M_2), producing knowledge that is relevant for societal stakeholders and entailing economic value (Miedema 2012, p. 24). This implies new (post-classical) quality criteria, but also growing tensions and contradictions between the inherent dynamics of academic work and the societal and economic expectations involved. But eventually, according to the author, a situation of co-creation is evolving ($\rightarrow M_3$), in which the questions and interests of science and society become more adequately aligned and knowledge production becomes coproduction: Science 3.0 (M_3) (cf. Gibbons et al. 1994; Nowotny et al. 2001; Leydesdorff and Etzkowitz 2001).

1.4   A Second Dialectical Exercise: The *Limitless* Case

This same dialectical schema can be discerned in research misconduct novels. Science novels provide podiums where dramatic dialectical scenarios are enacted, albeit not always resulting in a "happy" end (M_3). The dialectical trichotomy ($M_1 \rightarrow M_2 \rightarrow M_3$) allows us to grasp the basic dramatic structure reflected in misconduct narratives. The first moment (M_1) is comparable to what is often referred to as "exposition" (Freytag 1863). In the first chapters, we are introduced to the characters and their socio-cultural ambiance. During the second moment (M_2), the (conflicting) demands and challenges become apparent, as key protagonist are exposed to novelties (new forms of knowledge or technicity, now types of laboratory equipment, new research targets, unexpected obstacles, etc.). The whole ambiance suddenly appears in a different light, as if the περίακτοι (the revolving triangular wooden devices of ancient Greek theatre) are turned around. Existing expectations and established behavioural repertoires prove insufficient, and this gives rise to tensions, conflicts and frustrations. In dialectical terms, the initial expectations are *negated* by the challenges and contradictions emerging in real research. The one-sidedness (or even naivety) of the initial principles and convictions is exposed. Key

protagonists must learn to come to terms with and domesticate the challenge, but this also involves a re-consideration of the basic principles themselves: a collective re-education. This is the third moment (M_3) of reflection, catharsis or denouement (when the περίακτοι are turned again). This trichotomy of moments determines the basic logic of misconduct narratives.

Take for instance the novel *Limitless* (Glynn 2001/2011), discussed in more detail elsewhere (Zwart 2014a). The protagonist (Eddie Morra, a literary author living in Manhattan) has finally received his first book contract and seems about to realise his expectations and objectives (M_1). Precisely at that moment, he faces a major challenge: a mid-life crisis, in the form of a paralysing writer's block. The usual behavioural options (withdrawal into his studio, staring at his computer screen for hours, smoking, alcohol consumption, etc.) fail to work (M_2) and, in despair, he yearns for a way out to by-pass the hazardous route of *working through* the crisis. Coincidentally, he meets a former drug dealer, now working for a pharmaceutical company engaged in illegal experiments (in the wild), who offers him a "solution" in the form of a novelty: a nootropic drug named MDT-48. The dealer's job is to recruit early adopters (such as tormented authors) who are enrolled in unauthorised pre-clinical trials (so as to reduce the costs involved in developing marketable enhancement drugs). The protagonist takes the drug (reluctantly at first) and it works: he becomes a prolific author overnight. Apparently, the drug offers a short-cut, a panacea, so that he is suddenly able to overcome the paralysing tension between expectations and achievements.

The problem situation is not really sublated (*aufgehoben*) in the dialectical sense of the term, however, and the third moment is not really reached ($M_2 \rightarrow | M_3$). Before long, side-effects begin to accumulate, symptomatic of the deficiency of the solution (brain doping). Besides suffering from memory loss and nausea, the protagonist becomes addicted to the drug, and MDT increasingly takes over his life. In accordance with the dual meaning of the Greek term for pharmaceuticals (φάρμακον), the drug (a bio-active, toxic, nootropic substance) is both a medicine and a poison. The tension between expectations and performance (M_2) resurges, but now on a higher level of intensity. In the novel version, the protagonist dramatically fails to adequately address the challenge and in the end he proves utterly unable to "sublate" his problem ($M_2 \rightarrow | M_3$). In the movie version, however, he apparently manages to domesticate the drug and to re-educate himself, in such a way that he is able to live on an optimal dose (increasing performance benefits while avoiding addiction and other drawbacks).

From a dialectical perspective, however, the movie outcome must still be regarded as suboptimal. The reconciliation between expectations and performance is not really achieved and the contraction is not really sublated (the *negativity* of the situation is not really *negated*). For although the individual apparently manages to survive (temporarily at least), his experiences are not really used to bring about a conversion, a metanoia, a systemic change, neither individually nor collectively. Notably, the misconduct committed by pharmaceutical companies and other mega-actors is neither exposed nor addressed, so that the problem continues, and new victims are likely to become trapped in similar scenarios.

We may look at the novel from various perspectives, first of all from the perspective of *knowledge*. The designer drug reflects a neuro-centric view, both on human existence in general and on individual achievement in particular (M_1), reducing the phenomena of artistic creativity to the flow of neurotransmitters in the brain. The *Limitless* experience (M_2) urges us to question the naïve, one-sided conviction that we *are* our brains. The novel incites us to see human achievement rather as a dialectical interplay between individual performance (and its neurological correlates) on the one hand and the broader systemic context (the socio-cultural environment or *world*) on the other. In *Limitless* this insight (that creativity can only be partially explained with the help of neurotransmitters and brain chemistry) is not really achieved however ($M_2 \rightarrow | M_3$). The new designer drug (the materialisation of a new form of neuro-scientific and psycho-pharmaceutical expertise) remains one-sided and disruptive, both individually and more broadly, on the level of culture and society. In the movie version, the power game played by the company, at the expense of individuals (early adopters, notably faltering artists) is neither criticised nor overcome. Eddie the protagonist temporarily succeeds in outsmarting others, but a sustainable moral practice (*Sittlichkeit*, M_3) never develops. In other words, the neuro-centric starting-point (M_1) is not really challenged and corrected (negated, "sublated") in response to the dramatic *Limitless* experiment (M_2). Various power games are enacted in the course of the trial (M_2), but without overcoming the moral and epistemological deficiencies and deadlocks exposed by the novel. By relying on brain doping, the protagonist remains trapped within the logic of a toxic power game, rather than transcending and sublating it, so that the "happy end" remains a temporary, solitary and vulnerable one ($M_2 \rightarrow | M_3$).

The difference between the novel version and the movie version of *Limitless* is quite telling in this respect. In the novel version, the protagonist is literally described as a research subject, a "guinea pig" (p. 244), a "human lab rat who was tagged and followed and photographed and then discarded" (340), so that the idea of the experimental novel must be taken quite literally here. In the movie, however, the role of the pharmaceutical company, whose untested pharmaceutical products facilitate "a sudden and unexplained leap forward" in the early adopter's career (p. 204), until disruptive side-effects and withdrawal symptoms begin to manifest themselves, blends into the background. The origin of the drug remains more or less unclear. Life is lived in the fast lane and experienced as highly competitive, while pharmaceutical innovations provide shortcuts to success. The protagonist *persists* in this neuro-centric and neoliberal view on what human existence is about (M_1), rather than allowing the negativity of this viewpoint to be challenged and negated by his experiences. The strength of the novel, compared to the movie (from a dialectical perspective), is that the initial convictions are really called into question, on three levels, namely on the level of *knowledge* (the epistemic level), of *power* (the biopolitical level) and of the Self (the ethical level). On the knowledge level, the novel challenges the neuro-centric view on human creativity, a view which frames society as a pharmaceutical laboratory where consumer responses to brain-chemicals can be tested by companies. On the level of *power*, the novel problematizes the unequal power relationship between pharmaceutical companies and consumers (early

adopters) of designer drugs. And on the level of *Self* it becomes clear that the various tensions and conflicts described by the novel can only be addressed when the challenges are really *worked-through*, so that egocentricity and opportunism (of individuals-as-entrepreneurs) give way to the development of a sustainable, collective, moral culture which is able to stand up to and domesticate the toxic novelty (M_3).

These three dimensions or axes, namely *knowledge* (epistemology), *power* (bio-politics) and the *Self* (ethics) will assume a broader relevance in this study. They indicate three types of questions that may be asked concerning research misconduct, namely: Which new forms of knowledge (of scientific technicity) are emerging? How do they affect power relationships or established power regimes? And finally: What practices of the Self are developed in response to this challenge? These three axes of research (these three types of questions) have been distinguished by Michel Foucault (1984; cf. Zwart 2016c), but prove highly relevant for a dialectical approach as well. A dialectical process is unleashed when new forms of *knowledge* (epistemic novelties) emerge. In the case of *Limitless*, these novelties initially exemplify and reinforce a bio-molecular, neuro-centric view on human creativity, as we have seen, which is *exposed* by the novel (M_1). In accordance with the neuro-centric viewpoint, experiences of stagnation and frustration (such as a writer's block) are addressed with the help of substances like MDT-48, allegedly allowing the protagonist to modify his brain chemistry. A decidedly neuro-centric self-understanding is entailed in this scenario (M_1). Rather than seeing ourselves as *existing* beings, as beings-in-the-world, MDT-48 reinforces the conviction that we *are* our brain, that our brains are makeable and that our societal performance, our moods, our intelligence, our productivity and our creativity are functions of a modifiable brain. In other words, rather than being the autonomous *subjects* of our performance, human beings become the targets of bio-molecular interventions.

As soon as this new type of biomolecular and psycho-pharmaceutical knowledge, exemplified by the designer drug, enters the real world of socio-cultural infrastructures, however, various kinds of tensions and conflicts emerge and various kinds of ambiguities are revealed. The psycho-pharmaceutical novelty produces disruptive *power* effects (M_2). Although the protagonist enters a stellar career, he becomes increasingly dependent on the pharmacological substance, the miracle drug, provided by a powerful company which surveys and monitors his performance, using him as a research subject in an informal (wild) trial. In the movie it is suggested that, in our increasingly competitive, high pace and information-dense societies, performativity can no longer be achieved without the use of nootropic drugs (brain doping), allowing us to enhance our moods and information-processing capacities. It is suggested that virtually all "high performers" (especially in competitive environments such as Manhattan) are on MDT-like drugs. In other words, individuals become the targets of bio-power, of manipulation and surveillance by a Big Other.

But *Limitless* also has repercussions on the level of the Self. Psycho-pharmaceutical innovations are initially envisioned as instruments that allow us to realise certain goals which otherwise would be beyond our reach (in this case: novel

writing). Subsequently, however, the relationship between the (allegedly autonomous) Self on the one hand and the technological novelty on the other is bound to change. The subject (the protagonist) becomes increasingly dependent on his pill, his instrument (ὄργανον). His organism, his brain chemistry can no longer do without. Moreover, his brain, his whole organism, becomes significantly and irreversible affected by (and addicted to) the drug. In other words, whereas initially the novelty (MDT-48) allegedly allowed the protagonist to become the manager of his brain, of his creativity, his moods, etc., gradually the designer drug becomes increasingly powerful and threatening. The protagonist no longer experiences himself as master over his own brain and the focus inevitably shifts to the question: how to domesticate this drug? For the real *agent* of the novel seems to be the (colourless, almost immaterial) drug itself (in Lacanian algebra: the object *a*), *drawing* the protagonists into action.

Initially, moreover, all this seems a purely individual challenge (how to prevent or counter-act addiction, nausea, memory loss, etc.), but gradually it becomes clear that the domestication of MDT-48, exemplifying a whole new wave of psycho-pharmaceuticals, requires a socio-cultural transformation, the development of a new moral culture (*Sittlichkeit*, M_3), sufficiently robust to withstand the massive intrusion of designer drugs. In other words, MDT-48 actually opens-up and reveals a whole world of contradictions and tension within highly advanced capitalism in which individuals struggle for survival. This raises the question whether more viable (less drug-dependent) practices of the Self allow individuals to safeguard their autonomy and to contribute to a turn or conversion (μετάνοια) on the collective level of *Sittlichkeit* ($M_2 \rightarrow M_3$).

The question for the protagonist therefore is how to constitute himself as an autonomous and responsible subject, vis-à-vis the biotechnological and bio-political challenges enacted in the novel. Whereas designer drugs allegedly allow individuals to manage their cognitive capabilities and moods, in the course of the narrative the question rather becomes reversed: how to manage, how to domesticate these products of neuro-biochemistry (allegedly benign, but actually quite toxic)? Initially, the basic objective of such drugs is to allow us to manage the bio-molecular processes occurring within our neural networks. But this entails a naïve, neuro-centric and instrumental view on technology. The new challenge is: *how to domesticate commercial neuro-biochemistry*? The issue shifts from managing our brains to governing pharmaceutical industries, so that pharmaceuticals not only become *bio-compatible* (enhancing rather than disrupting our psychic well-being), but also *socio-compatible* (optimising rather than endangering daily existence and societal culture). Instead of being socially disruptive (via the intensification of drug-dependent competitiveness), new forms of neurological knowledge must be mobilised in such a way that they may be *used by us* rather than the other way around. In *Limitless*, the designer drug is like a bio-technological (man-made) vampire virus, *using* human individuals as mere vehicles in order to proliferate and spread.

In other words, the designer drug operates as a socio-cultural infection. Agency increasingly shifts from human users to the super-pill itself. Containment of this infection can only be realised collectively, but *Limitless* describes a socio-cultural

landscape where this "third moment" (M_3) remains decidedly out of reach. The question how to effectively domesticate designer drugs also applies to other "converging" NBIC technologies (where NBIC stands for: nano-technologies, bio-technologies, information technologies and cognitive science). The question is not whether such novelties will *either* lead to empowerment of individuals *or* to increased drug-dependence, for the most likely scenario is: both. This is the paradox of the "second moment" (M_2): the autonomy of the protagonist is *seemingly* strengthened, but actually it is a lure, because before long the subject becomes increasingly dependent on "his" drug. Increasingly, moreover, the designer drug affects the socio-cultural arena, seducing other potential consumers (use me!), occupying the position of *agent* addressing and seducing potential consumers (rather than being a mere instrument). The drug (a neuro-chemical substance) represents power-relationships moreover: a pharmaceutical company recruiting early adopters as informal research subjects, using their personal experiments are a source of information. With the help of the drug, the protagonist aims to restore performativity, but actually he becomes a research animal, a lab rat, while Manhattan *as such* becomes a neuro-pharmaceutical laboratory or test site. Before long, the pharmaceutical company knows more about Eddie's brain than Eddie himself. Eventually, the gap between expectations and performance is intensified rather than bridged by the drug. The dialectical question therefore is how to restore *Sittlichkeit* on the macro-level: a moral culture or scaffold (M_3) which enables individuals to survive exposure to such infectious, toxic substances; both enabling and building on viable practices of the Self. The development of such a culture presupposes that questionable practices on the part of pharmaceutical companies (flooding the market with designer drugs, life-style drugs, anti-depressants, ADHD-drugs, etc.) is exposed and addressed (Dehue 2015). Let this suffice as a first example of how a novel (analysed from a dialectical perspective) may inform the debate. I will now turn to Lacan's second source of inspiration, namely Freudian psychoanalysis.

1.5   Freud and Fraud

In discussions on research misconduct, Freud's work may be addressed from multiple perspectives, for in the course of his career he played various roles, as a scientific researcher, as a physician specialised in psychic afflictions, and as the founding-father of psychoanalysis.

Initially, Freud was a scientific expert: a neurologist trained at the University of Vienna who qualified as doctor of medicine in 1881 and became a specialist in the treatment of patients labelled as hysterics and neurotics. As a neurologist, he contributed to what Jacques Lacan refers to as "university discourse" (a concept that will be discussed in more detail in the next chapter), notably via his neurological publications on aphasia and the brain.

Dialectically speaking one could argue that, as a researcher, and subsequently as a trained and qualified practitioner, Freud's basic aim (on the level of *knowledge*)

was to contribute to the realisation and elaboration of the neuro-physiological world-view (M_1); initially as a researcher involved in experimental work, but subsequently as a practitioner working outside academia and focussing on "neurological" afflictions such as hysteria and compulsion neurosis. Yet, inevitably, he encountered weird obstacles and experienced frustrations of various kinds (M_2). On the *knowledge* level, he faced tensions and contradictions between his epistemic convictions and his practical experiences. The latter seemed to challenge or even "negate" the neuro-physiological paradigm in which he was trained. In his efforts to deal with these complexities, he increasingly began to explore new terrains. In 1897 (the birth year of psychoanalysis), this resulted in a scene-change. The περίακτοι of his practice was reversed, as the laboratory setting had already given way to the famous Freudian couch. But rather than representing a deflection from his scientific convictions, Freud consistently emphasised that he wanted to reconcile the two by addressing emerging therapeutic challenges in a scientific manner, so that the apparent tensions between neuro-physiology and psychopathology could be sublated (*aufgehoben*). Although his scientific convictions seemed to be *negated* by his experiences as a physician, his aim was to achieve a *negation of the negation* and to reconcile neuroscience and psychotherapeutic praxis (M_3). He saw psychoanalysis as an extension of science and expected that, one day, psychoanalysis could be confirmed by (or even replaced by) endocrinological and neurological views (Freud 1920).

This dialectical schema mirrors Zola's concept of the experimental novel discussed above. Freud likewise sets out to bridge the gap between the scientific and the literary world, between the novel (as a literary case history) and the experimental method (as a basic form of scientific experience), albeit starting at the opposite end. For whereas Zola was a literary author who recognised the possibilities of the scientific method, Freud was a scientist who recognised the relevance of belles-lettres. It has been observed that Freud's case histories actually read like novels (Marcus 1974/1985). While Zola the novelist adopted experimental concepts and techniques in his literary writings, Freud at a certain point decided to employ novelistic techniques to further develop his understanding of human psychic existence. Point of departure was a model of the human mind elaborated in an unpublished manuscript known as the *Entwurf*. In order to reconcile the tensions between his neuro-scientific theory (the *Entwurf*-model) and his psycho-therapeutic practice (M_2), he not only began to *analyse* novels and theatre plays, but also actively began to *write* novel-like case histories himself ($M_2 \rightarrow M_3$).

Thus, Freud developed a unique discursive practice, compared to standard university discourse. Initially, Freud was a qualified expert who aimed to *apply* the theoretical and methodological requirements of the neuro-physiological paradigm to the empirical complexities of psychotherapeutic practice, but this proved an unsolvable challenge ($M_2 \rightarrow \mid M_3$). In response to his fiasco, he moved away from explanation to interpretation, from causality to narrative, from science *strictu sensu* towards the humanities, realising a science-humanities dialogue. Freud-the-qualified-expert had been a neurologist who basically regarded the bodies and brains of human individuals as *objects* or targets of research. Freud-the-psychoanalyst, however, took a different perspective. Notably in his extended case

studies (*Dora*, the *Ratman*, etc.), the patients themselves are now given the floor as *subjects* and invited to articulate their inhibitions, fixations and desires, via free associations (automatic speaking) and transference. In other words, Freud as an author produced two different types of discourse: *before* the birth of psychoanalysis he published scientific papers (on aphasia and neuro-anatomy), but after the epistemological turn or rupture (occurring in 1897) he began to publish case histories, together with meta-psychological considerations based on them (from 1897 onwards). And only his psychoanalytical output is included in the standard editions of his *Gesammelte Werke* or 'complete' works.

In his role as a professional expert (i.e. a neurologist who tried to extrapolate his convictions into psychotherapy, who tried to *realise* his science), Freud faced a number of integrity challenges. As a medical practitioner who became a psychotherapist, his dealings with patients were far from flawless, and some (questionable) activities have been amply documented, first and foremost by Freud himself. One of them concerns the so-called cocaine episode. In 1884, Freud developed an interest in possible medical applications of cocaine and published an article advocating the drug as a panacea (although he lost the race for priority against ophthalmologist Carl Koller, who demonstrated the surgical use of cocaine at an ophthalmological congress that same year; Gay 1988, p. 43). Meanwhile, Freud had started to use the drug himself, as a remedy against depression and impotence, and he recommended or prescribed it to a number of patients and friends. One of them was Ernst von Flieschl-Marxow, who quickly became addicted to it, so that the remedy actually exacerbated his sufferings. Cocaine proved a φαρμακόν: both remedy and poison. Other physicians reported that the drug (if subcutaneously injected, as Freud suggested) could have rather unfortunate side effects. This troublesome episode damaged his professional reputation and became a topic in his dream life. Some cocaine-related dreams are reported and analysed in *The Interpretation of Dreams* (1900/1942).

The most famous dream analysed by Freud, and the one that is generally regarded as the prototype of Freudian dream analysis, is *Irma's injection*, a dream which likewise reflects embarrassing experiences as a medical practitioner. In this dream, which was dreamt on the night of July 23, 1895, Freud meets a former patient (pseudonym: Irma) who suffers from unexplainable symptoms. He asks her to open her mouth and peers curiously into her throat, where he notices a strange white spot. Three colleagues join the examination and after some deliberations they conclude that the suffering is caused by an iatrogenic *infection*, resulting from a (rather carelessly administered) *injection* with a "solution" named *Trimethylamine*, whose formula appears before the dreamer's eyes, printed in bold type. Freud's subsequent interpretations reveal that the dream indeed addresses an instance of questionable professional practice. Via his dream, Freud argues, the dreamer (Freud) tried to exculpate himself at the expense of colleagues.

The practical experiences reflected in this dream are well known. In March 1895, Freud treated a young single woman named Emma Eckstein (27 years old) for hysterical nose bleeds and called in the assistance of his friend Wilhelm Fliess, a nose and throat specialist (otolaryngologist) from Berlin, to examine her. Inspired

by idiosyncratic theories about the role of the nose in sexuality, Fliess operated on Irma's nose on March 4, but this did not stop the bleeding. To make matters worse, a foetid odour set in. As profuse bleeding continued, Freud called in another surgeon who discovered that Fliess had left at least half a metre of gauze behind in the nasal cavity. In a letter to Fliess, Freud commented that it was an unfortunate accident that could have happened to the most careful surgeon. These instances of carelessness or even misconduct clearly troubled Freud and affected his dream life.

All these experiences were part of the transition period, when Freud was still combining his budding improvisations as a psychotherapist with biomedical interventions, such as cocaine injections and surgery. But the crucial, formative *experience* gained during this period (M_2) was that neuro-physiological theory on the one hand and the realities of hysterical and neurotic suffering on the other seem impossible to align in an adequate way, so that he eventually deflected (as a neuro-physiological apostate) into a fundamentally different kind of praxis: psychoanalysis, relying on extended, novel-like case histories, yet persisting in the expectation that eventually science and narratives, experimentation and interpretation would be reconciled ($\rightarrow M_3$).

As a psychoanalyst, however, he again faced various integrity challenges, albeit of a different, *textual* nature. They were related to authorship and had to do with handling sensitive information. His shift from physical examination and biomedical intervention into interpretation and case study analysis is also reflected in the type of integrity dilemmas he is now facing, revolving around issues concerning the question whether it is admissible to publish sensitive, confidential information about patients in academic papers.

One relevant episode, from the point of view of research integrity, concerns the so-called Dora-case, the first extensive psychoanalytic case history published by Freud (1905/1942). The case study *as such* is an exemplification of psychoanalytical discourse. It is a *Fallgeschichte* which indeed reads like a "novel" (Marcus 1974/1985),[5] and the patient herself is given the floor as the key protagonist, while Freud acts as the narrator who (as one of the characters in this "novel") narrates the story in retrospect. To this famous case study, however, a *Preface* is added, which is written in a somewhat different discursive mode. In this *Preface*, Freud poses as a professional doctor who writes *about* a patient and who discusses his moral dilemma concerning the confidentiality principle before an audience of medical colleagues (Zwart 1992, 2016b). From a literary perspective, this may be regarded as a "framing action" (Marcus 1974/1985, p. 67). In his *Preface* he admits to publishing this document (which contains a significant amount of intimate personal details concerning his former patient) without the patient's consent, arguing that patients would never opt for psychotherapeutic treatment if they suspected that confidentiality could thus be broken. Freud claims, moreover, that his duties as a scientist (to share his findings, so that future therapists and patients may profit from the insights

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[5] Steven Marcus, reading *Dora* from the point of view of literary criticism, argues that Freud's case study reads like a "modern experimental novel" (p. 64) and that he writes "exactly like a novelist" (p. 68).

gained) have to be given more weight than his discretional duties towards single patients.

According to Freud, professional therapists find themselves in an impossible position, facing an insolvable integrity dilemma. When they refuse to provide details from their therapeutic practice, medical colleagues will complain that their theories are unfounded. But when the data are provided, these same colleagues argue that he should not have done this, in the light of the principle of confidentiality (p. 163). In other words, the expert is confronted with a clash between methodological norma-tivity (always provide the necessary details in support of your theory) and ethical normativity (be a Victorian gentleman and treat confessions about intimacies made by patients, notably female patients, with the utmost discretion). But if he had asked his patient for her permission to publish such intimate details, she certainly would not have given it (p. 164). Moreover, Freud took care to conceal Dora's identity, notably by using a pseudonym, but her identity was nonetheless discovered of course (cf. Kochiras 2006). Regardless of whether contemporary readers find Freud's line of reasoning convincing (probably not), this *Preface* is written in a professional rather than a psychoanalytical vein, so that in terms of discursive mode it contrasts with the case history as such. The *Preface* is written by Freud-the-professional-expert, rather than by Freud-the-budding-psychoanalyst.

Other integrity aspects of Freud's psychoanalytic practice have likewise aroused uneasiness or criticism. This includes reproaches concerning "therapeutic nihil-ism", meaning that, although psychoanalysis aims to foster self-understanding, it often fails to actually cure the patients from their psychic afflictions, notably because these afflictions tend to reflect fundamental entanglements with the socio-cultural environment as such, and are therefore seen as symptomatic of (Western) civilisa-tion as a whole. But such criticism basically concerns Freud in his role as a profes-sional, a therapist. In this introductory Chapter, the focus of attention is not in the practices of Freud-the-professional-expert (evidently questionable at times), but rather on the concepts and methodologies employed and on the insights gained by Freud-the-psychoanalyst, such as his concept of 'impossible professions'.

1.6 Scientific Research as an Impossible Profession

One example of a concept coined by Freud-the-psychoanalyst that seems highly relevant for our purposes is the concept of "impossible professions" (Freud 1925/1948; 1937/1950, p. 94). Reflecting on some questionable aspects of his per-formance as a therapist in retrospect (such as the ones described above), Freud argues that his predicaments are attributable to the fact that therapy, together with pedagogy and governance, should count as an "impossible profession". Given the basic tensions inherent in the practices concerned, unsatisfactory results are to be expected from the very outset.

Jacques Lacan subsequently extrapolated this concept to include scientific research as a fourth instance of an "impossible profession". According to Lacan,

this notably applies to scientists who nowadays work with dangerous and potentially toxic or infectious objects, such as nuclear energy or potentially dangerous bacterial strains. In view of the dilemmas involved, Lacan argues that researchers are struggling with a "crisis of anxiety" (1974/2005, p. 74). They are alarmed by the idea that dangerous life forms may one day escape from the laboratory, causing pandemics in the outside world, perhaps even cleansing the world from human beings. In some cases, this may cause researchers themselves to adopt a self-imposed moratorium, as happened in the case of recombinant DNA research in the 1970s (Berg et al. 1974; Zwart 2013). In other words, scientific research has become an "impossible profession" (Lacan 1974/2005, p. 73).

Dialectically speaking, this experience is part of the second moment (M_2) of the dialectical unfolding: the moment of negation or negativity, when contradictions (the clash between the desire to know and the various constraints implied in the societal responsibilities of a scientist) may seem impossible to solve. Initially (M_1) it seems evident that scientists work for the benefit of humankind and that scientific knowledge may be used to address societal issues. But gradually (M_2) it becomes clear that science itself may become a danger, a *problem*, rather than a solution, because *science itself* may entail significant societal risks. Nonetheless, from a dialectical perspective, it would be nihilistic to conclude that this experience (relevant as it is) must be regarded as the final outcome. Somehow, we must *work through* the challenges (the symptoms of the crisis) and *negate* the unexpected negativity of science, thus opening-up a more viable plateau of activity, where science and society may become reconciled again (M_3).

In all the novels analysed in this monograph, the experience sooner or later emerges that scientific research may indeed entail potentially disruptive risks, so that scientific research should indeed count as an impossible profession, given the integrity challenges which researchers are facing and which seem impossible to solve. But this *experience* inevitably raises the question how the situation of paralysis and deadlock (M_2) may eventually be overcome (the negation of the negation: M_3). In practice, this envisioned dialectical end-result (M_3) may prove difficult to achieve however. The experience of science as an "impossible profession" may give rise to less optimal scenarios and may imply that scientists, exposed to (unsolvable?) integrity challenges, revert to questionable research practices or even misconduct, in order to by-pass (rather than address) them.

Because of the decisive role of reflections on problematic experiences (the cocaine-case, the Irma-case, etc.) during the gestation and birth of psychoanalysis, as reflected by his dream life as well as by *The Interpretation of Dreams* (Freud 1900/1942), it is remarkable perhaps that on a manifest level Freud speaks about research misconduct in a fairly cursory manner. In *The Psychopathology of Everyday Life*, Freud (1904/1941) discusses a case of *unintentional* plagiarism ("cryptomnesia") he once experienced. After sharing with "a friend and colleague" (Fliess again, but his name is not mentioned) some ideas about the original bisexuality of human individuals, Fliess kindly reminds him that he had been discussing this same idea with him two and a half years earlier, when Freud had actually rejected it. Thus, he suffered a narcissistic insult: he was forced to give up his illusion of originality, but,

he adds: "Since then I have become more tolerant if I come upon one of the few ideas with which my name can be linked elsewhere in the medical literature, and I find that I have been given no credit for it" (1905/1941, p. 160). In other words, lack of acknowledgment (i.e. plagiarism) is the default rather than the exception.

Another key concept in Freudian epistemology is the concept of resistance as a mechanism of defence. From a psychoanalytical perspective, modern science opens up the closed circle (the Platonic cave) of everyday phenomenological experience, revealing a dynamic universe of immense proportions and complexity. For Lacan, the prescientific Aristotelian cosmos was basically a phantasy (Fink 2004, p. 148), revolving around the idea of a pre-established harmony between the *world* (the natural macro-cosmos) and the embodied *soul* (the human micro-cosmos). Modern science, however, relying on quantification and formalisation, gave rise to a universe in which human existence is increasingly de-centred and marginalised. This entails what Freud (1917/1947) refers to as a "narcissistic offence". The egocentric ego (the human micro-cosmos, mirrored by the macro-cosmos) gives way to the marginalised subject of modern techno-science. Modern science represents an initially quite painful and distressing awakening, an epistemological birth trauma. Science disrupts the "poetry" of a traditional, pre-scientific world and invokes anxiety and unease because it entails a diminution of humankind. The world of modern science is so large (in terms of space and time) that humans become trivialised. For Freud, this narcissistic offence explains the resistance against Copernican, Darwinian and other scientific revolutions, which not only confront us with the immensity of the universe but also, for instance, with the existence of a (potentially threatening) microbial world, both surrounding and pervading us. Psychoanalysis likewise represents a narcissistic insult, by revealing that the ego is not the master in his own house, but driven by unconscious desires and hampered by unconscious obstacles.

To ward off the unease triggered by scientific revelations, there is an inherent inclination in human beings to ignore such threats. In *Beyond the pleasure principle*, Freud (1920/1940) argues that, in contrast to views which emphasise human curiosity and world-openness, the human psyche basically functions as an immunisation mechanism: a mechanism of defence, designed to keep the threatening outside world at bay. Although our sense organs allegedly allow us to see and hear the world, their primary task is to ward off and filter disconcerting external signals, allowing only small samples of reality to enter our sensory system. They filter out the information we need and disregard the rest. Indeed, we are equipped with eyes and ears first and foremost because they allow us *not* to see and *not* to hear (Matthew 13:13).

This is underscored by human anatomy. We are almost completely covered by protective skin, in combination with artificial protective layers known as cloths. Our sense organs are miniature apertures, Freud (1920/1940) argues, whose primary purpose is to provide protection against overstimulation (*Reizschutz*). This tendency of humans and other organisms to insulate themselves from the outside world already applies to micro-organisms, coaxed inside their cell membranes. First and foremost, our vulnerable bodies have to be protected against overstimulation.

Protection against external stimuli is a life task at least as important as sensitivity and receptivity (Freud 1920/1940, p. 27). Our sense organs are like little antennae that select small samples of exteriority, allowing us to assess minute quantities of reality. Our primary objective is to safeguard our psychic integrity from external traumas. And this also explains obstinate human reluctance to accept the insights (fairly disconcerting and unsettling at times) produced by scientific research.

In the next chapter I will explain how Jacques Lacan coagulated Hegelian dialectics and Freudian psychoanalysis into a theoretical and methodological framework which allows us to use science novels as oblique windows into contemporary technoscience.

Chapter 2
Conceptual and Methodological Framework: Lacanian Psychoanalysis
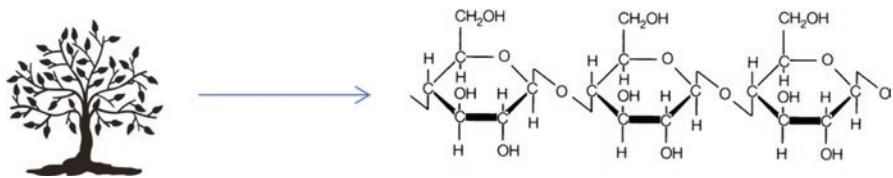
2.1 Lacan on Science, University Discourse and Research Misconduct

Before addressing Lacan's views on scientific integrity and research misconduct, I will first outline his views on science as such. For Lacan, science basically entails a process of symbolisation which proceeds via instruments and gadgets (1972–1973/1975, p. 104), producing discursive "emissions" on a massive scale. Modern science eliminates ("decomposes") the world as we know it from naïve lifeworld experience, replacing it with a completely different kind of universe, composed of symbols (signifiers) referring to concepts (molecules, electrons, quarks, etc.) that represent enigmatic entities whose ontological status (whose materiality or realness) poses a challenge to human imagination (1972–1973/1975, p. 49). The progress of science is the progress of the symbolic order, consuming, incorporating, transforming and obliterating nature as described by Aristotle (1980), namely as φύσις: that which emerges, comes forward on its own accord, having its own inherent principles of change, that which is simply *there*, without our doing. Nature becomes obliterated and dissolved in the course of the ongoing symbolisation or hominisation of the planet (Lacan 1953–1954/1975, p. 291).

Science notably entails a symbolisation of the phenomena of life (1954–1955/1978, p. 43). Rather than understanding life as such, the aim of science is to understand specific bio-molecular processes with the help of instruments and contrivances, such as clocks, microscopes, X-ray diffraction (XRD), etc. (1954–1955/1978, p. 96, p. 344) resulting in symbols (letters, figures, formula, graphics, etc.) of various kinds: a form of understanding which does not allow us to see living nature as it *is*, but rather aims to control and manipulate biological processes. Scientific explanation depends on the use of signifiers (discursive elements which are easily modifiable, notably when sitting in front of a computer screen) which structure scientific experience (1955–1956/1981, p. 216). Thus, symbolisation is the language of precision technology and relies on technologies of knowledge

(measurement, mathematisation, quantification, precision instruments, etc.). Like the French psychoanalyst of science Gaston Bachelard, Lacan emphasises the technicity of scientific research. Scientists do not think with their brains, as Lacan phrases it, but with signifiers, which float through networks, computers and machines (Lacan 1961–1962). Science entails hard labour, resulting in a drastic cultivation and transfiguration of nature. Time and again, Lacan stresses the virulence of the λόγος (i.e. the combinational and computational algebra) of modern science, which is drastically transforming the world via human beings (1958–1959/2013, p. 448), building on strands of symbols. Moreover, notably from the 1950s onwards, science has become "intoxicated" by the information concept (1961–1962). Lacan sees the digital logic of informatisation (the language of 0s and 1s) as the final stage in the symbolisation process.

In the course of this process, the natural thing becomes obliterated. Initially, in the lifeworld, a natural entity presents itself to us as a concrete shape (*Gestalt*), such as a tree for instance. In order to understand this tree, however, science exposes the object to a symbolisation procedure, so that the focus shifts from the phenomenal tree (i.e. the thing as it presents itself to us) to the noumenal tree, disclosing that the tree is composed of basic components that can be represented with the help of symbols (letters from the alphabet, numbers, etc.), such as: CO_2, H_2O, $C_6H_{10}O_5$, etc. In other words, scientific research takes us away from the tree as a visual *Gestalt*, prompting us into seeing the tree as *cellulose*:

This process of symbolisation, brought about by science, takes us from the *imaginary* realm (the world of images, visual shapes, etc.) to the *symbolical* realm (the scientific world of measurements, numbers, chemical formulae, mathematical operations, methodological standards, ethical requirements, h-factors, etc.).

This process is comparable to the transition in Plato's simile discussed above (where visual images are replaced by abstract ideas), but it also concurs with Hegelian dialectics. Initially, human beings are imprisoned in a phenomenological world: the *Umwelt* we encounter via our sense organs. Modern science liberates us from our epistemological constraints, allowing us to see the world with different eyes, literally: with the help of technical contrivances (telescopes, microscopes, barometers, hygrometers, etc.), adding precision by drastically increasing the resolution or scale, etc. In the course of this process, the natural entity with which we are familiar in the lifeworld (M_1) is abolished or negated (M_2). This is the basic paradox of science. The scientific will to know (the *cupido sciendi*) aims to deepen our understanding of the natural thing. But in order to achieve this, the thing is transformed into a techno-scientific *object*, a laboratory artefact. The initial thing is

negated. Increasingly, there is a tension or even estrangement between the natural thing and the techno-scientifically produced item. The initial fleshy thing is literally "obliterated" (replaced by letters and similar symbols, employed by science). The object is "analysed", i.e. reduced to basic components (genes, molecules, proteins, etc.). The phenotype is reduced to the genotype (describable in terms of A, C, G and T, etc.).

This is the basic contradiction, the inherent negativity of scientific research: in the course of the symbolisation process, the original object, the natural entity is lost. But this is a necessary experience. To refuse to adhere to this dynamics, by holding on to a more poetic interaction with natural entities, would come down to the position of the *Schöne Seele*. An interesting exemplification of such a position is the work of Franz Bratranek (1815–1884), a Goethe scholar, but also a close colleague of Gregor Mendel at the famous Augustinian monastery in Brno (Zwart 2008a). Both monastic scholars were devoted to botany, but their styles of research diverged. In 1853 Bratranek published his book *Ästhetik der Pflanzen* ("The Aesthetics of plants") in which he develops the view that landscapes invoke in us a certain subjective mood, symbolised by the plant forms that represent it. This explains the almost magical rapport between subjectivity (*Stimmung*, "mood") and objectivity (the landscape, notably the typical plant form which gives it a face). To further explore this rapport between subject and landscapes, Bratranek studies plant poetry, for poets will write about particular plant forms to articulate the mood invoked in them by the landscape as a whole. This approach clearly differs from Mendel's efforts to discover the genetic elements (represented as Aa, Bb, Cc, etc.) which determine phenomenal features of plants (in a digital manner, namely in terms of absence or presence of dominant or recessive factors) and to quantify this noumenal dimension in the form of ratios (starting with 3:1).
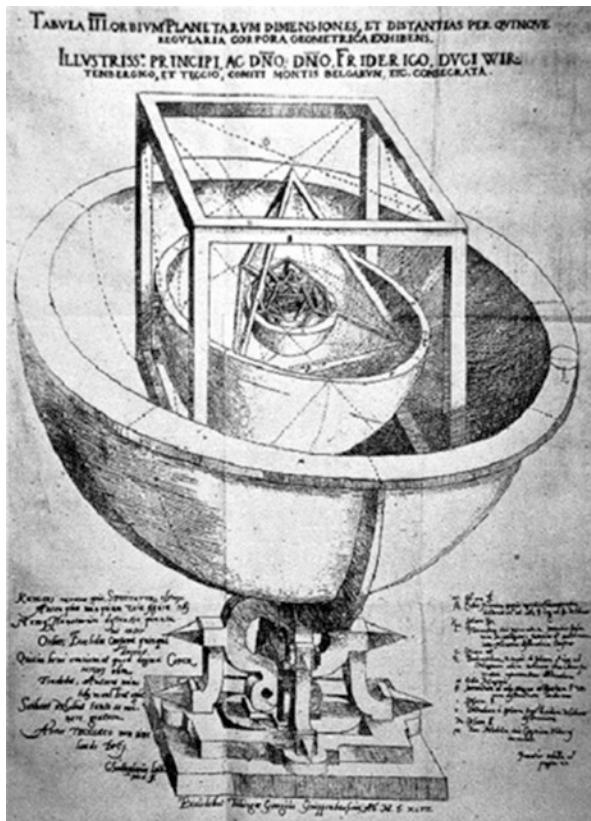
Still, although dialectics urges us to follow Mendel's negation rather than to persist in Bratranek's poetic *schöne Seele* approach, the natural entity must nonetheless somehow be retrieved. We must somehow sublate the negation, the second moment, the negativity of science ($M_2 \rightarrow M_3$). We only really understand an object when we are able to put it back together again, to reconstruct it as it were: finding out how the various parts fit together, how materials such as cellulose and processes such as photosynthesis hang together to produce a tangible, living tree, an organism: the natural entity as a whole. In order to really understand the object, we must develop a holistic, comprehensive view, on a higher level of complexity, where nature is irreversibly symbolised and yet captured as an organism. In doing so, we may actually discover that, in our molecular scientific understanding of the object, something is lost, something is missing, namely that which allows us to understand the whole. It may prove impossible to find our way back from the basic components (the partial objects) to the whole natural thing. Something seems lost underway ($M_1 \rightarrow M_2 \rightarrow | M_3$). There is a gap between the parts and the whole, between the molecular processes and the living entity, between laboratory knowledge (in vitro) and the real world in the wild (in vivo). Extrapolation of symbolical laboratory knowledge into outdoors reality may prove problematic.

This experience confronts us with a third dimension introduced by Lacan (besides the imaginary and the symbolical), namely the real: the recalcitrance of that which continues to resist our techno-scientific efforts towards symbolisation, that which continues to elude and escape us (1970–1971/2007, p. 28; cf. Assoun 2003, p. 56). Rather than being observed directly, the real (not to be confused with objective reality) announces itself in the folds and margins of our (faltering) knowledge production systems. For scientific discourse and lab-based research practices, the intrusion of the real is a traumatic, frustrating experience. Whenever symbolisation falters, there is a tendency to regress to imaginary explanations, so as to suture the gap, for example by claiming that the gap between the molecular components and the living whole points to the existence of a life force or vital spark (a glow of energy or mana: Jung 1953/1952), as posited by vitalism. By adding this mysterious, hypothetical, intuitive, invisible and animating force to the equation, the wholeness is allegedly restored.

We may further explain this with the help of a few (random) examples. Take Platonic astronomy, already discussed above. In Platonic astronomy, nature is initially regarded as a κόσμος, i.e. a perfect, harmonious, balanced, "apollonian" whole (as reflected in the theorem of the perfect heavenly spheres: M_1). Cosmic nature is "observed", but in the original sense of the Latin verb *observare*, which means: to *heed*, to *serve* and to *respect* nature. Fuelled by this devoted interest in nature, however, astronomical observations will become increasingly "symbolical" and precise ($M_1 \rightarrow M_2$). As a result, the fascinating *Gestalt* of the heavenly spheres proves increasingly difficult to uphold. Anomalies are bound to accumulate (M_2). Nature proves inexorable and imperfect. This was the problem Kepler was facing when he developed his decidedly Platonic model of the universe, in which the five perfect three-dimensional ("Platonic") solids (i.e. the pyramid or tetrahedron, the cube, the octahedron, the dodecahedron and the icosahedron) determined the distances between the six perfect planetary spheres (Saturn, Jupiter, Mars, Earth, Venus and Mercury).[1] But this beautiful model, this foundational, inspirational image, which *had* to be true, did not stand the test, was not confirmed but rather *negated* by factual knowledge, by empirical observation (M_2). And this resulted in a traumatic experience, namely that nature is not as perfect as was expected. Anomalies and inconsistencies continued to accumulate, and the astronomer's respect for (the perfection of) nature was increasingly challenged and destabilised or even subverted by this growing inability to really confirm the initial view. Thus, the Platonic κόσμος was "negated" by quantitative astronomic observations, relying on telescopes and other modern contrivances (M_2). Precisely for that reason, Lacan, in a famous dialogue with a member of the Russian Academy of Sciences (shortly after Gagarin travelled through space) objected to the use of the word "cosmonauts": because the

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[1] Hegel considers Kepler's sublime laws of heavenly movements as a highlight of human understanding (1830/1970, § 270). His idea that perfect cubes determine the distances between the planets exemplifies his fidelity to reason: his reliance, with absolute confidence, on the presence of reason (logos) in nature, and therefore Kepler's laws are the most beautiful produced ones by natural science.

κόσμος no longer exists (Roudinesco 1993, p. 365; Lacan 1968–1969/2006, p. 66). In the seventeenth century, the modern universe already became a three-dimensional, cold and silent emptiness, completely determined by mathematical and physical equations (such as Newton's law of gravity), where God seemed irretrievable absent.

Kepler's experience (of contradiction and frustration) was nonetheless important, because it revealed that, apparently, the awesome Platonic starting point had been naïve, inadequate and misguiding. In fact, his frustrating experience *enabled* Kepler to discover that the orbits of the planets are actually elliptical. This is in agreement with the dialectical insight that experiences of negativity (frustration, contradictions, etc.) are inevitable and progressive. It is only by exposing ourselves (our worldviews) to the real that knowledge production may progress, however painful and offensive such experiences may be. Kepler's fiasco became the starting point for a process, an epistemic adventure that culminated in space travel.

Unfortunately, Lacan adds, although a modern space capsule is basically a laboratory, a device for conducting multiple experiments, Russian and American space programs failed to grasp the opportunity to conduct experiments of a more philosophical (phenomenological) nature. How did Gagarin, Glenn and the other early
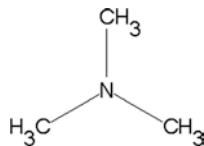
space travellers (locked-in in their capsules) experience time and space? Did they doff their Euclidian intuitions? It would have been highly interesting, Lacan argues, if we had used the opportunity to organise a philosophical conversation, a "phenomenological dialogue" with them about their experiences *in situ* (9, p. 78). Unfortunately this was not part of the program, but it would probably have confirmed that Gagarin was *not* a cosmonaut (12 p. 79), precisely because his journey through space followed a trajectory which would have been incomprehensible in terms of ancient astronomy. Space travel presupposes a contemporary understanding of space and time in terms of relativity theory and curved four-dimensional spacetime. The journey of Gagarin was completely unlike the cosmic, imaginary journey of Er described in the previous chapter.

Still, the desire to somehow reconcile our cosmological intuitions on the one hand and actual discoveries on the other (albeit on a higher level of complexity) remains very much alive. Dialectically speaking, the Big Bang theory and the current, fascinating view of the expanding universe may be regarded in this context as the "negation of the negation" ($\rightarrow M_3$). The Platonic view had to be relinquished, but we received something in return, namely the contemporary worldview which opens up a dynamical universe which even seems "theo-compatible" again. The Big Bang theorem was developed by Lemaitre, a Catholic priest. And although the latter decidedly presented it as scientific and "neutral" (as neither confirming nor contesting Catholicism, as Lemaitre himself emphasised in his famous discussion with Pope Pius XII, who had tried to catholicise this view) this new universe is nonetheless compatible with the *Fiat Lux* idea.

Another example, closer to the topic of this monograph, is the current climate change debate. The primordial idea of nature conceived as φύσις, as decidedly beyond our grasp (M_1), is negated by the disconcerting experience that humankind is having a tremendous impact on the planetary, geophysical and geochemical level: on planet Earth as a whole (M_2). During the moon landing, our planet as a beautiful *Gestalt* became visible for the first time in history, an experience which triggered our sense of responsibility, our awareness of the Earth's vulnerability: the ultimate negation of M_1. The irreversible, omnipresent and disruptive impact of human activity can now be measured and ascertained with the help of hypermodern equipment, so that processes of symbolisation enable monitoring and self-monitoring on a massive, terabyte scale (Zwart 2017b). Yet, although climatological thinking basically relies on the symbolical (on concepts, measurements, equations and mathematics: Lacan 1966, p. 724), climate change debate nonetheless remains vulnerable to the sway of the imaginary. The avalanche of big data information produced by climate research may arouse certain basic images, known in psychoanalysis as archetypes or archetypical complexes. On the one hand, those who believe in climate change may fall victim to the "catastrophe archetype": the disconcerting but at the same time alluring idea (as old, in fact, as human history itself) that we are heading for disaster, that we are on the verge of a man-made, anthropogenic cataclysm, strengthening human narcissism, because humans in general and climate scientists in particular are the ones who may *safe* Planet Earth (Zwart 2010). Climate sceptics may likewise fall victim to a similar archetypal (i.e. imaginary) idea, this time entailing

the image of a world-wide conspiracy, with the intention of preparing the ground for the dawn of a totalitarian Big Brother society, where an autocratic, science-based government forces citizens to change their lifestyle (and to relinquish something which they refuse to give up, such as cars, freedom, coal mines, etc.). In other words, the dispute over figures, numbers and models (over symbolical data) unfolds against the backdrop of a fundamental clash (γιγαντομαχία) of basic images, of archetypes. In such a situation, individual scientists (convinced that their theory *must be* true) may be tempted to massage the data in such the way that the desired patterns are confirmed. From a psychoanalytical perspective, the climate change debate will not be settled with the help of symbolical input alone, unless we become aware of the impact of the archetypes: a dimension we must discern and explicitly address.

As a final and more small-scale example, let us return for a moment to Freud's dream about Irma's infection briefly discussed in Chap. 1. In a large hall, among numerous guests, Freud discovers his former patient Irma who looks pale and is suffering from pain in her throat. He takes her to a window where she, reluctantly at first, opens her mouth, so that Freud discovers the disconcerting white spot. Three other doctors join the examination and it becomes clear that she is suffering from a iatrogenic infection, after being injected with a chemical solution, namely trimethylamine (Freud literally sees the chemical formula in printed type), given to her by Freud's friend Otto (i.e. Fliess), who had used an unclean syringe. By interpreting this prototypical dream in terms of the imaginary, the symbolical and the real it may function as a kind of exercise in Lacanian epistemology.

$$CH_3\text{---}N(H_3C)(CH_3)$$

Initially, Freud discerns the *Gestalt* of an attractive young Victorian woman (i.e. the imaginary), and in response to her attractiveness he tries to lure her into a corner, but something seems far from perfect, something is troubling her: an anomaly has occurred. Freud therefore asks her to open her mouth, as doctors tend to do, and is terrified by what he sees. The open mouth is like the intrusion of the real: it is as if the backside of Irma's face suddenly stares at him (Lacan 1978, p. 186). That which should remain hidden, is suddenly too close. Her mouth is tainted, moreover, by a disconcerting white spot: a condensation of the Real, something which Lacan refers to as the "object *a*". To ward off this disconcerting, disturbing anomaly (*a*), the assistance of the symbolical is called in, literally: in the form of a chemical formula for trimethylamine – $N(CH_3)_3$ – depicted above. But this chemical "solution" (both in the literal and in the figurative sense of the term) does not really "solve" the problem. Rather, it reminds Freud of his failure to live up to the expectations and demands of professional standards involved in the treatment of such patients, standards which pre-structure the landscape of medical practice in a normative way.

Like chemical formula, ethical guidelines define the configuration of the symbolical order, allowing individuals to distinguish proper from improper behaviour. Lacan therefore compares this triadic formula to a moral accusation (writing on the wall). In Lacan's reading it becomes a rebus: the three CH_3 groups represent the three colleagues, while N in the centre of the group represents the dreamer and may be read as Nemo (= *no*-body) or as AZ (azote = *not*-living, an obsolete name for nitrogen). This constellation indicates that the dreamer does not want to find himself in this situation (which confronts him with his professional failure) at all. Freud tries to exonerate himself, by shifting the blame on others, in three directions, but notably on friend Otto, one of the three CH_3 groups: an instance of displacement.

2.2   Genealogy of the Scientific Subject: From the Platonic κόσμος to the Moebius Ring

According to Platonic cosmology, the world was basically a sphere, an immense macrocosmic mirror, providing an imaginary model for the ideal human polis and its ruling elite. But this imaginary spherical phantasm was derided by Aristophanes who, in *Symposium* (Plato 1925/1996), argues that, if the ideal world (κόσμος) is spherical, primordial humans must have been spherical (i.e. egg-shaped) as well. It is in this text, Lacan argues (1960–1961/2001, p. 81), that the term *Spaltung* (διεσχίσθημεν) occurs for the first time: in Aristophanes' parable, explaining how human integrity was once deliberately demolished by Zeus, namely by splitting or slicing early humans in two (like boiled eggs that are spliced with the help of a hair), so that we (their descendants) are still frantically searching for our lost "other half": the lost part of what we once were (Plato 1925/1996, 189E–191C).

I will come back to this parable later in this book, because what is at stake in this story is human *integrity*. Integrity literally means wholeness (*integritas*) in Latin (Zwart 2000a). The parable basically claims that although human beings once upon a time were godlike creature (in their original position), we have become divided subjects long ago ($), marked by an irrevocable loss of integrity, an ancestral, original flaw if you like. Civilisation is a project which aims to rehabilitate the subject, not by restoring the primordial egg-like shape of course, but by initiating a process of working through, of coming to terms with and compensating for the loss, both individually and collectively (Zwart 2017a).

An important exemplification of restored integrity is the ancient figure of the Master (in Lacanian algebra: S_1), an authoritative voice, someone who has seen the truth. His views and theories reflect (and are mirrored by) the macrocosm. His thinking (λόγος) corresponds with the logic (λόγος) which pervades the universe as such; his thoughts, his intellect corresponds with being as such. Via adequate thinking (resulting in a theory which reflects and corresponds with the cosmos) forms of anxiety and discontent which torment ordinary human beings are overcome, whilst integrity is restored. As a rational being, the Master participates in the spirit (νοῦς)

which guides the universe. By listening to and interpreting the discourse of the Master, the disciple (μαθητής) becomes the recipient of the Master's basic conceptions, of his *mathemes*, such as, for instance, the conception that the world is spherical, because the sphere is the perfect form, a complete whole which encompasses everything. The Master develops a worldview, a metaphysical theory concerning the cosmos as a whole.

Aristophanes' story acquires special relevance in the case of a modern *scientific* subject, however. The modern scientific subject (involved in experimental research, for instance) is no longer a disciple who relies on the wisdom of the Master (S_1). Moreover, modern science no longer aspires to develop a worldview (a theory about the cosmos as a whole). Rather, scientists now focus on specific items (molecules, proteins, chemical reactions, model organisms, etc.), something which can be isolated, manipulated and studied in laboratories, or on a specific aspect of language or culture (say, Renaissance music or fin-de-siècle architecture). Due to their formation and training, moreover, scientific researchers are predictable, stable, balanced and impassive subjects, rather than driven by desire.

In the case of the natural sciences, this is realised because natural scientists are thoroughly trained in experimentation and quantification (Bachelard 1947), so as to become reliable sources of information. Ideally, such researchers are fully replaceable, as research results should not depend on the individuality or subjectivity of the researchers involved. The scientific subject is immunised against desire. Thus, integrity is restored, not in the primordial sense (the spherical subject of Aristophanes), but in a functional sense. This type of subject (integer, reliable, impassive, replaceable, etc.) is referred to by Lacan as S_2. In scientific research, as conducted in laboratories, the idea is that an objective, reliable and impassive subject (S_2) is facing a standardised, domesticated and modifiable object: a model organism for instance, so that the researcher (S_2) seems fully in control of the knowledge production process. Researchers quietly and persistently modify and analyse their objects, not in the wild, but in isolation.

The macrocosm of modern science has likewise changed. In the era of Descartes, Pascal and Newton, the spherical finite universe of Plato and Aristotle collapses and is replaced by an infinite, three-dimensional space. The basic mathematical concept, the basic matheme of modernity which symbolises this new sense of space is the coordinate system, invented by Descartes. The coordinate system not only reflects the infinite three-dimensional universe (in the form of three axes stretching out into infinite space from an arbitrary intersection), but is at the same time a mathematical tool which facilitates experimental research. The x-axis represents the independent variable (manipulated by the researcher), for instance: the volume of a fixed mass of gas, while the y-axis represents the dependent variable (the pressure of this same volume of gas). In other words: the y-axis reflects the impact of experimental manipulations, so that the coordinate system facilitates a new style of thinking, resulting in a new form of knowledge: experimental knowledge, which dramatically increases the power of dexterous scientists over nature (Zwart 2005). The formula that indicates the relationship between volume and pressure of gasses (Boyle's law)

for instance, allows scientists and engineers to fully control gaseous nature from now on.

The objective of scientific training is to transform a divided subject $ (tormented by desire) into a subject who is characterised by impassivity, objectivity and replaceability ($ → S$_2$). Yet, in situations of crisis or chronic malaise, the divided subject may resurge (S$_2$ → $). Unexpectedly, the object (to which the researcher may have sacrificed years of research) may turn out to be a recalcitrant, allusive and inexorable object, rather than controllable and predictable. Researchers may waste years of hard labour on what they consider the missing link, the gap between theory and objectivity, erroneously hoping that their expectations will be confirmed rather than refuted. Such a research object may become an obsession, may prove impossible to control. Indeed, it may become what Lacan refers to as the object *a*, the impossible object of our will to know (the *cupido sciendi*): an object of desire, so that the frustrated, tormented subject falls under the spell of this seductive, addictive or even toxic object (*a*). As a result, the knowledge relationship becomes destabilised, giving way to what Lacan refers to as the matheme of desire: $ ◊ *a*. In this position, the integrity of the subject is challenged by the hazardous exposure to the object *a*. Instead of confirming expectations through tedious labour, the researcher has fallen into a trap.

To prevent such as situation from happening, integrity should not be regarded as a purely individual challenge, but as something which can only be realised on the collective level, by establishing a research culture: a scaffold which facilitates responsibility, allowing the scientific subject (S$_2$) to function in a responsible manner, even in the face of epistemic hazards. The importance of the institutional dimension was already acknowledged by Plato, who not only argued that the ideal state should be governed by highly trained philosophers, but also that the training of such philosophers required the existence of a rational state. For Lacan, the most radical effort to realise such a concept under modern circumstances was communism. The Union of Soviet Socialist Republics, he argued, was a final effort to keep alive the platonic *egg-* or *onion*-model of the world (the world as a sphere of influence, radiating from Moscow: 1965/1966, p. 207). This explains why Lacan considered it symptomatic that Soviet astronauts were called cosmonauts. The Soviet Union was decidedly science-based, relying on physics, dialectical materialism and social engineering, but at the same time communism was still under the sway of the imaginary, and susceptible to a seductive but at the same time claustrophobic phantasm: the idea of a holistic state, turning the whole world into a university. This phantasm blatantly disavowed the epistemic "mutation" (1965/1966, p. 233) that had given rise to the dawn of modern science (the era of Descartes), resulting in a new cosmology: the collapse of the spherical κόσμος and the transmutation of space into the empty, silent, three-dimensional, infinite universe of Pascal, Newton and Laplace. The fiasco of the political experiment known as the Soviet Union indicated that the holistic idea had indeed become untenable. Still, in order for research integrity to function, universities and research institutes are indispensable, not only in the sense of technological infrastructures and research facilities, but also in the sense of a supportive moral scaffold.

But the imperatives generated by such a culture may prove inconsistent. For instance, in contemporary research environments, risk-seeking behaviour by individual scientists may on the one hand be encouraged (promoting high-risk, innovative research rather than predictable research, etc.) while risk-taking is at the same time discouraged (requesting scientists to adhere to strict ethical and methodological codes and guidelines, for instance). In Lacanian terms: individual researchers are both supported and restricted by the symbolical order, by the discursive structures, the knowledge production systems that are always already in place. Besides being frustrated by intractable, impossible objects (*a*), the divided subject ($) may become trapped in a power field of conflicting imperatives and expectations, so that scientific research becomes an impossible profession, as we have seen.
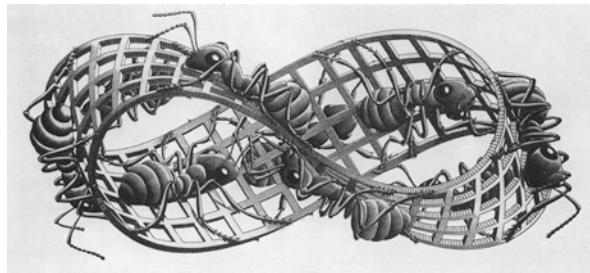
According to Lacan, modern science was inaugurated by Descartes who articulated a new form of subjectivity: the Cartesian cogito, representing an epistemological mutation which resulted in the birth of a new science (Lacan 1966, p. 855), exemplified by classical, Newtonian physics as the new model: a science which produces knowledge rather than truth. Classical physics allows the world to appear in a certain manner, namely as a set of causal relationships (in accordance with the principle of determinism) and it is only insofar as the world is causal that it can be understood by physics. Modern physics significantly increased the pace (the "galloping tempo") of research, resulting in a chain reaction of knowledge production.

A similar mutation occurred around the year 1900 (when Freud published his *Interpretation of Dreams*), another dramatic change in style, unleashing another chain reaction in the knowledge production process (Lacan 1966, p. 855), exemplified by quantum physics and cybernetics, by genetics and molecular biology, by psychoanalysis and modern linguistics (Zwart 2016b). It prepared the ground for the unfolding of twentieth century science. The *subject* of science is no longer a privileged sage who discerns the truth (S_1), but rather a split, divided subject ($) who (by conducting research, as a practice of the Self) aspires to become a balanced, impassive, reliable subject ($ → S_2). At the same time, this subject may fall victim to hazardous disappointments, frustrations and doubts, as we have seen.

At the *object* pole of the knowledge production process, the object of science is no longer the κόσμος as a whole, but rather the missing part, the missing link, the enigmatic, intractable something (the object *a*) which allegedly allows us to fill the knowledge gap and put an end to epistemic stagnation and malaise (in Lacanian algebra: -φ). Although scientists aspire to be objective and replaceable, they are nonetheless spurred on by a *cupido sciendi*, a will to know, so that their research may easily become an obsession, a practice which completely absorbs and even empties them, in accordance with the matheme of desire: $ ◊ *a*. In this psychoanalytical equation, the lozenge or *poinçon* (◊) points in two directions, indicating not only that the subject is focussed on (or even obsessed with) an inexorable object (which promises to fil the knowledge deficit, the gap), but also that the object (*a*) is actively drawing or even draining (fixating) the subject's full attention and intentionality. The lozenge is reminiscent of an optic contrivance, enabling the scientific subject to zoom out (<) or in (>), in response to the object's irresistible appeal. Thus, while the symbolisation process of science advances relentlessly, individual

researchers may become the victims of science as well: tormented, craving subjects (Mayer, Cantor, etc.: $\$$), who suffer from experiences of crisis, comparable to how Oedipus fell victim to a political crisis in mythic times, but at the same time adding something to the oedipal scenario (Lacan 1966, p. 870), because for Lacan the subject of science introduces a new type of subjectivity (S_2), as we have seen. The "subjective drama" of scientific progress can be represented by the formula $S_2 \rightarrow \$$ which points to the subversion of the impassive, rational agent (S_2) and the resurgence of the divided, tormented subject ($\$$).

Whereas the ancient worldview concurred with the concept of the Platonic sphere, and the modern worldview developed on the basis of the Cartesian coordinate system, the question inevitably emerges what mathematical concept represents the basic topology (the basic spatiality and subjectivity) of the current era, which began in 1900? For Lacan, the basic topological structure which exemplifies contemporary scientific subjectivity is the Moebius ring. Psychoanalysis is not *depth* psychology, he argues, and the unconscious is not a hidden animalistic or archetypal depth of an allegedly rational conscious subject. Rather, the unconscious is the reverse side of consciousness. In the case of a Moebius ring, although there is only one surface, there is always a reverse side, a blind spot, a missing part. But once we get there, the opposite side is lost to us again, for there is always a reverse (1962–1963/2004, p. 161). We will never reach a position of absolute knowledge, and the gap between knowledge and truth cannot be sutured. The subject of science is constituted by this split, this rupture between (partial) knowledge and (unattainable) truth (1961–1962, p. 48, p. 87, p. 189, p. 199) and this creative failure or impotence (*défaillance*, $-\varphi$) fuels rather than discourages the will to know (1968–1969/2006, p. 275).

The Moebius ring is a topological structure which reflects the Lacanian understanding of the unconscious. As indicated, Lacan does not see the unconscious as a psychic depth filled with animalistic instincts emerging from the body (Freud 1938/1941a) nor with primordial archetypes (Jung), but as the discourse of the Other: a discourse which is always already there and in which speaking subjects become enrolled. In the Moebius ring, the subject floats on the discourse of the others: the words (already operational) that make us think: the language that already speaks (*ça parle*) and to which we respond and contribute. But it also exemplifies the gap between knowledge and truth, as we have seen. The subject moves in a

milieu of words, of signifiers, of data, spiralling into one dialectical turn after another, but without ever arriving at a plateau of absolute knowledge, a comprehensive, converging view. Although the subject is processing and producing knowledge, the ultimate truth can never be attained ($\rightarrow | M_3$). We could refer to this view (which deflects from Hegelian dialectics) as "epistemological nihilism". Research entails an interminable analysis (*unendliche Analyse*), infinitely pulsating and alternating around gaps (Lacan 1961–1962). And yet, Lacan argues, contemporary science continues to obey to its key imperative: produce more knowledge! (1969–1970/1991, p. 120). This is like the voice of a super-ego, addressing scientists as the recipients (S_2) of an unconscious message (S_1). Researchers are not literally *told* to do so, for it is a message inherent in contemporary science *as such*, in which they are embarked (p. 121), coming from the Big Other (Φ).

It is impossible to put brakes on these games of signifiers and combinations called nuclear physics and molecular life science, Lacan argues, even though they result in an "inconceivable" power over matter and life. It is no longer an option not to obey the basic commandment of science: Go on, produce more data! (1969–1970/1991, p. 121). For science, there is no truth, no final word. Urging scientists to restrain themselves, by putting restrictions on research, seems out of the question. Nothing will curb the momentum of our overwhelming will to know. At the same time, scientists may become tormented by qualms of conscience, which may invoke a sudden "crisis of responsibility" (1974/2005, p. 74), such as when Nobel laureate Paul Berg and others announced a self-imposed moratorium on hazardous forms of recombinant DNA research (in their famous letter to *Science*, July 26, 1974). The tension between the relentless drive to produce more knowledge and such crises of anxiety, hampering scientific progress, may turn scientific research into an impossible profession due to incommensurable imperatives, and the scientific researchers involved may emerge as divided subjects or even as victims of science (*$*): epistemic neurosis as a by-product of science. We are stuck in the second moment, dialectically speaking. From a Lacanian perspective, misconduct may be committed because perpetrators are unable to live with the truth that there is no truth, but we will come to that.

From a Hegelian perspective, this would amount to the position of the unhappy conscience. Ultimately, Hegel argues, the spirit (of science) must and will recognise itself in nature, in the *logos*, the basic dynamics of the universe, and the will to know will realise its desire and achieve its goal. For Lacan, however, this telos remains barred ($M_2 \rightarrow | M_3$) and the ultimate exemplification of this situation is the novel *Finnegans Wake* by James Joyce, which not only gave rise to the term "quark", but constitutes an immense Moebius ring covered with text, a pure surface of automatic writing, of riverrun language that speaks itself and ends precisely where it begins. Thus, while Lacanian psychoanalysis builds on structuring moments of Hegelian philosophy, – the dialectics of master and Servant, the beautiful soul, the identity of the particular and the universal in the Fallgeschichte, etc. (Lacan 1966, p. 292) –, Hegel's dialectical backdrop at the same time allows us to determine the basic difference between Hegelian and Lacanian dialectics, between Hegel's topological

idea of consciousness spiralling in the direction of absolute knowledge versus Lacan's endorsement of the Moebius ring.

2.3   The Oblique Perspective

In order to discern the philosophemes and imperatives (S_1) which structure scientific discourse (S_2), we must step outside of the normal scientific discursive mode and analyse scientific discourse from an oblique perspective (Zwart 2017c). The idea that there are multiple types of discourse was already apparent in Freud's preface to *Dora*, as we have seen, where Freud at a certain point steps outside the psychoanalytical mode of writing (the case history mode) to comment on his own work from the perspective of academic, professional discourse, as a university-trained expert (S_2). Likewise, in order to discern the basic dialectical structure of scientific discourse, we must move from the discourse of the professional expert (the scientific researcher: S_2) to psychoanalytical discourse. In order to come to terms with phenomena of integrity and misconduct in science, we must step outside normal science discourse, adopting an oblique perspective, a psychoanalytic stance. The axis of attention takes a quarter turn. Instead of on the objects of research (molecules, elementary particles, historical archives, artworks, election polls, and so on) we assess research practices from a slightly tilted, *oblique* perspective. Instead of on the object-pole (molecules, microbes, model organisms, etc.), the focus is rather on the subject-object interaction: on the researcher (the research team) at work, on the interrelations between experimenters and their targets, "observing the observer", as Bachelard (1938/1949, p. 13) once phrased it, following the discourse of academic experts with *evenly-posed attention* ('gleichschwebende Aufmerksamkeit'; Freud 1912/1943), and from a critical angle: a position which is comparable to how psychoanalysts keep track of the analysand's discursive flow. At a certain point, somewhere in the stream of discourse, a specific metaphor, concept or confusion may light up, triggering our attention, catching the philosophical or psychoanalytical ear, so that a shift towards a more active, Socratic mode of listening is indicated, prompting questions and dialogue.

The *intentio obliqua* has a long history which goes back to medieval scholasticism. Thomas Aquinas already stated that, whereas human understanding is predominantly directed towards external reality, critical reflection on human understanding requires a change of perspective, an *intentio obliqua* (Schmidt 1966). By opting for an oblique perspective, a diagnostics of contemporary knowledge can be achieved: a critical assessment of the way contemporary research allows nature or social reality to emerge. This means that, rather than in protons, mitochondria, microbes, ethnic prejudices or political preferences, philosophers are interested in the λόγος–dimension: the words or signifiers that are actually used to bring such items to the fore.

Bachelard once argued that, in terms of competence, philosophers have but one: "the competence of reading" (1948, p. 6). Not only in the sense that they are

experienced or even voracious readers, but also because their reading is slow and interminable (Bachelard 1938/1949, p. 18), while the focus of attention is on the subject-pole rather than the object-pole of the knowledge relationship (on microbiologists rather than on microbes, on archaeologists rather than on archaeological finds, on psychiatrist rather than on neural networks). How is the object isolated, dissected, brought to the fore and allowed to emerge? Research represents a dialectical process, and the focus is on how the object is prompted to reveal itself: on the practical, computational and discursive intricacies involved in conducting experiments or navigating through the archives. Thus, an oblique reading style entails an *active* form of reading, "with the pen at the ready" ("la plume à la main"), as Denis Diderot once phrased it. The axis of attention has taken a quarter turn.

This technique of alternating between various forms of discourse was elaborated by Lacan in a systematic manner, in the form of the *four discourses*, which allowed him to determine the specificity of the psychoanalytic stance compared to other discursive modes, such as normal university discourse.

2.4   The Four Discourses: Introduction

For Lacan, psychoanalysis represents a different style of inquiry than normal scientific research (1953–1954/1975, p. 29). But in order to elaborate the profile of psychoanalytic discourse more precisely, the nature of normal scientific discourse must be clarified as well, because for Lacan the former was developed in response to the latter, and would be unthinkable without it (Lacan 1966, p. 856).

For Lacan, modern science results from a decisive mutation, which gave rise to a "chain reaction" in knowledge production, as we have seen (1966, p. 855): a dramatic increase in pace and scale. Science is focussed on knowledge production with the help of instruments and gadgets and entails an outpouring of charts, symbols, graphics, etc. (1970–1971/2007, p. 123). For Lacan, science is about knowledge rather than "truth", and the latter is regarded as something which rather belongs to the spiritual or religious realm (1966, p. 79). Truth is a "subjective" concept, albeit in the Lacanian sense of the term, referring to erring subjects and their existential itineraries: their quests for spiritual revelation. For Lacan, modern science has always remained sceptical towards "the" truth, which for him is essentially a religious notion. Although Lacan presents himself as areligious,[2] he claims that, notwithstanding the modernistic conviction that God is irrevocably dead (1960/2005, p. 36), the "true religion" (and for Lacan this means: Catholicism) will prove indestructible and may even "triumph" in the end (1974/2005, p. 79, p. 81, p. 92).

But the basic aim of modern science is to forget about truth. Moreover, science also ideally aims to do without the subject as an individual, to reduce the subject (the subject of science) to a purely functional (rather than a personal) position (1966–1967, p, 165), and to produce a standardised type of discourse which is no

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[2] "Je ne confesse aucune appartenance confessionnelle" (Lacan 1960/2005, p. 28).

longer attributable to any particular, idiosyncratic voice (1953–1954/1975, p. 291). Scientists are driven by desire, no doubt, and their "will to know" (their *cupido sciendi*) often entails a focus (a fixation even) on a very specific object (a particular model organism, for instance), but Lacan points to a tension that is involved here, because normal science should at the same time be objective and "disinterested" (1958–1959/2013, p. 433). Basically, normal researchers are expected to choose an object of research which *does not* interest them, which *does not* arouse their desire and allows them to keep their distance. They are expected to renounce *the* object (the object of desire, *a*), and to replace it by a different object (via a psychic mechanism known as displacement), so that objectivity can be achieved and maintained, although in reality the proximity between the divided subject and the impassive subject (between $ and S_2) as well as between the neutralised object (the replaceable object) and the object of desire (*a*) will continue to affect and disturb the knowledge relationship. The adventure of science entails self-containment, self-discipline and askesis, relying on chains of symbols and streams of discourse (S6, p. 449). The desire to know should be containable ($ → S_2). Nonetheless, for Lacan, a latent rapport remains at work between research and desire. Via displacement, the object of desire is pushed out of sight, but will nonetheless be there, so that there is still a link between the object of knowledge and the object of desire (*a*). As a result, the scientific subject always runs the risk of falling under the spell of the matheme of desire: $ ◊ *a* (1958–1959/2013, p. 434).

But in order to bring this disavowed desire, this obfuscated object of desire to the fore, we must change our perspective: we must step outside the "riverrun" of scientific discourse as such and opt for an oblique psychoanalytical approach. Psychoanalysis produces a different type of discourse than "normal" university discourse, Lacan argues. The focus of attention is reverted to the divided, craving subject, and to the *truth* of this subject. For Lacan it is no coincidence that Freud's publications are basically autobiographical. And this not only applies to his books on dreams, jokes and the psychopathology of everyday life (1955–1956/1981, p. 266), where the autobiographical content is obvious more or less, but also to his later work. Although the Freudian couch is a text-producing machine, comparable to other scientific contrivances (1967–1968, p. 76), psychoanalysis produces a singular type of discourse which focusses on the *subject* of science: on the relationship between the subject's will to know (the subject's desire, generating a stream of signifiers, namely normal scientific discourse and its discontents) and the alluring object (the object *a*).

Psychoanalysis focusses on the scientific *subject* as an erring subject, split between knowledge and truth. In science, researchers are barred from the truth in the original sense of ἀλήθεια. As Heidegger (1927) already argued, normal science produces adequate knowledge (in Lacanian algebra: S_2) as scientists are enrolled in an already functioning discourse. Contrary to art, as well as to pre-Socratic thinking (Heidegger 1957), the aim of science is not to disclose a primordial truth about the world (S_1). Scientific research adheres to the Moebius ring: progress is continuously made, but what is gained (revealed) on the one side is lost (forgotten) on the other (1971–1972/2011, p. 141). The cosmic (metaphysical) ambition to understand (and

admire) the whole, has given way to a drastically limited focus via the "narrow gate" of object choice (1965/1966, p. 6). The object of science is basically an absence, a gap, a missing link. But precisely here, an epistemic fetish, an "object *a*" may suddenly appear, apparently filling the gap (1965/1966, p. 64). Every now and then, an enigmatic "something" may come into view, something which until then had been discarded or overlooked, which suddenly seems to represent the missing element, something which allegedly fits into the hole; an uncanny entity, both fascinating and disturbing: the object *a*.

A similar problematic can be discerned at the subject pole of the knowledge production process. Science produces a discourse which ideally functions more or less anonymously and which preferably relies on smart, high precision machines: a discourse from which the subject as a person is more or less expelled (1966–1967, p. 165). The scientific subject has become principally replaceable. In contrast to the knowledge of the Master, who articulates a profound truth (S_1), modern scientific knowledge (S_2) is basically anonymous. But precisely this may give rise to discontent and malaise. Like the discarded object, the tormented subject ($) may suddenly reappear, in a disconcerting manner, as a frustrated experimenter for instance, unwilling to give up on what, apparently, is a dead end (a line of research for which funding has been retracted), or in the form of a fraudulent author, giving in to a desperate attempt to reconnect knowledge production with desire. Fraudulent research practices may be regarded as symptoms which refute the death of the author (as a recognisable person) in modern science. Notwithstanding the technicity of research, divided subjects still dwell in laboratories, suffering from their divided loyalty (between the impassivity of data production and the desperate quest for truth, for missing links, for meaning in life).

Lacan not only emphasises the difference between psychoanalysis and normal scientific discourse, but also between ancient knowledge and modern science. Ancient knowledge was basically cosmology, as we have seen, and the ideal subject of ancient knowledge was the sage, the aristocrat-philosopher (S_1), fascinated by the κόσμος as a whole. Ancient cosmologies (ancient theories of knowledge) presupposed an (imaginary, phantasmatic) reciprocity between thinking and being, between νοῦς and κόσμος, between microcosm and macrocosm (1972–1973/1975, p. 104). Indeed, ancient philosophy of nature, one could argue, was basically *cosmetic* in the etymological sense of the term, i.e. bent on beautifying and adorning the κόσμος (by disavowing the apparent bruises and sarcomas, the imperfections and the gaps).
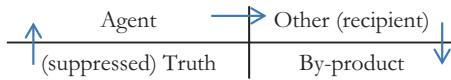
According to Lacan, this ancient desire for harmony was already destabilised by the Christian idea of the fall, but it was even more drastically subverted by modern science, which nog longer has the same objective as ancient cosmology, namely: identification with the cosmic whole via contemplation. Modern science is rather focussed on the ruptures and the gaps. The interest of the scientists is drawn towards that which seems missing, to the disconcerting anomalies.

Furthermore, ancient cosmology was not only a form of macro-cosmetics, but also built on an authoritative voice, a founding text, a Master discourse (1964/1973, p. 56). Indeed, even schools that seemingly challenged the cosmetic idea of a

beautiful, well-ordered cosmos (such as the cynics) held on to the idea of an authoritative sage (S_1) articulating a profound and revelatory truth and addressing anonymous disciples as recipients (S_2). Modern science, in contrast, is a practice in which the position of the master has become untenable. Rather than on Masters, science relies on technicity: on gadgets and equipment, on instruments and playthings. Via such contrivances, modern science becomes extremely effective in determining the conditions of a rapidly evolving world and of contemporary experience (Lacan 1964/1973, p. 257).

Lacan elaborated the specificity of these various types of discourse in his theorem of the four discourses (Lacan 1969–1970/1991), one of the highlights of his oeuvre. In this discursive quaternity, ancient philosophy is associated with the discourse of the Master. Here, the Master (S_1) functions as the *agent*, while the *recipients* (addressed by his authoritative voice) are the disciples or custodians of the message, or (in modern times) the scholarly experts and interpreters of the Master's oeuvre (S_2). Doubts and uncertainties, which must have plagued the Master as a real person ($\$$), are disavowed (via cosmetic procedures) and the by-product of this knowledge game is intellectual jouissance.

Lacan clarifies the structure of this type of discourse with the help of four key symbols (S_1, S_2, $\$$ and a) which may be inserted as "variables" in a fixed sequence ($\$$, S_1, S_2 and a) in four positions, in a rotating, revolving, quadruped scheme:

Agent →	Other (recipient)
(suppressed) Truth	By-product

In the case of the Master's discourse, this results in the following scheme:

S_1	S_2
$\$$	a

The Master (the Master's inaugural text) serves as the agent (S_1 in the upper-left position): addressing disciples (adepts, expert interpreters) as recipients (S_2 in the upper-right position), resulting in an interpretative (or even apologetic) discourse (S_2). The relationship between Master and adepts defines the upper (manifest) level of this genre of discourse. But it is not the whole story. Doubts and uncertainties on the part of the Master are disavowed ($\$$ pushed into the lower-left position), but remain nonetheless visible in the form of discursive symptoms, discernible for those who are able and willing to subject the discourse of the Master to a symptomatic reading. And whereas adepts are reduced to the subservient role of "recipient" of the truth, this discursive genre has a reward in stall for them: the intellectual enjoyment of reflecting on certain disturbing and problematic, but at the same time decidedly profound and revelatory concepts, the disconcerting enigmas (a) on which adepts may build their intellectual careers: their treasure cave of fascinating but unsolvable problems.

Normal scientific discourse, in which disinterested, anonymous subjects manage to contain their desire, so as to focus their attention on an allegedly neutralised and containable object, is different and adheres to what Lacan refers to as "university discourse". Now, the authoritative voice of the Master is dethroned (pushed below the bar, so that the quadruped takes an anti-clockwise quarter turn), while the anonymous and replaceable scientific expert (S_2) plays the role of agent, addressing the object, to which all questions are directed (a). This (apparently containable) object may prove a lure and may transmute into an alluring, inexorable and addictive something (a in the upper-right position) which drains the researcher's energy:

$$S_2 \leftrightarrow a$$

This relationship, between an impassive, professional subject and an (allegedly) domesticated, normalised object, constitutes the upper (manifest) level of university discourse:

S_2 (expert knowledge)	a (the recalcitrant object)
S_1 (the silenced imperatives of the dethroned Master)	$\$$ (epistemic despair)
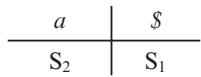
But, as indicated, the object may prove far more recalcitrant and challenging than expected, resulting in various forms of discontent or even crisis ($\$$ in the lower-right position, as by-product of university discourse). The deceitful object may become an obsession, so that the scientific subject becomes trapped in the matheme of desire ($\$ \lozenge a$).

This may result in a situation in which the tormented subject ($\$$) takes the floor as agent, protesting against the way in which science is organised for instance, so that the quadruped becomes reverted, giving rise to what Lacan refers to as the discourse of the hysteric, where a subjective, agitated subject ($\$$ now in the upper-left position) challenges and criticises an authoritative voice or institute, or a normative imperative (S_1 in the upper-right position). Yet, such subjects may be unaware of what is actually driving them. They may be misguided concerning the question Freud raised when he began to listen (with evenly-poised attention) to hysterics and neurotics for the first time: what do these subjects really want, what is the object of their desire, the object a that is unwittingly guiding them (lower-left position)?

$\$$	S_1
a	S_2

In order to address this latter question, and to discern and analyse this unfolding dynamics, psychoanalysis develops a discourse of its own, as we have seen: an oblique perspective, referred to by Lacan as the "discourse of the analyst". Whereas science as such tends to focus on the object (i.e. the *intentio recta*), psychoanalysis rather reflects on the unfolding subject-object interaction ($a \leftrightarrow \$$), and this requires

a change of perspective into an *intentio obliqua*. It is by opting for an oblique perspective that a diagnostics of contemporary knowledge production can be achieved, focussing on the λόγος–dimension: the basic signifiers, structuring the process:

$$\frac{a}{S_2} \quad \Bigg| \quad \frac{\$}{S_1}$$

Now, the object of desire itself, the target of the scientific will to know (the scientific *cupido sciendi*) plays the role of agent, challenging and destabilising the tormented subject ($\$$ in the upper-right position), drawing scientists into action. Such an object may suddenly emerge, in the form of an aporia, an anomaly, blocking the knowledge production process. In order to understand this dynamics, however, normal scientific expertise must be temporarily suspended (S_2 now in the lower-left position). For if we persist in approaching the object as a researcher (adhering to the logic of university discourse) we remain caught in the trap. Therefore, we must opt for a tilted perspective, involving an anti-clockwise quarter turn, in order to analyse the stagnant subject-object relationship (through self-reflection, spurred on by the questions of the analyst).

This may result in the acknowledgement, for instance, that modern science, or more generally: university discourse, "disinterested" as it may seem, is actually fuelled by guiding imperatives, such as the one mentioned above: go on, never enough; continue to produce more data! Modern science (the product of emancipation) is spurred by forbidding normative imperatives of its own (S_1 in the lower-left position). And this may explain why researchers, scientific experts (S_2), allegedly autonomous and in charge, may actually feel exploited and slaved by the system, or even paralysed by malaise ($\$$). They are drawn into action by a recalcitrant object (*a*) and pushed into action by a relentless, invisible and disavowed Big Brother-like voice from beneath (S_1), the super-ego of scientific knowledge production ($S_1 \leftrightarrow S_2 \leftrightarrow a$), which they are unable to address directly (pushed below the bar). And in this power field of conflicting forces they may disintegrate ($S_2 \rightarrow \$$) so that they may become tempted to commit misconduct as a way out.

In this monograph, we will subject a series of research misconduct novels to an oblique reading, using them as a literary clinic, a narrative couch, to analyse the vicissitudes of the discursive strategies outlined above. We will use Lacan's theorem of the four discourses to clarify the dialectical structure of these novels, while using these novels to further develop, calibrate and extrapolate the Lacanian approach. In the next section, I will add more detail and precision to this exploratory introduction of Lacan's theorem. Subsequently, in Chap. 3, I apply this reading technique to a first series of research misconduct novels: a first round of exercises in Lacanian diagnostics.

2.5   The Four Discourses: Elaboration

Genealogically speaking, the discourse of the Master is the primary genre of discourse, while the other discursive genres can be regarded as efforts to dethrone or escape from the tyranny of the Master (S_1). One of these efforts to dethrone the Master is university discourse, where the self-conscious, emancipated expert plays the role of agent, as we have seen, while evidence-based knowledge is produced by qualified researchers (S_2). This type of discourse may prove less stable than it seems, however. The confrontation with an intractable object (*a*) may prove a destabilising and disruptive experience, while the researcher may also be tormented by metaphysical quandaries or normative doubts (S_1) coming from below, from the reverse side as it were, so that the qualified expert gives way to the divided subject (*\$* as by-product):

$$\frac{S_2}{S_1} \quad \Big| \quad \frac{a}{\$}$$

Although in modern science the Master's discourse has been replaced by university discourse, in which an (allegedly autonomous) subject focusses on an (allegedly domesticated) object, this process is nonetheless spurred on and guided by latent basic concepts and convictions ("philosophemes"), by an unconscious metaphysics as it were (S_1 in the lower-left position). In terms of Lacan's symbolic algebra, the relationship between scientific discourse (S_2) and its guiding imperatives or instructions (S_1) can be represented as: S_2/S_1. The guiding imperatives remain implicit, are pushed beneath the bar, so that they cannot be explicitly articulated within the emerging flow of normal scientific texts. This was what Heidegger referred to when he claimed that science does not think (1954, p. 4). On the manifest level, academics are involved in various processes of text production: they speak and think continuously. But, as Heidegger argued, genuine thinking basically means *to be addressed*, namely by the voice of the Other, whose revelatory thoughts present themselves as genuinely questionable (1954, p. 1). Academics publish in journals and contribute to academic conferences (Heidegger 1954, p. 2). Thus, they are involved in what Lacan refers to as university discourse. But in normal science they are barred from addressing that which is genuinely questionable (S_1 in the lower-left position), namely their basic *Begriff*, their answer to basic questions such as: what is nature, what is life, what is science, what is truth? S_2 builds on certain basic categories or premises, but is at the same time barred from explicitly addressing these apodictic claims (S_1), even though they actually guide the knowledge production process (S_2).

In principle it is possible to present such basic imperatives in a top-down, apodictic, authoritative and *ex cathedra* fashion. In that case, S_1 is posited at the topside of the bar (upper-left position), resulting in what Lacan (1969–1970/1991) refers to as the Master's discourse. An authoritative voice (Hippocrates or Aristotle, for instance) is regarded as infallible. His instructions and imperatives provide

guidance to his followers. The Master can be an authority from the past, but it may also be a highly respected institution. Uncertainties or doubts on the part of the Master (in Lacanian algebra: $\$$, i.e. the researcher as a *divided subject*, tormented by misgivings and frustrations), are disavowed and suppressed, in other words: placed beneath the bar, a situation which can be represented by the formula $S_1/\$$. The Master *knows* the truth. The discourse of the Master initially addresses (normalised) recipients: adepts and experts entrusted with interpreting the Master's oeuvre (S_2 in the upper-right position), custodians of the Master's legacy. Thus, the Master is acknowledged as infallible and authoritative. Uncertainties and doubts to which real, craving individual ($\$$) tend to fall victim, are decidedly left out of the picture, suppressed beneath the bar ($S_1/\$$).

Recently, a number of prominent scientists, including Nobel laureate John Sulston, recommended the adoption of an oath for scientists, comparable to the Oath of Hippocrates. It is a much older idea, of course, and was already proposed by Popper for instance.[3] The introduction of a formal oath would represent an effort to articulate a normative imperative (S_1) able to guide the production of normal scientific discourse (S_2). Its purpose would be to bring to the fore something which, in normal university discourse, is functional in an implicit, unconscious, indeterminate way (S_2/S_1), and may therefore easily be overlooked. Such an oath would be an intermezzo: an intrusion of an instance of Master's discourse (during a graduation ceremony for instance) in an ambiance which tends to be dominated by university discourse: a temporary and ceremonial reversal as it were (in terms of the quadruped: a quarter-turn to the right), because basically university discourse becomes possible precisely by *distancing* itself from the discourse of the Master (taking a quarter-turn to the left). A formal, solemn Oath would represent a temporary relapse into a different discursive stance.

Although in science (especially in the exact or natural sciences) the discourse of the Master has been subverted, there are nonetheless certain areas of scholarship where the discourse of the Master still thrives, such as in philosophical author studies. The *corpus* (i.e. the accumulated body of writings) of an authoritative author (Aristotle, Hegel, Nietzsche, etc.) is regarded as an articulation of the truth, and the modern expert functions as a recipient, a discursive servant, literally spelling the Author's oeuvre. The name of the Master serves as index of truth. For a Nietzsche expert, if a certain sentence is attributed to Nietzsche (i.e. if a certain quote or passage is regarded as authentic, as S_1), this sentence will immediately acquire special value, will be regarded as different from sentences written by other human beings (by the author's contemporaries for instance). It will stand out as highly valuable and profound. A certain surplus of meaning is attributed to it, compared to normal sentences produced by normal authors (S_2). Such an oeuvre may easily become the object of a respectful or even servile and apologetic type of discourse. The subject

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[3] "It is particularly important to ensure that new entrants into the scientific profession are made aware of their social and moral responsibilities. One way would be to initiate a pledge for scientists, a sort of Hippocratic oath, to be taken at graduation" (Rotblat 1999, p. 1475); cf. Popper (1970).

(S_2) is put to work to explain and defend the integrity and authority of the Master's corpus (the Master's body of writing), resulting in a particular kind of expertise, known as author studies (S_2). Scholars who find themselves in this position will focus their attention on certain specific signifiers within the Master's oeuvre, which (due to their opacity and intricacy) may be a source of frustration, but of intellectual jouissance as well (a in the lower-right position). These recalcitrant, ungraspable and enigmatic key concepts are the fascinating and intimidating "object a" of the authoritative oeuvre (S_1): a source of frustration but also of pleasure. This situation typically results in books or papers devoted to and revolving around a particular oeuvre (S_1): the typical discursive format of author studies.

But in the contemporary academic world, author studies discourse may be regarded as marginal or exceptional. In normal university discourse, the Master is dethroned. The imperative of Enlightenment spurs scholars to move away from and to emancipate themselves from the discourse of the Master (S_1): *aude sapere*. But this does not mean that anything goes, of course. Rather, the voice of the Master is replaced by the super-ego of academic discipline and its commanding methodological requirements.

The discourse of the Master is associated with the Master of ancient philosophy (Plato, Epicure, Diogenes, etc.) but also, in the modern period, with Hegel's dialectics: the dynamical relationship between the (theoretical) discourse of the Master and the (practical) discourse of the Servant. In his elaboration of the four discourses, Lacan explicitly builds on Plato and Hegel. The discourse of the ancient Master relies on speculation (due to his ability to discern the logos of nature), in contrast with the discourse of the servant, whose insights are produced through labour, employing various contrivances and equipment, and whose knowledge is basically *know-how* ("savoir-faire", Lacan 1969–1970/1991, p. 21). The knowledge and expertise of modern scientific experts (S_2) is closely related to the development and handling of particular instruments (telescopes, microscopes, galvanometers, spectroscopes, etc.). The Master (the gentleman-philosopher) is initially in control. He appropriates the servant's practical knowledge and transforms it into abstract knowledge (ἐπιστήμη, θεωρία), for instance: Euclidean geometry. This is documented in Plato's dialogues, such as the dialogue between Socrates and the slave Meno, with Socrates acting as a benevolent gentleman-teacher who grants the illiterate slave a crash course into Euclidean geometry, only to discover that the slave already *knows* his geometry, albeit in a practical, hands-on way. Theoretical knowledge (Euclidean geometry, ἐπιστήμη) had been appropriated by the Masters (the academic aristocrats), who transformed it into apodictic, abstract knowledge, and now purport to give it back, as a gift, in the form of education (Lacan 1969–1970/1991, p. 22).

But in the end, the practical knowledge of the servants will prove much more powerful and effective compared to the lofty contemplations of the Master who, instead of really interacting with and transforming nature, rather develops a worldview, i.e. an imaginary vision of nature (as a sphere, a harmonious whole: a κόσμος). Eventually, the supremacy of the Master (S_1) will by subverted by the practical know-how of the servants (S_2), so that in the end S_2 will come to occupy (usurp) the

upper-left position as agent: the power of the Master is subverted (S_2/S_1), and the scheme takes a quarter turn to the left.

Hegel's dialectics of Master and Servant, developed in his *Phenomenology of the Spirit* (Hegel 1807/1973) can elucidate this inevitable dialectical turn. Initially, the Servant acknowledges the supremacy of the Master. Instead of challenging the latter's authority, the Servant willingly relinquishes his autonomy, opting for an attitude of devotion and servitude. Such servants are put to work, in the interest of the Master. Rather than aspiring to become Masters themselves, which would lead to competition and warfare, they accept a subordinate position of dependency. In fact, this type of servitude produces a particular form of jouissance. Inevitably, however, a dialectal dynamics unfolds, which eventually subverts the situation in the sense that the discourse of the Master becomes increasingly dependent on the work of these servants. They become increasingly dexterous and skilful. Not only as custodians and interpreters of the Master's founding words, for the emancipation will not stop there. Rather, instead of relying on the signifiers coined by the Master to understand nature (S_2), the servants will explore and interact with nature with their hands, but even more so with their instruments, allowing them to manipulate nature, on the basis of laboratory *manuals*. And this should be taken literally, for etymologically speaking, to manipulate (derived from *manus*) means to handle. Increasingly, the Master's apodictic views are suppressed (pushed beneath the bar), as the servants come to rely on hands-on, practical interactions with nature, developing powerful tools to manipulate and manage natural objects more effectively: the birth of the experimental method. Exegesis (hermeneutics, the initial craft of the scholarly adept) increasingly gives way to experimental work (manipulating and quantifying nature). Increasingly, via skills and know-how, the servants assume mastery over the situation. Servants become scientists (S_2), scientific agents, while the meta-physical pontifications of the Master become a superfluous burden, so that the power relationship becomes subverted, and a new type of discourse emerges, to which Lacan refers as the university discourse:

$$\frac{S_2}{S_1} \quad \frac{a}{\$}$$

This is exemplified by Hegel's Master-Servant dialectics, but we can also use science novels (basically: *any* science novel) to elucidate this scenario. Take for example the novel *The Search* written by C.P. Snow (1958), a scientist who eventually became a science novelist (we will analyse one of his science novels in more detail in Chap. 6). In the first chapters of this novel, the protagonist is a youngster whose father (a religious person) tries to convey to him a sense of awe for the cosmos, especially for the stars, while his son sees natural things basically as "toys to handle and control" (p. 4). Moreover, he realises that, in order to really control them, we need effective instruments. His father is kind enough to encourage his son's budding interest in nature and gives him a telescope, an impressive "contraption", one foot long (φ, in Lacanian grammar), enabling exactness (the quintessence

of scientific research). Initially, this provokes archetypal, imaginary scenarios about expeditions to planets, so as to colonise and people them (inspired by *The War of the Worlds* by H.G. Wells), but gradually, his instrument fosters a more scientific attitude, based on symbolisation (with the help of a notebook which he uses to record his observations).

By the time the protagonist arrives at the university (King's College, London), his fascination has shifted from the immensely vast to the infinitesimally small, however, from stars to atoms. But once again, his knowledge, his research, becomes intimately tied up with an instrument, from the very outset: an X-ray spectroscope (p. 45; his spectroscopic φ) which he more or less builds himself. With the help of this contraption, he sets out to surpass his mentors (his Christian father, in awe of creation, but also his disillusioned school teacher, his disappointing university professor, etc.) in order to make a name for himself in science. Although his contraption can be a most recalcitrant and frustrating thing, he nonetheless gains "pleasure" from it. He even becomes addicted to it, forgets about the outside world, working himself into a state of "self-hypnotism" by watching the moving spot in the galvanometer for hours (p. 52). He becomes an ascetic science adept.

A less enthusiastic supervisor, an "academic cynic" (p. 47), warns him that there is another side to science, notably in the form of "idea-appropriation" (p. 48) and similar vices, i.e. research misconduct as a by-product ($ in the lower-right position), but the young protagonist is determined to try his chances, using his spectroscope to elucidate the chemical formulae of proteins (p. 50), one of the most significant scientific challenges of that period. Indeed, as his friend Sheriff phrases it, for ambitious scientists the post-War era is the opportune moment, the "Renaissance of science". Science has entered its "Elizabethan age" (p. 27). Gradually, however, disturbances start to accumulate ($ in the lower-right position), not only because the societal profile of the products of science is fairly mixed (as scientific research produces both hygiene and poison gas, as Sheriff formulates it), but first and foremost because Snow's science novel evolves into a drama of research misconduct.

The tragedies and vicissitudes of university discourse may help us to understand scientific discourse in general and research misconduct in particular. I see university discourse as the Lacanian equivalent of Kuhn's concept of "nomal science" (Kuhn 1962/1970): the regular work of scientists who are experimenting, analysing and theorising within an established paradigm, a normalised explanatory framework. Initially, the "normal" scientific subject addresses a "normal" scientific object, a model organism or a particular protein, for instance, an object in the neutral sense, but nonetheless a particular entity (an "organ", an "organism", an "atom", an "amino acid", etc.). This is the normalised and balanced situation. A new dynamics is unleashed when a subject is exposed to something extra-normal, to a *novum*, or when the allegedly normal object proves to be a recalcitrant anomaly, something beyond the range of the normal, the predictable and explainable. The challenge, then, is to regain a situation of normalcy, via self-containment and "detachment" (Snow 1958, p. 33), and not to give in to the alluring, intractable, supra-normal object (*a*).

But a split (*Spaltung*) may occur between the requirements of normalcy (the instructions and imperatives of normal science) on the one hand and the alluring object on the other, so that the impassive and detached subject is put out of balance ($S_2 \rightarrow \$$). In this force field, the scientific subject becomes destabilised, split between two poles of the knowledge relationship ($S_1 \leftrightarrow \$ \leftrightarrow a$). In the confrontation with the alluring object, the researcher becomes a divided subject, so that the interaction between subject and object becomes destabilised and trapped in the matheme of desire ($\$ \lozenge a$). This drama is a by-product of science, as Lacan phrases it. The divided, tormented subject is drawn into apostasy, and may revert to academic cynicism, or even become a fraud ($\$$ in the lower right position). Although initially the scientists (S_2) may seem in control of the situation, eventually the unfathomable object (*a*) may prove a toxic, inexorable lure, resulting in various symptoms, from frustration and workaholism up to burn-out or research misconduct ($\$$).

This dialectical schema may also help to understand the changing relationships between philosophy and science. Philosophy no longer occupies the position of the Master (S_1 as agent in the upper-left position). In university discourse, the position of the agent is occupied by the normalised scientist (S_2 now in the upper-left position), where scientists actively interact with research objects, via experimental, hands-on, technical research (laboratory literally means workshop). In laboratories, scientists develop increasingly effective tools to generate robust knowledge to refurbish nature, so that the things of nature become "toys", as we have seen. The contemplating "gentleman" (exemplified by Plato, or Claudius Ptolemy, for instance) is dethroned, and metaphysics no longer provides apodictic guidance (S_1 pushed into the lower-left position). Metaphysics is marginalised, and yet still there, occupying the position of the (suppressed and disavowed) *truth* of this discourse (below the bar). For instance, while science may be vehemently opposed to religion, it may overlook the extent to which religious worldviews actually prepared the ground for modern science. For instance, the basic (metaphysical) concept that a λόγος is discernible in nature which human rationality may comprehend, is (genealogically speaking) a religious idea. In a religious world, individuals are called upon to discern divine reason in nature (as an enchanting universe) and this metaphysical legacy may unwittingly still be at work in university discourse (S_1 in the lower-left position).

In the *Introduction* to his *Philosophy of Nature*, Hegel (1830/1970) deplores that metaphysics, the Master's discourse par excellence, has fallen into disrepute. Metaphysics has been replaced and subverted by positive insights produced by natural science. A field of knowledge which once aspired supremacy over other, more practical and reality-oriented fields, has now fallen silent.[4] But rather than becoming obsolete, it finds itself in a new position (1818/1970, p. 402). The era of metaphysics did not end with the rise of laboratory science, Hegel argues, but the focus of attention must shift to the *implicit* metaphysics at work in scientific discourse (S_1, the basic philosophemes or premises, now beneath the bar). By taking up this

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[4] "Diese Morgenröte begrüße ich, rufe ich an, mit ihm nur habe ich es zu tun" (Hegel 1818/1970, 10, p. 403).

challenge, a new dawn ('*Morgenröte*') may set in. It is the vocation of philosophers to question and critically assess the guiding philosophemes (S_1) of science. Rather than being delisted from the agenda, the metaphysical question "*What is nature*?" proves inescapable. We are both drawn to and repelled by this question: difficult to answer, but impossible *not* to ask (Hegel 1830/1970). We simply cannot ignore this basic philosopheme of science.[5] Scientific research (S_2) it not a purely technical or empirical endeavor, but entails a profound understanding of nature (S_1), an inspiring *truth*, which can and should be brought to the fore and critically examined by philosophy. The sciences are adrift, moreover. We are on the verge of a scientific revolution, and this applies to Hegel's era as well as to the present. This means that the philosophemes of science are becoming fundamentally questionable, are being fundamentally redefined ($S_1 \rightarrow S_1$). To phrase it in Heideggerian terms, philosophy as "thinking the questionable" seems more relevant than ever, but requires a different kind of discourse than normal university discourse.

In university discourse, experimental researchers (S_2) as *agents* (upper-left position) focus their attention on various kinds of objects, normal or normalised ones as a rule, so that their research may often be fairly repetitive and predictable. But at a certain point they may become exposed to an alluring, provocative "something", which triggers their *cupido sciendi*, their intellectual desire; their will to know. Laboratory objects (a particular type of microbe, a bacteriophage, a protein, a crystal, etc.) may become intractable entities (object *a* in the upper-right position) draining their intellectual energy, time and resources, and yet escaping them. In normal science, the laboratory expert (S_2 as agent) may seem firmly in control, but in real laboratory life, scientists may fall victim to a stagnant situation, may feel trapped by their inexorable object *a*. Frustrations await them, a whole life-time may seem wasted, so that scientists become tormented subjects (*$* in the lower-right position), with uncertainty and malaise as by-products of experimental research.

Discontent and disillusionment may become the dominant mode of discourse, so that a reversal sets in. Attitudes such as "masculine protest" (Adler) replace detachment and renunciation, so that *$* comes to occupy the position of the agent, resulting in what Lacan refers to as the *discourse of the hysteric*. The tormented, divided subject (*$*) emphatically takes the floor as agent, to raise a voice of boisterous, societal protest. This type of discourse figures prominently in public disputes, for instance when academics or journalists accuse the system of encouraging misconduct on a massive scale via perverse incentives, serving the interests of pharmaceutical companies or the food industry for instance, rather than the interests of patients and consumers (or of science as such). The phrase "discourse of the hysteric" should not be taken in a pejorative sense, however. In the history of psychoanalysis,

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[5] "Was ist die Natur? Wir finden die Natur als ein Rätsel und Problem vor uns, das wir ebenso aufzulösen uns getrieben fühlen, als wir davon abgestoßen werden… Wir sammeln Kenntnisse über die mannigfaltigen Gestaltungen und Gesetze der Natur; dies geht in ein unendliches Detail hinaus, hinauf, hinunter, hinein; und eben weil kein Ende darin abzusehen ist, so befriedigt uns dieses Verfahren nicht. Und in allem diesem Reichtum der Erkenntnis kann uns die Frage von neuem kommen oder erst entstehen: was ist die Natur? Sie bleibt ein Problem (Hegel 1830/1970, p. 12).

so-called hysterics (starting with Anna O) actually played a decisive role in the articulation of psychoanalytic discourse, and even respectable scientists may turn activists, for instance in the context of the recent March for Science (22 April 2017),[6] because they feel silenced and despised by "Washington" (a metonym referring to the new "post-truth" power regime personified by President Donald Trump). Philosophers may likewise assume a role as activists, challenging the voice of authority (the Big Other, now functioning as the recipient of the message in the upper-right position):

$$\frac{\$}{a} \quad \Big| \quad \frac{S_1}{S_2}$$

In his book *Critique of Cynical Reason*, Peter Sloterdijk (1983) rehabilitates and endorses this type of discourse as a genuine philosophical position, by tracing its genealogy, which takes us back to the ancient Cynics: a boisterous tradition relying on provocative gestures and dramatic, ludicrous or scandalous interventions, a bold, impertinent, popular, gay, practical, provocative, theatrical and grotesque style of moral critique.

Yet, Lacan would argue, this position eventually should raise our suspicion. In order to escape the $\$ \leftrightarrow S_1$ deadlock, activists must be spurred towards self-reflection. What is really driving their protest, what is the "*why*" of their unease, pushing them from beneath the bar, pointing beyond the issue at hand: towards a more basic form of discontent. What do these activists *really* want? But by asking such questions, we have already entered a different type of discourse, namely the discourse of the analyst.

2.6   The Discourse of the Analyst

The objective of the "discourse of the analyst" is to give the floor to the divided subjects (\$) in order to put them on the track of their (object of) desire (*a*). In the context of psychotherapy, this is the function of the famous couch, a bourgeois contraption (contrasting with machinery and instruments of the industrial revolution) which generates a particular genre of discourse, namely the case history or *Fallgeschichte*, although Freud and his followers also use plays and novels as case histories, while Freudian case histories "read like novels", as we have seen.

It would be a mistake, moreover, to identify novels with *one particular* type of discourse. Rather, the novel is a kind of *Bühne* where various forms of discourse are mutually exposed and played out against one another. According to the famous Russian philosopher Michael Bachtin, this especially applies to the novels by Dostoevsky, an important source of inspiration for Freud as well (1928/1948). A

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[6] https://satellites.marchforscience.com/

novel is a "heteroglossia", as Bachtin phrases it, a competitive collision between multiple genres of discourse. Lacan's theory of the four discourses is an effort to discern the dialectical structure in this linguistic turmoil by elaborating four basic types of discourse in a systematic and coherent manner.

The discourse of the analyst is unlike the other three discourses. As Bachtin phrases it, Dostoevsky (the novelist) refrains from siding with one particular type of discourse, but rather allows heteroglossia to emerge. Something similar applies to Lacan's four discourses as discernible in novels. Rather than siding with one of the voices (a strategy that would destroy the novel, from a literary point of view), the literary author allows various forms of discourse to take the floor in a convincing and credible manner. The discourse of the analyst is actively present in the novel as well, as one of these voices, while at the same time it is granted a somewhat different role, allowing the author to develop an oblique perspective on the other discourses that are fleshed out in the novel. In novels, the discourse of the analyst is often represented by physicians, detectives, journalists or other "outsiders", probing and listening to other discourses with evenly-poised attention, questioning them, sometimes literally *reading* them (when reading scenes are part of the novel). Such characters may work their way through the archives or files to come to terms with the "*why*" of an allegedly incomprehensible event. Novels keep track of the research conducted by these qualified experts, which opens up an oblique perspective on various discursive events, via dialogues and interactions.

In this monograph, science novels will be used as case histories, as oblique windows into science, providing a *Bühne* where various type of discourse compete with and challenge one another. A novel is never a monologue. Rather, the focus is on the ways in which various discursive genres are framed and enacted; and mutually compete with one another. Although these novels will be read from a Lacanian perspective, my monograph does not aspire to represent the "author studies" approach. This is not a book about Lacan, but a book about science. Still, indirectly, such an exercise may deepen our understanding of Lacan as well. Nor will my book reflect the structure of university discourse. I do not operate as an expert in analysing and solving integrity dilemmas, which would imply a self-positioning as S_2 in the role of agent. My objective is not to develop a particular ethical grammar for analysing and addressing moral dilemmas in preformatted ways. Rather, I develop techniques for using novels as source material.

Although philosophers may play various roles and may function as Master (the philosopher as guru: S_1 as agent), as expert (as applied ethicists for instance, or as author studies experts: S_2 as agent), or as activist ($ as agent), the discourse of the analyst concurs with the oblique perspective: a paradoxical term, since (ideally) the analyst is the one who does not speak but rather listens, with evenly-poised attention. For this type of discourse to work, the philosopher's expertise and knowledge (S_2) must be temporarily suspended, placed beneath the bar (lower-left position), a position known as learned ignorance (*docta ignorantia*). Instead of solving integrity issues on the basis of ethical principles or philosophical concepts, their unsettling questionability is emphasised. But precisely because of this intellectual self-constraint, this willingness to bracket the existing tool-box of integrity dis-

course (a strategy known in phenomenology as ἐποχή); the floor is opened to other voices.

A basic characteristic of the discourse of the analyst is that the ultimate target of desire, referred to by Lacan as the inexorable *object a*, comes into view, now in the position of the agent: triggering, commanding and frustrating the scientists' interminable work. This object challenges the prowess of scientists, arouses their desire, but continues to escape them, so that scientists emerge as tormented subjects ($ in the upper-right position). Thus, the novel becomes a philosophical laboratory where the (questionable) philosophemes of contemporary discourse are articulated and examined.

$$\begin{array}{c|c} a & \$ \\ \hline S_2 & S_1 \end{array}$$

But there are risks involved in such a discourse as well. Its objective is neither to develop "integrity expertise" (for S_2 is suspended, pushed into the lower-left position), nor to raise a voice of protest against "the system". The goal is rather to point out how $ is associated with the scientific will to know and the matheme of desire. In order to avoid an interminable analysis, spurred on and revolving around the intractable object *a* (in the upper-left position), however, a way out may be sought in the form of the sage, in this case: Lacan, or Freud, or Hegel, framing these authors as the ones who know the truth and whose body of writing provides the answers, so that, in the end, they are mistaken for the Masters (S_1 in the lower-right position), which would imply falling into a trap, a regression into a servile, apologetic Master's discourse, cherishing a particular oeuvre rather than trying to become philosophers ourselves.

But the discourse of the analyst opens up an alternative scenario, namely a strategy of *working through*. Although the work involved in analyzing misconduct novels may seem interminable, progress can nonetheless be made. Reading and analyzing science novels, notably in educational settings, may become a practice of the Self which allows (future) researchers to prepare themselves for the inevitable challenges entailed in research as an impossible profession. Moreover, the idea is not that philosophers should engage with the discourse of the analyst continuously. The four discourses allow us to temporarily switch to other types of discourse, if circumstances so demand, so that in this unfolding process philosophers may temporarily opt for other discursive modes, temporarily acting as author study experts for instance (this Chapter), or as ethics experts (as members of ethics committees for instance), or as social activists, but at the end of the day the discourse of the analyst is the one which concurs with the oblique perspective. As Hegel phrased it, rather than being the first to speak (as agents), philosophers spread their wings at dusk, as owls of Minerva, when other types of discourse have already thrived, when other agents (S_1, S_2, $) have already spoken. The philosopher's intellectual labour consists in reading and listening with evenly-poised attention to how others have already responded to the situation. The philosophical style is oblique (Socratic)

rather than apodictic. Rather than opting for expertise, activism or pontification, philosophers point to discursive symptoms, ambiguities, blind spots and contradictions that reflect the philosophemes adrift (for instance concerning our understandings of basic concepts such as truth or authorship). Thus, integrity discourse becomes a critical dialogue, a living oblique laboratory, a mutual learning exercise.

A philosophical reading of misconduct novels involves a shift from scientific discourse as such (S_2) to the philosophemes that actually guide and structure it (S_1), but also to the experiences of tormented subjects ($\$$) who aspire to adhere to these imperatives but face symptoms of inhibition and derailment in their interactions with the object (*a*). Exposed to such adverse experiences, researchers may be tempted to commit "misconduct", in order to keep up a semblance of normality and performativity. To open up this dynamics, specific signifiers may be singled out as especially relevant. Building on the etymology of λόγος, as explained by Heidegger (1951/1954), an oblique reading (*lectio*) tends to be selective, in the sense that *lectio* actually becomes *selectio*. Our attention becomes fixed on certain very specific, revelatory terms or phrases that reflect, in a symptomatic manner, the philosophemes (S_1) and discontents ($\$$) of "normal" science. It is *via* the discourse of the (apparently normalised, but actually tormented) subjects, as characters (analysands) in novels (case histories), that this dynamics is disclosed. In the next chapter, I will further elucidate this oblique reading technique with the help of a series of case studies.

Chapter 3
Knowledge, Power and the Self: Preliminary Explorations

3.1 Introduction

In the previous chapter I introduced the conceptual framework. *Knowledge*, *power* and the *Self* represent three axes or dimensions of the scientific landscape, while Lacan's four discourses represent strategies for navigating this three-dimensional discursive space. Whereas university discourse centres on expert *knowledge* (S_2), the discourse of the Master builds on an authoritarian *power* dimension (S_1), while the discourse of the hysteric places the divided *Self* ($$) in a frontal position, but all strategies are eventually forced to face the other two dimensions as well. The discourse of the Master, for instance, is subverted by the power inherent in expert knowledge and challenged by the subjectivity of the rebellious, insubordinate Self, represented by the discourse of the hysteric. The fourth discourse (the discourse of the analyst) opts for an oblique perspective, probing and analysing the other three discourses and their vicissitudes with evenly poised attention.

These three dimensions, and the four discursive strategies for navigating them, determine the structure of science novels as well. Whereas subsequent chapters (from Chap. 5 to Chap. 11) will focus on scientific integrity and misconduct in the more narrow (FFP) sense of the term, the next two chapters address scientific integrity and misconduct in a broader sense, mapping the broader landscape as it were, connecting it with the societal role and responsibility of science. And whereas subsequent chapters will increasingly approach the scientific present, this chapter provides a historical or genealogical backdrop by focussing on four literary case histories from the past.

Thus, this chapter will set the stage and calibrate the methodology for the upcoming chapters. The discursive landscape will be explored from an oblique perspective with the help of four literary documents, two novels and two plays. My first case study is Shakespeare's *Hamlet*, written circa 1600. This may come as a surprise, because *Hamlet* is not generally regarded as a science drama. What tends to overlooked, however, in the vast amount of scholarly literature devoted this play, is that

it is actually a play *about science*, first and foremost about astronomy (cf. Olson and Olson 1998). More precisely, the play stages a collision between scholarship and politics, as well as between the discourse of the Master and university discourse.

This schema will be further elucidated with the help of a second literary case study namely *Carmen*, published in 1845, a novel about an archaeologist who travels to Andalusia, but deflects from his research because of an encounter with a different kind of object *a* (namely the gaze and voice of a living being, instead of an archaeological find: *a* → *a*), so that his scholarly research becomes transformed into an "archaeology of the present" (i.e. psychoanalytical discourse).

The final two literary documents to be discussed in this chapter date from the late nineteenth century and are written by two contemporaries, namely Henrik Ibsen (1828–1906) and Jules Verne (1828–1905). Henrik Ibsen is generally regarded as one of the greatest psychologists of world literature and as a precursor of psychoanalysis. His oeuvre represents a literary psychoanalytical clinic *avant la lettre*. Indeed, as Lacan phrases it, Freud's oeuvre, focussing on human desire and gender relationships, emerges in "le contexte ibsénien de la fin du XIXe siècle" (Lacan 1986, p. 18). But Ibsen's plays also analyse how science and technology transform the world of fin-de-siècle culture. In other words, whereas most Ibsen scholars use his dramas to study issues in the realm of psychology and gender, I see his prose plays as literary laboratories, so that *Ghosts* explores end-of-life decisions and genetics (Zwart 1993), while *The Wild Duck* studies the emergence of photography and animal research (Zwart 2000b) and *The Lady from the Sea* reflects the impact of cruise steamers on art and tourism (Zwart 2015c). *Enemy of the People* (1882/1978), the play that will be discussed in this chapter, raises the question how researchers may safeguard their integrity while navigating a complicated societal landscape. The title already refers to the question whether scientists are benefactors or enemies of the people, or both.

To explain Verne's role in this book, some misunderstandings regarding his work must be addressed. First of all, although Jules Verne is often regarded as the "father of science fiction", most of his novels (rather than anticipating the future) actually address scientific and technological developments of his own era, so that his novels contribute to a diagnostics of the present. And indeed, in his immense oeuvre (encompassing ninety novels) a panoramic encyclopaedia of research fields and research technologies is fleshed out (Zwart 2008a, p. 233 ff.). Moreover, Verne sees technologies not only as products of science (which are subsequently transferred into the societal realm), but first and foremost as *enablers* of research. Nemo's submarine and the capsule that is designed to travel to the moon, to mention just two examples, are basically mobile laboratories, which allow researchers to conduct their experiments while moving towards the things themselves (*Zu den Sachen selbst*), allowing them to attain unprecedented proximity. In other words, what Verne reveals in his novels is the technicity of science, emphasising the crucial role of instruments and machinery. He describes how new research practices are opened up by new contrivances. Indeed, most of the machinery described in his novels is used for scientific exploration and experimentation. Also, Verne is often mistaken for an unequivocal advocate of science whereas in fact his attitude towards science

was highly ambivalent. In his novels, he consistently points out that there is a sinister side to the transformative and enlightening role of scientific research. Indeed, one could argue that Verne's oeuvre as a whole reflects Lacan's quadruped scheme of university discourse:

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\text{\$}}$$

The upper level of this schema basically describes the situation of normal science, as we have seen. It captures the way in which new technologies and contrivances enable scientific experts (S_2) to study and interact with objects of research which, until then, had eluded them, as forbidding, unapproachable entities out of reach (a). But precisely this new and hazardous situation reveals that, first of all, a latent imperative (a will to power: S_1) has always been guiding the (allegedly pure and innocent) research. Moreover, the close encounter with the target of the scientific *cupido sciendi* (a) may unleash a destabilising crisis (\$). Due to an unexpected parallax (an unexpected displacement in the apparent position of the object) the project (the journey to the moon, to the South Pole, around the earth, etc.) suddenly seems to falter. Now that the object is closer than ever, researchers continue to miss it. But rather than analysing his oeuvre as such, I will focus on one particular story, namely the story of Doctor Ox (Verne 1872/1875), focussing on the relationship between knowledge and power.

3.2 Rereading *Hamlet*

The first scene of Shakespeare's *Hamlet* is set on a platform before the castle, which actually serves as an observatory, a window into the stellar world. Hamlet, Prince of Denmark,[1] arrives at this platform exactly at the right moment, "carefully upon the hour" (Act I, scene 1, line 6) to observe the new star, the "thing" that had appeared (Act I, scene 1, line 20), a star that makes its course "westward from the pole": the *Stella nova* of 1572, which had already been spotted the night before. According to Renaissance logic, this stellar apparition confirms that the sublunary world must likewise be out of joint (for the new star is considered a bad omen, boding "some strange eruption to our state": Act I, scene 1, line 69). And indeed, it corresponds with similar disconcerting occurrences in the realm of politics, especially the royal wedding, vehemently loathed by Hamlet. Not coincidentally, the king's name happens to be Claudius, a reference to Claudius Ptolemy no doubt, the ancient

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[1] Hamlet was a fictional contemporary and compatriot of the famous Renaissance astronomer Tycho Brahe (1546–1601), of noble descent himself, who served as astronomer for the Danish King as the last of the major naked eye astronomers, working without telescopes for his observations, and lost his nose in a duel, so that he wore a prosthetic brass nose. He died from kidney failure after attending a court banquet in Prague.

authoritative astronomer whose geocentric system is about to be subverted by early-modern research (the Copernican revolution). In addition, Ptolemy is often listed as a scientific imposter who appropriated his insights much like King Claudius appropriated his throne. Indeed, "Claudius Ptolemy did most of his work not at night on the coast of Egypt but during the day, in the great library at Alexandria, where he appropriated the work of a Greek astronomer [Hipparchus of Rhodes] and proceeded to call it his own" (Broad and Wade 1982 p. 22). So there is some similarity between the crime of Claudius (in Shakespeare's drama) and *The Crime of Claudius Ptolemy* (Newton 1977).

In short, the beginning of *Hamlet* is structured in accordance with the dynamics of university discourse:

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\$}$$

A trained scholar (S_2) is fascinated by an intriguing object which unexpectedly came into view (*a*). The Prince is a Renaissance scholar, education at Wittenberg, who keeps a notebook, his "tables", for recording scholarly observations, for instance about astronomical phenomena. But alas, whilst Hamlet aspires to pursue his scholarly activities, a commanding voice from beneath, namely his father's ghost (S_1), draws the Prince back into the dreary world of palace politics: a regression. His father's eerie voice is a disturbance (scientifically speaking) which diverts him from his budding scientific career. The dead voice from beneath wants to draw Hamlet back into the Master's discourse, with the commanding monarch in the role of the agent (S_1 now in the upper-left position) and Hamlet as the recipient of the message (S_2 now in the upper-right position). In the unfortunate case of Hamlet, university discourse becomes impaired by this collision with the intruding discourse of the Master, so that Hamlet becomes a divided subject ($\$$ in the lower-right position), tormented by frustration and discontent. It turns him into a rather uncongenial fellow who, bored by courtly protocol, badgers his lover, bullies his mother and exasperates his uncle to such an extent that he is put under observation like a mental patient.

Astronomy (one of his scholarly pursuits) continuous to play a role in the play however, for instance during the graveyard scene when Hamlet ridicules Laertius's grief by commenting that it seems to "conjure the wandering stars, and makes them stand" (Act V, Scene 1, line 278), an event which is only conceivable in a pre-Copernican system, the world as envisioned by uneducated, uninitiated minds. Or when Hamlet explains that the earth for him has become a "sterile promontory" from which the firmament appears as "a congregation of vapours" (i.e. the modern worldview), rather than as a "majestical roof fretted with golden fire" (the ancient and medieval view: Act II, Scene 2).

But even in the realm of palace politics (which he experiences as a "prison"), Hamlet (the scholar) opts for a scientific approach. In order to ascertain whether Claudius really deserves to be deposed, he designs an experiment, a *mouse-trap*

(Act III, scene 2): the famous play-within-a-play, performed by actors who are carefully instructed by Hamlet. This play is a stimulus designed to elicit a response, and Hamlet asks his friend Horatio to closely observe his uncle Claudius in order to see whether, exposed to this mousetrap, which confronts him with a repetition of his disavowed deed, he will give away his "occulted guilt". Indeed: "The play's the thing/Wherein I'll catch the conscience of the king" (Act II, scene 2, line 642).

Thus, as a science drama, *Hamlet* can be elucidated with the help of Lacan's formalisation of university discourse:

$$\frac{S_2}{S_1} \left| \frac{a}{\$} \right.$$

Initially, Hamlet is a scholar, educated at the university (S_2 in the upper-left position) who uses the platform to observe and probe a remarkable, inexplicable phenomenon: the sudden appearance of an unidentified star (a in the upper-right position). Yet, his pursuits are interrupted precociously by a voice, a questionable summons from the past (S_1 in the lower-left position), drawing him back into clan politics as it were, into the gloomy, depressing cave of palace intrigue (where he is expected to take up his servile and boring position as successor to the throne). Hamlet becomes a divided subject, forced to divide his loyalty between practices of politics on the one hand and practices of knowledge on the other, giving rise to a series of disturbances which increasingly result in recalcitrance, cynicism and discontent, in symptoms of madness even, so that he is placed under surveillance and the palace becomes his psychiatric ward ($\$$ in the lower-right position).

Hamlet is a tragedy precisely because the emancipation of knowledge (of university discourse) falters. Instead of pursuing a career as a scholar, Hamlet becomes the recipient of a message (S_2 pushed into the upper-right position), coming from an authoritative voice (S_1 usurping the upper-left position), a situation which concurs with the discourse of the Master. Like Prospero in *The Tempest*, Hamlet is split between his scholarly calling on the one hand and the demands of palace politics on the other. The resurge of the voice of the Master, one could argue, is an instance of regression, occurring at a time when the scientific revolution was about to set off, a truth event in which Hamlet had hoped to be involved. In a positive scenario, university discourse would have succeeded in subverting the discourse of the Master, and a different situation would have arisen, because Hamlet would have remained faithful to his truth event (Badiou 1988).

In university discourse, the Master no longer addresses the Servant explicitly. Rather, it is the servant who addresses nature, via research, revolving around an object of choice, such as a stellar phenomenon (Hamlet's *Stella nova*), the researcher's *object a*, which is put to the test, but at the same time puts the subject to the test, for the *object a* is not simply a graspable, tangible object. Rather, its ontological status is highly uncertain. It may well prove a lure, an anomaly, a dead end, a trap. Rather than studying nature as a cosmic whole, nature becomes condensed and compressed into a particularly intriguing but inexorable object (a), an entity which

can only be brought to the fore and analysed with the help of specialised equipment. And this may explain Hamlet's failure, his impotence; his failure to act. In Hamlet's case, astronomy is still conducted with the naked eye, although one could see the platform as a kind of contraption, a Renaissance Stonehenge so to speak. A "phallic", telescopic instrument (φ) would perhaps have allowed him to emancipate himself from traditional *Gerede* and palace intrigue, focussed on the intricacies of match-making, but this instrument is missing ($-\varphi$). Hamlet remains a scholar, who reads, talks and writes, but practices with a sword rather than a telescope. Indeed, optical instruments are decidedly absent in his scholarly practice. Science becomes *real science* to the extent that technicity dominates the subject-object relationship, so that the *object a* is not only observed and analysed, but also (to a considerable extent) *produced* by research contraptions. But I will resume my analysis in Chap. 11 to indicate that Hamlet (as an experimental drama) continues to be relevant for understanding research practices up to today.

3.3 *Carmen* as a Research Novel

The narrator of *Carmen* (the novel) is a French scholar who travels to rural Andalusia to conduct archaeological research for an academic thesis on the battle of Munda (45 B.C.), Caesar's final victory over his republican opponents. After quenching his thirst with water from a pond in a deserted area (lying flat on his belly, drinking the water directly with his mouth, "like the bad soldiers of Gideon", p. 94), he runs into a dangerous brigand named Don José, whom he befriends by sharing a cigar with him, notwithstanding doubts concerning the "morality" of his action (p. 105). In Cordoba he pays a visit to a Dominican library and meets Carmen, an enigmatic Romani woman who is fascinated by his watch and offers to tell his fortune. He follows her to her home, where he meets Don José again. Carmen makes coat-cutting gestures, but Don José escorts him out, so that his life is saved, although he later discovers that his watch is missing. When he is informed that Don José has been arrested and is about to be executed, he decides to visit him in prison, where he tells him the story of his life.

Don José is a Basque whose real name is José Lizarrabengoa and who met Carmen while serving as a soldier in Seville (where the opera version of the tale begins). He arrested her after a quarrel in the Royal cigar factory with another female employee, but she flirts with him and addresses him in Basque so that, instead of taking her to prison, he allows her to escape, whereupon he is imprisoned himself and demoted for misconduct. After his release, he encounters her again and she tries to seduce him to collaborate with an outlaw smuggler gang. Upon hearing the sound of the army drums beating tattoo, he tells her that he has to return to his garrison immediately, in accordance with his instructions (his "consigne"),[2] but she ridicules him, comparing him to a tame canary (a reference to his yellow army

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[2] "Il faut que j'aille au quartier pour l'appel…" (p. 135).

costume). Later on, when he sees her in the company of his lieutenant, he kills the latter in a fit of anger and, in order to escape death penalty, with no other "career options" left, he decides to become a gang member after all.

He soon learns that Carmen is married and that the life of a criminal is not as wanton as he suspected. She dominates him completely and uses her feminine attractions to further the band's enterprises, making him sick with jealousy. After her husband is released from prison, Don José kills the latter in a knife duel, so that Carmen formally becomes his wife. But she despises him and although bad omens inform her that he will kill her, she falls in love with a picador. Overcome with despair, Don José stabs her to death and turns himself in. The final part of the story is a scholarly treatise on Romani lore, apparently written to probe the enigma of Carmen's gaze and voice (an instance of mock university discourse as it were).

Although Carmen is usually seen as a novel devoted to the toxic, disruptive and addictive nature of erotic desire (with Carmen's enigmatic gaze and voice serving as the novel's object *a*), I will reread it as a misconduct novel: a story about faltering academic scholarship, structured like a personality test. The test element is already apparent in the beginning of the story, when the archaeologist shares a cigar with a criminal and even helps him to escape. Before doing so, there is a symptomatic *Fehlleistung* already mentioned. The archaeologist is subjected to a pond-test. Instead of drinking water with his hands, sitting on his knees as civilised, self-contained persons are expected to do, he lies flat on his belly, drinking water directly with his mouth, "like the bad soldiers of Gideon" (that is: like an animal). Thus, he fails the test. This normative deficit is also reflected in his research activities. Instead of being fully committed to his scholarly work (exploring Andalusia to test his hypothesis), his encounter with Carmen disturbs his project. He becomes torn between his quest for the archaeological missing link (a piece of evidence which would confirm his archaeological theories) and the disturbing distractions of con-temporary life (embodied in a condensed way by Carmen's alluring gaze). Like Don José (the deflecting Basque soldier), the scholar-narrator is exposed to and falls victim to Carmen's charms. But although he initially fails the test, he eventually manages to sublate his conflict ($M_2 \rightarrow M_3$) by becoming an archaeologist of the present, a psychoanalyst who explores the dynamics of human desire (novel-writing as a synthesis of archaeology and anthropology).

In the case of Don José, the deflection is more radical and irreversible. During his exposure to Carmen, in front of the tobacco factory in Seville, Don José's profes-sional integrity (his metal) is being tested. At first he seems a very dedicated soldier (M_1), but his attitude of strict compliance is an immunisation device meant to cover-up a basic vulnerability, mercilessly exposed by Carmen during their first encounter (M_2).

Carmen is a novel about a scholar who endangers, but eventually manages to elevate his research to a higher level of complexity and relevance as it were. Compared to the opera version, there is a much stronger focus on the *knowledge* dimension. The opera version highlights the *power* dimension first and foremost. Here, the first moment (the exposition stage: M_1) is reminiscent of Michel Foucault's *Discipline and punish* (1975). Factories, army barracks and penitentiary institutions

serve to domesticate an unruly, multi-ethnic population, and Don José is one of these individuals who is conditioned and subjugated (subjectified) by the reigning power regime. As soon as he hears the drums, his conditioned reflex is to return to the barracks immediately, without further ado, for that is his *instruction* ("C'est la consigne"), the imperative of the Big Other, the discourse of the panoptic Master. He is the recipient of a call and has to respond in an almost automatic fashion (M_1). But due to the challenging exposure to Carmen (the object *a* of his desire) the power machinery falters and the conditioned reflex (return to the barracks!) becomes impaired (M_2). The exposure is the experimental condition as it were: Don José is put to the test and fails, deflecting into apostasy. His first infraction (allowing Carmen to escape because of her Basque phrases) is the first step in a process of escalation. Carmen derides his compliance, which contrasts with the behaviour of the lieutenant, who somehow seems perfectly able to combine army discipline with erotic pleasure. Don José experiences a basic split or *Spaltung*. He fails to constitute himself as a moral subject by adequately addressing the challenge ($M_2 \rightarrow | M_3$).

But what is the exact nature of the collision? Initially, it seems a conflict between instinct and obligation (in accordance with the repression-hypothesis, or with the basic tension of Kantian morality between inclination and duty). But the situation is much more complicated than that. What Don José fails to recognise is that his craving for Carmen (which revolves around her gaze, her voice, her Gestalt) is actually a by-product of the disciplinary regime itself (the discourse of the Master). It is *because* of the prohibition (S_1), addressing him as a compliant, professional soldier (S_2), that his desire is aroused (*a* in the lower-right position as by-product):

$$\frac{S_1 \quad | \quad S_2}{\$ \quad | \quad a}$$

It is *because* of his sensitivity to the call of the drums (to his "consigne") that Carmen's gaze, Gestalt and voice can emerge as the object of desire (*a*), as something utterly desirable, but also intractable and beyond his reach. She becomes his object *because* he realises that, should he allow himself to be lured away from his vocation, this scenario would prove fatal. It is precisely her toxicity (in view of the whole power constellation) that makes her so irresistible.

By stabbing the lieutenant, he relapses into masculine protest, challenging the authorities: an act of manifest subversion against the military regime ($S_2 \rightarrow \$$). In other words, he enacts a quarter turn to the right, so that Master's discourse gives way to the discourse of the hysteric:

$$\frac{\$ \quad | \quad S_1}{a \quad | \quad S_2}$$

But this does not solve the conflict. After their escape (from the tobacco factory and from the army barracks) Carmen and Don José spend most of their time on the road, like travelling nomads, from one place to the next, but it is not a pastoral

situation. New obstacles (notably Carmen's husband, the band leader) get in the way and Don José again finds himself in a situation in which he has to obey instructions. But he does not seem to *know* what he wants or what is driving him into despair.

After Don José's arrest, the archaeologist visits him, to hear his confession as it were, and the novel becomes a *Fallgeschichte*, shifting into the discourse of the analyst. What made Carmen so fatally attractive? The focus is now on the object *a* (the object of desire) as agent, on the disruptive impact of her gaze and voice on the tormented subject (*$* in the upper-right position):

$$\frac{a}{S_2} \quad \bigg| \quad \frac{\$}{S_1}$$

In order to play the role of analyst, the narrator (the qualified archaeologist) suspends his expertise (S_2 = academic knowledge pushed into the lower-left position), which allows him to listen with evenly-poised attention. The result (by-product) of the analysis is an important normative insight. Unlike what is suggested in the Opera ("L'amour n'a jamais, jamais connu de loi"), Carmen does *not* represent pure freedom, and she is *not* at all a lovebird who persistently refuses to be subjugated by rules and laws. She does *not* represent a love which knows no laws.[3] Rather, her narrative reflects a fundamental collision between two normative regimes ($S_1 \leftrightarrow S_1$). The *human* (written) law of the modern world of discipline and punish (of rules and regulations) collides with another, more ancient sense of obligation, which she refers to as the Law of Egypt ("La loi d'Égypte, p. 135"), and which Hegel (1821/1970) and Lacan (1959–1960/1986) refer to as the *divine* (unwritten) *law*. Indeed, Carmen embodies the collision between human and divine Law which plays such a crucial role in Hegel's *Philosophy of Right* (1821/1970) as well as in tragedy as a genre. Carmen is a nineteenth-century version of Antigone. She acts the way she does because she cannot do otherwise, *not* because she is driven by instinct (as a female vamp or something like that), but rather because she herself is under the sway of an incommensurable *normative* code. In other words, by suspending expert knowledge (S_2 in the lower-left position) and focussing on the fatal interaction between Carmen (*a*) and Don José (*$*), a crucial normative insight is brought to the fore (S_1 as by-product): the eroticised female criminal is actually a profoundly spiritual person, a devotee who articulates one of the highlights of continental philosophy: Hegel's dialectics of human and divine law (S_1), the clash between legalism and moral truth. I will now further elaborate these reflections starting with the Master's discourse that pre-structures the topology of the scene, most conspicuously in the opera version, but also in the novel.

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[3] The nineteenth century prejudice that "primitive" people (such as Romani) are less constrained by laws than modern Europeans was also addressed by Freud in *Totem and Taboo*, 1913/1940). Rather than being wanton and licentious, the life of "primitive" people is determined by remarkably harsh inhibitions.

Carmen-the-opera begins in front of the tobacco factory about to open its doors for the next shift, consisting solely of female workers, while a group of soldiers is waiting for a change of guard. It is a world disciplined by societal stratifications and timetables, grounded in a rigid compartmentalisation of time and space. The same topology can be discerned in the novel. Outside the barracks, the subject (S_2) remains a recipient of a summons (exemplified by the French term "consigne", which means order or instruction). The signal resounding from the army barracks strikes him as a categorical imperative which he simply *has* to obey, whatever the circumstances. It is the compulsory force of this signifier, this command (emitted by S_1) which sets everything in motion. There is no room for wavering or doubt ($\$$ firmly pushed back into in the lower-left position). Don José (the recipient) is a professional soldier, a qualified and allegedly reliable guard (S_2 in the upper-right position), who simply has to obey. All this reflects the topology of power, the discourse of the Master:

$$\frac{S_1 \quad | \quad S_2}{\$ \quad | \quad a}$$

When Carmen enters the scene at the beginning of the opera, he pretends to ignore her, so as to immunise himself against her aura (unconsciously aware of his susceptibility, his vulnerability perhaps). But it is *precisely because* all interactions with her are strictly forbidden that her gaze is sublimated into something toxic and dangerous: the object of desire (*a*), something completely *other*, exotic and out of reach. Her alluring, captivating seductiveness is reinforced by the constellation. In accordance with his *consigne* (S_1) the professional soldier (S_2) *seems* self-contained, but this is a façade. Carmen, a gifted Romani folk psychologist, immediately notices the vulnerability (covered-up by his apparent indifference): she has found her target. Her gaze, her voice, something about her Gestalt, seems extraordinary and irresistible. As indicated, precisely the fact that she is beyond reach sublimates her into a thing of extraordinary value (the object *a*, representing the illicit object of desire as by-project of the Master's discourse, in the lower-right position).

In *Carmen* the novel the initial protagonist is not the tormented Basque soldier, torn (as a divided subject) between his *consigne* and the object of his desire ($S_1 \leftrightarrow \$$ $\leftrightarrow a$), but rather the French gentleman-scholar who travels to Andalusia to conduct research for his dissertation on Caesar's expeditions. Ignoring the topology of the present, he tries to reconstruct the topology of the past. The beginning of the novel again reflects the discourse of the Master:

$$\frac{S_1 \quad | \quad S_2}{\$ \quad | \quad a}$$

The scholar's starting point is a guiding, authoritative document (S_1): an anonymous treatise entitled *Bellum Hispaniense*,[4] which he has scrutinised (as a scholarly expert: S_2 in the upper-right position) and his philological exercises resulted in a new hypothesis concerning the exact location of the battle, which he now puts to the test. In other words, he travels to Andalusia to free himself from the sway of the Master (the prison of library scholarship) and to become an empirical researcher, an authority himself. In terms of Lacan's quadruped, he aspires a quarter turn to the left into university discourse:

$$\frac{S_2}{S_1} \bigg| \frac{a}{\$}$$

He aims to become an autonomous researcher (S_2 in the position of agent), someone who develops and tests his own hypothesis, who deviates from established scholarly views (which are suspended and pushed into the lower-left position: S_1). The targets of his research are decisive archaeological remains (as object a) which derive their value from the fact that they may confirm or disprove his reading (the exact location of the battle of Munda is still controversial among archaeologists up to this day). In other words, the narrator (who felt trapped in the discourse of the Master: the scholarly pursuit of textual analysis, under the sway of previous generations of scholars) tries to realise a quarter-turn to the left, so that the outdated views of previous scholars become suspended (S_1 pushed into the lower-left position) and he can test his hypothesis (question the object) in a more direct and empirical manner (S_2 now in the position of agent, replacing the authoritative discourse of the Master with empirical research and university discourse). The archaeologist (who conducts his research in the autumn of 1830) distrusts the claims made by older colleagues, and his starting point is academic scepticism: the original source (S_1) is about to be *negated* by his fieldwork. The discourse takes a turn to the left: from a respectful reliance on an ancient source (the logic of the Master's discourse) to university discourse, where empirical research enables the academic subject (S_2) to adopt a critical distance to sources, in favour of direct interaction with the intractable object of research:

$$\frac{S_2}{S_1} \bigg| \frac{a}{\$}$$

In other words, while exploring the current landscape, he is actually looking for *something else*, namely traces of a previous epoch, a layer now covered by the (more or less irrelevant) present, represented (via condensation) by the object a of his scholarly treasure hunt, that which made him travel all the way from Paris to Andalusia, a potential but (as yet) allusive archaeological trace, preferably in the

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[4] Referred to as "the worst book in Latin literature; its text is the most deplorable. The language is generally ungrammatical and often unintelligible" (Holmes 1928, iii, p. 298).

form of concrete archaeological objects: ruins of fortifications or sculpted stones or (better even) inscriptions (*a* in the upper-right position): hidden signifiers from the past, reflecting and commemorating Caesar's actions, something that will allow him to publish an academic memoir that may end the controversy among the specialists (Mérimée 1845/1965, p. 91) and make him famous. His aim is to *see through* and erase the present in order to address and rediscover the lost world of the absent past. As a qualified expert, he is also guided by a "consigne", but in a less conspicuous way. As a professional scholar he has internalised the academic imperative, assuming a position of agency (S_2 in the upper-left position; S_1 now in the lower-left position). He is not drilled by army drums as in the case of Don José, but driven by an internal motive, a personal will to know.

But his research falters and he fails to come up with a single find. He does not give the impression of being very committed either. Due perhaps to his inability to find the object *a* (and contribute to the body of archaeological knowledge, revivifying the dead letter of the text through field work), he deflects, and becomes increasingly interested in something else. Instead of persevering as an archaeology scholar, he fails the test. He experiences a split (*Spaltung*) between past and present, between his rereading of the authoritative source and the contemporary landscape, but also between the requirements of archaeological research on the one hand and the enticing temptations (both erotically and intellectually) of the contemporary world ($S_1 \leftrightarrow \$ \leftrightarrow a$). The current population of what once was Munda Baetica clearly disappoints him, but he becomes fascinated by the itinerant subculture of outlaws and brigands, exemplified by Carmen's paralysing gaze, her exotic aura, her strange superstitions: the object *a* of ethnography. Her gaze now becomes the object *a* of his *cupido sciendi*, and he is on the verge of falling victim to the matheme of desire ($\$ \lozenge a$).

This interest, stirred by Carmen, happens to concur with another illicit (non-academic) fascination, for he now confesses that, as a student, he had "wasted" considerable amounts of time on studying the occult sciences (p. 110): another apostasy (from the point of view of university discourse). Carmen the enigma (with her strange, fierce, "inhuman" eyes, completely fixated on his golden watch, p. 111) now becomes the focus of his intentionality. He allows himself to be trapped by her, for he wants to find out the enigma of her knowledge (an experience which he barely survives). He deflects to a different kind of research: archaeology of the present. Not the quasi-ethnographic, quasi-scholarly reflections concerning the customs, history, language, etc. of the Romani to which the final pages of the novel are devoted, but rather his psychoanalytic assessment of the dynamics between Don José (the criminal) and Carmen (his femme fatale). Thus, the frustrations as a qualified archaeologist, who came to Andalusia to put his knowledge to the test (S_2 in the upper-left position) give rise to an unexpected by-product, a growing experience of *Spaltung* ($\$ $ in the lower-right position) between his formal academic assignment and his budding *cupido sciendi*, converting him into a psychoanalyst *avant la lettre*. His deflection contrasts with Don José's more dramatic and disruptive apostasy, however, for while the latter deserts the army to become a rebellious brigand, the scholar rather endorses the discourse of the analyst, so that he is able to render the tormented soldier a patient ear:

a	$\$$
S_2	S_1

Don José confesses how his craving for Carmen (*a*) resulted in a deflection, in "misconduct" as a soldier, followed by his imprisonment and demotion ($\$$ in the upper-right position). But he also confesses that he does not really *know* what is so appealing, so addictive and toxic about Carmen: the object-agent which set his story in motion (*a* in the upper-left position). But Carmen as a *real person* (not as an *object* but as a *subject* of desire) is torn between two incompatible worlds as well. The opera libretto presents her as a lovebird who knows no laws, but actually she is extremely law-abiding. As agent she is torn between two incommensurable imperatives ($\$$). She is susceptible to a different, exotic, *unwritten* law. It is this loyalty to a more ancient law that makes her despise and provoke the representatives of human law (S_1 in the upper-right position). Like Antigone, she represents the discourse of the hysteric:

$\$$	S_1
a	S_2

She confronts the authorities (S_1 in the upper-right position) because she is addressed by and susceptible to an inner voice of conscience (*a*). And the by-product of this discursive constellation is an ethnographic report of the life and activities of Andalusian Romani, of gypsy lore (S_2 in the lower-right position), indicating that the deflected archaeologist indeed became an anthropologist ($S_2 \rightarrow S_2$).

The novel as such is structured as a series of personality tests (testing the metal of the narrator and of Don José) culminating in a confession, so that the novel actually evolves into a (psychoanalytical) *Fallgeschichte*. The narrator sublates the negation or subversion (M_2) of his initial consignment (M_1) by reconciling his scholarship with his interest in the present (the negation of the negation: M_3). He remains a *homme des lettres*, but switches his focus of attention from the diachronic to the synchronic dimension, from the oedipal stage of Western history (Caesar's bold victories over the establishment) to the contemporary stage. He regains his integrity (undermined by his deflection) by becoming an impromptu psychoanalyst (an archaeologist of the present), but also via novel-writing as a practice of the Self, a form of working-through. Don José confesses the story of his infatuation with Carmen, in accordance with the matheme of desire ($\$ \lozenge a$). The question is: how could this happen, what exactly caused the fatal attraction, the deflection. What was the intractable something that provoked him and lured him into deflection and eventually destroyed him, although he desperately tried to silenced her gaze and voice (the object *a*) by killing her.

Thus, we have entered the discourse of the analyst, placing the object *a* in the upper-left position as agent, the thing which sets everything in motion, with Don

José (the tormented, divided subject) in the role of recipient ($ in the upper-right position):

$$\frac{a}{S_2} \Big| \frac{\$}{S_1}$$

To be able to play this role and probe this fatal dynamics, the archaeologist must leave his field (S_2 = academic expertise pushed back in the lower-left position). He is no longer a frustrated archaeologist, but rather an analyst hearing a confession, exploring the subject's psychic past. In contrast to normal confessions, as Freud phrases it in *The Question of Lay Analysis*, Don José not only confesses everything he knows, but also what he *does not know*.[5] During the analytical session, he explores his unfathomable fascination and obsession for his object *a*, embodied by Carmen. And the by-product of this exercise is an important ethical insight, an important truth (S_1), namely that Carmen is not lawless at all. Her world is not a moral vacuum, where all normativity is suspended or eliminated, far from it. After shifting from the archaeology of the Roman past to the archaeology of the present (psychoanalysis) and in the context of a psychoanalytical retrospect it becomes clear that the moral topology of Carmen's world is pre-structured by the collision between two irreconcilable forms of normativity, namely the *human* law of societal legislations and regulations versus another, *unwritten*, enigmatic law, the "law of Egypt" (the divine Law, overruling the human law; S_1 emerging in the lower-right position), a form of normativity to which Carmen is extremely sensitive, due to her "upbringing", according to Don José:

$$\frac{a}{S_2} \Big| \frac{\$}{S_1}$$

Unlike university discourse, this type of discourse is not about producing *knowledge* (archaeological evidence, ethnographic treatises, etc.), but about *truth* (the desire of the subject). The question is: can a practice of the Self unfold which allows us to constitute ourselves as moral subjects, vis-à-vis integrity challenges we encounter?

In the course of the literary case studies explored in this monograph, this conceptual and methodological framework will be further refined, amounting to an extrapolation and elaboration, rather than a mere "application" of Lacan's theorem. Provisionally we may conclude that misconduct, seen through the lens of the misconduct *novel*, is not a matter of self-centred calculations versus normative obligations, but rather something which emerges in a situation of conflict between

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[5] "In der Beichte sagt der Sünder was er weiß, in der Analyse soll der Neurotiker mehr sagen" (In confession the sinner tells what he knows; in analysis the neurotic has to tell more … more than he knows (Freud 1926/1948, p. 215)).

expectation and realisation, between knowledge and truth. It is, in other words, a misguided act of despair in response to an unfolding, existential crisis.

3.4 Qualified Experts: Benefactors or Enemies of the People?

Ibsen's play *An Enemy of the People* [*En Folkefiende*], written in 1882, is set in a quiet Norwegian coastal spa. Doctor Thomas Stockmann, the scientist, the professional expert (S_2), is staff physician at the municipal baths, a position which he owes to his older brother Peter Stockmann: the town's conservative mayor, who also acts as chairman of the board of the bath facilities (the main source of income for the town, its hope for the future). In *Act I*, Doctor Stockmann receives a letter from the university confirming his suspicions that the water of the spa is contaminated with "infusoria", so that, rather than being healthy, it is "injurious to health, for either internal or external use". Infusoria are not yet domesticated objects in the 1880s. Rather they represent scientific novelties which question the hegemony of human beings. By opening up a whole new environment, only visible with the help of optical contrivances, they are a source of unease. As Stockmann lacks the necessary scientific equipment, he had sent samples of drinking water and seawater to the university lab for a thorough analysis (p. 299). Seeing his suspicions confirmed, he sends a report of his findings to the board of directors (chaired by his powerful brother), but at the same time he dispatches an article to a local progressive newspaper (*People's Courier*), the mouthpiece of the Mayor's political opponents.

The two Stockmann brothers have a strenuous relationship. They have a dispute, for instance, concerning the question who had been the first to come up with the idea of building a spa. Apparently, whereas the Mayor was the one who "got the thing moving and put it into practical reality … the idea came from the doctor first" (p. 286), a prototypical description of the relationship between *knowledge* (Thomas) and *power* (Peter). The Doctor conducted his inquiries into the water condition secretly, without informing his brother (his immediate superior). And now, he intends to use his "great discovery" to demonstrate that the Mayor is incompetent. Indeed, he hopes that, via his newspaper article, his discovery will stir up a local political "revolution" (p. 325). But the Mayor manages to convince the left-wing editors that the costs of Stockmann's proposals for rebuilding the bath would be immense, and that his wild conjectures will actually ruin the town's economy. Therefore, to Doctor Stockmann's astonishment, or even outrage, the left-wing journalists refuse to print his manuscript. Stockmann then decides to organise a meeting to share his findings with the public, but when (due to clever manoeuvring by the more experienced politicians present, notably the Mayor) he is prevented from giving his speech, he decides to present an impromptu lecture on his broader political views, revolving around a "more important discovery", namely the claim that the educated minority (the enlightened avant-garde) is intellectually superior to

the uneducated majority, the "masses". In response to his tirade as "a man of science" against popular opinion, he is branded an enemy of the people and in the final act he considers emigration to America (exile as his final option).

Whereas literature and science studies often focus on documents which suggest a lack of ethical consciousness among scientific researchers (Peterfreund 1990; Haynes 1994; Haynes 2003; Caudill 2011, p. 50), Ibsen's play is interesting because, rather than depicting science out of control, it describes a far more complex and dialectic interaction between knowledge and power. Doctor Stockmann is often heralded as a whistle-blower, a champion of truth, who runs into conflict with prejudice, hypocrisy and vested interests, but on closer inspection the dynamics of the science-power relationship are far more complicated (Zwart 2004). Let us have a closer look, using Lacan's theorem of the four discourses as our conceptual lens.

The Mayor (Peter Stockmann) represents the discourse of the Master in Ibsen's play. He functions as the unshakable embodiment (Peter = πέτρα = rock) of local authority. The bath facilities entail huge financial risks and the success of the endeavour (notably the support from the big stockholders and, by implication, the value of the stocks) relies to a considerable extent on Mayor Stockmann's name and prestige. His brother Thomas, who had spent a number of years in the far north of the country under taxing circumstances (living on "starvation wages") works as staff physician (medical officer) so that the Mayor (to whom he owes this position, − and the salary that goes with it) is his direct superior. In other words, Thomas Stockmann, the professional expert, finds himself in the position of the Servant (S_2 in the upper-right position): the recipient of assignments and directions coming from the father-figure, the person in power (S_1 in the upper-left position of the agent).[6] The Master (burgomaster) even appropriates Stockmann's ideas (notably the idea of establishing a bath facility in the first place). For, according to the logic of the Master, since the Mayor (the Master) "owns" him (by paying his salary etc.), the Master may also claim ownership of his ideas. In the course of the play it becomes clear that various controversies, uncertainties and doubts had emerged during the development of the baths, but these were firmly pushed beneath the bar and the town seems on the verge of a flourishing future, with coastal health tourism as a promising prospect. Ibsen's play is structured in alignment with the discourse of the Master:

$$\frac{S_1}{\$} \quad \Big| \quad \frac{S_2}{a}$$

Yet, Stockmann's interactions (as a Servant) with coastal nature (swimming and drinking water) in a fairly direct, empirical and hands-on manner inevitably become a source of autonomy and power (in accordance with Hegel's dialectics of Master

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[6] "MAYOR: The individual has to learn to subordinate himself to the whole, to those authorities charged with the common good" (p. 291); "As a member of the staff, you're not entitled to any personal opinions … as a subordinate official at the baths, you're not entitled to express any opinions that contradict your superiors" (p. 319).

and Servant). His increase of power (at the expense of the Master) is confirmed when Stockmann finally makes his "great discovery" (p. 297). His research activities, which are not explicitly part of his assignment, are conducted in secret as we have seen, so that his discovery (his claim that millions of infusoria have contaminated the water supplies) represents a by-product of the power-knowledge constellation (with the enigmatic but toxic infusoria as the object a in the lower-right position). Now that Doctor Stockmann has made his great discovery (has found his object a), he realises that he has something in his hands (literally), namely a contaminated water sample, which allows him to challenge the status quo and to subvert the power of the Master. The letter from the university confirms his suspicions and indicates that "the whole establishment is poisoned" (298), as waste water from the tanneries (a more traditional source of income) is seeping into the pipes. His suspicions can no longer be discarded as a product of his lively fantasy and the university letter transforms a mere water sample into something highly significant, a thing of value: an object a, a powerful symbolical tool which allows Stockmann to disrupt the political power balance. Or, as Stockmann phrases: the samples, whose contamination is confirmed by the formal letter, allow him to challenge "the superstitious myth of the infallibility of the authorities" (p. 307). In other words, the letter from the university suddenly changes his position. From a mere Servant (acting as the recipient of top-down assignments coming from an autocratic ruler) he is transformed into a "man of science", the agent and spokesperson of university discourse licensed to produce knowledge.

This significantly enforces his agency and puts him in the position of the agent (S_2 now in the upper-left position), so that the *discourse of the Master* gives way to *university discourse*. The discursive setting of Ibsen's drama undergoes a quarter turn to the left. The archetypal Gestalt of the mayor, decorated with insignia of power, is overturned and the town suddenly finds itself "on the verge of a revolution" (p. 325).

Initially, Doctor Stockmann seems to delight in his new role, challenging his brother's power position as a professional expert, a "man of science" (p. 289, p. 319), taking the floor as a conscientious researcher (S_2 in the position of the agent) who had worked quietly for months ("in seclusion", focussing exclusively on his infusoria, his samples) to put his misgivings to the test, suspending any political or ideological motives (S_1 in the lower-left position) while focussing on his object of research, his research results, hoping it will prove a "great discovery" (p. 297, p. 303), hoping that these samples will indeed function as his object a. In short, initially, Doctor Stockmann's discourse aligns with what Lacan refers to as university discourse:

$$\frac{S_2}{S_1} \quad \frac{a}{\$}$$

In this position (as an emancipated, professional scientist) he challenges the intellectual ownership of the Mayor, reclaiming the original idea for developing a

bath facility. His aim is to free himself from the Master's sway by pushing S_1 beneath the bar (silencing the Master's voice). Allegedly, his focus is solely on the scientific issues (*a*). This means that he disavows the extent to which his research is actually spurred on by political motives, by *his own* political ideology.

During his coming out (in Act Four), however, it becomes clear that Stockmann's scientific research (S_2 in the position of the agent) is actually guided by a basic truth (S_1 in the lower-left position), an ideological view that collides with established convictions. Stockmann's discovery destabilises the political situation by generating uncertainty and turmoil ($ in the lower-right position, as a by-product of his research). The letter of the university reinforces the disruptive power of scientific knowledge vis-à-vis the traditional power regime. It soon becomes clear that his finding is not purely a technical matter, but will have serious political and economic implications as well: that his discovery is "interrelated with a lot of other things" (p. 306). The epistemic novelty quickly becomes entangled in a complicated web of socio-political relationships.[7]

Under the sway of this philosophical discovery, Dr. Stockmann eventually relapses into a different kind of discourse: the discourse of the hysteric ($ now in the upper-left position), confronting the establishment and challenging established political views (S_1 in the upper-right position):

$$\frac{\$}{a} \quad \bigg| \quad \frac{S_1}{S_2}$$

He now concedes that his real and ultimate *discovery*, the revelatory *insight* or missing link that inspired his allegedly objective research (*a* in the lower-left position) is of a completely different, political and philosophical nature. His scientific work (S_2) is now presented as a by-product of what actually is a clash between worldviews ($S_1 \leftrightarrow S_1$ in the upper-right position). His real discovery is that the most insidious enemy of truth and freedom is "the majority". Rather than challenging the power of the "authorities" in the name of science, Stockmann's *real* concern (as a free-thinker) is the democratic "prejudice", endorsed by the Mayor's liberal opponents, that "the majority is always right" (p. 355): the basic philosopheme (S_1) of a democratic culture. This statement, Stockmann argues, must be replaced by its logical negation, namely the (Platonic) conviction that the *minority* is right, that an avant-garde minority of scientists and enlightened intellectuals should rule the world, because "the majority is never right" (p. 356). In other words, power to the intellectual elite (first and foremost to himself)!

ACT FOUR stages Stockmann's coming out as a self-inflated, provocative prophet ($). In the course of his public lecture, Stockmann moves beyond the constraints of university discourse (which revolves around professional and technical expertise) and relapses into the discourse of the hysteric, challenging the position of

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[7] MAYOR: "What's involved here is not a purely scientific problem. It's a mixture of both technical and economic considerations" (p. 319).

the Master (the "clique of politicians", the "Mayor and his cronies", the "ring of reactionaries", etc.) in a boisterous, provocative way.[8] In terms of the περίακτοι, i.e. revolving triangular wooden devices of ancient Greek drama, the situation suffers a dramatic turn. Not only the waterworks as such, but rather society as a whole must now be purged and disinfected (p. 327). In the terms coined by psychoanalyst Alfred Adler (1920/2006), Stockmann regresses into an oedipal position of "masculine protest". In his confrontation with representatives of traditional and democratic power regimes, he rejects both options, thus running into conflict not only with the traditional regime embodied by his brother, but also with the new power regime heralded by *People's Courier*. Both his brother and the left-wing journalists act as the recipients of his boisterous message:

$$\frac{\$}{a} \quad \bigg| \quad \frac{S_1}{S_2}$$

As a researcher, Doctor Stockmann had represented university discourse, focussing on the object *a* of later nineteenth-century microbiology, the toxic little animals (*animalculae*) or infusoria detected by "microbe hunters", as science author Paul de Kruif (1926) called them, equipped with powerful microscopes (φ):

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\$}$$

But his sudden revelation produces a split or *Spaltung* ($\$$ in the lower-right position) between his scientific conscience and his political engagement, resulting in a drastic reversal of the scene, a relapse into a hysterical position. For Stockmann's real source of inspiration, the "object a" that spurs him into action, is of a completely different nature. Stockmann experiences himself as a subject who is constrained, paralysed and emasculated by the existing power regime ($-\varphi$), and he desperately want to use his discovery (and the letter of the university confirming it) to restore his sense of autonomy and performativity. To achieve this, his scientific activity, his scientific discovery seems merely a pretext. He is not interested in infusoria as such, for it is rather the spiritual contamination (due to "lack of oxygen" in Norwegian houses, rather than to microbes), which infuriates him. Therefore, he uses his discovery to confront his older brother (his father figure).[9] But in order to grasp this, we must revert to the discourse of the analyst which explicitly raises the question what is driving this tormented subject, who becomes a victim of his own

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[8] "DOCTOR STOCKMANN: "The worship of authority has to be uprooted" (p. 311).

[9] MAYOR: "You want to attack your superiors – it's your old pattern. You can't stand any authority over you; you resent anyone in a higher position and regard him as a personal enemy" (p. 318). In other words, the Mayor assesses Stockmann's assault on him as a symptom of oedipal masculine protest, discarding his discourse as hysterical. This is confirmed by Stockmann himself, moreover, in utterances such as "Our leaders are one group that I can't stand. I've had enough of that bred… They get in a free man's way… We should exterminate them" (p. 354).

discovery, trapped in the very contraption he had designed to overthrow his father-figure.

Lacan describes the structure of the discourse of the analyst as follows:

$$\frac{a}{S_2} \quad \Big| \quad \frac{\$}{S_1}$$

This puts the object *a* in the position of the agent: the missing link, the invisible cause of the political malaise. In *Enemy of the People*, the role of object *a* is played by the infusoria. From the very beginning, there is something disconcerting about these little animals, first of all because nobody can actually *see* them. These "infusoria" are of the order of the signifier: they exist in a symbolical manner, as a term, on paper. They exist as labels on water samples, sent off to laboratories that will detect, identify and quantify them, they are mentioned in the letter from the university, in the four-page report submitted by Stockmann to the board of directors, and in the manuscript for a newspaper article submitted to the *People's Courier*,[10] but for most of the characters in the play they remain something invisible, something utterly intractable and intangible, something which is impossible to grasp. Some tourists had fallen ill, and some cases of typhoid and gastritis had been reported, but were these infusoria really to blame? Stockmann's "object *a*" remains a symbolical concept. His toxic little animals (*animalculae*) are addressed and dealt with in a symbolical manner, but they are never really present as visible, material objects. Their ontological status remains questionable.

It is the *signifier* "infusoria" which plays an active role, rather than the living microbes as such (which had already been there for quite some time without anybody noticing it). It is the *letter* from the university (containing the signifier "infusoria") which sets the socio-political machinery into motion. It is as if their toxicity is of a symbolical, rather than of a physical nature, as if they destabilise the political status quo as soon as they are mentioned in a formal letter. And should they be mentioned in a printed newspaper article as well, as is Stockmann's (thwarted) intention, they will certainly cost the town a lot of money. It will force the authorities to redesign the installation of the baths, and the expenses for that will run into a hundred thousand Kroner. As soon as these little animals appear in print, they will affect the value of the stocks. In short, the object *a* functions as a toxic signifier, and Ibsen's drama describes the circuit, the itinerary of this signifier, from Doctor Stockmann's study to the university laboratory and back, traveling in envelopes, and from there they are carried into the editorial office of the *People's Courier*, and finally they arrive in the improvised lecture hall, wreaking havoc and upsetting the status quo wherever this inexorable "something", this label (*infusoria*) shows up. It is a signifier, moreover, which connects a small Norwegian town with the world at large,

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[10] The manuscript itself is also regarded as a kind of sacred page. Stockmann addresses Aslaksen, the printer, in the following way: "give the manuscript your personal attention. Handle it like gold. No misprints… Don't cut any of the exclamation points…" (p. 327).

with the research of Pasteur and Koch, with the world of modern tourism, modern mass media and modern science.

Thus, these little animals, as the *objet a* of Ibsen's play, remain something ungraspable or even immaterial. And this even applies to Stockmann himself, who confesses that even for him, the infusoria are merely a symptom of what he regards as the real infection: the "spiritual contamination" of society at large ("all the sources of our spiritual life are polluted", p. 353). In other words, as soon as the infusoria are discovered, and their discovery is confirmed, they put Doctor Stockmann (the recipient of the letter confirming their existence) out of balance. The object *a* is the agent (upper-left position) that destabilises Doctor Stockmann ($\$$ in the upper-right position). Eventually, the scientist reverts to the role of prophet and his ego becomes inflated. His outreach to the audience, his public sermon is a by-product of his research (S_1 in the lower-right position). In this constellation, Stockmann's persona becomes Zarathustra-like. After spending many years up north, he now descends from his isolated position in order to take the floor and spread his disconcerting gospel, namely that the enlightened minority is consistently ignored by a stupid and backward majority, so that "the stupid … rule the intelligent", p. 356). It would be better if the masses were seen as the "raw material" out of which a people is to be shaped by the elite. This sermon purports to be a "scientific" lecture of the S_2-type (Stockmann compares governance with animal husbandry for instance, p. 358), but actually it is a sermon of the S_1-type directed at everybody (the conservative establishment, the liberal opposition, the wider audience) and claiming (as S_1-type prophets tend to do) that everyone who refuses to endorse his truth should be stamped out "like vermin" (p. 361). Instead of restoring his integrity, he is exposed as an impostor, who abuses scientific facts to propagate a world-view.

From the point of view of research integrity discourse, Thomas Stockmann is often presented as a whistle-blower, a champion of truth, by Bernard Shaw (1891) and Emma Goldman (1914) for instance, but a psychoanalytical rereading reveals why this assessment is short-sighted. Take for instance Stockmann's decision to conduct his research in secret,[11] in order to take his antagonist (his brother) by surprise. A far more constructive approach would have been to share his concerns (and subsequently his proposal to take water samples and send them to university experts for analysis) with the board, who appointed him precisely to signal and address emerging health risks in a transparent and responsible manner, so that a comprehensive plan of action could have been developed. Now, his brother, being suddenly confronted with an unexpected novelty, is drawn into a struggle for political survival. Also, he should have informed the board *before* sending his article to a (politically biased) newspaper. Going public (with his concerns and his test results) would have been defensible if the board would have refused to take his report seriously, would have refused to consider his plans of action, but now the responsible authorities are simply denied this opportunity. In terms of integrity discourse, he "failed to use the proper reporting channels" (Miethe 1999, p. 218). From the very beginning,

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[11] MAYOR: "Was it necessary to press all these investigations behind my back?" (p. 313).

Stockmann is determined to use (abuse?) his test results as a weapon in a political campaign, in a call for revolution, so that science becomes instrumentalised. It is Stockmann himself who subjects research to politics.[12] Instead of adhering to university discourse, he lapses into the discourse of the hysteric, which makes his message less credible and convincing.

In response to his defeat, Stockmann designs a new experiment. He wants to start a school to serve as a pretext for his research: exposing 12 schoolboys to a regime of oxygen and enlightened political ideas. But here again, science (the educational "experiment") is merely a façade, for his real goals are of a political and ideological nature (raising future revolutionaries). The new experiment (exposing research subjects to oxygen and enlightenment without their consent) is reminiscent of another literary figure, Doctor Stockmann's counterpart or alter ego, namely Doctor Ox, the key protagonist of a short novel written by Jules Verne, Ibsen's contemporary (both authors were born in 1828).

3.5 Dialectics of Enlightenment: The Two Experiments of Dr. Ox

Verne's story describes an experiment conducted in a quiet provincial Flemish town by two prototypical Verne-characters, namely Dr. Ox, chemist and physiologist, and his faithful assistant Gédéon Ygène. The town's Burgomaster gladly accepts Dr. Ox's offer to develop a lighting system based on "oxyhydric gas" (i.e. steam) at his own expense, but before long the tranquil place becomes the theatre of "surprising phenomena" (p. 3). The lighting system is only a pretext for conducting a large-scale, physiological-psychological experiment intended to study the effect of oxygen on the human mind and body, using the town's inhabitants as research subjects (or rather, as Ox himself phrases it, as research animals). Ox employs electrolysis to decompose water into hydrogen and oxygen and as the air becomes saturated with oxygen, humans become increasingly agitated and excited. The main symptom of the mysterious epidemic affecting the town is that its citizens suddenly enter into vehement political altercations (p. 17). Initially, it is unclear what is causing these "symptoms", this "infection", this "epidemic", this general "inflammation", this "mysterious intoxication"[13] until, in the factory of Dr. Ox, oxygen and hydrogen are mixed by accident, resulting in a major explosion. Composer Jacques Offenbach turned the story into an opera (*Le docteur Ox*) in three acts in 1877, and a second opera, based on the same story and entitled *Doctor Ox's Experiment*, was composed by Gavin Bryars and performed in 1998.

The first chapters of the story are dominated by the discourse of the Master. The Burgomaster is described as a quiet, moderate, apathetic, indifferent person who

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[12] "[Stockmann] talks about the baths, but it's a revolution he is after" (p. 350).

[13] "Quel Œdipe aurait pu répondre à toutes ces insoluble questions" (p. 57).

hardly ever comes to a decision, a kind of stoic sage (S_1), governing an off-grid polis of moderate size. It is a stagnant version of this discourse, which seems to have come to a complete standstill. Precisely for this reason, Ox considers the town a perfect theatre for his experiment. Dr. Ox gives voice to a completely different kind of logic, namely university discourse, which destabilises and subverts the discourse of the Master. The structural core of this discourse is the experimental design. In fact, Dr. Ox conducts two experiments: a chemical (manifest) and a physiological (obfuscated) one. The manifest experiment is an instance of applied nineteenth-century engineering and concerns the use of oxygen for lightning, but the *real* experiment is of a physiological and psychic nature. Lacan's scheme for this type of discourse has been discussed already:

$$\frac{S_2}{S_1} \quad \frac{a}{\$}$$

Dr. Ox represents the scientific "agent" (S_2 in the upper-left position) absorbed by his object *a* (or "object o", as it is something translated in English) namely *oxygen*, a volatile and toxic substance, from which his surname "Ox" is derives of course, while the term "oxyhydric gas" parodies scientific terminology. Oxygen (as an isolated component, O_2) becomes the independent variable of the experiment, manipulated by the experimenter. Initially, Ox opts for a small-scale trial, a pilot study, saturating the air of the town's theatre with oxygen in order to explore the physiological and behavioural effects (the dependent variable as it were, although the level of arousal is not really quantified and measured).[14] Under the sway of oxygen, even the performance of the opera *Les Huguenots* by Meyerbeer (which the audience has witnessed already many times before) has an unexpectedly dramatic impact. The orchestra increasingly hastens its movements and the audience becomes highly agitated, up to the point of losing self-control ($\$$ in the lower-right position), relapsing into a carnivalesque frenzy, as if "all are equal" and things like burgomasters no longer exist (p. 52). This impact cannot be attributed to the music as such. Rather, the audience seems to be "unconsciously" (p. 53) exposed to an unknown stimulus, seems to be inhaling a "stimulating power" (p. 47).

The next step is "to operate on a large scale", as Ox phrases it, and to conduct the experiment "on the masses" (p. 62). Due to the experimental approach, the town becomes an outdoors laboratory, designed for chemistry-based social engineering. Before long, strange excitement and intoxication seize the citizens, resulting in a kind of epidemic, manifesting itself in symptoms such as increased pulsation, excitation, agitation, political engagement and the like.

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[14] Pulsation is measured *before* the beginning of the experiment ("what is the average pulsation you found? Not fifty per minute", p. 24; "The mean of their pulsations remained as it was of old, from fifty to fifty-two per minute", p. 56; "And have you analysed the air of this town, master? … Seventy-nine parts of azote and twenty-one of oxygen, carbonic acid and steam in a variable quantity. These are the ordinary proportions", p. 25), but no such measurements are reported later in the novel.

Initially, his faithful assistant follows the scientist blindly. In their deliberations, Dr. Ox not only explains his chemical theories, but also his professional ethical views on conducting experiments. The citizens constitute a small sample of humanity, he argues: a sample of research animals in fact,[15] a human herd as it were, and precisely as research animals they cannot be expected to give their voluntary consent. Quite probably, they would object, also because the excitation of their respiratory organs may somewhat "injure their lungs" (p. 24). Therefore, they are subjected to the experiment unknowingly, as perfectly naïve subjects, but this deception, this breach of deontology, this affront to human autonomy is justified in a consequentialist manner, namely by arguing that the experiment is conducted "in the interest of science" (p. 24). More precisely, it will enlighten our understanding of human society as such. It will demonstrate that things like morality, dignity, talents, political commitment and so on are "only a question of molecules" (p. 78), that qualities like virtue, courage, talent, wit and imagination are "only a question of oxygen" (p. 102). In other words, the experiment is inspired by a chemo-centric world-view, a basic philosopheme, a basic truth (S_1 in the lower-left position), namely that our mental superstructure (ethics, politics, national character, etc.) is based on chemistry.

Increasingly, however, the assistant begins to have his doubts ($ in the lower-right position). And when (towards the end of the story) the once so peaceful citizens become increasingly violent, Gédéon regards the whole design as morally questionable. The explosion in the oxygen factory actually results from growing moral tensions, from a deontological crisis as it were, between Ox and his assistant. While the latter pleads for a moratorium, in view of the dramatic impacts of the trial, the former seems more determined than ever to move forward.

Dr. Ox transforms society into a laboratory, and the lighting initiative (i.e. the intrusion of nineteenth-century technology in a provincial, pre-revolutionary, off grid ambiance) is merely a first step. The ultimate objective is to "reform the world" (p. 25). According to Lacan, the ultimate exemplification of this type of political philosophy is the Soviet Union, a society which is completely under the sway of university discourse[16]: a society designed by political engineers.[17] Ox transforms the provincial town into a miniature socialist republic. There is a clear connection between *lightening* and *enlightening* the town, and Ox is not really an impassive researcher (S_2), but rather spurred on by a political ideology (S_1), a basic view on

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[15] Dr. Ox, we are told, performs his experiments "in anima vili" (p. 21). This signifier refers to the famous dictum *Fiat experimentum in corpori vili* or *anima vili* (perform experiments on inferior bodies, or souls), an adage used by Kant and others and basically meant to justify the use of animal models in scientific research. In other words, treating citizens as *anima vili* means: treating them as research animals.

[16] "Ce qui règne dans ce qu'on appelle communément l'Union des républiques socialistes soviétiques, c'est. l'université" (XVII, p. 237).

[17] This is reflected in the novel *The Red Star*, written by the prominent Russian communist Alexander Bogdanov (1908/1984), about Martians routinely performing blood transfusions to increase productivity and life expectancy of the human workforce. The author himself died in 1928, after a foundering transfusion experiment (Groys and Hagemeister 2005).

human existence, seeing human society as makeable and modifiable in a fundamental way. The morality of the Master, emphasising the importance of harmony, quietude, equanimity, temperance, etc., has thus been replaced by a different regime, exemplified by "agitated altercations" about politics. Even the Burgomaster himself (whose town-hall had always been silent as a convent, a "temple of silence" until now) becomes a prolific administrator overnight, a bureaucrat, making "twenty decisions a day" and actively enforcing the regulations of his administration. In other words, the Master (S_1) has given way to the bureaucrat (S_2) in the position of the agent. It is only by climbing a high tower, by achieving sufficient verticality, that the Burgomaster can temporarily escape the influence of oxygen and give in to the poetic-meditative quietude of a stylite sage ($S_2 \rightarrow S_1$, p. 87).

Initially, the discursive dynamics of the story is a subversion of the discourse of the Master by university discourse, which entails a quarter-turn to the left. Although initially the burgomaster seems to function as an autocrat, with Ox in the role of recipient of the assignment, before long Ox himself usurps the position of the agent, relying on technicity (oxygen production) to do the job. Yet there is a growing tension between his chemical (manifest, legitimate) and his physiological (latent, unwarranted) experiment, between Ox-the-professional-scientist and Ox-the-impostor. In Verne's story, this tension results in a moral crisis, giving rise to an archetypal explosion, for according to Bachelard (1947), who builds on Jung, the explosion is the archetype, the typical image associated with chemistry as a research practice: that which makes chemistry both fascinating and disconcerting. And this explosion symbolises the implosion of university discourse, disrupted by inherent tensions. The final act, in the wake of the spectacular explosion, is the denouement phase of catharsis and reflection (of individuation if you will), which calls for a different type of discourse.

A psychoanalytic rereading entails a shift to the "discourse of the analyst", another quarter-turn to the left. Now the toxic, infectious "object *a*" itself (i.e. oxygen) occupies the position of the agent. It now becomes visible how Oxygen (the object), rather than Dr. Ox (the subject) assumes agency in Verne's story. Oxygen is not at all a normalised, domesticated, neutralised chemical compound. Quite the contrary, it is a toxic, infectious "substance", volatile, intractable and dangerous. First and foremost, Dr. Ox *himself* is infected and agitated by his object *a*. He is oxygen's primary victim as it were. He becomes intoxicated with a lust for power. For oxygen not only brings him fame, but also allows for social engineering. The process of oxidation will affect society at large and Ox's mechanical valves (which allow him to determine the oxygen level) may become instruments of social manipulation. In view of this alluring prospect which triggers his will to power, Dr. Ox himself becomes destabilised: a divided subject, as a result of his exposure to the object *a* ($ in the upper-right position). His desire to know (*cupido sciendi*) is driven by a will to power. His scientific expertise is sacrificed to this development, so that instead of a responsible scientist, Ox becomes an impostor. The oxygen experiment reflects a political ideology and is meant to contribute to the advent of a world-view based on social engineering (S_1 as by-product, lower-right position).

Various instances of misconduct (as by-product of university discourse) can be detected in the novel, first of all the element of deception. The lightening project is a pretext, a façade as we have seen. The real experiment is conducted secretly. In order to be able to realise his design, Ox deceives not only the town officials (the burgomaster and his staff), but also the citizens, who are used as involuntary research subjects. This is at odds with the principle of informed consent, and exposes these subjects to physical and psychic risks. Rather than addressing misconduct from a university discourse perspective, however, a psychoanalytic rereading brings the whole power-knowledge constellation into view. In the case of Ox, science becomes instrumentalised by bio-power, treating naïve citizens as human resources who are mobilised for progress and whose level of excitation can be technologically adapted to the circumstances. Ox's experiment is an exercise in what Jünger and Heidegger refer to as *Mobilmachung*, and mobilisation is one of the core motifs in Verne's oeuvre, as Peter Sloterdijk has argued, who regards the motto of Captain Nemo (the prototypical engineer and creator of a floating, utopian society): *mobilis in mobile*, the basic formula ("Epoche-formel", Sloterdijk 1999, p. 895) of the modern era as such. Ox's basic objective is not to enlighten, but to set in motion. The provincial town must become connected with the modern technological grid (Heidegger's *Gestell*). The deontology of research ethics is sacrificed to a technocratic telos: increasing the pace, the pulsation, not only of individuals, but of society at large. Ox apparently intends to transform a tranquil city into a "hospital" (p. 52) whose inhabitants are put under constant surveillance. Emancipation entails mobilisation and exploitation, as is indicated by Verne when he describes how, under de influence of the epidemic, even the plants increase their pace of growth: "Les plants elles-mêmes *s'émancipaient*" (p. 59).

In contrast to Doctor Stockmann, who discovers the *presence* of dangerous infusoria in water, Doctor Ox rather discloses a *lack* of oxygen in air. In both cases, science reveals an invisible deficit. The object *a* fills a gap: as the invisible agent which causes the mysterious contamination (Stockmann) or as an invisible substance that determines (enhances) air quality. In the case of Dr. Ox, the "object *a*" enables air conditioning on a collective scale, and air conditioning opens up the possibility of social engineering. The structural congruence between *The Experiment of Dr. Ox* by Verne and *Enemy of the People* by his contemporary Ibsen is that in both cases *university discourse* (with its technical terms: oxyhydric gas, infusoria, etc.) is brought into play in order to contest the dominance of the *discourse of the Master*. Through this contestation, the basic discursive structure takes a quarter-turn to the right. Initially, the scientific subject seems able to maintain himself in confrontation with the object (*a*), but gradually the focus of attention shifts to disruptive symptoms (*$* in the lower-right position), indicating that the scientific subject himself (allegedly in control) becomes increasingly entangled in the tensions that are opened up by his discoveries, resulting in a conflict (a division) between the scientific impassivity of university discourse and the hysteric's desire to confront the authorities, the establishment, the father figures, the status quo. In other words, both documents reflect a relapse into the discourse of the hysteric, which inevitably collapses in the end, in the form of a dramatic debacle: the public fiasco in the case of

Doctor Stockmann, the archetypal explosion in the case of Doctor Ox. And this point to the risks involved in the Promethean desire to enlighten the world through technicity and research. In the case of Dr. Stockmann and Dr. Ox, the disruption unfolds on a local scale, but in the twentieth century, the dramas of science will assume global, planetary proportions.

These questions are also central in the next chapter (Chap. 4), taking us right into the heart of the twentieth century (the heart of darkness), namely the case history of Robert Oppenheimer. After two science comedies (*An enemy of the people* and *Doctor Ox*), the Oppenheimer case rather represents a modern version of ancient tragedy, as we will see. After exploring the case with the help of a famous Oppenheimer biography (entitled *American Prometheus*) we will use a novel, namely *The man who would be God*, published by Haakon Chevalier in 1959, as an oblique window into the case.

Chapter 4
Into the Twentieth Century: The Case of Robert Oppenheimer

4.1 Introduction: Daybreak and Crisis

In 1935, philosopher Edmund Husserl argued that the European sciences (notably physics) were facing a crisis, not in terms of scientific achievements, but in terms of their meaning for culture and society, for human existence. Science had always been a *moral* factor, Husserl argued, had decisively contributed to the humanisation and enlightenment of human culture, to the realisation of the idea of human beings as reasonable citizens of a humane society. But now, scientific research, precisely *because* (in the era of quantum physics) it had become so astonishingly successful, represented a threat to civilisation. It was increasingly questionable whether human ethics and politics would be able to master the technological power unleashed by science. The ethical profile of science had become ambivalent. Science and technology had become neutral forces employable for multiple purposes, good and bad. From a benefactor of humanity and culture, science had turned into a substantial risk. Husserl also claimed that, in 1935, only a small number of individuals (true philosophers, acting as "functionaries of humanity", p. 17) were aware of the critical nature of the situation, although the broader public (Stockmann's "majority" as it were) would discover sooner or later what was at stake. In August 1945, when two nuclear bombs were dropped on Japanese cities, Husserl's gloomy predictions seemed to be confirmed. The atomic bomb became a kind of historical end-point or dead-end. As Peter Sloterdijk, in his reply to Husserl's pupil Martin Heidegger, later formulated it, the history of science is like the burning away of a conceptual fuse winding from Athens to Hiroshima.[1]

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[1] "Die Geschichte der Wahrheit ist das Abbrennen einer begrifflichen Zündschnur, die sich von Athen nach Hiroshima windet" (Sloterdijk 2001, p. 214).

Husserl's message can be captured using Lacan's schematic analysis of university discourse:

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\$}$$

The upper level refers to the actual achievements of modern science (since the beginning of modernity): the scientific breakthroughs. But Husserl rather focusses on the forces at work beneath the bar. Rather than being neutral, Husserl argues, scientific research had always been driven (albeit tacitly) by a normative ideal (S_1 in the lower-left position). A latent truth, a basic conviction, a moral vocation had always been at work in modern research practices. But now, during the first decades of the twentieth century, physicists (S_2 in the upper-left position, as agents) are confronted with enigmatic entities (elementary particles: a in the upper-right position), which not only open-up previously unknown dimensions of reality (the subatomic realm), but also unleash unprecedented forms of power, resulting in an existential crisis, as by-product of university discourse ($\$$ in the lower-right position).

The transition leading from quantum physics to nuclear warfare has been amply documented. In this section I will reread this history from a Lacanian perspective, focussing on the case of Robert Oppenheimer, whose life story became the subject matter of a novel (by Haakon Chevalier 1959), a play (by Heinar Kipphardt 1964) and an opera (by John Adams 2005). A strict (technocratic) definition of misconduct focusses on fabrication, falsification and plagiarism of data (FFP), as we have seen, so that questions such as whether it is condonable for scientists to contribute to the development of a genocidal bomb (explicitly developed for massive destruction of urban areas) falls outside the scope of the integrity discourse *sensu stricto*. But the case of Robert Oppenheimer cannot be ignored for various reasons, ranging from questions concerning sensitive data management (the physicist as a "security risk") up to the function of the death drive, of which his atomic bomb seems the very embodiment. But the death drive also functions on the micro-scale, as a suicidal component (a tendency towards intellectual "suicide") discernible in many cases of misconduct, even in the FFP sense of the term. Starting point for the analysis is *The American Prometheus*, the 719-page Oppenheimer biography written by Kai Bird and Martin Sherwin (2005/2006).

4.2   American Prometheus: A Science Biography Classic

Oppenheimer was born in New York in 1904, but studied in Europe, where he became a "second wave" quantum physicist, following in the footsteps of "quantum giants" of the first generation such as Bohr, Heisenberg, Schrödinger, Pauli and Dirac (Bird and Sherwin 2005/2006, p. 78). Eventually, he achieved iconic status as the most famous scientist of his era, due to his leading role in the Manhattan project,

which resulted in the production and testing of the first atomic bomb (known among initiates as *the gadget*), in Los Alamos, New Mexico: an event which profoundly transformed global politics. After the War, he became Director of the prestigious *Institute for Advanced Study* at Princeton, but he was formally declared a security risk in 1954, due to his connections with communism and the Communist Party in the 1930s and 1940s. Before his appointment as Director of the Manhattan Project, Oppenheimer had been an active member of numerous Communist front organizations and had been closely associated with Communist Party members, including his wife Kitty and his brother Frank.

Thousands of pages of FBI records concerning the Oppenheimer case were accumulated over decades of surveillance, while the transcripts of his security hearing by the United States Atomic Energy Commission (AEC) in 1954 (resulting in his security clearance being revoked), published as *In the Matter of J. Robert Oppenheimer*, consisted of 3000 typewritten pages, comprising some 750,000 words, 993 densely printed pages (p. 546): a stack of papers 4 ft high (p. 545). Rather than on his role in the actual production of the atomic bomb, however, these inquiries focussed on the question whether Oppenheimer was co-responsible for leaking nuclear information to the Soviet Union. His integrity was questioned and he was accused of "fabrication" (p. 508), albeit not of research data. Rather, these accusations revolved around a "fabricated" story meant to cover up a conversation with Communist Party member Haakon Chevalier about funnelling classified information to the Soviet Consulate in San Francisco in 1943 (p. 509). Chevalier would eventually publish his own version of the Oppenheimer case, in the form of an autobiographical account of their friendship (1965), but also in the form of a roman-à-clef (Chevalier 1959): a story about an intelligence officer who, under the cover of an academic position, is actually employed by the U.S. secret service to report on Robert Oppenheimer (who appears in the novel under the pseudonym of Sebastian Bloch).

The question "Who was Robert Oppenheimer" is difficult to answer, as he was generally regarded an "enigma" (Bird and Sherwin 2005/2006, p. 5; cf. Bernstein 2004). Outwardly speaking, Oppenheimer was a chain smoker with a remarkably frail and delicate physical appearance (weighing something like 115 pounds). As a scientist, he was regarded a "verbal" and "imaginative" physicist. He was considered a "weak", "clumsy" or even "inept" experimentalist whose mathematics was regarded as "deficient", but Oppenheimer displayed a rare talent for grasping and combining new and challenging conceptual ideas.[2] As soon as Otto Hahn and Fritz Strassmann had demonstrated that the uranium nucleus could be split for instance (on January 29, 1939), Oppenheimer began to speculate that uranium could be used to make bombs (p. 166). Before long, there appeared a drawing of an atomic bomb

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[2]Although Oppenheimer is generally regarded as one of the leading theoretical physicists of his generation, and authored and co-authored important papers on issues ranging from the positron up to black holes, he has not been credited with any "discoveries", which is attributed to his "philosophical attitude": his quest for more profound and basic insights than theoretical physics offered (Pais et al. 1969).

on the blackboard in Oppenheimer's office, based on the idea of a nuclear chain reaction (p. 168). But he was also famous for his language gift. Besides his mastery of modern languages such as German, French, Italian and Dutch, he read the Hindu classic Bhagavad-Gita in Sanskrit. He also was an avid reader of poetry (Dante, Donne, Baudelaire and Eliot among others). As Director of the *Institute for Advanced Study*, he invited the poet T.S. Eliot to Princeton in 1948, where, besides writing *The Cocktail Party,* he was supposed to interact with exact scientists such as Gödel, Einstein and Von Neumann.

Last but not least, much like his supervisor Wolfgang Pauli, Oppenheimer was "intensely interested" (p. 126) in psychoanalysis. Pauli even joked that psychoanalysis was Oppenheimer's true "vocation", while physics was merely his "avocation" (p. 78). Already in 1925, after he had left a cyanide-poisoned apple on the desk of a lab colleague while suffering from symptoms such as insomnia, nervous tics, ceaseless smoking and "incessant talking", his mother insisted that he saw a French psychoanalyst in Paris (p. 47). But rather than subjecting himself to analytical sessions, he became "his own psychoanalyst" (p. 48). At Berkeley he studied psychoanalysis intensely, and joined a trans-disciplinary study group led by Siegfried Bernfeld, a disciple of Sigmund Freud who had settled in San Francisco in 1937, where he tried to integrate psychoanalysis with Marxism, meanwhile acting as training analyst of Jean Tatlock, a Jungian communist with whom Oppenheimer had an extramarital affair until she committed suicide.

In 1942, Oppenheimer was appointed by General Leslie Groves to lead the secret weapon laboratory of the Manhattan Project. Oppenheimer's appointment came as a surprise. He had no experience in directing large groups and, as a theoretical physicist, hardly knew anything about equipment, while the Manhattan Project was decidedly a *technological* project. Moreover, many of Oppenheimer's closest associates were or had been Communist Party members in the 1930s or 1940s, including his brother Frank, his wife Kitty, his mistress Jean Tatlock and several of his graduate students at Berkeley. But Groves relied on Oppenheimer, who somehow was able to transform himself "from an awkward scientific prodigy into a sophisticated and charismatic manager" (p. 179). This implied that he had to "conjure up skills he did not yet have, deal with problems he had never imagined, develop habits that were entirely at odds with his previous lifestyle and adjust to modes of behaviour that were alien to his experience" (p. 205). Indeed, Robert Oppenheimer had to remake a significant part of his personality. From a small-scale theorist he "metamorphosed into a charismatic, efficient administrator", running a project the logistics of which were "horrendously complicated" (p. 209). The eccentric theoretical physicist became a highly organised leader (cf. Thorpe and Shapin 2000). In a few months, he apparently corrected his naivety and communicative deficiencies and proved able to direct an industrial-scale enterprise.

In his capacity as research director, Oppenheimer oversaw the production of "the gadget", a metal globe containing uranium and studded with detonator plugs. Oppenheimer personally selected the location where the gadget was to be tested, naming the site Trinity, in reference to the metaphysical poet John Donne, but also to the Hindu deities Brahma (the creator), Vishnu (the preserver) and Shiva (the

destroyer). When (on July 16, 1945, at 5:29 a.m.) the gadget finally exploded, the horizon lit up with a tremendous flash, changing into a big orange ball, while night turned into day. At that moment, Oppenheimer's face allegedly relaxed into an expression of tremendous relief, after which he quoted a famous line from the Bhagavad-Gita: "Now I am become death, the destroyer of worlds" (p. 309).

As a university professor in theoretical physics, Robert Oppenheimer's position initially represented what Lacan refers to as university discourse:

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\$}$$

Oppenheimer was a physics researcher who later became a research manager and an atomic expert (S_2 in the upper-left position as agent). At Berkeley, Oppenheimer was not only committed to research, however, but he was also an active participant in communist circles. He shared his fascination for and even involvement in communism with many contemporary scientists active in his field, including Linus Pauling, David Bohm and Maurice Wilkins (Zwart 2015d). As was already explained above, Lacan regarded the Soviet Union as a science-based society, under the sway of university discourse, a society designed and led by political engineers. And the nuclear research facility at Los Alamos (the site of the Manhattan project) was basically a scientific kolkhoz, an exemplification of scientific collectivisation. In the 1930s and 1940s, communism was a political ideology which decidedly appealed to scientists (notably physicists). It was university discourse elevated to the level of world politics.

As a research manager, Oppenheimer (S_2) focussed his attention on the "gadget": the primordial, prototypical atomic bomb, the Manhattan Project's object a (in the upper-right position). But precisely as object a, the gadget played an elusive and recalcitrant role. During the construction process, the gadget seemed something tangible and physical, but it remained uncertain whether it would work, whether the contraption they were building really *was* a gadget (i.e. a prototype atomic bomb). It was uncertain what exactly it would do. It remained highly unclear whether the gadget would really unleash a nuclear chain reaction. But as soon as the experiment succeeded, the gadget (as a physical object) was obliterated, not only because, after the explosion, all that remained was an empty, contaminated spot in the desert, but also because, as soon as the gadget exploded, it became a completely different kind of entity, namely a political object, which was therefore immediately taken out of the hands of the physicists. As soon as the gadget actually worked, it was subjected to compartmentalisation. Before the explosion, the gadget had been a scientific entity, a contraption in the hands of the scientists, but after the explosion, it became a weapon of mass destruction, and fell into the hands of the military. In other words, the ontological status of the gadget (questionable from the very start) drastically changed. As soon as the gadget (the object a) really proved to be the first atomic bomb, the scientists were barred from access to this bomb; they were left empty handed as it were: they were *expropriated*. Indeed, from now on, the scientific sub-

ject, the nuclear physics expert, became a security risk, a potential leak of classified information. Scientists who worked for the Manhattan Project had no say whatsoever concerning the actual use of the bomb. Like other citizens, they were informed about the bombing of Hiroshima and Nagasaki via the newspapers, via the mass media (Wilkins 2003). They had no say in the matter at all. After the explosion, after the birth trauma, the birth of the bomb, the umbilical cord which had connected them with the bomb was immediately severed.

The gadget, the object *a*, proved a toxic entity moreover, disrupting the scientific subject, putting many of the scientists involved out of balance in various ways. Some physicist involved in the Manhattan project (Klaus Fuchs for instance) saw the gadget as a threat to world peace and decided to become spies, even if this meant deflecting to the Soviet Union, while others (Maurice Wilkins, for instance) left the field of physics research, in order to migrate into other emerging research arenas, such as the molecular life sciences (deflecting from the science of death towards the science of life, as Wilkins himself formulated it). And even Wilkins (who later contributed to the discovery of the structure of DNA in 1953) was suspected of espionage (Zwart 2015d). Thus, while Oppenheimer and Groves had been working closely together to make the Manhattan Project a success, after the explosion a rupture between science and politics was enforced. The military use of the bomb would be controlled "exclusively by the White House, with no input from the scientists who over the past two years had been building the bomb" (p. 293). After Trinity, "the gadget had become a weapon, and weapons were controlled by the military" (p. 313). Scientists had "no proprietary rights" (p. 300) over the bomb and were sent back to their universities and laboratories (p. 294).

This eventually even applied to Oppenheimer himself. His frantic post-war efforts to influence global nuclear policy dramatically failed. After the revoking of his security clearance, President Eisenhower himself decided that "a complete bar" was to be erected "between this individual [Oppenheimer] and any information of a sensitive or classified character" (p. 480). He issued a formal note ordering to place "a blank wall" between Oppenheimer and classified material (p. 480). Thus the "object *a*" of nuclear physics experienced what in metaphysics is known as *transubstantiation* (Aquinas 1922, Pars III, Q. 75, Art. 4): whereas in material terms the entity (the atomic bomb) may appear to be the same, its ontological status, it noumenal essence has dramatically changed. A research project produced a gadget which, via self-obliteration, transubstantiated into a bomb, or rather: into *the* bomb, so that the object *a* (the object of the will to know) became the A-bomb, as exemplified by the following two pictures:

In the picture on the left, the gadget is physically present, but as an intriguing research object. The picture on the right shows Oppenheimer and Groves right after the explosion. The gadget is now absent, has obliterated itself, and yet, it is only now that it has come into existence, that it is *more existent* than ever. Through its sudden physical disappearance, its dissolution, it has become the most terrible weapon of destruction ever built: an "awful thing" (p. 301), a symbolic entity which transformed the United States into the world's first nuclear power. "We have made a thing", Oppenheimer told the American Philosophical Society, "an evil thing" that has "altered abruptly and profoundly the nature of the world" (p. 323).

But the explosion not only resulted in transubstantiation at the object-pole, it also dramatically affected the subject-pole. Many physicists working on the project were troubled by ethical qualms about their genocidal bomb. Ethical deliberations emerged as a by-product of the project ($ in the lower-right position). At a certain point for instance, a meeting was organised in Los Alamos to discuss "the impact of the gadget on civilisation". Unsettling doubts concerning the moral legitimacy of the whole endeavour ($ in the lower-right position) aggravated after Germany surrendered. And after the War, the bomb provoked an exodus of physicists into other fields such as biology, resulting in the birth of the molecular life sciences, as a transdisciplinary research field, paving the way for the human genome project (funded by the U.S. Department of Energy because of this organisation's interest in the genetic damage inflicted by nuclear warfare).

This dynamics can be elucidated with the help of Lacan's quadruped. Initially, Oppenheimer is a scientist (S_2) working on a project which revolves around a particular object: the gadget (*a*), and its core component: the Uranium isotope 235 (Uranium-235), an unstable, "fissile" isotope, usable for igniting an unsettling scenario: a nuclear chain reaction (*a* in the upper-right position). It is not at all a "normal", domesticated object, but rather an entity which destabilises and dramatically affects its environment, not only on the macro-level (in terms of the organisations and institutions involved in the research, for the Manhattan Project gave rise to big

science and the militarisation of research), but also on the micro-level (the ethical qualms of the individual scientists who managed to bring this entity into existence). After the explosion the doubts and concerns of individuals (as divided subjects) aggravated, transforming them into security risks. Leaking classified information became a singular form of "misconduct", closely connected with the bomb project. Whereas normal science depends on the free exchange of information, certain forms of information were suddenly labelled as highly confidential. In a dramatically changed political landscape, the physicists experienced a split (*Spaltung*) between their scientific vocation and their political obligations. In other words, the splitting of the atom (*a*) corresponded with a splitting of the scientific subject ($S_2 \rightarrow \$$). Oppenheimer was not a purely detached, objective, impassive, replaceable, etc. researcher, but rather fuelled by a basic *truth*, which surfaced on July 16, 1945, when, by citing his Hindu quote, he articulated, in a very condensed way, his spiritual understanding of the eternal cycle of creation, preservation and destruction (S_1 in the lower-left position).

The subsequent *appropriation* of the atomic bomb by the State (depriving the collectivised scientific workers, who had been put to work at the Los Alamos kolkhoz, of their surplus value, their object *a*) resulted, in Lacanian terms, in a temporary resurgence of the discourse of the Master. By taking possession of the bomb, in order to ascertain a position of nuclear monopoly, the U.S. President basically claimed "World order, *c'est moi*" (S_1 now in the upper-left position as agent). The world from now on revolved around the bomb and the position of the U.S. President was from now on defined by and closely associated with the bomb. During the Truman Administration, sensitivity to ethical qualms concerning the legitimacy of the development and use of genocidal weapons ($\$$) was pushed beneath the bar ($\$$ now in the lower-left position), as the U.S. presidency aimed to use its nuclear monopoly to establish global political supremacy, a position of power relying on the bomb, pushing scientists back into the position of scientific workers: recipients of instructions from those in power (S_2 in the upper-right position), in accordance with the dynamics of the Master's discourse:

$$\frac{S_1}{\$} \bigg| \frac{S_2}{a}$$

This resulted in what Karl Marx (1867/1979) referred to as expropriation or estrangement. The physicists were confronted with the product of their own labour (the bombs dropped on Hiroshima and Nagasaki: *a* in the lower-right position) indirectly, via the newspapers, while politicians consolidated their power position by expropriating this product of research (this by-product of the quantum physics revolution). The physicists lost control over their gadget. The object of their *cupido sciendi* was appropriated by the State and transubstantiated into a political entity: the most decisive by-product of the war effort (*a* in the lower-right position), destined to transform the global political landscape, the global symbolical order. From now on, "scientists could serve the state only as experts on narrow scientific issues" (p. 549).

    The discursive landscape took a quarter-turn to the right, temporarily restoring a form of Master's discourse, of absolutism, providing the U.S. with absolute power, albeit temporarily, for this political coup d'état soon proved anachronistic and unstable. For de facto the new power regime continued to rely quite heavily on scientific and administrative expertise, so that the power of expert knowledge continued to hold sway. As soon as the object a proliferated to other states, notably the Soviet Union (as the very embodiment of social engineering and university discourse), absolutism (the Master's discourse) dissipated once again, and power fell into the hands of a new type of experts (S_2 again in the position of agent), namely professional administrators and nuclear diplomacy experts, of the Henri Kissinger type: a nuclear strategist informed by game theory and behavioural research (p. 559) who, in the 1950s, served as consultant for the *Psychological Strategy Board*, set up in support of the transition from traditional warfare to what came to be known as "psychological warfare" (Osgood 2002).

    Oppenheimer's own strategy during the aftermath of World War II was basically a frantic effort to maintain his position of influence (as a physicist) within this changing global landscape. Physicists, he argued, should have a say in the transnational management of the bomb. An international atomic authority was to be established, placing the bomb under international control, so that all countries, including the Unites States, should voluntarily agree to a "partial renunciation of sovereignty" (Bird and Sherwin 2005/2006, p. 342). To this global supra-national authority (an exemplification of politics under the sway of university discourse, steered by scientists), countries should relegate ownership of uranium mines, atomic power plants and nuclear physics laboratories. But this vision, this strategy, this fantasy perhaps, dramatically faltered. Instead, the political reliability of physicists, including Oppenheimer himself, was increasingly seen as questionable. Soon, the role of nuclear physics experts was taken over by arms race experts and professional administrators of the atomic era (now representing S_2 in the upper-left position). Rather than playing the role of absolute monarch, the American President and other world leaders again came to rely on export knowledge (in accordance with the logic of university discourse), represented by political scientists (such as Kissinger) rather than physicists, who were again regarded as mere *human resources*, as the brain power of high capitalism.

    This reign of university discourse (with experts like Kissinger replacing intellectuals like Oppenheimer) would soon be confronted with another quarter-turn to the right, however, giving rise to the discourse of the hysteric, placing $\$$ in the upper-left position of the agent, challenging and questioning the position of those who were placed in responsible positions (S_1 in the upper-right position). The discourse of the hysteric was represented by the anti-war and disarmament movement of the 1960s and 1970s:

$$
\begin{array}{c|c}
\$ & S_1 \\
\hline
a & S_2
\end{array}
$$

But this constellation (this collision between university discourse and the discourse of the hysteric, between S_2 and $\$$ as agent) eventually reinforced the position of the nuclear technocrat, the policy expert (in accordance with the logic of university discourse). Protests against the bomb produced a new type of expertise, specialised in the development and governance of more "humane" and sophisticated forms of nuclear warfare (S_2 in the lower-right position, as by-product of anti-nuclear protest).[3] Meanwhile, Oppenheimer himself, so politically engaged in the 1930s and 1940s, was "oddly disconnected from the political turmoil (the cold war and anti-war 'hysterics') of the 1960s" (p. 578). At the beginning of the decade, as many Americans dug atomic bomb shelters in their backyards, Oppenheimer "never spoke out against such hysteria… Similarly, as the Vietnam War escalated in 1965–66, he had nothing to say in public" (p. 578).

From the perspective of the discourse of the hysteric, Oppenheimer's position of silence and withdrawal may seem awkward and disappointing, but his position as a withdrawn sage during the final years of his life becomes understandable if we revert to the discourse of the analyst (quarter turn to the right):

$$\frac{a}{S_2} \quad \bigg| \quad \frac{\$}{S_1}$$

During the final years of his life, Oppenheimer was primarily engaged in self-reflection, a process of analysis and catharsis revolving around the gadget, the object a, as the thing which set his life in motion, which had addressed him, which had both stabilised him (helping him to overcome the neurotic, solipsistic egocentricity of his youth, transforming him into a charismatic leader) and destabilised him (leading to his fall from grace in 1954). The gadget allowed him to develop an identity, to make a name for himself, the object a defined his life, but it also ruined him in the end. On the macro-level the gadget transformed (destabilised and subsequently stabilised) world politics. From the perspective of the analyst, the gadget, the "object a" is the agent, determining history, making and breaking scientific careers (a in the upper-left position as agent), with physicists as the ones who were the first in line to be addressed by this gadget: $\$$ in the upper-right position. During the final stage of his life, Oppenheimer hardly functioned as a physicist, in the scientific sense of the term, his expertise was suspended (S_2 now pushed into the lower-left position). One could argue that, rather than a scientist, he became a kind of sage: silent, withdrawn and enigmatic, a "modern seer, a thoughtful, enigmatic philosopher of the role of science in the modern world" (p. 560). In other words: S_1 in the lower-right position (wisdom as ultimate by-product of biographical drama). In the next sections, I will

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[3] This development is comparable to how the boom of hysterical discourse in academic quarters in the late 1960s and 1970s (May '68 and so on) gave rise (paradoxically perhaps) to the current regime of technocrats and managers, of performance indicators and performativity scores that currently dominate most Western universities (S_2 as a by-product of 'hysterical' protest). As Lacan (1969–1970/1991) predicted, the discourse of the hysteric emphatically addresses the Master (as recipient of the message, S_1 in the upper-right position) but inevitably reinforces the power of the technocrats (as by-product, S_2 in the lower-right position).

explore these discursive turns in more detail, analysing this case history from an oblique perspective, focussing on *The Man who would be God*, a science novel about Oppenheimer written by Haakon Chevalier (1959).

4.3   Oppenheimer in Fiction: *The Man Who Would Be God*

The case of Robert Oppenheimer is a prominent case study for science ethics, but also a source of inspiration for genres of the imagination. I already mentioned the German playwright Heinar Kipphardt who devoted a play to Oppenheimer, written in the vein of Bertolt Brecht's *Leben des Galilei* and focussing on the hearings to which Oppenheimer was subjected in 1954. In fact, the title (*In der Sache J. Robert Oppenheimer*) is the literal translation of the published version of the transcript of the procedures. More recently, in 2005, American composer John Adams devoted a remarkable Opera to the case, entitled *Doctor Atomic*.

The following sections focus on a novel devoted to the Oppenheimer case, written by Haakon Chevalier who, besides being a translator and assistant professor of French Literature at Berkeley, was also a member of the Communist Party and a close friend of the Oppenheimers during their Berkeley episode. The novel (written in San Francisco in 1948 and finished in Paris in 1958) is actually a roman à clef. Oppenheimer, the key protagonist, is easily recognisable under the pseudonym Sebastian Bloch, and his wife Kitty (Tanya Bloch) is portrayed quite recognisably as well. Although Chevalier served as a translator during the Nuremberg trials and translated various books, notably by surrealist writers such as Louis Aragon and Salvador Dali, he is most famous for his role in the so-called Chevalier Incident that dominated the Oppenheimer hearings. In February 1943, the two friends had a brief conversation in Oppenheimer's kitchen (where Robert was preparing martinis) concerning a proposal from George Eltenton, a communist scientist educated at Cambridge and employed by the Shell Oil Company (Bird and Sherwin 2005/2006, p. 195). Exactly what was said became the subject of much controversy during the 1954 hearings, but according to Chevalier, Eltenton had solicited him to ask his friend Oppenheimer to pass on information about the Manhattan Project to a diplomat in the Soviet consulate in San Francisco, who would probably want to funnel the information to the Soviet Union. Oppenheimer rejected the overture, but later became entangled in contradictory accounts of what had actually been said. Oppenheimer apparently declined to have anything to do with the proposal and Chevalier later insisted that he was only alerting his friend to it, rather than acting as a conduit. Although Oppenheimer was director at Los Alamos at that time, he never reported the event (which he should have done), and during the hearings Oppenheimer's integrity was therefore questioned. Notably, Oppenheimer was forced to confess to having produced multiple inconsistent versions of the event. As the Chevalier novel phrases it, he was accused of "fabrication" (1957, p. 508). In the novel version, the Chevalier incident is set in Bloch's garden (instead of the kitchen), involving German physicists rather than Soviet agents, but the incident plays a similar role in the novel as in real life.

The main protagonist of the novel, however, is Mark Ampter, who actually resembles Haakon Chevalier in various respects. Ampter works at Berkeley University, becomes an active member of a Marxist unit (of which Sebastian is the most inspirational member), joins the Berkeley branch of the teachers' union (a communist front organisation) and becomes involved in various other leftist causes, − all this closely corresponds with Chevalier's own biography. Moreover, Mark Ampter and his wife Eve (Barbara Chevalier) become close friends of the Bloch couple. And finally, in Chevalier's novel, there is a crucial scene about miscommunication: the garden scene, the turning point in the novel, uncannily reminiscent of the Chevalier Incident. When Mark seems finally able to pass a secret message (allegedly coming from German scientists) which he was requested to communicate to Bloch, the latter suggests to step out into the garden, away from hidden microphones (knowing that otherwise the conversation would be taped). Oppenheimer (Bloch) was fully aware of being under more or less constant observation. Virtually everything he said was being monitored. Unfortunately, their conversation (meant to straighten things out) was interrupted (in real life Kitty was impatiently waiting for the arrival of the martinis, and in the novel Tanya urged Sebastian to come and entertain his guests), never to be taken up again.

Another remarkable similarity between Mark Ampter and Haakon Chevalier is that for both, the university job was basically a cover. Chevalier used it for his communist activism, Ampter for reporting on Bloch, which also highlights the most remarkable difference between both men. For instead of being a communist, Mark Ampter is actually working as a secret agent. His assignment is to infiltrate the radical left-wing milieu of scientists at Berkeley in order to observe "the mechanism of subversion, disruption and sabotage" from the inside (p. 88). His first and foremost objective, however, is to report on Sebastian Bloch. Berkeley campus is basically a breeding ground for subversive activities (both according to the Communist Party and according to the Secret Service) and Bloch is regarded as one of the key actors hunting for converts, thus spreading the infection. His influence is "poison", as Gospodin Gregg (Ampter's chief) phrases it (p. 165). In the context of his assignment, Mark Ampter produces an enormous pile of reports concerning Bloch and his entourage (comparable to the 3000 typewritten pages produced by the FBI used as evidence during the Oppenheimer hearings). In other words, Chevalier and Ampter represent opposite extremes of the political spectrum: Chevalier as a member of the Communist Party (receiving instructions from Moscow), Ampter as an employee of the (anti-communist) secret service (operating from Washington). Chevalier himself figured high on the watch-list of secret intelligence agencies as a possible Soviet spy. But although being political opposites, the Communist party and the secret service are both organisations that are shrouded in secrecy and actually mirror one another. Communists are monitored and at times harassed, not only by the secret service, but also by their own organisation. In the novel, both organisations devote much of their time and resources to enrolling (and monitoring) new recruits, infiltrating various movements to achieve this. Both the secret service and the communist party are organisations of the Big Brother-type: taking over people's lives while collecting potentially damaging information about individual members for possible

future use. Moreover, recruitment (either into the Communist Party or into the Secret Service) results in "compartmentalisation" (p. 208), in a split existence, a double life. The official profession of the person involved becomes a cover-up for carrying out secret assignments, about which only inner circle party members and/or the secret service are informed. Chevalier's novel describes how three organisations, namely the university, the Communist Party and the Secret Service, become intimately entangled with one another.

But things become even more complicated when Mark Ampter not only feels quite at home in "enemy territory", but increasingly starts to fall under the influence of Bloch. He is "overwhelmed by Bloch's personality", by his charisma, his "towering intellect" (p. 67). It is as if the latter is "casting a curious spell over him" (p. 57), as if Mark has lived all his life in a kind of vacuum and now suddenly discovers "reality" (p. 59). He strongly "identifies" with Bloch (p. 59), even "imitates his mannerisms" (p. 95). For him, Bloch embodies an ideal. He is the type of person who fulfils the requirements of leadership spelled out by Freud in his psychology of the masses (1921/1940): endowed with sufficient charisma and prestige so that junior group members can identify themselves with him (up to the point of copying phrases and mimicking gestures). Ampter decides to try to leave the secret service and to join the leftist movement, in other words he opts for apostasy, going native, moving over to the enemy camp to become "a free citizen" once more, with a "respectable profession" (p. 189). But he soon realises that cleansing himself of his past is not as easy as it seems. Although in retrospect he regards the entire investigation of Bloch a mistake, his work for the secret service cannot be "blotted out" (p. 318), not even by joining the army, where he becoming seriously injured in battle. Even worse, his superior (Gregg, nicknamed the Chief) refuses to regard the detailed reports on Bloch which he produced (the "mass of derogatory information against Bloch", p. 441) as "fabrications" (p. 195). The damaging information he had been collecting on his new friends and colleagues already found its way into the files, *their* files (p. 183).[4] His integrity cannot be restored, so that Mark will remain *marked* (as an informant) for life.

The novel revolves around the bomb, referred to as the *Thing*, the *gadget*, the *Bolt*, the *contraption*, etc. It is described almost as a living organism, an "embryo" at first (p. 217). In the course of its growth process, it changes the power field dramatically. At first there is only an abstract concept, without a body, without reality: calculations on a blackboard. Step by step, however, the "Thing" becomes increasingly real. Bloch's appointment as director of the research facilities at Los Alamos (surnamed Valhalla in the novel) forces him to break all ties with his left-wing past. His involvement with the Thing forces him to transform his very identity. In order to secure access to the Thing, to the bomb project, he must obtain security clearance, and initially this seems utterly impossible. This obstacle (his left-wing sympathies), which threatens to bar his access to the bomb, becomes a basic motif

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[4] "That wouldn't simply vanish as a result of the fact that he was quitting the security service. It was still in the record, filed away safely in the office for future reference, ready to do its damage" (p 183).

in the novel: "the clearance of Dr. Sebastian Bloch" (p. 235). In order to pass security clearance, Sebastian is not only forced to abjure his political beliefs, but also to denounce his former friends, including Mark Ampter. In other words, whereas Bloch is initially a beacon of integrity, his practices become increasingly questionable, from a moral point of view, precisely because he increasingly experiences himself as desperate and vulnerable. He cannot live without the Thing and therefore he cannot afford "any suspicion of a taint of communism" (p. 204). The records concerning his un-American activities (collated in a detailed way by Ampter) make it possible (in principle) to discharge him immediately from the project, should his superiors decide to do so. Therefore, he feels completely "powerless" (p. 229). His questionable "integrity" (p. 292) as a former communist becomes his fatal weakness, especially when the intelligence service discovers that there is a "security leak" somewhere: that someone central to the project is transmitting vital material which is reaching the Soviet Union (p. 292). Sebastian seems to know something about it, seems to be withholding "some vital piece of information". When interviewed by secret service agents, he lacks the power to protect his "personal dignity" (p. 227). He realises that, in order to safeguard his addictive proximity to the bomb, he must be cooperative "to the last ignominious syllable" (p. 228), until his integrity is completely abolished and the "depth of indignity" is reached (p. 229). He suffers the "humiliation" (p. 232) of being forced to "violate his code of honour" (idem) and to betray "some of his closest comrades" (idem). His attachment to the Thing makes him a "prisoner" (p. 218). He is under constant observation (p. 221), "mistrusted, watched and followed" (p. 329). He is forced to give away "something that he would later discover it was disastrous not to have kept" (p. 308). Yet, being completely wrapped up by the Thing, being *devoured* by it (p. 344), he simply cannot accept to become separated from his gadget:

> Deep down, he rejected the whole venture: his conscience, his spirit, the effectively human part of him, condemned it… but if the project was going ahead, then he must be in on it. The Monster must not be made without him. Such an eventuality was unthinkable (p. 217).

He dedicates "his whole being to the making of the Bolt". There can be "no conflicting allegiance or responsibility", he "commits his whole destiny" to it (p. 220). As indicated, the Thing is portrayed as a quasi-living being.[5] For being allowed to interact with the Monster (*a* in the upper-right position) and to prevent being disconnected from the one thing on which his whole existence has come to depend, Bloch proves willing to "pay the price" (p. 282): his integrity crisis as by-product (lower-right position), in accordance with the dynamics of university discourse:

$$\frac{S_2}{S_1} \quad | \quad \frac{a}{\$}$$

Initially, Bloch is a high-trained physicists who becomes recruited as a nuclear physics expert (S_2 in the upper-left position) to investigate how U-235 can (the object *a*) can be used to unleash a nuclear chain reaction. But before long, this object *a* (the gadget, the contraption) becomes an obsession. During the years of the Bolt, Sebastian had to "rule out everything that was tangential to his overriding task" (p. 332). As a result, he becomes a divided subject ($\$$ in the lower-right position), divided between his former loyalties and his present obsession, so that he falls victim to the matheme of desire ($\$ \lozenge a$). Bloch is now obsessed with his gadget, and Valhalla is basically machinery which allows this impossible object *a* to come into existence, providing Bloch the privilege of access and interaction. In the next section, the vicissitudes of university discourse will be analysed in more detail.
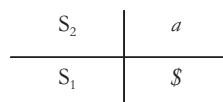
4.4   University Discourse: Vicissitudes and Discontents

From a Lacanian perspective, the novel analyses (various instances) of university discourse. Remember that university discourse starts off (at the upper side of the bar) with a devoted, objective, epistemologically reformed subject (S_2) who is facing (interacting with) a purified yet elusive object (*a*), in this case: isolated, purified Uranium. Gradually, however, it becomes apparent that this allegedly "pure" subject-object-interaction is actually challenged (haunted, contaminated) by forces coming from elsewhere (from "beneath" the bar). Not only because a Master voice is spurring the process as a voice of conscience (*Thou shalt produce the bomb*: S_1 in the lower-left position), but also because the various frustrations, sacrifices and contradictions which emerge in the course of the process result in a tormented subject, an integrity crisis, as an unintended by-product of research ($\$$ in the lower-right position):

S_2	*a*
S_1	$\$$

The first instance of university discourse presented in the novel is quantum physics, an allegedly *pure* research field. Tanya, an outsider, describes how, from her perspective, Sebastian (the archetypal physicist) belongs "to some more exalted sphere, accessible only to a very few" (p. 13), a world that is "alien to her" (p. 13), because it is "the most abstruse of scientific fields" (p. 18). In this decidedly *other* world (the realm of basic science), a dimension of being is studied that is completely other and alien: the world inside the atom, where strange and incomprehensible subatomic entities somehow exist and move about, although it is far from clear what existence and movement means here. Quantum physicists seem to be the most disinterested scientists of all. Quantum physics is depicted as the *nec plus ultra* of pure science.

Sebastian evokes in Tanya the image of a white "swan" (p. 12, p. 24, p. 255, p. 432). She experiences him as a Lohengrin-like figure, descending from a higher realm, a vulnerable man, moreover, "made of a finer clay than the other men she had known" (p. 12), someone who "had to be protected", a fragile Knight wholly devoted to serving the Holy Grail of quantum physics: a spectral, empty, almost immaterial something, the object a of quantum science (the atom and its elementary components). To her, Sebastian is "a fabulous being endowed with strange powers", absent and uncommunicative, a stranger, a mysterious persona, often away on mysterious errands, belonging to a "different order", radiating a kind of "spirituality" (p. 40). Light seems to radiate from his presence, exerting a charm that few can resist. He seems "touched with saintliness" (p. 40). An inexplicable calling (S_1 in the lower-left position) is spurring him on. And therefore, her efforts to restore this wild swan "to his human shape" are bound to falter (p. 256).

New developments in this highly specialised field are absorbing him more and more. One day, on a blackboard, he fleshes out how a mysterious, minuscule atom may in principle unleash a nuclear chain reaction, so that something unbelievably small (an atom) may transmute into something astonishingly big: an atomic bomb. His mathematical equations reflect the Real, "mathematisation alone reaches the Real", as Lacan (1972–1973/1975, p. 165) phrases it: the unimaginable atomic world, bypassing worldviews, visual representations and written discourse. The equation predicts that the *atom* (the intangible, elusive object a of quantum physics) is destined to become the *A-bomb*. The fission reaction represents pure, elementary *fire* (a) which S_2 desperately aims to integrate, domesticate and appropriate into university discourse. It is clear to Sebastian that he, of all people, is destined to make this bomb, although the gadget will drastically remake and transform *him* as well.

Bloch/Oppenheimer entered quantum physics as an already established field (S_2 in the upper-left position). He was not a pioneer, but belonged to the second generation. In contrast with Bohr, Heisenberg, Schrödinger, Pauli or Dirac, he is not credited with any ground-breaking contributions.[6] As the novel phrases it, Bloch made no comparable discovery (p. 158). But now, physics as such is entering a new stage, becoming a large-scale, coordinated organisation of "superlative efficiency" (p. 272), involving hundreds of physicists, each of them contributing an "infinitesimal share" (p. 271). The only way of making a difference under such conditions is to guide the field onto this new plateau of achievement, unleashing the era of big science.

The novel also addresses the metaphysical level (S_1 beneath the bar), however. Quantum physics is symptomatic for a *metaphysical* crisis, affecting science and

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[6]Although Bloch is generally regarded as a genius, the novel does mention "the relative slightness of his original work, the total absence of new fundamental discoveries or concepts comparable to those made or put forward by a number of his immediate contemporaries, such as Dirac, Heisenberg, Fermi, Oppenheimer, Schrödinger, the Joliot-Curies (p. 158/159). The name "Oppenheimer" seems a curious misplacement in this list, reflecting the ambivalence regarding the question whether or not Bloch/Oppenheimer is to be placed on the same level as these other 'giants'.

society at large. Scientists see the "crisis of science" as "a reflection of the crisis that besets our whole society… How increasingly instable the integrations in physics are becoming" (p. 151). The "golden sphere of harmony" had already ceased to exist long ago and even the basic convictions (the philosophemes) of classical physics became untenable. Indeed, quantum physics exemplifies the "shakiness of our metaphysics" (p. 151), but also the "awareness of the need for synthesis". But this, according to Bloch and his followers, would require a shift, on the level of the philosophemes (beneath the bar: S_1), towards dialectic materialism as the new foundation, turning society as such into a kind of university world, with physicists as guardians of the atomic age. According to Marxism, only a classless society may solve the crisis that science (S_2 above the bar) experiences today (p. 151), abolishing philosophy by absorbing it into science.

Initially, the gadget has a positive impact on the subjects involved in terms of individuation and personal growth. It prompts and enables Sebastian to face difficulties that would have "overwhelmed him 3 years before", that he would have been "utterly incapable of coping with" (p. 178). Thanks to the gadget, he had "broken through that magic but sterilising cocoon of solipsism that had enveloped him … He had become a human being" (p. 179). Yet, increasingly, this process of individuation becomes frustrated and Sebastian eventually emerges as a tormented subject ($\$$ in the lower-right position). Working on the bomb project, Sebastian experiences himself as "a man divided", outwardly self-possessed, but inwardly distraught and tormented" (p. 211). A "nameless anguish" possesses him (p. 213). His new symptoms ($\$$) are no longer the symptoms of egocentrism and unworldliness that troubled him in the past, for the "Thing" changes everything and engenders a series of more unsettling symptoms. He becomes increasingly distant and unapproachable. A sinister change comes over him (p. 256) due to his involvement in "this fearful Thing" (p. 257), turning him more and more into a stranger. In the confrontation with the Thing, the position of the scientific expert (S_2) becomes destabilised, and the research site becomes an ethical and epistemological clinic ($\$$), sometimes literally, when Sebastian is forced to keep his bed because of exhaustion (clinic is derived from κλίνη, = bed).

According to Tanya, his unsettling tasks make him inhuman and estrange him from humanity. His appalling responsibilities become "a screen separating them" (p. 260). The Monster creates "a gulf between them" (p. 288). "We've hit on the gadget… the Monster… the Thing" (p. 148), Sebastian argues, and this "Thing", this instrument of wholesale destruction, without parallel or precedent in history, is now relentlessly "challenging" him (p. 147). Indeed, his whole being becomes wrapped up in the Bolt; he eventually becomes *devoured* by it (p. 344). He is "consumed" by his gadget, his object *a*. The Monster *will* be born; nothing can stand in its way. His whole being seems to rebel against it, but he cannot stop the Monster. He senses that he is "in the grip of a necessity that transcended his own will" (p. 336). The object *a* is pulling him towards his destiny. Face to face with the Bolt, he is no longer master in his own house, as Freud once phrased it:

> He had known for a long time, even before the premonitory shadow of its shape first loomed before him, that his commitment to it was inescapable… His whole being rebelled, [but] the most important decision of his life was one that he had already unwittingly made (202).

The gadget forces him to accept "a decision that he … tried to justify as though it were a decision that he had freely chosen" (p. 339). Or, as he phrases it later in the novel: "I have no choice" (p. 364). As a result, he transforms into a chain smoking anorectic, becomes "terribly emaciated",[7] but also his character changes. Still he cannot disconnect himself from the Thing, even if this implies a loss of integrity. For this is the morale of the story: Oppenheimer becomes what Lacan (1966, p. 870) refers to as a "victim of science" ($ in the lower-right position). Especially in fields such as theoretical physics, Lacan argues, an element of personal drama, a subjective toll is often involved. The crisis on the part of the subject entails a drama of knowledge that does not concur with the typical oedipal crisis in a classical Freudian sense. It is not a neurotic case of rebelling against the father (the Master), but rather an instantiation of becoming trapped in the matheme of desire ($ ◊ a).

4.5   The Case of Communism

The second instance of university discourse fleshed out in the novel is communism. Although communism is often regarded as an exemplification of absolute power, Lacan points out that, rather than reflecting the structure of a Master's discourse, it is a radical effort to replace the absolutist monarch by a rational, science-based system (with Stalin serving as an obscene version of the return of the repressed). Communism is social engineering and decidedly strives to be science-based. Dialectical materialism presents itself as a *science* (Engels 1880). In his book *Materialism and Empirio-criticism*, written in 1908, Lenin explicitly addresses the "crisis" in contemporary physics because physics is politics and vice versa (p. 252). Materialism is challenged, but not subverted, Lenin argues, by recent physical discoveries concerning X-rays, radium, and the like (p. 250). He intervenes in what for him is not a purely scientific debate (among trained experts), but a politico-scientific dispute between bourgeois physics and dialectical materialism. So-called "revolutionary" discoveries do not refute dialectical materialism, but rather confirm it. Even though in the case of electrons concepts such as matter and mass seem to evaporate, matter has not "disappeared" (p. 258), has not been obliterated by the onset of quantum physics. Lenin contests the conclusion (by Henri Poincaré and others) that the very possibility of "knowing the object" evaporates in the case of subatomic particles such as electrons (p. 254). According to Lenin, the crisis rather stems from the fact that these new developments threaten to reduce physics (which

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[7] Descriptions by fellow scientists collected by Thorpe and Shapin (2000) likewise emphasise the "fragility of the smallness of his body" (p. 553). Oppenheimer is portrayed as "frail to the point of transparency", as "almost ethereal". The thin, ascetic Los Alamos Director looked like a fifteenth-century portrait of a saint (p. 552). He was so thin that he seemed "a disembodied spirit", "lacking a fleshly dimension" (p. 552). His emaciation suggested "an aversion to incorporating the world". In his autobiographical account of their friendship, Chevalier describes him as the archetypal ascetic and associates his "surprisingly blue eyes" with "the faces of apostles… A kind of light shone from it" (Chevalier 1965, p. 11).

had always been an emancipatory field) to a mere utilitarian artifice, a technological recipe for manipulating nature (p. 256). For Lenin, there is no real "crisis" at all. The bourgeois philosophy (articulated by Ernst Mach and others) is based on a misinterpretation of the new physics, to be rebuked by dialectical materialism. Lenin sees himself an engineer of power, and therefore his vocation is to address scientific (and ultimately philosophical) debates as well. Unlike Machiavelli, he is *not* a scholar-servant (S_2 in the position of recipient, serving a Master, an absolute monarch), but a political engineer (S_2 in the position of agent) for whom dialectical materialism is a scientific project, concurrent to physics. Therefore, the crisis in (bourgeois) physics (represented by bourgeois authors such as Mach) must be addressed in the same manner as the crisis in (bourgeois) politics and (bourgeois) political economy, namely by pointing out that its contradictions can only be sublated by opting for a truly scientific (i.e. dialectical materialist) approach, building on Marx and Engels (notably the latter's *Anti-Dühring*).

A communist society purports to be a new type of society where *science* holds sway. As Žižek phrases it, building on Lacan: "the Soviet Union was the pure reign of university discourse".[8] Marxism (dialectical materialism) appeals to scientists in the novel precisely *because* it is structured like university discourse. It entails a rationalistic, scientific approach to politics: it *is* a science. Due to Marxism, a formerly unworldly Sebastian suddenly becomes aware of the contemporary world. He begins to read newspapers, listen to the radio and explore contemporary history, politics and economics. As a communist convert, he overcomes his introvert, neurotic inhibitions and connects with the world at large. Before that time, he lived solely for the atom (the quantum world), but now he discovers that the macro-world is open to science (dialectical materialism) as well. He devours all three volumes of *Das Kapital* in the original over a weekend (p. 70). Although for strategic reasons party officials refuse to let him actually become a party member, Sebastian meets with the Berkeley "unit" regularly, acting in every way as though he were a bona fide member, and the other members so regard him. A time may come when it will prove of great advantage that he never was in fact a member, his party superiors argue. But no one is going to prevent him from regarding himself, in his own mind and conscience, as a true "communist" (p. 15).

The Bomb aligns quantum physics and dialectical materialism even more closely. As the United States are manoeuvred into the war with Nazi Germany, the bomb becomes the thing most likely to decide the outcome. For communist scientists, both dimensions of their compartmentalised existence can now be brought closer together: having worked to sovietise the United States, they can now wholeheartedly contribute to the war effort, albeit in the expectation that eventually, the bomb will come under international control, through an international atomic agency controlled by (communist) scientists. Responsibility over the Bolt should not rest with any particular government, they argue, and scientists should have a major voice in determining the use to which it is put (p. 216). Thus, as they join the army of scientists to make their infinitesimal and anonymous contribution (S_2 in the upper-left

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[8] http://www.lacan.com/zizfour.htm

position) they are nonetheless spurred on by a demanding worldview, whose conflict with the political status quo is temporarily suspended (S_1 in the lower-left position).

They work on an unprecedented, unimaginable something (*a* in the upper-right position), a genocidal weapon of mass destruction, meant to destroy whole cities in a few seconds. This gives rise to hesitance and doubt, resulting in meetings concerning the social implications of the gadget (*$* in the lower-right position). But, as the novel phrases it, this is not a time to indulge in the private luxury of qualms of conscience (p. 147, p. 152). Joining the communist party is like "taking holy orders": entering a world that separates its members "from all those who do not belong to the brotherhood" (p. 80). Joining the scientific Valhalla kolkhoz confirms and radicalises their conversion (their willingness to identify completely with S_2 at the expense of all other societal ties).

But as soon as the gadget is successfully detonated, the happy concordance between science and politics becomes disrupted. Germany has already surrendered (and never seriously worked on developing an atomic bomb), while Japan is about to surrender as well. There is, according to the novel, no justification anymore for using the bomb. The bomb basically becomes something completely different: a sign of warning addressed to Russia. The bomb will redefine global politics in the post-war era: will play a decisive role in a budding *anti*-communist conflict with the Soviet Union. Oppenheimer frantically tries to secure his say over the future of the bomb, even if this means giving the names of former communist friends and denouncing colleagues to security agents, who constantly harass him to do so. Eventually, he reverts to a damaging "fabrication" (p. 338, p. 377, p. 406, p. 436, p. 445), tangling himself up in a whole maze of fabrications (p. 344), but he is no longer considered irreplaceable and his pre-war politics make him highly vulnerable ($-\varphi$). While science (the gadget, the object *a*) initially transformed warfare, it is now the other way around: the military is rapidly transforming science, increasing its power by subsidising universities for research, while many left-wing scientists and Valhalla veterans are refused instalment in their university posts, because of their tainted records. The hand of the military is "everywhere". While normal science is reinstalled (S_2 in the upper-left position), many scientist are expelled from academia, forced to leave the field, meanwhile plagued by moral misgivings because of the nuclear cataclysm to which they contributed, the "holocaust of horror", the "mega-deaths" (p. 202) to which two major Japanese cities had been exposed (*$* in the lower-right position).

As the atomic bomb becomes technologically reproducible, an item of "mass production" (p. 433), the scientists feel decidedly used. Their knowledge is appropriated and they themselves become discarded. They have "equipped the army with the absolute weapon, a wholly new factor in the world situation, a force that had no parallel in history", serving "humanity's mania for self-destruction" (p. 338), but now they are dispatched (as human resources) while the State seizes hold of the valuable product of their labour. This scenario would have been unthinkable without a third instance of university discourse: the secret intelligence service.

4.6   S₂ as Secret Agent

Quantum physics is initially *pure* research, as we have seen, and quantum information is allowed to circulate freely within the international scientific community, between the German-speaking and the English-speaking world. But as soon as it is discovered that uranium isotopes may unleash a nuclear chain reaction, so that they may in principle be used for making nuclear bombs, this type of scientific information becomes "classified information" overnight, that is: classified as "confidential" or even "top secret". *Classified* is a metonym in the Lacanian sense of the term: a seemingly neutral adjective actually referring to a problematic shift, with serious implications for the scientists involved. Scientific information that is regarded as "classified" no longer belongs to the commons of free-floating ideas, but becomes *compartmentalised*. The term "classified information" is a metonym because an apparently neutral, technical term (*to classify*) is used to indicate that this type of information is potentially dangerous or even toxic from now on, and must therefore be handled with utmost care. Suddenly, S₂ is confronted with information (neutral and innocent until now) which, by being stamped as classified, is transformed into something highly valuable and dangerous, into an object *a*. Psychoanalytically speaking, this constitutes an instance of sublimation: something apparently unexceptional (scientific information) suddenly becomes highly exceptional. Classified means that the information is "*classified as…*", namely as *highly confidential* or even *top secret*. The metonym "classified" indicates that information which formerly belonged to the scientists themselves is now appropriated by the state. It no longer belongs to the scientists who produced it. Quite the contrary, the formal labelling of certain data as confidential implies that new forms of misconduct are introduced: leaking classified information, a confidentiality breach which may incur serious penalties for the scientists involved: the producers, but no longer the owners of this information. Moreover, a formal *security clearance* is from now on required to be allowed access to classified data and to handle classified documents. Classified or compartmented information is nonetheless bound to "leak". Such leaks must likewise be regarded as an inevitable part of the confidentiality complex, for it is only by labelling information as highly confidential that it can be leaked at all and that the desire to leak can emerge, so that the sin (ἁμαρτία), the misconduct can be committed. As explained by Saint Paul, sin and desire result from prohibition, rather than the other way around.[9] Secrecy requirements, indeed: the very label "secret" turn neutral activities (sharing information) into perpetrations. Due to the label *classified*, sharing information becomes *leaking* or *funnelling* information: a new type of misconduct, a by-product of the new constellation (*\$* in the lower-right position). But precisely *because* of the value which this information suddenly acquires, scientists may feel forced to *leak* it, in response to a compelling *force majeur*, such as:

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[9] "I would not have known what sin was had it not been for the law. For I would not have known what coveting really was if the law had not said, 'You shall not covet'" (Romans 7:7; cf. Lacan 1959–1960/1986, p. 101).

preventing a U.S. monopoly on atomic weapons. In other words, researchers fall victim to the matheme of desire ($\$ \lozenge a$). Classified information becomes the object a precisely *because* it is classified as top secret, withdrawn from the knowledge commons.

This has grave repercussions for the individuals involved. As soon as it becomes clear that atomic knowledge may give rise to an atomic bomb, the biographies of the scientists involved (previously uninteresting more or less) become "records" or "files", while problematic entries (such as: involvement in certain political activities) become items of concern. Thus, from now on, scientists involved in classified research are scrutinised and monitored. A researcher with communist leanings is from now on a scientist with a *divided* loyalty (p. 312), who "professes loyalty first and foremost to the Soviet Union" (p. 229). The communist is the Mister Hyde ($\$$) concealed beneath the allegedly impassive expert persona (S_2), who is therefore likely to fall victim to the matheme of desire and to give in to the inclination to perpetrate. When Sebastian is about to be appointed as scientific director of the Valhalla project, it is made clear to him that "from here on … you will have to resign yourself to the fact that you'll probably be under more or less constant observation. I would simply assume that everything you say, and everything said to you, whether directly or over the telephone, is being monitored, that your mail is being opened and your movements followed… You'll be watched closely" (p. 217), all this because of his involvement with the Thing. Due to the Thing, Sebastian becomes a file, scrutinised by secret service experts, trawling it for symptoms of divided loyalty.

Thus, Sebastian becomes the target of investigations by the secret service, but the object of these investigations is not Bloch as a living human persona, but something *inside* Bloch, something enigmatic: the "Mr. Hyde in this Dr. Jekyll" (p. 40) as Gregg phrases it, his communist leanings, in combination with his uncanny gift for influencing people, his almost "telepathic" talents of persuasion, bordering on the occult. Bloch is an enigma (p. 68) who does not limit himself to one particular speciality, like normal scientists, but seems completely at home in the whole realm of science; and in the arts as well (p. 40).[10] There is something strange about his eyes and voice, moreover, and his face seems suffering and haunted: a "strange, arresting" face with a "brooding, uncanny look" (p. 67), a "demoniac look" (p. 258), with a compassionate yet cruel set of eyes (p. 67). Due to his involvement with the Thing, his face becomes even more unsettling: an "abstract mask" (p. 261), while his "black eyes become enormous" (p. 343).

For Gospodin Gregg, the archetypal secret agent, this enigmatic "something", the Mr. Hyde in Dr. Bloch, the $\$$ inside S_2, becomes the object a, to which he devotes many years of research and around which he designs a completely new type of "experiment". Gregg is a *psychologist* studying a physicist, driven by his anti-

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[10] In art a similar dynamics is discernible as in science, Sebastian argues. Beginning with Cézanne, modern painters had "destroyed painting … had begun the process leading to disintegration that made the exhibits of modern painters look like the cemeteries and ossuaries of art" (p. 147/148). The monster exemplifies this disintegration of "substance and sense" (p. 201).

communist zeal, his patriotism (S_1 in the lower-left position). In terms of university discourse:

S_2 (Gregg-the-psychologist)	a (the Mr. Hyde in Dr. Bloch)
S_1 (patriotism)	$\$$ (Bloch as an obsession)

Bloch exerts an indefinable, telepathic influence upon others, and Mark's assignment, acting as the Chief's eyes and ears (his equipment as it were) is to find out what it is:

> But there was another man in Sebastian Bloch … It was he who fascinated the Chief to the point of obsession and whom he had singled out for his quarry… the mystery behind those eyes was not the mystery of innocence (p. 159).

Gregg sees Oppenheimer/Bloch as an enigma who manages to exert a "poisonous influence" (p. 165) on "hundreds of people" (notably students and young researchers), and the investigation aims to reveal the secret of his magnetic personality. To achieve this, Gregg wants Ampter to build up a file. Modern wars, Gregg explains, call for complete mobilisation of manpower and resources; and this especially involves mobilisation of "brain power" (p. 38). Modern wars are won or lost in laboratories, and this creates wholly new security problems. For while statesmen are trained in the game of international politics and the military in the game of war, "these science fellows know nothing about either. And some of them have some pretty wild-eyed notions". The first objective is to find out whether Sebastian is a communist. But the target is not a naïve subject. From the very beginning, Sebastian was "conscious of another presence of whose attention he was the object" (p. 221).

This dimension of the novel likewise reflects the dynamics of university discourse. The secret service agent is an *expert*, a researcher, specialised in accumulating and analysing files (with the help of recording equipment, typewriters, archives, mnemonic devices, etc.). The name Ampter is reminiscent of the German word *Amt*, originally spelled as *Ambt*. Etymologically speaking, the word basically means *servant*. Mark Ampter is the agent (a promising professional, yet replaceable, in principle) who is expected to spend all of his time on investigating Bloch, in order to discover the mysterious factor X somehow at work in him, by producing a huge pile of material about his target. Years of work result in an impressive file, the Bloch archive, "a stack of folders ten or more inches high" (p. 157). As Gregg later explains, it is a unique procedure, "something of an experiment" (p. 239). Via Mark Ampter (his instrument, his eyes and ears), Gregg aims to become connected with, to establish a window into the doings of Sebastian Bloch. The Chief from now on perceives everything Ampter says as a possible access to "the mind of Sebastian Bloch" (p. 73). Gregg is basically a psychologist who has designed an N = 1 experiment, keeping his distance, working from a distance, using Ampter as his one-way screen: his "one direct line right into the heart of the enemy territory" (p. 159). Ampter is entrusted with the actual work, but Gregg reads his reports quite care-

fully, looking for key symptoms, in order to develop a psychological assessment, leading to the conclusion that Bloch is indeed a major security risk, a "very dangerous man" (p. 241).

But it is impossible to tell exactly wherein the danger lies. The Mr. Hyde continues to elude him. While Ampter is beset with serious "misgivings as to the validity of his highly confidential mission" (*$* in the lower-right position), Gregg becomes increasingly "obsessed" with Bloch. During the first 5 years of the research, Gregg himself never even sees or meets Bloch. And yet in a sense he "knows him more intimately than he had ever known a human being" (p. 268). He comes to the conclusion that "there was in this man, in spite of his almost godlike gifts, something negative, something destructive, something *against nature* … a dangerous force" (p. 268). Gregg becomes a Bloch expert, studying his case for years, but still struggling to explain what the dangerous factor amounts to. On the one hand, Bloch is one of the elect, but at the same time he is a dangerous apostate. Bloch is completely absorbed by his work, but what is "the secret of that compulsion" that drives him (p. 315)? Gregg confesses that, "with all his knowledge of human nature … the mystery still eluded him" (p. 315). Bloch, or rather: this elusive something at work in Bloch, is Gregg's object *a*. When he finally meets Bloch, he is intrigued even more. Bloch looks decidedly "unreal". He reminds him of "a piece of sculpture dug up after many centuries and showing the mark of time" (p. 310), "the reincarnation of some holy man out of a remote century" (p. 315); the Ötzi of the intelligence service.

In order to come to terms with the enigma, Gregg decides to design a "trap", a psychological mouse trap (p. 408), similar to the one designed by Hamlet. He orders one of the scientists who works as a secret agent to tell Ampter that German scientists (allegedly farther advanced than the Americans) had decided not to build their bomb after all, and are now eager to contact Bloch, in order to convince him to do the same, so that the whole genocidal project can be put on hold: a self-imposed international moratorium on nuclear warfare as it were, initiated by scientists who bypass their governments. Ampter is unable to contact Bloch, and therefore reluctantly informs Tanya, who (again: reluctantly) informs Sebastian, who is indeed "tortured" by the story, because he cannot decide whether it is true. He has the uneasy feeling that the story is "a lure", "a trap" (p. 288), and Tanya soon realises that "she shouldn't have mentioned it" (p. 257), for (the Lohengrin-complex again) her wild swan now withdraws even more into his increasingly "forbidding" (p. 259) world of "inaccessible thoughts" (p. 364), where no one can reach him. He is "inexorably carried toward a cold, high region" (p. 232). In fact, this conversation practically ends their marriage (the Lohengrin-motif indeed). Their relationship is disrupted because Tanya cannot refrain from saying something which should have remained unsaid. From a security perspective, spreading such a story means sabotage, an attempt to slow down the progress on the bomb.

In a communist, totalitarian society, the whole state is transformed in a laboratory, and Gregg adheres to this same logic: his war against totalitarianism relies on monitoring and manipulating seemingly innocent individuals, in order to expose them as agents, as security threats, thereby becoming totalitarian itself. His secret

service becomes a totalitarian, science-based state within the state, studying, but at the same time mimicking the logic, the functioning of communism. Communism and the secret service increasingly mirror one another. Bloch's role in the novel inevitably changes, as a conceptual physicist is transformed into a research subject, enrolled in a psychological N = 1 experiment.

For Bloch, the hovering, ubiquitous presence of secret agents generates a sense of profound, almost paranoiac "uneasiness" (p. 221). After many rounds of interrogations, which increasingly revolve around the story about the German scientists who allegedly tried to contact him, Bloch finally confesses that he had the story from Ampter; thereby contaminating the latter's record and destroying his prospects for a university career. But somehow, he cannot do otherwise, he feels completely powerless and forced to comply $(-\varphi)$. Refusal to give in would mean becoming disconnected from the gadget:
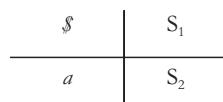
> Sebastian knew that he himself had just lost a little piece of something precious and irreplaceable, and that he was about to lose more. And he knew that he was helpless to prevent it (p. 227).

Gregg subsequently exposes Ampter to the tape-recording of Sebastian's voice mentioning Ampter's name; an extremely uncanny experience: "the voice was Sebastian's, but it wasn't Sebastian speaking. There was something inexorable about it" (p. 438). This voice (which once had been Mark's source of inspiration) now became the source that entered the damaging fabrication into Mark's file. The voice he had missed, the voice he loved and longed to hear, is all of a sudden there, but detached from the body as a whole, and transformed into a toxic, damaging voice. In the course of the twentieth century, Lacan (2004; cf. Zwart 2017a) argues, the human gaze and voice, as objects *a*, as objects of desire, had become externalisable and transferrable with help of cameras, voice recorders and similar devices. Although nowadays we have sufficiently familiarised ourselves with such techniques (such externalisation), they were initially experienced as fairly shocking: evoking both fascination and concern. For indeed, what used to be natural and familiar ('*heimlich*,' namely eyes, voice, etc.) became technologically reproducible, became *uncanny*. And although gradually people familiarised themselves with dislocated faces and voices, the confrontation with *this particular recording* reveals once again the estrangement of the original situation when, via Edison-like devices, a disembodied but still recognisable voice became audible for the first time. It is precisely the fact that the voice is disembodied and recorded which makes it so damaging, turning the recording into a *record*, a vital piece of harmful evidence. The recording of the recognisable yet disembodied voice is the object *a* of the Bloch file, the missing link which is now there, so that the file is by now "quite complete" (p. 440). As Gregg explains: "I've been working on the case for eight years. I'm tempted to say that I know more about Sebastian Bloch than I do about myself (p. 440). Gregg is referred to as "a cool precision instrument of a mind" (p. 440) able to "dissect" the mind of Bloch, via constant surveillance, in combination with traps.

But to really discern the Mr. Hyde in Dr. Bloch, Gregg has to make a decisive turn, opting for a different type of discourse, based on the Freudian credo that, in order to understand a certain case history, we have to know and record *everything*, however trivial, embarrassing, etc. it may seem. As Freud himself phrased it: "We instruct the patient to … report to us whatever internal observations he is able to make [taking care not to] exclude any of them, whether on the ground that it is too *disagreeable* or too *indiscreet* to say, or that it is too *unimportant* or *irrelevant*" (1917/1940, p. 297; cf. 1926/1948, p. 214). Seemingly trivial details (the bagatelle) may prove to be highly significant. Unconscious motives are revealed by failures and embarrassments, rather than by achievements. But this same rule now guides the work of Gregg, aimed to bring to the fore the hidden hysteric ($) in the allegedly impassive researcher (S_2), forcing Bloch and Ampter to confess not only what they know but also what they do not know themselves about themselves. Gregg's method probes divided subjects (potential apostates) to take the floor and reveal themselves. He opts for a kind of talking cure: inviting Bloch and Ampter to give themselves away merely by speaking, by asking seemingly innocent questions. In the case of Bloch, such interrogations give rise to tics, fatigue, spinal ailment, incessant smoking, fabrication, and other symptoms of imbalance: because Gregg the psychologist manages to confront him with his object of desire, his fatal flaw. But before diving more fully into the discourse of the analyst (into which university discourse is inevitably sliding at this point, taking a quarter turn to the left) I will first of all explore the role of the discourse of the hysteric in Chevalier's novel.

4.7   The Discourse of the Hysteric

Although the novel first and foremost revolves around the intricacies of university discourse, as we have seen, the discourse of the hysteric (in the Lacanian sense of the term) occasionally flares up as well, both on the individual and on the collective level, for instance when qualms of consciousness can no longer be contained or repressed. In the latter case, the hysteric's discourse gives rise to a boisterous attitude, challenging the authorities, criticising those in power: $ \leftrightarrow S_1$ on the upper level. In the full version:

$$\frac{\$}{a} \quad \bigg| \quad \frac{S_1}{S_2}$$

It is a basic objective of university discourse to convert untrained individuals into impassive, reliable experts (S_2), a process referred to by Bachelard (1947) as the *formation* of the scientific mind. A similar objective is at work in Marxism (dialectical materialism), aiming to transform anarchistic, hysterical and utopian forms of protests ("childhood diseases" of the leftist movement, as Lenin once phrased it)

into objective science, i.e. to transform the discourse of the hysteric into a well-organised and science-based *university discourse*, represented by the impassive communist apparatchik as agent (S_2). From a Marxist perspective, the intended sovietisation of the United States is meant to be a thoroughly scientific endeavour.

Nonetheless, as we have seen, university discourse produces instances of discontent and deception (*$*), for instance when the bomb was used not as a weapon against Nazi Germany (as many scientists, especially refugees from Central Europe, had hoped), but rather as an instrument of power to secure the global monopoly position of the United States. Scientists were expropriated, as the bomb was suddenly out of their hands and out of their control. As a consequence, forms of protests against nuclear warfare policies (against the bomb) began to emerge amongst scientists, and discontent took the floor. In the novel, they also express their disappointment in the father of the bomb, former mentor Bloch, now spending most of his time in meetings with politicians, generals and representatives of "the highest circles of industry, business tycoons, presidents of investment trusts, owners of newspapers and press syndicates, men who control finance, media and transportation networks, in short: the very people whom, as a Marxist, he had regarded as the enemy; for they are all attracted by the Monster" (p. 283), paying tribute to the Monster and its maker in a "fetishist way" (p. 285). In order to stay connected with the gadget, with the *fetish* he produced, Bloch has to follow it into this bourgeois world, even if it means detaching himself from his former environment. In retrospect, Sebastian now regrets his former engagements and sadly admits that his communist sympathies had been a mistake, that the Communist Party had "remained alien and unassimilated", speaking a "strange language" (p. 234). He also drifts out of his marriage. It is via the newspapers that Tanya finds out that her husband has "suddenly become world-famous" (p. 359) as the "man of the hour" (p. 368). For former students he is not only unapproachable, but also unfathomable, a mystery more than ever, moving in the "most exalted spheres", having a voice in the "highest councils of the nation" (p. 413), but consistently failing to speak out; or to take a stand against what is happening: the expropriation of (the know-how to produce) the bomb by politicians, big industry and the military. The demise of their former mentor is considered a symptom of the times. As one of his former students phrases it during a protest meeting: "There's something wrong with our civilisation" (p. 385); a perfect articulation of the experience of discontent.

Mark Ampter is one of these protesters, but tries to professionalise and institutionalise the discontent. To avoid the discourse of the hysteric ($* \rightarrow S_2$) he becomes hyper-active, travels to Washington as executive secretary of an association of left-wing scientists concerned about the future of the Bolt. The Bolt has "corrupted" and "poisoned" science (p. 412), and this must be undone. Science must regain its innocence. He writes and publishes manifestos, bulletins, leaflets, press releases and letters with the help of duplicating machines, dictating machines and telephones, and even gives "bolt physics courses" to government officials. From all over the country scientists, including the most eminent, drop by to offer their help, but "never Sebastian" (p. 413). All the while, the scientific community is eagerly awaiting the publication of a plan drafted by a powerful commission of which Sebastian is the

most articulate and prominent member. When the document finally appears, in tens of thousands of copies, the mystery seems solved. A moratorium on nuclear warfare is proposed, and the gadget is projected as a potential servant of humankind, a device that may prevent all future wars. But left-wing scientists are suspicious readers and before long they recognise the "trap" (p. 422). The offer of a moratorium is a smart plan bereaving the Russians of their opportunity to develop a gadget of their own ($-\varphi$), a "disguised hostile act" (p. 424), a political calculation. In short: "Now we know where Sebastian stands" (p. 425).

But Mark Ampter finds it impossible to accept this outcome. In order to escape from this deadlock, he opts for a different strategy: the discourse of the analyst. Instead of criticising those in power, he sets out to seek the truth, shifting the object a into the position of the agent (upper-left position). He finally wants to come to terms with the situation by exposing himself to a painful truth. He decides to visit his former Chief Gregg, who has been promoted to the position of highest secret service official, and meets him in the heart of darkness in his empty office, deprived of all personal paraphernalia, reflecting Gregg's "almost pathological reluctance to reveal himself" (p. 435), in accordance with the imperative $\$ \rightarrow S_2$ (the desire to become a thoroughly impassive functionary). Gregg, the observer, does not want to be observed himself, let alone give himself away.
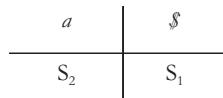
To dig up the truth they descend into the basement, the secret service's "laboratory" (p. 437), replete with instruments and machinery, containing an immense collection of tapes: derogatory information about thousands of individuals. Here, the tape is stored with Sebastian's voice on it, so that Mark is finally exposed to the uncanny truth. The source of the derogatory information, thwarting his career, but also the cause of his physical impairment as a soldier (the loss of a significant part of his intestines, the loss of his masculinity and strength: $-\varphi$), was Sebastian himself: the very person about whom Mark had produced a large pile of derogatory information himself. Mark had tried to transform himself into a secret service apostate, had converted to communism and had joined the army. Because of his tainted record, however, he was deployed in extremely dangerous positions, ending up severely wounded, physically marked for life. He had hoped that Sebastian's gadget would have ended the war, and this idea (that Sebastian was working on the gadget) had been his "talisman" (p. 320): the very thing (a distant thing, still inexistent, a phantasmagoria perhaps) that kept him alive. Suddenly, he had an experience of doubt, and the idea that "the gadget would not be forthcoming after all produced in him a creepy feeling of panic" (p. 320). And precisely at that point he enters the shallow cave where "a big part of his guts" are shot away. He survives, becomes a medical miracle, an "exhibit", a "guinea pig" (p. 367), but like Sebastian he suffers a profound physical change. The damaging information, and the loss of his talisman, more or less dismantles him. Notably, he loses his strength. His pre-war suits are much too big for him (p. 383) and he is no longer able to lift heavy weights (p. 385). Unable to listen to the tape recording of how Sebastian's disembodied, uncanny voice is giving the names of former colleagues, students and friend, Mark tries to get away, but Gregg seizes his arm with "a powerful, cruel grasp" (p. 438). Mark "tries to wrench his arm free" but Gregg holds it "in an iron grip", confronting

him with his post-traumatic fragility, so that he is forced to listen to how Sebastian's voice, in response to Gregg's urgent question ("I want to give you the name of that intermediary"), finally replies that it was "Mark Ampter" (p. 439).

In this scene, we enter a different type of discourse, a different kind of interaction: the discourse of the analyst. Mark, the former professional (S_2) who tries to *rehabilitate* himself, is exposed to the object of desire which sets everything in motion (*a*), his conversion to communism as well as his impairment on a Pacific island: Sebastian's disembodied voice, confronting him with an unsettling revelation, something which seems impossible to grasp or work through: the secret service "laboratory" as a traumatic couch.

4.8   The Discourse of the Analyst

The novel is a discursive clinic, enabling a diagnostics of modes of discourse. To bring these discourses and their contradictions to the fore, the novel is a stage, a *Bühne*, where various types of discourse can be fleshed out and mutually exposed to one another. To achieve this, the novel adopts a psychoanalytical perspective. Quantum physics gives way to psychoanalysis and self-analysis.[11]

$$
\begin{array}{c|c}
a & \$ \\
\hline
S_2 & S_1
\end{array}
$$

The true protagonist or agent of the novel (spurring the others into action, while frustrating their plans and ambitions) is the object *a*, the gadget, the thing which inevitably draws the other characters into various courses of action, and hundreds of scientist into the Valhalla kolkhoz, where they become subjected to compartmentalisation, isolated from the outside world, accepting a "voluntary censorship on atomic information" (p. 119), keeping information "out if circulation", in accordance with "the security principle of compartmentalisation" (p. 208) which enforces "a strict observation of the rules of secrecy and compartmentalisation" (p. 272). The gadget deflects the life-course of all those who come within its orbit. Like a fetish, it draws scientists, politicians and industrialist towards it.

The Bolt has an enormous impact notably on Sebastian himself (allegedly the "father" of the Bolt). As soon as he becomes involved with it, Bloch's character undergoes "a profound change" (p. 381). He makes "a complete about-face", "disavows all his former beliefs" and even turns "informer", as we have seen. He not only tells on former comrades, but even invents "highly compromising stories" (p. 381) regarding Mark. Indeed, "the Monster haunts him" (p. 183). The Bolt

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[11] "Those of us who seem to the world at large to be the most disinterested – I mean scientists … are actually concerned with … man's relation to himself" (p. 30/31).

proves a poisonous entity, affecting his integrity, addressing and challenging everybody (the object *a* now in the upper-left position as agent), scientists first of all, but also generals, administrators and businessmen. Those who come too close, who fail to keep their distance, are put out of balance, become *derailed* ($ in the upper-right position). This notably applies to Bloch. A devoted, pure scientist becomes a security risk, a fabricator.

But the change even goes much deeper than that. It speaks through his body, a suffering body, a "bony frame", a "wretched thing" (p. 347), an "island of pain" (p. 229). He becomes increasingly conscious of the "fragility" of "this flimsy, faulty organism that he carried about with him" (p. 377), of his "precariousness" (p. 377). Notably, he suffers from a chronic spinal ailment. His back aches "excruciatingly" (p. 224): he is tormented by "an excruciating strain on his back" (p. 228), especially when he is interviewed by secret service agents, which frames him as an American Prometheus. The pain in his spine becomes "unremitting" (p. 321). Towards the end of the novel he looks frightfully emaciated and frail (p. 310, p. 343). He does not want Tanya to see him naked because he has grown so thin (p. 347). He has become "a shadow of his former self … The brain was still there …. But of the rest: what remained?" (p. 323). Indeed, his body has become a body "without organs" (Deleuze and Guattari 1972). His head is described as "a little knot of hardness … prolonged by an awkward spine, to which an odd assortment of organs and parts was attached", not as functional integrated parts, but "each of them a point of attack for discomforts" (p. 135). He seems a kenotic subject, "emptied of all his substance" (p. 296), smoking cigarette after cigarette (three packs a day), a fragile envelop of vessels and arteries (p. 230). As if his body is taking revenge for his desire to strip his life of everything but the essential, sacrificing everything to his relationship with the gadget, thus falling victim to the matheme of desire ($ ◊ *a*). Sebastian becomes an emptied, kenotic subject.[12]

Due to his attachment to the gadget he becomes an unapproachable "total stranger", to Tanya (p. 362), but to his former colleagues and students as well. Because of his unconditional devotion to the Bolt, Sebastian resolves "to forgo all sexual indulgence", to "harden himself against her" (Tanya), as an act of "renunciation" (p. 334), exemplifying Freud's concept of *Versagung*. He and Tanya hardly ever sleep together, but when at a certain point they do, she notices his dramatic metamorphosis, his transfiguration, becoming aware of him as "a shivering presence in the bed … an icy chest, an icy shoulder" (p. 306). Indeed, "the contact with hard bone covered with cold, clammy skin was, for a second, repulsive". But then she experiences some tenderness for "this frail, vulnerable being – a mere skeleton covered with skin and hair… She pressed herself against him, enveloped him with her flesh, the fullness and the firmness of the matter that composed her body, the sheath of muscle and tissue that clothed her bones… He was taller than she, but he now weighed considerably less than she did… He felt so small and frail and insub-

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[12] The Biblical term κένωσις refers to a process of Self-emptying or Self-renunciation (Saint Paul, *Letter to the Philippians* 2:7, where it is said that Jesus 'emptied himself' (of His previous, divine Self; Cf. Zwart 2016a).

stantial, it was almost like clasping a naked undernourished little waif (p. 306/307). In short, she experiences his "too-light, clammy, bony weight" (p. 307) as decidedly uncanny.

Sebastian makes the Bolt, it is *his* Monster, but the gadget drastically remakes him too. It seems as if Sebastian's face is "marked by some searing vision, by some soul-shaking revelation" (p. 400). Chevalier's description of Sebastian's face, marked by his encounter with the Bolt, is remarkably reminiscent of Jung's description of the impact of the Trinity Vision on the body, personality and face of Brother Nicolas of Flüe, after being confronted with a revealing vision that dramatically changed his life, but ruined health (Jung 1953, p. 78). The confrontation with this inexplicable, overwhelming something unleashes a process of kenosis and metanoia.

Towards the end of the novel, Sebastian's state of chronic "exhaustion" (p. 346), due to his interactions with the Thing, results in a physical and mental breakdown, a kind of "stupor". As Tanya phrases it, Sebastian had been "wearing himself out" (p. 250), had "burned himself out" (p. 428). Finally, there is an experience of revelation. Sebastian finally discerns a pattern, a higher plan in everything, a fatality that carries not only his "aching" body, but the whole world, as on a current. He feels dreadfully alone and yet he seems to embody all mankind. As if he had acted as the instrument of an "inexorable necessity" (p. 446), of a "fatality that was carrying him" (p. 446), and this new insight illuminates everything for him. He will vanish as a person, but his spirit will "hover over men", helping them "to illuminate the formulation of a theorem" for instance (p. 447). "Wherever men are gathered, in meditation, in council … he would be the faith, the inspiration … he would be nothing and all (p. 447)". In Jungian terms, he experiences a psychic "inflation", identifying himself with the archetypal spirit. Shortly after this vision, Tanya decides to leave him, claiming that he has become "inhuman" (p. 449).

What precisely happened to Sebastian Bloch, psychoanalytically speaking? He represented the Lohengrin-complex, but he also incorporates the Icarus-complex: a stellar career, a science celebrity, ready to take enormous risks, eager to reach unprecedented heights, but then he "flies too high" (p. 123) so that he is destined for a dramatic fall. This concurs with the basic message of the sizable mural (on wooden panels, almost hundred square meters in size) painted by Pablo Picasso in 1957–1958 for the UNESCO headquarters in Paris, which came to be known as *The Fall of Icarus*.[13] There is a stark contrast between the fleshy, bathing, living, healthy bystanders and Icarus himself: a minimal human being, stripped down to his bare essentials, so that only a skeleton remains, as if his body has been exposed to radiation and transformed into an X-ray picture, about to drown. Bystanders witness how Icarus is about to disappear from view. Picasso himself persistently refused to comment on the meaning of his artwork, but many connected it with the nuclear bombs which put an end to World War II, as UNESCO was established in response to the

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[13] Picasso himself referred to it as "Humanity turning its gaze towards the happy future" (Cabanne 1977, p. 487). Georges Salles, honorary director of French Museums, dubbed the artwork *The Fall of Icarus* in his inaugural speech (Di Lauro 2004).

prospect of global nuclear devastation.[14] The *Fall of Icarus* is the portrayal of a human being whose flesh is obliterated (by uranium-235?) so that his bare essentials are exposed.

Towards the end of the novel, during the catharsis or denouement stage, Gregg points out that the case of Sebastian Bloch reminds him of Greek tragedies. The secret service director confesses that he is actually a fairly erudite man. Notably he is reminded of the "play about Oedipus" (p. 442). And for him this similarity raises the question what (in the case of Bloch) the "twist", the "weakness" (ἁμαρτία) is, as Aristotle (1982) phrased it. According to Gregg, it is his overestimation of intelligence: "One man's intelligence. There's something else that's much more important. But he doesn't know it" (p. 442). In other words, psychoanalytically speaking, for all his intelligence as a scientific agent (S_2 in the upper-left position), Bloch failed to acknowledge the unconscious motives that inexorably drew him towards the Thing. A drastic change of perspective, a self-analysis is required (in accordance with the discourse of the analyst) to become aware of the agency of the gadget, of the *impact of the gadget*, not only on society at large, but first and foremost on the scientific subject, on Bloch's own existence, luring him into a liaison the structure of which is captured by the matheme of desire ($\$ \lozenge a$).

In order to realise his goal, Sebastian stops being a scientist and becomes a manager, a politician, and eventually he becomes a visionary, a sage ($S_2 \rightarrow S_1$) who envisions the pattern, the whole, as in the Lacanian quadruped reflecting the discourse of the analyst. The position of the scientist is suspended (S_2 pushed back into the lower-left position). His involvement with the gadget requires a rupture with his scientific past, a conversion. The interaction with and exposure to the gadget changes

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[14]Another explanation is that Picasso, while working on the mural, noticed the Russian Sputnik orbiting overhead (at Nice Airport), an experience which filled him with excitement (Di Lauro 2004).

him dramatically (*$* in the upper-right position). "There were two men in Sebastian Bloch", but only one of them was the scientist (p. 158). The confrontation with the gadget reveals (and intensifies) this split, this *Spaltung*. First of all, it results in various kinds of symptoms, turning Sebastian into a chain-smoking anorectic with an uncanny stare (*$* in the upper-right position), someone who is willing to betray his past, up to the point of producing damaging fabrications, only to secure (temporarily at least) his continued interactions with the Bolt. For although the Bolt poisons science; Bloch "needed the Monster" to survive (p. 377). But eventually, he identifies himself with the position of the sage who sees the pattern, sees farther and clearer than others, a kind of invisible, intangible guiding Spirit (S_1 in the lower-right position), someone who finally manages to become "completely detached" (p. 414). While attending countless conferences, and reading and co-authoring endless documents, he is "no longer present". His mind functions swiftly and accurately, but he himself is absent, in another realm, his own realm, which claims him more and more, hoping to achieve a metamorphosis, a transcendence of "fleshy reality" (p. 415).

4.9   Aftermath: Science and Art

Chevalier's novel is not the final word on the case history of Oppenheimer. In his opera *Dr. Atomic*, composer John Adams creates a quantum physics soundscape (with its stochastic, aleatory, random music) to reveal how Oppenheimer, exposed to the blinking gadget, falls victim to the matheme of desire. Robert Wilson, a close collaborator of Oppenheimer on the Manhattan Project, later became the first director of Fermilab (near Chicago), the second largest scientific contrivance in the world (next to CERN). In this capacity, he was actively involved in the architectural design of the research facility. He wanted the Fermilab to look like a cathedral, not only because the size of the nucleus compares to the atom like a fly inside a cathedral, but notably because, for Wilson, scientific facilities such as particle colliders are the cathedrals of the present. Science, he argues, has no practical purpose (Hilts 1982). It manufactures nothing, makes no profit. Its function is primarily spiritual. It is purely concerned with the ultimate nature of matter. There are no practical applications, no more than for literature, theatre, poetry, or painting. Scientific understanding has its inherent cultural value. It has great beauty. Once, asked whether his expensive accelerator would in any way further the country's security, he decidedly denied it. It has nothing to do with defending our country, he argued, except for making it worth defending. Psychoanalytically speaking, the particle collider, exemplifying the return of purified, cleansed science, is Wilson's effort at reparation (*Wiedergutmachung*).

As to pure science, the novel *The Search* (discussed above) contains an interesting dialogue between the protagonist and his girl-friend (presented in the novel as a "disturbance" to his work), who tells him about a novel she had read: "I was Reading *Arrowsmith* the other day" (Snow 1959, p. 59), a novel about practical science, medical science. And now she wonders why the protagonist immerses himself in basic research, instead of going for "the *Arrowsmith* kind" of science (p. 59), with its practical benefits for society at large. The answer basically is that the protagonist wants to keep his science "pure". But if pure science already becomes entangled in tragic integrity challenges, what about "the *Arrowsmith* kind"?

Chapter 5
Phage–Ethics: A Lacanian Reading of Sinclair Lewis's *Arrowsmith*

5.1   Introduction

Arrowsmith (published in 1925) is an intriguing novel for various reasons, but first of all because this 500–page romance is often regarded as the first real *science novel*, devoted to experimental laboratory research as a practice, a profession, an ideology, a worldview, a "prominent strand in modern culture" (Schorer 1961, p. 414), a way of life.[1] Named after its key protagonist Martin Arrowsmith, it records an important event in the history of biomedicine: the discovery of the "bacterium–eating" virus: the bacteriophage. But it also addresses a moral ambivalence that runs through biomedicine as a research field, namely the tension between the exacting demands of "pure" research on the one hand and its various (more or less benevolent) applications in medical practice on the other. The novel stages a series of dramatic moral conflicts between the duties of Martin Arrowsmith as a physician (working for the benefit of his patients) and as a researcher (working for the benefit of future generations, of "humankind"), thereby practicing not one but *two* "impossible professions". Lewis's lively descriptions of science communication, priority conflicts, funding strategies, research ethics and laboratory rivalries are still relevant today. First and foremost, however, the novel allows us to discern how, beneath biomedicine's manifest aspiration to promote human well–being, there is a "deeper" impulse, a disconcerting obsession at work that may prove highly disruptive, not only for test animals, research subjects and patients, but also for scientists themselves. Biomedicine's fuelling desire, its *cupido sciendi* (its will to know) is not predominantly to safe, but rather to *control* life, and the aim of my Lacanian rereading reading is to bring this subliminal dimension to the surface. Lacan's quadruped will guide our reading:

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[1] "*Arrowsmith*, the first major American novel to concern itself with the culture of science" (Doctorow 2008, p. 455/6).

S_2 (biomedical expertise)	a (the bacterium-eating factor X)
S_1 (compulsion to control life)	$\$$ (the impossible profession)

Sinclair Lewis (who was awarded the Nobel Prize for literature in 1930) wrote what is perhaps his best novel in collaboration with science writer Paul de Kruif,[2] a graduate from the University of Michigan who had worked as a bacteriologist ("microbe hunter") at the *Rockefeller Institute for Medical Research* in New York[3] and was well underway to become a prominent author himself.[4] He would publish his (still famous) best–selling book *The Microbe Hunters* in 1926. Whereas Lewis (son of a general practitioner) was responsible for the descriptions of marital, domestic, professional and civic life in the United States a century ago, De Kruif added the scientific ingredients: the biomedical jargon and the intricate details of laboratory research. But he also portrayed one of the most intriguing characters of the book, namely Max Gottlieb: a "blend" (De Kruif 1962, p. 93, p. 102), "melange" (p. 109) or "amalgam" (Markel 2001, p. 372), – a *Mischperson* as Freud calls it (1900/1942, p. 299) –, of Frederick G. Novy (De Kruif's Professor of bacteriology at the University of Michigan) and Jacques Loeb, the famous biologist of German–Jewish descent (1859–1924) who joined the Rockefeller Institute in 1910 (Pauly 1981; Fangerau 2006). Lewis and De Kruif toured the Caribbean together on a "literary safari" (De Kruif 1962), combining furious writing with heavy drinking, collecting ample materials for their masterpiece along the way.[5] And while De Kruif offered Lewis a crash course in bacteriology, Lewis provided De Kruif with an apprenticeship in non–academic writing.

Arrowsmith portrays the relentless (and potentially disruptive) will to power that drives life science research. Whereas on the 'manifest' level biomedicine aspires to do good, there is a "mysterious and unreasoning compulsion" (p. 146) at work that cannot be reduced to purely altruistic motives. This is underlined by a disconcerting

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[2] "To Dr. Paul de Kruif I am indebted not only for most of the bacteriological and medical material in this tale but equally for his help in the planning of the fable itself – for his realisation of the characters as living people, for his philosophy as a scientist" (Lewis 1925/2002, p. 2).

[3] The Rockefeller Institute, with its "sumptuously plush research facilities", is depicted by De Kruif as a "scientific emporium" (1962, p. 14).

[4] Although his "dissociation experiments" (comparing virulent and attenuated streptococci) resulted in publications in the *Journal of Experimental Medicine*, he was fired by the Institute's director Simon Flexner (Dr A. DeWitt Tubbs in the novel) for publishing *Our Medicine Men*: a critical journalistic review of contemporary medical practice in the U.S. ("A montage of what I'd seen, heard, read, felt, and experienced", 1962, p. 35), written at night while experimenting during daytime. Flexner notably objected to De Kruif's view that relentless *competition* rather than disinterested *collaboration* lies at the heart of scientific research.

[5] Their collaboration was drenched in "epic" alcohol bouts and subsequent hang–overs. In his memoirs, De Kruif explains that during these "drunken combats" his assignment was "to keep our genius [Lewis] on this side of delirium tremens … on this side of going off a deep end – though there were times, mornings, when his shaky hands poured some of his Scotch onto the table and some into the glass." (1962, p. 94).

quote from Paul de Kruif (who transferred his own research ethos on Martin Arrowsmith) about the "nihilism" of scientific inquiry:

> Why had I stopped the study of medicine and switched to bacteriology? … [What did] my years of cool butchery of thousands of rabbits and guinea pigs show but a lack of reverence for life? I was destructive. I was a nihilist, period. For me, the world was too full of people and animals. And having no spark of reverence for all life, I had no ethics (1962, p. 39)

To bring this "deeper" impulse to the fore, I will read the novel from a Lacanian angle, to come to terms with this disconcerting normative "flaw", this *death drive* fuelling what is purported to be the "science of life". But before explaining the design of this chapter more fully, let me first provide an outline of the plot.

5.2   Plot Outline

Like Lewis himself (born in Sauk Centre, Minnesota, in 1885) Martin Arrowsmith grows up in the American Mid–West at the turn of the century, but as a young adult, his biography more closely resembles that of Paul de Kruif (1890–1971). Like him, he is a medical student at the University of Winnemac ($\equiv$ Michigan) at Maholis ($\equiv$ Ann Arbor), a "factory designed to produce physicians much like the Ford Motor Company produces cars" (Lewis 1925/2002, p. 8). In Lacanian terms: a factory to produce S_2-type professionals. Here, however, Martin becomes infected with the spirit of pure science, personified by Max Gottlieb ($\equiv$ Jacques Loeb), a *Fremdkörper* in professional medicine, because he is a professor of bacteriology rather than a physician, who puts his life in service of an obsession, a fatal addiction, namely "pure", basic research. His goal is to synthesise antitoxins *in vitro* to free humanity from the scourge of infectious disease, but also to free laboratory researchers from the laborious use of test animals (as impure and unreliable models). Martin wants to follow in his footsteps and become a bacteriologist himself: a devotee, a believer in the "religion" of science.

But as he meets a female nurse (Leora) and becomes a married man, he has to choose between a career as a general practitioner (that will provide him with social respectability and an income) and the uncertainties of a life devoted to science–for–its–own–sake. Somewhat reluctantly, he opts for the former, thus betraying his true calling, his truth event (the lectures by and conversations with Gottlieb), suppressing his persistent feelings of discontent with heavy drinking. Martin gives in to the reality principle, as it were, allowing himself to become enwrapped in civic, marital and professional life. Yet, he keeps up his habit of spending long and lonely nights tinkering in his home–made laboratory. At a certain point he investigates a local outbreak of cattle disease, publishes his results in the *Journal of Infectious diseases* and sends a reprint to Gottlieb, who now works as a principal researcher at the McGurk Institute ($\equiv$ the Rockefeller Institute) in New York. After reading this article, Gottlieb invites Martin to join him at McGurk and Martin eagerly accepts the invitation.

During his (initially quite unsuccessful) research there, he coincidentally discovers a strange invisible "something", a mysterious "principle X" which destroys bacteria, and he decides to study it meticulously, in accordance with the rigorous methods of his mentor. Unfortunately, while Martin is still engrossed in his analyses, experiencing serious inhibitions when it comes to putting his findings to paper, Felix d'Herelle of the Pasteur Institute announces his discovery of what he refers to as the "bacterium–eating" virus, the bacteriophage. After recovering from this serious drawback (the loss of priority), Martin is urged by Gottlieb to continue his phage research, but to focus on practical applications instead, using these predators of bacteria as "allies" in the war against disease. When the fictitious Caribbean island of St. Hubert is struck with bubonic plague, and McGurk is called upon for help, Martin is sent there (accompanied by his wife Leora and a drinking companion, the public health specialist Sondelius) to conduct a field trial designed to determine whether "phage" can effectively be employed in fighting lethal pathogens. The result is a moral clash between the island's administrators (who had expected a life–saving doctor) and Martin's own objective as a scientist, intent on using the population as "material" for his trial. Thus, he finds himself confronted with an ethical dilemma: as a physician, it is his duty to vaccinate as many inhabitants as possible, but as a researcher, he is in need of an (untreated) control group to demonstrate the effectiveness of his vaccine. This means: dividing the coloured, illiterate population of a village into two equal halves: the saved and the doomed.

Initially, he remains loyal to the experimental rigour instilled in him by Gottlieb, but after the tragic death of both Sondelius and his wife the physician in him gains the upper hand and he contaminates the experiment that was supposed to bring him everlasting fame. He still manages to publish his results, but tampers with his sloppy data so as to make his story sufficiently convincing. He becomes married again, this time to an affluent socialite widow who kindly provides him with a lavishly equipped laboratory of his own. Yet, utter dislike of the social life of the New York elite, in combination with marital unease, presses him to leave both wife and child behind and to escape to the wilderness of Vermont, where, together with another disgruntled colleague, he lives out his mania for "pure" research, virtually undisturbed, in an isolated forest cabin.

In the following sections, key dimensions of the novel will be subjected to a Lacanian reading, treating Martin Arrowsmith as a case study (*Fallgeschichte*). Successively, I will focus on: (a) the organisational and occupational hazards of a biomedical career; (b) the *cupido sciendi* of pure science as a "divine madness"; (c) Martin's grand moment of discovery (the bacteriophage as the intrusion of the "real"); (d) the core medical–ethical dilemma (the bacteriologist as a physician and as a researcher) and (e) cabin science: Martin's escape to a reclusive, scientific Walden, the novel's final act.

5.3 Medical Practice and Its Discontents

For young Martin Arrowsmith, becoming a doctor involves an extended process of socialisation into the medical profession. Although courses in bacteriology and immunology are indispensable ingredients of his training, they nonetheless represent something which, in essence, remains at odds with professional medicine, namely basic research: science for the sake of science (seeing human beings as research subjects rather than as patients). The pure scientist (Max Gottlieb) is an oddity on the campus, eager to recruit a small number of students (the "elect few"), − or even one single student, Martin –, luring him away from a normal professional career, converting him to the spirit of pure science.[6] Due to Gottlieb, one could argue, *Arrowsmith* becomes a *science* novel, rather than a *medical* novel (i.e. a novel featuring a practicing physician).

Thus, *Arrowsmith* depicts a failed process of socialisation. Martin continues to waver between the world of medical professionals (from country doctors up to metropolitan hospital surgeons) on the one hand and the international subculture of "pure" scientists on the other: nomads really, contemptuous of "worldly success" (p. 11), speaking a strange, artificial language, migrating from one laboratory to the next, convening at international conferences and publishing dense quantitative analyses in esoteric journals. Sooner or later, Martin will have to choose between the "profane" world of medical practice and the "sacred" world of laboratory work, with McGurk, the "immaculate" laboratory, towering as the ultimate "sanctuary" of science (p. 310): a "Heavenly laboratory in which good scientists may spend eternity in happy and thoroughly impractical research" (p. 147).

Just a few years before *Arrowsmith* was published, Sigmund Freud (1921/1940) developed his views on socialisation in *Group psychology and the analysis of the ego* ("Massenpsychologie und Ich–analyse"). How can an organised group of people (an "organised crowd") sustain itself in view of the fact that, for individuals, participation comes with a price: they must relinquish private interests and short–term rewards to pursue distant goals that can only be collectively achieved? How can self-centredness, individualism and discontent in modern mass societies be overcome? For Freud, the key to understanding the functioning of well–organised groups (as opposed to unorganised groups, i.e. *crowds* or *mobs*, who are intimidating, but prone to panic) is identification. Groups need leaders: paternal figures like Sebastian Bloch in the previous chapter, embodying the collective ideal and endowed with sufficient charisma and prestige for anonymous group members to identify themselves with them. And this is precisely the weakness of professional medicine as depicted in Lewis's novel, − and the cause of Martin's failure. The various father–figures (representatives of organised medicine) are relentlessly ridiculed, one after the other. Only Loeb escapes the pervasive atmosphere of satire.

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[6] Like Jacques Loeb (1859–1924), Gottlieb was a contemporary of Freud, trained by the German physiological school, although Freud focused on neurology and language (aphasia) and Gottlieb on psychophysics, before turning to immunology.

In the early twentieth century, group behaviour had become an urgent topic. Societies were becoming mass societies; modern media were creating mass audiences; politics had become the domain of mass movements; and even science itself was expanding in scope and scale: new universities were established and new types of scientific institutions were founded (such as the Rockefeller Institute, founded in 1901). The question how to manage and organise large groups was not a purely academic one.

In *Arrowsmith* we see a chronic tension/collision between two types of groups (two types of callings), highly dependent on one another, and yet apparently mutually exclusive, namely (impure) medical practice and basic (pure) research. For Martin, there are many incentives for choosing a medical career: the income and respectability of the profession, the possibility of marriage and of upward social mobility, in combination with the public acknowledgement of its relevance. Yet, what is lacking, to a deplorable extent, are inspiring personalities. One by one the father–figures in Lewis's novel (representing medicine and public health) are ridiculed as hypocrites, endorsing unsubstantiated claims and leading uninspiring lives. On top of that, Martin himself is not a good physician at all, lacking "bedside manners" and communicative skills, while his drinking habits are symptomatic of his ambivalence: his repressed yearning for pure inquiry.

Gottlieb, by contrast, seems to stand out as a beacon of integrity, a scientific prophet, a window into the future. Their first meetings give rise to "imprinting", as it were. No matter how hard Martin tries to "repress" his admiration for his hero, his exposure to Gottlieb prevents him from developing a whole–hearted commitment to medical practice. Indeed, although he had "given up Gottlieb–worship and his yearning for the laboratory … something of Gottlieb's spirit remained" (p. 115).

Having mesmerised Martin during his lectures, and subsequently during the laboratory hours they spent together, Gottlieb continues to draw Martin towards him.[7] Gottlieb considers "medical science" a contradiction in terms. He is a genuine scientist, devoting his life to intellectual aspirations, willing to work excessively hard and to accept the risk of failure. Martin is in awe of Gottlieb, the ideal "father figure" he is looking for (Parry 2008, p. vii), an ego–ideal or intellectual conscience, encouraging him to work harder. Indeed, Gottlieb "indoctrinates him into the religion of a scientist" (p. viii).

Already during the very first lecture he attends, a *rapport* is established, and Martin identifies himself with his life–long mentor. The novel describes how, at the beginning of the lecture, Professor Max Gottlieb is about to assassinate a guinea pig with anthrax germs, displaying his masterful technical dexterity, claiming that "technique is the beginning of all science" (p. 36). As Lewis phrases it, the class was "a mob" (p. 35), "shuddering" (p. 36) in response to the idea that even a small sample of anthrax bacilli could easily produce a lethal infection. But Martin is simply enthralled by Gottlieb. Indeed: "Martin Arrowsmith already saw himself doing the same experiment and, as he remembered Gottlieb's unerring fingers, his hands curved in imitation … He had begun, perhaps in youthful imitation of Gottlieb, to

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[7] Lewis originally intended to call his novel *In the shadow of Max Gottlieb* (Fangerau 2006).

work by himself in the laboratory at night" (p. 38/9). He mimics and copies Gottlieb's words and gestures. And via Gottlieb, who studied with Helmholtz and idolises Koch, Martin extends his identification to his master's masters.

This fascination for scientific truth hampers his professional career, causing a chronic sense of ambivalence: "Martin remained doubtful, he admired the insistence on the physician's immediate service to mankind, but he could not forget the cool ascetic hours in the laboratory" (p. 119). As a symptom of this ambivalence, he insists on having a makeshift laboratory of his own where he continues his habit of conducting experiments, usually at night, although this is barely tolerated by his social environment, first of all his wife. This dynamics is captured by Lacan's quadruped:

S_2 (medical professionalism)	a (unknown disruptive lethal factors)
S_1 (the imperatives of pure science: Gottlieb as super-ego)	$\$$ (divided loyalties: the worldly versus the "religious" calling)

His research position at McGurk (where he joins his ego–ideal again), his dramatic expedition to the Caribbean and, finally, his retreat into the woods are all instances of a return of the repressed. Having been exposed to the quest for pure science, he cannot really become socialised into normal civil society any more. Indeed, in *Arrowsmith*, bacteriology is presented as an infectious affliction, spreading from the laboratories of Pasteur and Koch into the United States, with researchers such as Gottlieb as carriers or vectors.[8] As Freud argues in *Group psychology and the analysis of the ego*, there is a strong desire in infected individuals to confer their infection to others, for why should they alone be excluded from the benefits of social life and condemned to an ascetic existence of toil and hardship (p. 134)? But what exactly makes laboratory research so 'infectious' (for individuals 'susceptible' to it), so alluring?

5.4 *Cupido sciendi*: Pure Science as a Divine, Infectious Madness

Arrowsmith contains numerous descriptions of biomedical research settings, with racks of test–tubes, Bunsen burners, constant temperature baths, centrifuges, autoclaves, notebooks and so on, but this in itself does not explain the fatal attraction

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[8] Immunology and psychoanalysis seem comparable. There is a famous anecdote, told by Lacan (1966), who allegedly had it from Jung, that (as their ocean liner entered New York harbour) Freud gloomily told the latter that they were 'bringing the plague' to America. Psychoanalysis has often been depicted as an 'infection', disrupting academic life and therapeutic practice (or even society at large), for instance by De Kruif, who claimed that Pavlov "immunised me against the peril of what I came to call the 'analism' promulgated by Sigmund Freud, just then beginning to taint American psychiatry and even psychology" (1962, p. 122).

these *loci of discovery* exert on individuals such as Martin. Rather, what attracts him in science is the aura of a quasi-religious calling. This is underlined by an improvised sermon by Gottlieb, with Martin (who has just entered McGurk) "at his feet" (Doctorow 2008, p. 453), explaining that science, extremely demanding and error–prone, is essentially a religion:

> I make many mistakes. But one thing I keep always pure: the religion of a scientist. To be a scientist [is] like mysticism … it makes its victims all different from the good normal man… The scientist is intensely religious – he is so religious that he will not accept quarter-truths, because they are an insult to his faith… he is a man that all nice good–natured people should naturally hate! … [The authentic scientist is] the only real revolutionary… He lives in a cold, clear light… Not all the men who work at science are scientists. So few! … To be a scientist [there are] two things you must do: work twice as hard as you can, and keep people from using you. I will try to protect you from success … May Koch bless you! (292/293)

Science means perseverance, loneliness. Research had not yet evolved into the large-scale pre-programmed phenomenon it became today. Discoveries were made by solitary individuals at their benches, preferably after hours, during the night.[9] McGurk encourages individuals to pursue their goals in splendid isolation. Research is pure, researcher-driven, and intolerant towards the "quarter-truths" abounding in the real world outside the lab.

As a general practitioner struggling in the fuzzy, dreary outside world, Martin tried to forget about Gottlieb and his imperatives (S_1 in the lower-left position), but his super-ego continues to haunt him like a phantom. As a doctor, Martin is deprived of something, $-$ and of someone. The repressed attachment continues to cast a shadow[10] and his ego is split into two halves: on the one hand the married, heavy drinking professional, on the other hand the would-be researcher, tormented by his intellectual conscience (his ego–ideal), failing to live up to his true vocation ($\$$ in the lower-right position). His entering McGurk as a research associate entails a moment of euphoria and triumph, of reconciliation and atonement: a spiritual "inflammation". He and Gottlieb (the "demon" of pure science) are finally on speaking terms again, while Martin can overcome his paralysing dividedness ($\$ \to S_2$), can restore his *integrity* (literally: his *wholeness*), can wholeheartedly identify himself with his role as researcher and constitute himself convincingly as a moral subject.

But in his new position, new challenges, new threats to his integrity await him, precisely *because of* the exclusiveness of the scientific calling. In *Arrowsmith* the ethos of science is described as a divine madness, θεία μανία, as Plato phrased it (*Phaedrus*, 244–256). Inside their laboratory, similar to Plato's philosophers, scientists behold a realm of truth which is invisible for untrained senses, a transcendent region only discernible for the initiated mind, although there are many who, after

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[9] Cf. "In Betreff der intellektuellen Leistung bleibt bestehen, dass die großen Entscheidungen der Denkarbeit, die folgenschweren Entdeckungen und Problemlösungen nur dem Einzelnen, der in der Einsamkeit arbeitet, möglich sind" (Freud 1921/1940, p. 89).

[10] "Der Schatten des Objekts [i.e. Gottlieb] ist auf das Ich gefallen" (Freud 1921/1940, p. 120).

much toil and hardship, leave the field without gaining even a glimpse of this higher reality (248B). Because of their desire for truth, true scientists cannot sleep at night. They must distance themselves from the common "herd" of mankind; ignore their neighbours, who rebuke them for apparently having gone mad. In *Arrowsmith* this madness, rather than providing access to a "higher" realm (of ideas), as in Plato, allows Martin to open up a "deeper" realm of microbial life, only accessible via microscopes. The topology has changed: rather than striving upwards, the modern scientist aims to dive deeper, but a similar amount of persistence is required. Only those who, like Martin, persevere in their tedious, repetitive activities will experience the "joy" (p. 43), the "rapt quietude" (p. 125), the "beautiful precision and dullness" (p. 40) of laboratory work. They will "sink blissfully into the laboratory" (p. 270), "beyond sounding in their experimentation" (p. 305), so that their lab temporarily becomes a "perfect world" (p. 295).

On the verge of the discovery of his "principle X", Martin becomes completely absorbed in his work. He forgets about night and day, becomes unconscious of the world, and completely exhausts himself, until he goes literally mad: "He was completely fagged, perhaps a little insane" (p. 326). Indeed, he works himself into a state of "neurasthenia" ($ in the lower-right position):

> Martin watched himself, in the madness of overwork, drift toward neurasthenia…From irritability he passed into a sick nervousness in which he missed things for which he reached, dropped test–tubes, gasped at sudden footsteps behind him. … Then he was obsessed by the desire to spell backward all the words which snatched at him from signs… At last Fear closed in on him. [It began] with terror of the darkness. Footsteps in the hall were a creeping cutthroat…. When in the street below he did actually see a man standing still, he was cold with panic. Every sky glow was a fire…He knew absolutely that his fears were absurd, and that knowledge did not at all keep them from dominating him. Till the safe dawn brought back a dependable world (p. 332/3)

All this is captured by the Lacanian quadruped:

S_2 (pure laboratory research: the dexterous experimenter)	a (the unknown, allusive factor X)
S_1 (driven by a will to power, to control)	$ (various symptoms due to exhaustion, self-exploitation, workaholism, etc.)

As a consequence of his fatigue, he suffers from a wide range of symptoms, the by-product (in Lacanian terms) of his devotion: insomnia, agoraphobia, claustrophobia, siderodromophobia (i.e. the fear of railway journeys) and, most of all, anthropophobia (the fear of meeting other humans), and yet he realises that, sooner or later, his crazy experiment will turn "from overwhelming glory into sane … routine" again (p. 335), so that S_2 (the balanced, impassive agent of university discourse) will be restored. What is it that, during this episode of self-imposed mental suffering, reveals itself to him? What is this "gold" which he seems about to find (p. 336)?

5.5   The Bacteriophage as the Intrusion of the Real

Arrowsmith makes it sufficiently clear that experimental laboratory work is often-times quite tiresome and repetitive. Researchers redo their experiments over and over again, under various conditions, in order to confirm and verify their results. As World War I is gliding into its final, most sinister Act, Martin quietly attends the beautiful, grapelike microbes named staphylococci which he cultivates in vitro, rep-resenting the S_2 agent of university discourse.[11] All of a sudden, something com-pletely unexpected happens, thwarting his expectations rather dramatically. What went wrong?

The purpose of laboratories is to keep the unexpected and disturbing at bay, allowing researchers to achieve maximal control over nature. The experimental set-ting is designed to immunise experiments against disturbances and intrusions (noise). The real world (out there, beyond the confines of the lab) is kept at a safe distance. Research facilities are purified, streamlined versions of reality, devoid of debris, processing tiny, artificial samples of nature that can be meticulously studied, such as strains of bacteria in test-tubes, carefully cultivated, protected, isolated, and also controllable and predictable to a considerable extent, with the help of measure-ments, technical equipment and mathematical equations.

But now, in the midst of this tedious, repetitive, quantitative work, something highly unusual occurs, something which cannot be ignored. "I have hit something" (p. 323), Martin aptly exclaims, something "at the mysterious source of life" (p. 321), something which is not mentioned in the manuals or journals of normal science. A violent, disruptive, completely unknown dimension of nature suddenly opens up to him. A peaceful strain of staphylococcus bacteria, which should be flourishing and multiplying in their flask, is suddenly missing. Instead of a colony of bugs, he discerns a "clearing" (p. 325). The microbes have all disappeared: a most uncanny situation. Under his microscope, he sees "nothing but shadows of what had been bacteria: thin outlines, the form still there but the substance gone; minute skeletons on an infinitesimal battlefield" (p. 323). While World War I is rag-ing, Martin hovers over a perennial battlefield (existing since time immemorial) on the microbial level, spotting the ghostly remainders of his perished troops (with test–tubes turned into trenches). Something has dissolved them, wiped them out. It looks as if they committed "suicide" on the spot (p. 323). Something is relentlessly preying on these peaceful herds; something violent has entered the lab, reminiscent of Heraclites's maxim that warfare (πόλεμος) is the essence of being. What is this intruding "something"?

Jacques Lacan would have called it the Real: something which cannot be dis-cerned directly, but intrudes and flouts our expectations, something alien, amor-phous, unknown and uncanny; something we were *not* looking for. All of a sudden, something is missing which should be there (something is *Fort* which should be

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[11] "He was so absorbed in staphylolysin that he did not realise the world was about to be made safe for democracy. He was a little dazed when America entered the war." (p. 315).

Da): a researcher is suddenly deprived of his microbes. They are reduced to phantoms: ghostly, emptied organisms, bodies without organelles. Nothing survives the intruder's attack. The Real is that which is discovered by coincidence, which resists the normal functioning of scientific practice (Lacan 2007, p. 29) but cannot be ignored any longer; something profoundly alien and "other".[12] It can only be tamed if embedded in the symbolical order, by identifying, naming, counting and analysing it: the basic objective of university discourse, of laboratory research.[13]

Martin's discovery of the bacteriophage is also a turning point in the movie version (Ford 1931). In mid–winter,[14] with Manhattan covered in snow, Martin places three flasks in a refrigerator, thick with bugs. Returning to his laboratory later that evening, unable to detach himself from his work, he discovers that in one of them, the bugs have completely vanished. Instead of being turbid, the fluid is clear. Under his microscope, which he handles with professional ease, he discovers the remnants of what had been a thriving colony of bugs. Nothing like this ever happened. Is it good or bad? Bad, because it ruins his experiment, but he quickly considers the option that it might be something "good", something "better". Bugs don't commit suicide: what slaughtered them? It must be *something*. In fact, it turns out to be the greatest *thing* that ever happened to him. "I have found *something*", he triumphantly exclaims, "but don't ask me what it *is*". After days of prolonged labour, Gottlieb glances though his notes and says: "Martin, you have a big *thing* here, a great *thing* … You must find out what it *is* … You will begin working in earnest".

Techno–scientific artefacts create a man-made, controllable reality, but the disconcerting real is never completely annihilated. It persists in the folds and margins of the laboratory world,[15] offering resistance to complete "assimilation" (Lacan 1973, p. 65), revealing itself as a gap, a crevice, a rupture, something totally unexpected (Lacan 1991/2001, p. 58), unacknowledged, unnamed, unmeasured, unvisualised. The real is basically an intrusion, a disruption: that which resists our expectations. It is the "inexorable" (Lacan 2013, p. 565). As Heraclites phrased it, many centuries ago: real nature is wont to hide herself, but sudden revelations may prove quite disconcerting (Lacan 2004, p. 85 *ff*.). The real is that which, from the point of view of normal science, seems utterly "impossible" (Lacan 2011, p. 141).

Martin is confronted, not with an "object", but rather with a gap, something which causes his bugs to be *missing*. A first important step towards "symbolisation"

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[12] The Real is not 'reality'. The latter term refers to the world of normal experience: that which functions, the world as we know it, worked-over, restructured, reorganised and transformed into something which is sufficiently accessible and predictable: objective reality, a product of human culture, of science and technology most of all. A world, a techno-social 'habitat': to a considerable extent man-made. We have been working hard to transform the terrifying Real into an environment we may safely inhabit, in which we function. Fire, for instance, has been domesticated with the help of pyro–technology, but the looming threat is still there (cf. the *Tower Inferno* archetype).

[13] During his days as a country doctor, an infectious disease flared up among farm animals, and the situation quickly got out of hand. Martin managed to tame the threat with the help of his makeshift laboratory.

[14] In the novel, the discovery is made during a "fine, wide August morning" (p. 326).

[15] "Le réel est à la limite de notre expérience" (Lacan 1956–1957/1994, p. 31).

or domestication is the act of naming. Martin uses a provisional, empty signifier for his strange entity: "principle X".[16] It becomes his "object a" (in the upper-right position), alluring and disconcerting, uncanny *par excellence*, midway between being and non-being, living and non-living, a condensed fragment of (or window into) the real. In the struggle over priority which unfolds, d'Herelle emerges victoriously, not only because he is the first to publish his results, but also because he gives the new entity a convincing name, a signifier that sticks: the virus that preys on bugs, the *bacteriophage*. By coining this signifier, which aptly conveys (in shorthand) what the mysterious entity actually *does*, he definitely makes a name for himself, and turns the mysterious principle into an (albeit fairly intractable) object. We see science at work: with scientists achieving immortality by successfully adding a new signifier to the network of names, concepts and symbols which Lacan refers to as the symbolical order. By providing the weird non-object with a name, the bacteriophage, or "phage", as Americans soon prefer to call it (Cairns et al. 1966), becomes something that can be analysed and normalised, something scientists can relate and refer to: equations can now be drafted; the anomaly becomes embedded in university discourse.[17]

Why didn't Martin publish his findings earlier? Because the scientific method, personified by Gottlieb (his epistemological conscience), prevented him from doing so. No preliminary results, however intriguing, even if they bring you everlasting fame: that is Gottlieb's ethos. More research is always needed. As a super–ego (*Über–Ich*), Gottlieb proves too demanding. He refuses Martin to *enjoy* the fruits of his sacrifices, his late-night hours. Martin never seems to have laboured enough. With Gottlieb peering over his shoulder, he feels paralysed when it comes to putting his findings on paper. As Freud (1921/1940) phrased it, the leader of the organised group (the collective conscience or ego-ideal) is reluctant to grant his co-workers their personal triumphs, as this would set them apart from others and reward their striving for independence. Gottlieb already said it in his sermon: "I will try to protect you from success". Whereas Director Tubbs (his formal superior at McGurk) urges Martin to hasten and publish his results, Gottlieb keeps discouraging him from doing so. And when the latter walks into Martin's lab to tell him the bad news about d'Herelle's publication (according to Gottlieb's rigid standards a premature,

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[16] Martin starts taking notes: "I have observed a principle which I shall temporarily call the X Principle" (p. 328). Indeed, "after years of stumbling he … had visions of his name in journals and text books; of scientific meetings cheering him. He had been an unknown among the experts of the Institute, but now he pitied all of them. But when he was back at his bench the grandiose aspirations faded and he was … the impersonal worker. Before him, supreme joy of the investigator, new mountain–passes of work opened" (p. 329).

[17] The discovery of the bacteriophage as an intrusion of the 'Real' is different from the famous Eureka–experience (of Archimedes and others) when pieces of a puzzle suddenly fit together and the missing link is found. The intrusion of the Real is something unpleasant, something we try to ignore or to explain away: that which does *not* fit our theories, enforcing itself upon us, until we 'give in', forced to acknowledge that we have 'hit' something. This is also underscored by d'Herelle (1917) who explains how he isolated the 'invisible microbe' from the faeces of a patient recovering from dysentery: the unexpected finding emerges in that which is rejected, abhorred: the (infectious) waste.

sloppy publication), he is ambivalent about it. Although he deplores the fact that Martin (and, by implication, the Institute) has lost the race over priority, the sublime ethic of pure science nonetheless stood its ground, rather than compromising itself by hastily running into print, merely to attain worldly fame (a questionable research practice). Martin, the researcher in the trenches as it were, is sacrificed to these lofty ideals. And rather than regretting his reluctance, Martin himself experiences relief for not having published a "premature" paper (p. 345). He doesn't revolt against Gottlieb's sinister regime: not yet, but is willing to produce more knowledge, work harder, even risk his life, by travelling to plague-ridden St. Hubert, where his devotion to the lofty ideals of science will be put to the test even more relentlessly. Or should we rather see it as an escape from the laboratory, where the split between obligation and desire ($) had become untenable?

As was already outlined above, we may summarise these analyses with the help of Lacan's dialectical scheme of "university discourse", by inserting Lacan's four symbols (S_1, S_2, $ and a), Lacan's στοιχεῖα, as "variables" (in a fixed sequence) in the four positions in a rotating, revolving quadruped:

$$\begin{array}{c|c}
\text{Agent} & \longrightarrow \text{Other (recipient)} \\
\hline
\text{(suppressed) Truth} & \text{By-product}
\end{array}$$

University discourse puts the qualified expert (S_2) in the position of the agent.

$$\begin{array}{c|c}
S_2 & a \\
\hline
S_1 & \$
\end{array}$$

The scientist (as agent: S_2 in the upper-left position) is a committed, self-composed, ascetic researcher focussing on an exacting object (a in the upper-right position). Initially, this object seems a normalised, standardised, domesticated object: his carefully cultivated staphylococci, but due to the disconcerting intrusion of the real, the focus of attention shifts to something completely different (initially referred to as his principle X), a taxing, toxic and addictive object, claiming his full attention, while remaining intractable and inexorable (a in the upper-right position). Initially, the position of the researcher seems completely neutral and impassive, but the confrontation with this "object a" proves a taxing experience and reveals that *something else* (besides objectivity, precision, etc.) is at work in science as well, addressing scientists from beneath the bar. On certain occasions, during his "sermon" for instance, Gottlieb initiates him into a basic truth, namely that science is actually a *religion*, so that the true scientist is an ascetic devotee, an adept, something of a stylite, addressed by a secret calling, a will to power (S_1 in the lower–left position). And although research initially may seem repetitive and boring, this combination (the exposure to the intractable object, which reveals the hidden imperative) results in a destabilising by-product, an unexpected moment of intellectual jouissance, of θεία μανία, of divine madness ($ in the lower-right position), so that the normal relationship between an impassive subject and a domesticated object

gives way to the matheme of desire: $\$ \lozenge a$. And indeed, this is what forces Martin to flee the Rockefeller Institute and seek shelter in the Caribbean: the tension between impassivity and desire (between super-ego and object a, between Gottlieb and X) has become untenable, resulting in an experience of dividedness or *Spaltung* ($\$$ in the lower-right position). His competitor (d'Herelle) faced a similar tension, but apparently decided to publish his findings prematurely, without sufficient evidence (controls, replications, etc.), a questionable way-out (from a normative perspective). This compromised his methodological integrity, but brought him everlasting fame. For someone like Gottlieb, however, such an eagerness to publish is a most questionable research practice.

5.6   The Medical–Ethical Dilemma (The Bacteriologist as a Researcher and as a Physician)

The history of the discovery of the bacteriophage is closely connected with World War I. Bacterial viruses were discovered in 1915 by the English microbiologist F.W. Twort, who had to discontinue his research because of the war effort. Two years later, in 1917, the phage was discovered for the second time[18] by French–Canadian Felix d'Herelle at the Pasteur Institute. In d'Herelle's original publication, he calls the bacteriophage a potential panacea, a "microbe of immunity". Therapeutic trials proved unsuccessful, however, and phage therapy (the use of phage as a bacterium–killer, as a soldier in the war against infectious diseases) eventually gave way to more effective means: penicillin and other antibiotics (Dublanchet and Bourne 2007).[19]

Thus, the bacteriophage moved from medicine to pure science and became essentially a lab organism: a tool for basic research in molecular biology. As such, it achieved world-renown through the work of Max Delbrück at Caltech (Pasadena) who employed it as the "hydrogen atom of biology", as a "minimal organism", albeit too minimal for the word "organism" to apply. His Phage summer course at Cold Spring Harbor[20] put young James Watson on the road to success (Watson 1966). In Lewis's novel, phage research is still in its earliest, applicatory stage. With De Kruif providing the necessary scientific details, *Arrowsmith* follows history quite closely, as if d'Herelle and Arrowsmith really were contemporaries, stumbling

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[18] "Perhaps independently, perhaps not" (Stent 1966, p. 3). The *originality* of d'Herelle's discovery is sometimes questioned.

[19] "By the middle of the 1930s … the widely propagandized control of bacterial diseases by means of bacteriophages had failed to materialize" (Stent 1966, p. 5). This may change, however, as new ways of using anti-microbial viruses are currently under development: a revival of d'Herelle's approach (Keen 2012). Dublanchet and Bourne (2007) likewise argue that, in view of increased antibiotic resistance, phage therapy may become topical again.

[20] Pasadena (Los Angeles) and Cold Spring Harbor: the "Mecca and Medina" of phage–research (Cairns et al. 1966, p. ix).

over bacterial viruses at different locations (Paris and New York) more or less at the same time.

Seeing the struggle for priority lost,[21] Gottlieb urges Martin to reorient his agenda towards applied research. An outbreak of bubonic plague in the Lesser Antilles provides him with a perfect opportunity to test his phage *in vivo*. His motives are scientific rather than medical, however, and he sets off on an expedition which is not meant to save lives, but rather to produce a landmark publication. He wants to *use* humans instrumentally, in order to understand the phage. For him, human beings (coloured, illiterate inhabitants of a Caribbean island) are living test-tubes as it were. So far, the bacteriophage had been a laboratory artefact. Time had come to test his principle X in an outdoor setting, exposing it to the reality principle as it were. Bacterial viruses were still untried in the real world outside the lab. Will the vaccine work in the messy and complex environment called reality? The inhabitants of St. Hubert are seen as research subjects rather than suffering patients. The population of a remote village (providing optimal conditions for a field trial) is divided into two samples: the experimental condition (receiving the phage vaccine) and the control group (denied the life–saving serum and treated with traditional methods) – a strategy which Pasteur and his followers had successfully adopted in their experiments with cattle (Zwart 2008a, p 175 ff.).[22] Indeed, the experiment (purportedly conducted for the benefit of mankind, but primarily designed for the prestige of McGurk) is performed by Americans at the expense of coloured, native human "bodies" (Lynch 2000). But as the phage vaccine begins to show results, it becomes increasingly difficult to uphold the experimental design in practice. This again reflects the dynamics of university discourse:

S_2 (experimentalism: extrapolation)	a (phage therapy: will phages kill lethal bugs?)
S_1 (methodological imperatives: epistemic super-ego)	$\$$ (normative collision between medicine and research)

Initially, Martin is bent on extrapolating his phage research to the outside environment, conducting high-quality research which is sufficiently robust (methodologically speaking) to render (friendly but powerless) doctors obsolete for good. In the end, however, he acknowledges that he is "too human to be a satisfactory experimenter". The panic–stricken controls (the anonymous indigenous masses) secretly begin to move over to the experimental sample, and finally, due to the death of Martin's two most significant others (Western individuals with a name and a face,

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[21] While the conflict over priority between Twort and d'Herelle is still a matter of dispute among historians, the Arrowsmith–d'Herelle conflict resurged in the struggle over priority that unfolded in the 1980s between Robert Gallo (of the National Cancer Institute in Bethesda, Maryland, who also did research on viral pathogens in the Caribbean) and Luc Montagnier (of the Pasteur Institute) over the discovery of HIV.

[22] "There may have been in the shadowy heart of Max Gottlieb a diabolic insensitivity to … suffering mankind. He who had lived to study the methods of immunising mankind against disease had little interest in actually using those methods" (p. 365).

namely Sondelius and Leora),[23] Martin becomes aware of the disruptive logic of "pure" biomedical research. The experimental method may endanger rather than safeguard life. He decides to give his phage vaccine to everybody, ignoring Gottlieb's instructions (his inflexible ego-ideal, summoning him from a distance, from beneath the bar). The objective is reversed: from conducting experiments (knowledge production) to beneficence (saving lives). With a scientific conscience weakened by inconsolable remorse, tropical heat and heavy liquor, he *compromises* his work and fails the test. The moral force field produces a cleavage or splitting ($) between epistemological and bioethical normativity, and he proves unable to maintain his integrity by upholding his unconditional allegiance to pure research.

There are dramatic examples in real history of similar conflicts between the roles of physician and researcher (between caring for severely ill patients and trying to find a magic bullet), for instance in the case of AIDS. Another famous example is the discovery of cyclosporine to prevent rejection of organ transplants (Starzl 1967, 1992/2003). After the heroic first stage of organ transplantation (during the 1950s and 1960s), a severe crisis emerged in the 1970s. Implants were rejected, immune systems were ruined. Cyclosporine seemed to offer a miracle cure. Prospects for patients improved dramatically. But in order for the new product to become available, it had to be tested in randomised trials, allowing the results from the experimental condition (the saved) to be compared with those of the controls (the doomed).

Martin continues to waver between both roles. Initially, he remains loyal to the gospel of randomised trials preached by Gottlieb, but eventually he botches his experiment and spoils his results, assuming the role of "saviour" of the desperate. The plague disappears from the island, but it is no longer possible to conclusively prove that it was the phage vaccine that did the job (as plagues always have the tendency to disappear after a while, even in the absence of any biomedical intervention whatsoever).[24] Thus, his final big opportunity to acquire everlasting fame is thwarted. Martin's fatal flaw is his incapacity to consistently uphold his loyalty to one of these two incommensurable deontologies: the demands of scientific rigour versus the principles of professional medical ethics, – even though the deontology of science is the dominant one because an *Über–Ich* is "introjected" (as Freud calls it) into his psyche, personified by Gottlieb. He feels haunted by the latter's critical gaze, experiences any concessions to his duties as a physician as moral weakness and sees his West Indies expedition as a failure because he puts the well–being of people above research (Parry, p. ix).

Beneath his manifest allegiance to Gottlieb, however, a latent oedipal conflict is clearly at work as well. Throughout the novel, Martin struggles to distance himself from Gottlieb-the-father-figure, attempting to evade the inevitable oedipal collision

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[23] Leora dies from smoking a cigarette carelessly left behind by Martin in his lab, infected by spillage from a test–tube.

[24] "Playing the savior, he had been a traitor to Gottlieb and all that Gottlieb represented … he did not have complete proof of the value of the phage … The more they shouted his glory, the more he thought about what tight–minded scientists in distant laboratories would say of a man who had had his chance and cast it away" (414/5).

that awaits him should they remain too close. This is what makes him leave the (promising) field of bacteriology to become a country doctor: an independent, married adult with an income, craving to free himself from the tyranny of "Gottliebism" (p. 116). Yet, Gottlieb crosses his path again and Martin, tormented by discontent, now eagerly subordinates himself to his found-again father-figure, wasting two long years on dreary, repetitive, meaningless lab work, without any output of significance. When suddenly the perennial microbial battlefield opens up before his eyes, for the first time in biomedical history, Gottlieb proves an excessively stern father, notably towards his "favourite" (p. 64), standing in the way between Martin and an international academic breakthrough, consciously retarding and discouraging his publication, so that the competition over priority is lost. Gottlieb effectively hinders Martin to seize the one big opportunity to "make a name for himself", as Tubbs phrases it: gaining international recognition and achieving intellectual independence as a department head (a position offered to him by Tubbs, but withdrawn as soon as the news of d'Herelle's publication reaches New York).

This is also reflected by Gottlieb's comments on this occasion: "Something has happened, not altogether bad". Now that the situation has become untenable, Martin is sent on a gloomy errand, all for the glory of Gottlieb himself, whose life-work Martin is supposed to fulfil: the St. Hubert expedition. But eventually he is overwhelmed by anger, resulting in an outburst of masculine oedipal protest: "To Hell with experiments! To Hell with Gottlieb!", as the movie version phrases it.

In this latter scene, university discourse gives way to the discourse of the hysteric. Unable to overcome the split between conflicting deontologies, Martin now takes the floor as a tormented subject ($\$$ in the upper-left position as agent), raising a voice of boisterous protest against the authoritative father-figure (the recipient of the message: Gottlieb now acting as S_1 in the upper-right position), both practically (by compromising his experiment) and verbally (the movie scene):

$$\frac{\$}{a} \bigg| \frac{S_1}{S_2}$$

This type of discourse tends to be disruptive, but may nonetheless be functional. By challenging the "impossible" epistemic regime represented by Gottlieb, a less disruptive practice of knowledge production could perhaps emerge (S_2 in the lower-right position). But in order to achieve this, Martin (the divided subject) must work through the question what is really driving his research, his *cupido sciendi* (*a* in the lower-left position). And precisely this self-reflective deficit is Martin's ἁμαρτία, his tragic fatal flaw. In order to analyse his experiences, he is in need of a therapist. Upon his return to New York City, he bursts into Gottlieb's office to make a full–fledged "confession": "I did not add to knowledge. I did the humane thing. I lost sight of science". But this attempt to establish an analytical relationship falters, because he can't get through to Gottlieb anymore, who has become senile, so that Martin cannot be "cleansed" (p. 422). Unable to accept his father's place and become his substitute (the position of department head is offered to him, which

would reposition him as S$_2$ in the upper-left position), he flees from McGurk for good, taking his microscope with him – an item which functions as a phallic symbol, an enabling contrivance, complementing his deficiencies – to follow a fugitive colleague into the forest.

This final gesture seems a final escape into Cynicism (in the ancient sense), for Cynics were itinerant scholars who already refused all societal roles and responsibilities, which they saw as enslaving, as indicated by their garment: bare feet and a rough cloak (Dudley 1967). Martin's escape into the forest conveys his refusal or inability to accept endorsement by the professional, institutional, symbolic order. After the death of the father, Martin flees from the role he is expected to play, as well as from the claustrophobic embrace of his wealthy spouse, who mothers him and bereaves him of what is left of his independence. Beyond the civilised world, he wants to come to terms with his own desire. But should we see his "forest science" as an attempt at self-analysis, or rather as a relapse into the position of beautiful soul, a misguided effort to restore his integrity by withdrawing into "pure" science, rather than by trying to *work-trough* the inevitable conflict?

5.7 A Scientific Walden: The Pastoral of Cabin Science

As a researcher, Martin is torn between the profane world of everyday existence and the sacred realm of science. The normal world is depicted in a cynical and sarcastic manner. Only heavy drinking allows the hero to survive the imperfections of love, marriage and human company, where real-life people oftentimes prove disappointing and abusive.

Only in the realm of pure science can Martin hope to find purity and precision (integrity), instead of sloppiness and contamination (questionable practices or even misconduct). These two realms compare to one another as newspapers and popular magazines compare to the *Journal of Infectious Diseases*. But the scientific realm is not an innocent world. For here, the death drive reigns: Martin studies bugs in order to systematically eradicate them (to destroy these "amiable" pathogenic germs, with their "lovely flagella", p. 41), while staggering numbers of test animals (rabbits and guinea pigs) are "sacrificed" on behalf of (often quite pointless) research, without any ethical review procedure whatsoever. At a certain point, Martin even starts using chimpanzees for a 2 year project that ends in failure, although "murdering monkeys proves expensive and grim" (p. 440). And finally, on St. Hubert, human beings are sent to death like guinea pigs for the sake of upholding the rigorous logic of randomised trials, represented by a highly charged term: the word "control",[25] – the

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[25] "He had learned from Gottlieb the trick of using the word 'control' in reference to the person or animal or chemical left untreated during an experiment, as a standard for comparison … When a physician boasted of his success with this drug or that electric cabinet, Gottlieb always snorted, 'Where was your control?'" (p. 43).

novel's basic signifier, the most powerful term which Martin as a student adopts from Gottlieb, playing a decisive role in the structuring of the plot.

For Martin, the conflict seems unsolvable. One is *either* a scientist, *or* a doctor (Clarfield 2007). The normal, professional world ('reality') is a wasteland of boredom – a waste of time. The "religion" of science promises personal redemption, but this can only be achieved by conducting experiments, almost as a "religious exercise" (Löwy 1988), which are inherently destructive.

As a final solution, in a desperate quest for salvation, Martin prefers *flight* over *fight*, into the forest, the outdoors world, where a self–made cabin laboratory is installed. Thus, Martin moves from rural medicine (North Dakota) to public health (a small town in Iowa) to bacteriology (a fashionable Chicago clinic) to basic research (New York, the 'ultimate' city) and finally to "pastoralism" (Doctorow 2008, p. 456). Here, in a drastically simplified world (in stark contrast to the extravagantly furnished laboratory organization at McGurk),[26] he can finally *act out* his ideal of uncontaminated inquiry, albeit in a rather imaginary manner, since life in this tiny scientific hermitage (this "shrine", p. 467) is almost completely out of touch with what is happening in the world at large. Here, in isolation, he really wants to begin working in earnest, continuously, day and night.[27] As a stranded researcher he conducts experiments which seem bereft of all purpose. For although he seemingly adheres to what Lacan sees as the basic imperative of modern science ("Go on, continue to produce more knowledge!; 1991, p. 120), real scientific productivity can only happen in a world of social networks.[28] In terms of Hegelian dialectics, the discourse of the hysteric concurs with the position of the "beautiful soul" who rises up against the world in the name of the "law of the heart" (Lacan 1966, p. 219) but proves unable to deal with the conflicting demands and tensions of the real world (the world of contracts, relationships, professional expectations, rivalling claims, priority conflicts and so on), and therefore decides to drastically simplify life. Only in this manner can Martin live up to his fantasy of pure, uncontaminated activity, instilled in him during his student days by Gottlieb.

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[26] In the novel, but even more so in the film, McGurk is depicted as a streamlined laboratory in a futuristic Institute in a futuristic building in a futuristic city: on the uppermost floors of a skyscraper, a majestic office building located in the metropolitan quarter from which New York ruled the world; a topology emphasising the steep vertical aloofness of 'top' science.

[27] "When they had worked all night, they came out to find serene dawn lifting across the sleeping lake" (p. 468). And when his wife (in a final desperate effort to make him change his mind) seeks him out in his hide–out and asks him whether he hasn't become a bit insane, he answers: "O absolutely! And how I enjoy it!" (p. 469).

[28] Cf. the final sentence of the novel: "I feel as if I were really beginning to work now … We'll plug along for 2 or 3 years … and probably we'll fail" (p. 471).

5.8   Conclusion: Conflicting Deontologies

Arrowsmith addresses a basic divide running through biomedicine, a clash between two (incommensurable) deontologies, two *integrity regimes* as it were: the principles of medical ethics on the one hand and the demands of experimental research on the other. Although biomedicine is allegedly motivated by the objective to promote well-being (enhancing the effectiveness of clinical practice), *Arrowsmith* emphasises that there is another, rather disruptive impulse at work as well: a violent will to control life, endangering rather than protecting the well-being, not only of research animals, but also of patients and, eventually, of biomedical researchers (such as Martin Arrowsmith) themselves. They must choose between two options, both of which are presented as morally unsatisfactory: on the one hand medical practice, portrayed as fundamentally insincere (permeated by *mauvaise foi*, to use the Sartrean term), on the other hand the methodology of randomised trials, depicted as inconsiderate and ruthless. After a series of fiascos, Martin's "solution" is simplification and escape (*flight* instead of *fight*).

This raises the question whether this nihilistic portrayal of the moral dichotomy is inevitable. Dialectically, the relationship between medical practice and basic research may perhaps be seen in a different light. In *Arrowsmith*, the claim is made that, as soon as the principles of biomedical science (M_1) are *applied* to practical situations, multiple conflicts and contradictions emerge (M_2), but a more sustainable and satisfactory outcome would be the awareness that, eventually, the one cannot really function without the other ($\rightarrow M_3$). In splendid isolation, pure science becomes thin and empty, so that the plea for "pure" research may actually be an immunisation strategy, a mechanism of defence (the beautiful soul position). Moreover, it is precisely in the confrontation with real-life situations that the relentless drive towards control, fuelling the quest for knowledge, is brought to the fore. In other words, application and extrapolation are necessary experiences to discover what science really is about. The experience of *working through* the conflict is then seen as a precondition for self-understanding.

But this outcome is not easily achieved. The chronic tension is there for real, as indicated when we read the novel in terms of the discourse of the analyst:

$$\frac{a}{S_2} \quad | \quad \frac{\$}{S_1}$$

The phage is Martin Arrowsmith's *object a*: the cause of his desire, that which gives meaning to his life, that which makes him move and act. But it also inflicts in him a tragic sense of *Spaltung* ($). Suffering, desperate patients are not his primary source of inspiration, and his profession is merely a pretext for his real desire: conducting research. In the exposure to the enigmatic object, professionalism becomes suspended (S_2 in the lower-left position). What really motivates him is an invisible, faceless laboratory phenomenon, inexorable and uncanny, hovering between living and non–living (*a*), and more addictive than heavy liquor. The phage is the one thing

he wants to control, but which actually controls him, up to the point of impairment (*$* in the upper-right position). His craving is to transform it into a predictable tool, to domesticate it into a normal object, so that university discourse can function smoothly again. A working vaccine would have been a perfect outcome in this disruptive struggle for power between the researcher and his virus (*$ ◊ a*). In that case, the phage would have ended his discontent, his anonymity, by making him famous, turning his life into a success story after all. But the idea of medical benefits functions as a façade, a pretext for his urge to dominate nature in her most elementary (viral and microbial) dimensions, working himself into a state of neurasthenia – in accordance with Dostoyevsky's insistence that intellectual activity is, in final instance, a "disease" (1864/1972, p. 18).

In conclusion, we are not confronted with a moral dilemma in the sense of a problem that can be solved by developing or abiding to rules and regulations, such as the codes of conduct and ethical principles of research with human subjects. Although such practices (developed by professional ethicists) may help to subdue the tension, making microbial research more manageable no doubt, they will not abolish the basic divide. The desire to control life may become addictive precisely because it is driven by a disruptive compulsion. As a science novel, *Arrowsmith* opens up and dramatizes this basic rupture, thus furthering our awareness of the gap between what basic research produces and what clinical medicine basically needs. And this divide not only affects the *knowledge* dimension, but the normative dimension (the level of morality and of the Self) as well. According to *Arrowsmith*, what is considered *integrity* in the realm of basic research is regarded as *misconduct* in medical practice, and vice versa. But this may not be the final word. *Arrowsmith* is the first real science novel, as we have seen. In the next sections we will explore how these tensions are addressed in other novels, notably in Chap. 7 (*Cantor's dilemma*) and Chap. 9 (*Intuition*).

Chapter 6
A Compartmentalised Culture: Snow's *The Affaire*

6.1 Introduction

Charles Percy Snow's novel *The Affair* (1960) is the eighth volume in his novel sequence ("roman fleuve") *Strangers and Brothers*. The book concurs with the principle of unity of time, place and action in the sense that most of the action takes place at a Cambridge college, within a limited time frame (the period 1953–1954), and revolves around a delicate case of fraud. Lewis Eliot, a former college fellow and legal expert is invited to investigate the case and acts as first-person narrator. As a science novel, bridging the gap between literature and science, *The Affair* and other novels may be regarded (somewhat paradoxically perhaps) as a counterpart to Snow's famous 1959 lecture *The Two Cultures* lamenting the gulf that exists between scientists and "literary intellectuals", de facto bridged by these novels. He earned a Ph.D. in physics (spectroscopy) in Cambridge and became a Fellow of Christ's College in 1930 before taking up his *Strangers and Brothers* sequence.

The story can be summarised as follows. In 1951, a case of scientific fraud is detected in a prestigious Cambridge college. A former Fellow named Donald Howard published a paper in a scientific journal which was criticised by American colleagues who were unable to replicate his experimental results. A diffraction photograph, which was presented as decisive experimental evidence (both in Howard's paper and in his Fellowship thesis) proved to be forged. On closer inspection, "dilated pin-marks" could be seen (p. 108). Some experts from within the college had investigated the allegations and concluded that the picture indeed represented a clear case of "unadulterated fraud". But when called upon to explain himself, Howard (after initially vehemently denying the accusation) claimed that the fraud must have been committed by his supervisor, a highly venerated professor named Palairet, who had just died (on January 5, 1952).

Initially, Howard's line of defence seemed highly unlikely. Palairet's scientific work was sound and safely established ("textbook stuff"). His experimental results were beyond dispute and had been repeated, time and again, in laboratories across

the world. Why should such an esteemed scholar revert to fabricating his data? In addition, if the story had any credibility at all, it basically implied that Howard himself had been an extremely careless and irresponsible scientist who simple accepted data provided to him by his supervisor without questioning or critically assessing their quality. So, even if the fraud had been committed by Palairet, which seemed highly unlikely, Howard had de facto disqualified himself, both as a researcher and as a College Fellow. Thus, the Howard affaire was regarded as settled and the perpetrator was dismissed. The self-cleansing mechanisms of science had been successfully put to work and the College had managed to keep the scandal silent. No one in the outside world had been informed.

At the start of the novel, however, Laura Howard, the perpetrator's wife, insists that her husband is innocent, that his reputation has been damaged and that the case should be reopened. Initially, the College community is very reluctant to do so, also because of a broadly felt antipathy or even contempt towards Howard, not only because of his sloppy research attitudes, but also because of his communist fellow-traveller convictions. But Laura Howard (described as a "dark", "awkward" woman with a "long nose") suggests that prejudice may be at stake, given that her husband is Jewish. This also explains the title of the novel: a reference to the Dreyfus affair.[1] Initially, the grievances of the Howard couple are attributed to "paranoia and persecution mania", but at a certain point it is nonetheless decided to ask Palairet's executioners to turn over the late Professor's notebooks so that they may once again be scrutinised by two College scientists, Nightingale and Skeffington. The notebooks arrive in batches and when finally the last instalment of Professor Palairet's scientific papers (a thick exercise book referred to as Notebook V) arrives (on December 11, 1953), it is studied first by Nightingale and subsequently by Skeffington. Towards the end of the notebook (on page number hundred and twenty-one, to be exact), the latter discovers a blank space in the middle of a page "with a rim of sticky paper, as though something had been removed". Two thirds of the page is empty, except for traces of gummy paper marking out the sides of a rectangle, where a photograph must have been. Indeed, at the bottom of the rectangle, even a scrap of the print is still noticeable. Underneath the empty space there are some lines in Edwardian script, in Palairet's handwriting, saying: "Have always predicted this. Follow up". Clearly, a diffraction photograph must once have occupied the empty space, but the photograph is now missing (p. 68). Skeffington realises that this is where Howard's paper starts off. Was it a case of self-deceit on the part of the elderly scholar? That seems difficult to determine, since the crucial piece of evidence has disappeared, which is problematic enough in itself.

With the smallest possible majority, the College fellows now decide to reopen the case. Everyone despises Howard, but most College fellows nonetheless believe that justice should be done. The Court of Seniors is requested to reconsider its

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[1] Snow also makes a comparison with the case of Emil Rupp (1898–1979) who retracted five publications in which he claimed to confirm Einstein's theories on wave–particle duality. Rupp attached a psychiatric report to his retraction claiming that these publications were written under the influence of "dreamlike states" caused by psychasthenia.

previous verdict. Two professional legal experts are brought in to argue in favour and against a reversal of the earlier decision, and two fractions line up, so that a drama of college politics unleashes. Quickly, dissensus among the college fellows increases, tensions build up, suspicion proliferates and the political force field splits in two.

The reconsideration procedure is formally opened on April 22, 1954, with a leather-bound Victorian ledger, holding a collection of Palairet's notebooks, exhibited on the table. The case is a delicate one from the very outset. A piece of deliberate scientific fraud is in itself already considered a rare and highly unlikely event. All Fellows agree that the photograph in Howard's thesis had been deliberately faked, but the question is: by whom, Howard or Palairet? Before Palairet's notebooks reached Skeffington, they went through the hands of Nightingale, a Palairet supporter. Was it credible that Nightingale had seen the photograph and pulled it out? If the photograph now missing from the notebook had been present, and if that photograph had been a fraud, then that fraud (a case of self-deception, perhaps) must have been committed by Palairet. But again: why would a distinguished scientist, a member of the Royal Society, at the age of seventy-two suddenly revert to faking his results, thereby jeopardize his life's work? There seemed to be no motive, nothing much to gain from such an act, for Howard's mediocre work hardly added anything to Palairet's reputation. On the other hand, "the psychology of scientific fraud is often a mystery" (p. 230).

Howard himself is unable to explain how the tainted photograph had gotten into the experimental data. Palairet must have provided it, but Howard cannot remember how or when. There were many photographs, he tells the jury, and he was just trying to finish his thesis in time. He never saw the original negative and only used the evidence as it was provided. Without it, his thesis would not have been approved. On a previous occasion he had even declared that he was not interested in discoveries at all, that he just wanted to publish some papers and "play the game". On the other hand, everything fitted into place once the premise was accepted that Palairet had done it. But this would mean that the photograph now missing from Palairet's notebook had been consciously removed, in order to preserve Palairet's reputation and justify Howard's dismissal. Someone who was pro-Palairet and anti-Howard apparently desired to have that photograph out of the way. In other words, a fraud, a *suppressio veri* (286), had occurred twice, involving the same picture; and this shifted the focus of suspicion to Nightingale. The latter however claims that, when he looked into the notebook, the picture had still been there and that nothing seemed wrong with it at all. How then could the photograph have disappeared when the notebook was next opened? Was it Skeffington himself perhaps? Interestingly, as the narrative unfolds, everyone who is confronted with this toxic photograph, this toxic piece of evidence (Palairet – Howard – Nightingale - Skeffington) becomes tainted or infected by it, finding his integrity questioned, his reputation damaged.

Eventually, after much intrigue and bargaining, the "curves of justice" lead to the reinstatement of Howard. With the smallest possible minority it is concluded that the testimony is not sufficient to support the order which had been given for the "deprivation" of Howard. But this is not the end of the dispute, for the next issue on

the list concerns the amount of financial retribution to which the generally despised Howard is entitled.

6.2 First Comments

The Affaire initially seems a novel about Kantian morality, focussing on the conflict or tension between inclination and obligation (with the latter eventually overruling the former). Although the College community as such reveres Palairet and is vehemently and unanimously inclined to despise Howard, the collective super-ego or sense of justice nonetheless forces the fellows (or some of them) to reconsider their opinion. Notably, they are sensitive to the accusation of "prejudice" (a metonym or displacement term for antisemitism). "Prejudice" is the *signifier* which puts the procedural machinery into motion: a "second-order" accusation. Whereas the first-order accusation concerns the fraudulent act as such, the second-order accusation concerns the effort to cover it up (using Howards as a scapegoat).

If we look at the context (Cambridge, United Kingdom, 1953), a real scientific event immediately comes to mind, namely the discovery of the bio-molecular structure of DNA by James Watson and Francis Crick in 1953. Their discovery likewise involves an infamous, tainted photograph, namely photograph 51, belonging to Rosalind Franklin (although probably taken by Raymond Gosling, her collaborator), and shared with Watson (without Franklin's knowledge or consent) by Franklin's colleague Maurice Wilkins, as a vital piece of evidence in favour of the double helix-hypothesis, adopted by Watson and Crick but contested by Franklin (Zwart 2015d). This event (i.e. Wilkins showing photograph 51 to Watson)[2] is generally regarded as a decisive event (perhaps even *the* decisive event) in the DNA discovery, so that over the years a vehement discussion has evolved concerning the question whether the Wilkins-Watson scene should be considered a case of scientific misconduct (at the expense of Franklin, a female Jewish colleague with whom both Watson and Wilkins had a rather tense relationship (Watson 1968/1996; Wilkins 2003). In *The Affaire*, no mention of nor any reference to this real dispute is made. Nonetheless, some intriguing parallels between both cases (the literary and the historical one) can be discerned (I will come back to this in due course).

From a Lacanian perspective one could argue that the (absent, missing) item, the decisive piece of evidence, the object with forces the various agents into action, the toxic entity which is infecting and contaminating everyone who touches it (Palairet, Howard, Nightingale, Skeffington, etc.) is the intractable object *a* of the novel, which I will now analyse in terms of Lacan's theorem of the four discourses.

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[2] One day in January 1953, Raymond [Gosling] met me in the corridor and handed me an excellent B pattern that Rosalind and he had taken… A few days later Jim [Watson] was visiting us, and I stopped him in the main passage of our lab to show him the photograph. I said that it was very frustrating that Rosalind was continuing to base her work on non-helical ideas even though she had this new pattern that was even more convincingly helical than ever… (Wilkins 2003, p. 197/198).

6.3 The Discourse of the Master

The backdrop of the novel is a discursive mode which Lacan refers to as the discourse of the Master. The Master is an absent but prestigious voice from the past, emeritus Professor Palairet, acting as a deceased father-figure whose integrity is beyond question ($ in the lower-left position) and whose presence is still acutely felt, so that he puts his adepts (the recipients of his legacy) to work (S_2 in the upper-right position):

S_1	S_2
$	a

Besides his formal, published legacy, there is a *Nachlass*, an informal legacy, which becomes a source of embarrassment to the sons: a situation which in philosophy is not unknown, think of Nietzsche's *Nachlass* for instance. In contemporary author studies research, it is comparable to Heidegger's *Schwarze Hefte*. Palairet's *Nachlass* is tainted, infected, and the problematic photograph is the condensation of this problem. In other words, the core item of this legacy is something which is highly questionable, something which his disciples experience as impossible to deal with, and which is strictly speaking absent, but which *precisely because of this absence* is decidedly present: the allusive object a. Did Nightingale try to contain the threat (the potential damage to the reputation of S_1, so that $ would be revealed) by removing the photograph, thereby putting himself at risk? If this is the case, Nightingale (a respected fellow) becomes a fraudulent scientist himself ($S_2 \rightarrow $), as if fraud is an infectious affliction, which can only be atoned by counter-fraud. Should that be the case, Nightingale (the only one who actually saw the original picture), apparently failed to see that he was *being seen*, that the absence of the picture would not go unnoticed (a position which Lacan (1966, p. 15) refers to as the position of the Ostrich, the person who hides something without being aware that he will be *seen as* hiding). Or are all other academics simply upset by a missing photograph which, according to Nightingale (again: the only person who actually saw it), was not only unproblematic but even irrelevant, "uninteresting". Paradoxically, the disruptive power of the object *a* resides precisely in its absence. Moreover, the (missing) evidence begins to circulate, infecting and injuring everyone who touches this intangible absent something, which damages the reputation of an eminent scientist (Palairet, accused of fabrication), disrupts the career of an early stage researcher (Howard, accused of sloppiness), undermines the credibility of Nightingale (accused of manipulating the file) and even affects the respectability of the Court of Seniors (accused of prejudice), etc.

There are, as we have seen, two instances of fraud (first-order fraud and second-order fraud). The first-order fraud can be summarised as follows. Initially (M_1), the legacy of a reputed academic is to be treated with respect. But when the evidence produced by Palairet (the father-figure) is really used (by Howard), all kinds of tensions and contradictions emerge (M_2). If the evidence produced by Palairet is used

in an uncritical manner, this results in accusations of fraud. But if the evidence is treated with scientific scepticism, in other words: if Palairet is regarded not as an unquestionable authority (S_1), but simply as a researcher (S_2), a *Fehlleistung* is discovered, a most unfortunate fatal mistake, possibly due to self-deception (but this interpretation is actually a rationalisation, for it is not to be excluded that it really was a case of fraud). The whole constellation results in an unintended and discomforting by-product: the faked photograph (*a* in the lower-right position), exposed by U.S. competitors. Psychoanalytically speaking, the object *a* is the primordial agent of the story, forcing everybody into action: the picture with the diluted pin-marks, taken by Palairet, and therefore initially regarded as an unquestionable piece of evidence, but now posthumously undermining his prestige. Apparently, Palairet's photograph deceived him into believing himself to be on the path towards truth. The object *a* reveals Palairet's susceptibility to self-deception (*$*): Palairet's *fallibility*, disavowed until now and pushed back into the lower-left position. How to reconcile all these ambiguities into a convincing, comprehensive view (M_3)?

A similar dynamics (reflecting the structure of the Master's discourse) unfolds with respect to the second-order misconduct. The trustworthiness of the notebook, the legacy, bearing the name-of-the-father (Palairet's signature and handwriting: S_1) seems initially beyond dispute (M_1). Yet, there is a disconcerting gap, a missing link: the decisive item is emphatically absent. Only an empty space (its negative as it were) is visible. One possible explanation is that Nightingale, the first recipient of the notebook (S_2 in the upper-right position), seeing that his attempt to verify Palairet's credibility was *negated* by the facts (M_2), decided (as an act of fidelity by a devoted adept) to falsify the data by removing the toxic item (which threatens to compromise the legacy of the Master, upon which the reputation of the institution builds), thereby inevitably becoming tainted or infected himself. Palairet's handwriting (underneath the missing picture) seems to confirm his *Fehlleistung* (his self-deceit), but by removing the decisive piece of evidence, doubts concerning the reliability of the legacy of the Master (*$*) are temporarily silenced (contained in the lower-left position). But this instance of misconduct fails to restore the integrity of the *Nachlass* ($\rightarrow | M_3$). Therefore, the by-product of Nightingale's (respectful or disrespectful?) actions is a spectral, haunting item (*a*) which begins to circulate, disrupting the political balance within the College, due to the eruption of conflicting views concerning the content of the missing picture. In other words, due to the object *a*, latent political ruptures in what purports to be a homogeneous community come to the fore, so that a special procedure is set in motion in order to contain the political turmoil (on the *power* level), the credibility crisis (on the *knowledge* level). But on the level of the *Self*, this offers an opportunity for everyone involved to constitute oneself as a responsible moral subject by adopting a particular normative interpretation of the situation (by taking sides). But in terms of discursive dynamics, precisely this formal procedure (adopted as a means to find out the truth) effects a quarter-turn to the left, so that the discourse of the Master gives way to university discourse.

6.4   University Discourse

In university discourse, S_2 (the professional expert) assumes the role of agent (upper-left position):

$$\begin{array}{c|c} S_2 & a \\ \hline S_1 & \$ \end{array}$$

Challenged by the unsolvable enigma (the crisis of the Master's discourse), Nightingale and Skeffington take the floor, not as adepts, but as (allegedly objective and independent) experts, able and willing the assess the situation, even if this entails a critical assessment of the legacy of Palairet (reading his work as if he were a mere researcher, rather than an infallible father-figure). The unquestionable authority of the Father (S_1) is disavowed (pushed into the lower-left position) and Nightingale and Skeffington (representing S_2) assume the role of independent agents who have sufficiently emancipated themselves from the (now discredited) power structure entailed in the Master's discourse. They address the intractable object (a) in an impassive manner by giving their expert opinion. In order for the university discourse to function (in order for S_2 to function as agent), the voice (the sway, the prestige) of the Master must be suspended (S_1 in the lower-left position). Judgement on the basis of authority must be replaced by expert opinion, by a careful, technical and evidence-based examination of the case. But as soon as these principles and imperatives (M_1) are brought into practice, the logic of university discourse becomes frustrated (*negated*) by the fact that both scientists, confronted with the same data, reach opposite (and mutually exclusive) conclusions (M_2). The examination gives rise to a contradiction which seems impossible to reconcile. If the position of one of the experts is adopted, this necessarily implies that the other is a fraud (guilty of prejudice, of falsifying the data, etc.). Either Nightingale or Skeffington is guilty of second-order fraud. If Skeffington is right, Nightingale must have deliberately removed the photograph, but the reverse is also true. We are faced with a Moebius ring: both positions may be taken, and several fellows move from one side to the other, but no one is able to comprehend the situation as a whole. There is always a missing link, another side. Although both experts seem absolutely convinced of their case, the split proves unsurmountable, and both fellows find their reputation damaged in the course of the procedure. They are contaminated by the encounter with the infectious target of their examinations (a in the upper-right position). And the status of this object a (the photograph) remains highly ambiguous, for it is both regarded as decisive evidence (by some) and as uninteresting (by others), both as fabricated (by Skeffington) and as unproblematic (by Nightingale). The confrontation with this object a produces a case of fraud ($\$$ in the lower-right position), but it seems impossible to determine with certainty who committed the misconduct. The result is a deadlock which is damaging for both, because rather than as impartial experts (S_2), able to keep their distance, and in control of the situation, they are exposed as "divided subjects" ($\$$) willing to revert to misconduct if that is what is

required for their version of the truth to prevail (*$* in the lower-right position). In other words, in their struggle against fraud, they (or one of them at least) are forced to *become* fraudulent themselves.

6.5   Hysteric's Discourse

The Master's discourse is not only challenged by university discourse (by expert opinion), however, but first and foremost by the discourse of the hysteric. This type of discourse is voiced by Laura Howard (*$* in the role of agent), not in the sense that she is a hysteric in the psychopathological (Freudian) sense of the term, but in the sense that she is the one who challenges and stands up against the authorities directly (S_1 now in the role of recipient of the disconcerting message). She consciously violates the ethos of the College, which (among other things) entails that the (good) name-of-the-father should be venerated at all times. By raising a voice of protest, and also by introducing a sensitive signifier into the discursive mixture ("prejudice", a metonym for "antisemitism"), she forces the College to act. In response to her accusation, the procedural mechanism is set in motion, perhaps as an immunisation strategy, a mechanism of defence to safeguard the College's prestige. But instead of warding off the disruptive accusations entailed in the hysteric's discourse, the contamination proves more infectious than expected, resulting in chronic malaise:

$$\frac{\$}{a} \bigg| \frac{S_1}{S_2}$$

Laura Howard acts as agent, raising a voice of protest (*$* in the upper-left position), challenging the authorities and accusing them of "prejudice". Although she is generally regarded as an "awful" woman, and repetitively referred to as the "other" woman, at a certain point her complaints (coming from outside the system) can no longer be ignored. Thus, the establishment, the recipient of the accusation (S_1 in the upper-right position) is challenged and accused of prejudice and fraud. The initial verdict is negated: the establishment rather than Howard (its victim) is fraudulent. But her fervent campaign against injustice (allegedly on behalf of her husband) actually seems a façade driven by something else. She is not interested in science or scientific misconduct at all. Her object of desire (*a*) is to expose (and to subsequently cleanse the world from) antisemitism. Finally, in the course of the procedure, two legal experts become involved (one of them the narrator) who actually learn something from this case, so that their expertise is strengthened (S_2 as byproduct of the collision).

6.6   The Discourse of the Analyst: *The Affaire* and *The Purloined Letter*

But the reason for reading a novel is that it is neither an instance of a Master's discourse (the legacy of a father-figure), nor of university discourse (a report written by experts), nor of a hysteric's discourse (*J'accuse!*), but rather a stage where these types of discourse a probed and questioned by mutually confronting them with one another. This is why the narrator, the author's voice, is a legal expert, for this position allows him to do what the discourse of the analyst basically consists of: asking questions. In view of the epistemological, political and normative crisis, all other voices (the voice of authority (S_1), of expert knowledge (S_2), of societal protest ($\$$)) become suspended (ἐποχή), so that a discursive space is opened-up and a different type of discourse evolves. The novel becomes a Freudian couch, a psychoanalytical clinic, a moral laboratory as it were. The focus shifts from the perspective of the subject (inevitably limited and one-sided) towards the disruptive role of the object (*a*) as agent. It is the itinerary of this missing object which defines the structure of the novel. The photograph is the cause of Palairet's self-deceit, of Howard's sloppiness and of Nightingale's (or Skeffington's) fabrication. They are all contaminated by what is supposed to be evidence. As if the father-figure bestows a toxic infection on later generation via a seminal picture. Because of accusations of fabrication by American competitors (S_2), the papers containing the picture (*a*) is retracted, but this is not the end of the affair, for the original picture is still there, in Palairet's notebook, waiting to be discovered. Therefore, when Laura Howard ($\$$) makes her accusation (of prejudice), Nightingale tries to take the picture out of circulation once and for all, but precisely because of its sudden absence it draws everyone's attention more than ever. As a spectral, *missing* item, it threatens to disrupt the symbolic order *as such*. Its absence seems to confirm the suspicions against Palairet, but by denying that he has removed the photograph, Nightingale de facto accuses Skeffington of having committed second-order fraud, etc. In other words, it is as if the toxic picture carries an invisible label: *Noli me tangere*, do not touch!

Snow's story about the missing photograph is reminiscent in many ways of the famous detective story *The purloined letter*, written by Edgar Allan Poe and meticulously analysed by Jacques Lacan (1966). This story concerns an embarrassing piece of evidence, which may severely damage a person of high status: namely a confidential piece of writing, an embarrassing letter – *lettre embarrassante* (Lacan 1966, p. 13) – to a Queen. The letter has been purloined by a Minister, who wants to use this sensitive piece of information to increase his power over the Queen. But actually, the purloined letter enters into a complicated circuit. As soon as it begins to circulate, it runs the risk of falling into the wrong hands, or the right hands, depending on one's perspective, so that it seems to empower its new owner, while at the same time it is impossible for the recipient to actually *use* the information. For by using the missing letter, the perpetrator would inevitably draw attention to his misdemeanour, so that the impact of his disclosure would be thwarted, and he would become the accused rather than the accuser. It is a story about seeing and failing to see, and about having valuable information at one's disposal without being able to use it.

Such paralysing paradoxes can also be discerned in Snow's story. Several persons may or may not have purloined the picture. If Palairet did it, it proves that he wanted to correct the self-deceit to which he had temporarily fallen victim, putting his disciple Howard on a vicious track (who should have handled the evidence with more suspicion). But it is also still possible that Howard did the tinkering, in order for his paper to be publishable, although he now claims to be ignorant as to the origin of the damaging picture. Nightingale may have taken it out. In that case, he knows something which others cannot know for certain. But he cannot use this knowledge, because as soon as he would produce the evidence, he would damage either Palairet or himself or both. Skeffington may own the picture, but in that case he cannot use it either. Should either of them decide to produce the picture (to prove that Palairet is either innocent or guilty) they would expose themselves as perpetrators. Therefore, even *if* one of the two experts owns the picture (thereby *knowing* the truth, but *keeping* it from others) this knowledge cannot be made available to others. The owner necessarily feigns ignorance, so that the trump card (wherever it is located) can never be played, face up on the table. As soon as it is put into circulation, the recipient becomes contaminated. Whereas the individual who removed the photograph, thereby taking it out of circulation (Palairet, Howard, Nightingale, Skeffington?) probably *expected* that this would stop the object *a* from causing any more damage (while granting him some power over the potentially disruptive situation), the very opposite is true. By being absent, the purloined picture proves more damaging than if it had been present. But now it has become impossible to put it into circulation once again. In other words, all actors grossly underestimate what Lacan refers to as the supremacy of the signifier (the evidence), whose very absence determines the interactions between the actors involved. It is the *absent entity* which determines the acts, interactions, blind spots and even future destinies of the subjects involved (1966, p. 30; cf. Assoun 2003, p. 40). In other words, instead of owning the photograph (the signifier), the perpetrator rather *is owned* by it. As the drama unfolds, the activities, options and choices of all the persons involved are increasingly determined by an absent X, so that its absence proves much more damaging and effective than its (now impossible) presence. In terms of game theory: by trying to prevent damage to Palairet (by trying to keep the latter's *Fehlleistung* a containable secret), the sum total of the collective damage becomes significantly increased. But once the process is set in motion, it functions almost automatically, and the big puzzle, for the Court of Seniors, is not "who did it?", but rather: "how to bring this detrimental process to a stop?"

Chapter 7
What Do Scientists Want? Perverse Incentives and Replication Traumas in *Cantor's Dilemma*

7.1 Summary

Prof. Isidore Cantor is a biochemist who became a cell biologist and works at a small university on tumorigenesis research. During a nightly visit to the toilet, he has a eureka-experience. His idea is that, because of some mutation affecting the production of arginine (an amino acid named after its bright, silvery-white colouring) certain proteins are suddenly able to move freely in and out of cells (cell membranes normally permit translocation only in one direction). To test the validity of his brain wave, he designs an innovative experiment with tagged proteins as radioactive labels and orders his post-doc Jeremiah (Jerry) Stafford to perform it. Cantor insists on Jerry's complete availability for this research, for he believes it may bring them the Nobel Prize, but this commanding assignment puts substantial pressures on the latter's relationship with girl-friend Celestine Price, a promising biologist, but also a muscular campus athlete who shares an apartment with Leah, a humanities scholar specialised in Bakhtin and dialogism. According to Cantor, to unravel the enigma of tumorigenesis would certainly be a Nobel-prize winning achievement, comparable to climbing Mount Everest or K-2 (p. 37). The analogy between scientific research and mountain climbing occurs several times in the novel and is a well-known trope (Collins 2011; Zwart 2011). Cantor sees his research field as a scientific Himalaya (83) and his project as a scientific Everest (p. 82), while Stafford is referred to as Cantor's Sherpa (p. 37, p. 83). The Himalaya metaphor (with the Nobel Prize as the summit) reflects the dimension of verticality in academic research (Zwart 2014c).

When Stafford finishes the experiment (allegedly successfully), Cantor sends a manuscript to John Maddox, editor of *Nature*, who agrees to bypass the usual refereeing process because it is such a hot topic. No experimental details are given. Their article appears in print within 10 days of the manuscript's arrival, and Stafford learns from Cantor how scientists may tilt the choice of referees in their favour. Adding citations of someone's work, for instance, is likely to lead the journal editor

to select that person as a referee (flattery always helps). But due to this discovery, Cantor (apparently an *impassive* researcher) suddenly becomes a craving subject, driven by the desire to establish priority and secure the prize (p. 61). In terms of university discourse: the confrontation with arginine's role in tumorigenesis (*a* in the upper-right position), destabilises the expert (S_2 in the upper-left position) and produces various symptoms of desire (*$* in the lower-right position) in a seemingly impassive university professor.

For Stafford, Cantor is a lab creature (S_2), but it soon turns out that he is not a single-minded researcher who lives solely for his work. He has a second, secret life (and an affluent one at that, because of a calculated marriage). Outside the lab, he lives the life of a gentleman-connoisseur, interested in erotic art, classical music and Jugendstil furniture, playing Boccherini in a string quartet and obsessed with Schönberg, Hindemith and Egon Schiele. In this role, he encounters Paula Curry, a tall, athletic, cello-playing Valkyrie who happens to be Celestine's aunt.

Clouds begin to appear in the clear blue sky when Cantor receives a call from his competitor Kurt Krauss (professor at Harvard) informing him that, although he had put his best post-doc (Yuzo Ohashi, "my Stafford") to work on it, the latter had been unable to replicate Jerry's experiment. Cantor decides that Jerry and he should replicate the experiment together, and apparently this time they are successful, until Cantor receives an anonymous note, an unsigned message, one sentence long, suggesting that Jerry secretly doctored the results: *Why was Dr. Stafford in your private laboratory Sunday evening?* (p. 93). This of course raises Cantor's suspicion. Why had Jerry secretly visited the lab? Cantor faces a dilemma. Should he retract the paper, exposing himself to academic humiliation, so that from now on every colleague will associate his name with fraud, or at least with sloppiness and irreproducibility? Cantor had never withdrawn a published paper before, had never reported unduplicatable experiments. An error of this magnitude would never be forgotten. Cantor decides to perform a second experiment, using a somewhat different design, an alternative route to the top. With the Prize before him and the spectre of withdrawal peering over his shoulder, he disappears into his private lab for weeks, unavailable to the outside world. In the end, all seems to end well. Both versions of the experiment are eventually confirmed, and both Cantor and Stafford fly to Stockholm to collect the Nobel Prize, but this does not put an end to the questionability of their results and the situation remains uncomfortable.
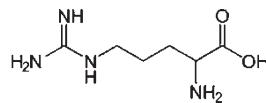
The dialectical structure of the narrative can be summarised as follows. The first moment (M_1) is an unexpected idea which allows Cantor to link abstract biochemistry with something relevant and concrete, namely cancer research. But this idea has to be *realised* in an experimental fashion (M_2), and this proves a frustrating experience, because the researchers are confronted with a hurdle, with the replication complex as it were. The goal is to overcome this hurdle, to discover the decisive experimental move, so that the abstract idea can be sublated into textbook knowledge (M_3), but on the final page of the novel it is still unclear whether this has really been achieved.

Djerassi, the author, is an organic chemist himself, famous for his contribution to the development of the oral birth control pill. Besides that, he authored several

"science-in-fiction" novels and plays. I will now analyse his novel from a Lacanian perspective, using the three dimensions distinguished earlier: knowledge, power and the Self.

7.2 Knowledge Production: The Epistemological Dimension

Cantor's research project exemplifies the trend towards symbolisation in scientific research. It is an effort to capture an existential lifeworld threat (cancer) in biochemical formulas. In cantor's theory of tumorigenesis, the amino acid arginine plays a crucial role:
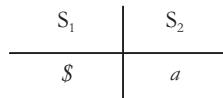
If cancer can be tamed via biochemical means, with the help of a structural formula, the medical challenge can finally be addressed. Thus, the *knowledge* dimension adheres to the structure of university discourse:

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\$}$$
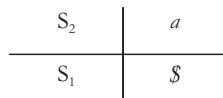
Cantor is the qualified expert (S_2 in the upper-left position of the agent) who, by introducing biochemical expertise into cell biology, suddenly seems able to discover the decisive factor which allows him to unravel the cancer enigma, focussing on *arginine* (the object a in the upper-right position). This endeavour is driven by a secret, latent objective, however, which suddenly seems to come within his grasp, and even becomes a manifest goal at a certain point, namely to reach the summit, i.e. to receive the Nobel Prize. In other words, a displacement occurs, as silvery arginine (the initial object of desire) gives way to a golden medal ($a \rightarrow a$): the Nobel Medal, together with a Nobel Diploma and a document confirming the fee, handed to the laureate by the Swedish King (S_1). This prospect (the distinction received from the hands of the King, representing the dimension of verticality) is the decisive push, causing the researcher to become trapped in the matheme of desire ($\$ \lozenge a$).

The Nobel procedure as such represents the discourse of the Master in the novel. The Nobel Committee is an authoritative voice (S_1 in the upper-left position), its verdicts are unquestionable and undebatable ($\$$ pushed into the lower-left position), while allegedly impassive scientists, acting as recipients (S_2), prove highly susceptible to such incentives. This chronic pressure or conflict of roles, namely between Cantor the stoic, *impassive researcher* (S_2 in the position of the agent in university discourse) and Cantor the *potential Nobel laureate* (S_2 in the position of the recipient

in the discourse of the Master) produces the brainwave: a moment of jouissance, revolving around arginine as the object *a* (in the lower-right position):

$$
\begin{array}{c|c}
S_1 & S_2 \\
\hline
\$ & a
\end{array}
$$

But to realise this ambition, Cantor has to revert to university discourse again, placing himself as a qualified expert in the position of the agent (S_2 in the upper-left position) who puts his theory to the test by performing an experiment, designed to tame the object *a*, focussed on proteins containing arginine (*a* in the upper-right position), a target which proves more intractable and recalcitrant than expected, resulting in doubts, suspicions and even panic (*$* in the lower-right position):

$$
\begin{array}{c|c}
S_2 & a \\
\hline
S_1 & \$
\end{array}
$$

Initially, however, rather than playing this role himself (rather than allowing himself to be exposed to these frustrations and risks), Jerry Stafford is placed in this position (facing and interacting with the object *a*), so that Cantor can keep his stoic distance. Stafford has to face the challenge of realising the masterful idea in a hands-on fashion. He has to capture the recalcitrant target via experimental dexterity, but there is always the possibility that arginine is actually a lure, resulting in frustrations and despair (*$* in the lower-right position).

From the very beginning, there is a clear division of labour between Master and Servant. Cantor acts as the Master, the gentleman-scientist who conceives the idea, designs the experiment and writes the article, reaping the fruits of Stafford's labour, while the latter is doing the actual lab work. As soon as Stafford has finished the exacting experiment, Cantor quickly goes through the key data. He is jubilant ("*we did it*", p. 56) and decides to write the paper himself. But he does not consult Stafford's laboratory notebook, the actual record of his toilsome labour. He disregards the tension between context of discovery (backstage, the realm of the Servant) and context of justification (frontstage, the realm of the Master). But an experiment in itself means nothing: it is only meaningful if it can be repeated (replicated) by someone else elsewhere. When the competing team at Harvard fails to replicate the trial, he requests Stafford to write up the experimental details in full, because they may have missed some essential technical detail, some missing step or link, but this does not help (p. 110). He even considers sending Xeroxes of Stafford's lab notebooks to Kraus, but to his embarrassment he discovers that Stafford's notebooks are actually rather sloppy, so that there are too many details missing. This situation is frustrating for Cantor (the Master), but also for Stafford (the Servant) and the second part of the novel is basically an account of Stafford's efforts to *emancipate* himself from the Master, but we will come to that.

In a self-reflective mood, during a conversation with Paula Curry, Cantor confesses that scientific research is not as straightforward as is sometimes suggested. Most scientists suffer from what he refers to as a "dissociative personality" (p. 113). On the one side, they are rigorous believers in the experimental method with its set of rules, bent on advancing knowledge (in other words: S_2). On the other hand, they remain fallible human beings with all the accompanying emotional foibles (in other words: $). One of the gravest occupational hazards in science, moreover, is simultaneous discovery. Sooner or later, somebody else will have the same idea. Scientists are driven by one desire: recognition by their peers (the Krausses of this world), but in order to obtain recognition, priority is essential. To score a Nobel Prize, one has to be the first to reach the summit. Thus, the push for priority is enormous. And the only way to establish priority is to be the first to publish. In other words, due to the confrontation with arginine (the object a), the self-contained expert (S_2) falls victim to disruptive desire, and this results in a split (*Spaltung*) between adherence to methodological safeguards (S_2) and the desire to maintain his advantage, his momentum, so that Cantor's eagerness to score ($) suddenly seems to overrule his impeccable technique. Krauss is Cantor's scientific conscience or superego. If the experiment proves impossible to replicate, Krauss may accuse him of sloppiness, or even fabrication: "Surely he is not calling you a –. Paula stopped short", p. 109). And once someone's credibility in science is damaged, it can never be repaired. The only option left to Cantor is to do the experiment himself, to become his own Servant as it were, and to design a second experimental test, climbing Everest by a different route (p. 116). Because he cannot trust Stafford anymore (p. 113), he has to take the experiment literally in his own hands, doffing his costume for a lab coat. It is only via working through that the methodological requirements and desire for recognition can be reconciled again.

Various instances of self-reflection can be discerned on the epistemic level. In his Nobel speech, looking back on his experiences, Stafford suggests that the failure of the Harvard team to replicate the results was due to a procedural discrepancy that was "really quite trivial", adding that "if there is one lesson to be learned from this experience, it's that even the smallest details should be put in one's notebook … You never know which details may turn out to be crucial" (p. 198). This self-reflection not only concurs with the principles of experimental methodology, but also with the psychoanalytic rule that one should report any observations; that one should take care not to exclude any of them, for in principle nothing is *irrelevant*". Even seemingly trivial details (the bagatelle) may prove to be highly significant (Freud 1917/1940, p. 297).

But in the novel, the role of the analyst, listening to the dialogues (the flow of university discourse) with evenly-poised attention, and from an oblique perspective, falls to Leah, the expert in Bachtinian analysis (p. 82). She is not at all interested in proteins, membranes or arginine, but rather in the grammar of biomolecular discourse. When challenged to share her observations (by Jean Ardley, Leah's supervisor, who happens to visit them), she points to the remarkably role of the term "we" in experimental discourse. Why do scientists always use the *pluralis majestatis* ("We, scientists", "We, the authors") when speaking about science? What is wrong

with the first person singular? Who is this "we"? From a Lacanian-Bachtinian perspective, it is clear that the "we" functions as a grammatical operationalisation of S_2: the replaceable, un-subjective, decidedly *impersonal* subject of science. But it also covers up the exploitation and expropriation of the servant by the Master ("We, the Master, did this"). And Leah's therapeutic intervention proves effective, for from now on, Stafford begins to pay attention to Cantor's use of the term "we" (or "our"), which suddenly may give way to "I" or "mine". For instance, he now notices that Cantor informs him that the Krauss team is having troubles repeating "your" experiment, and that there may be something the matter with "your" notebooks, while he consistently speaks about "our" *Nature* article. In the latter case, there is "no ambiguity about *our*" (p. 89). In other words, Cantor uses the "we" in such a way that he may safeguard his intellectual property rights, while attributing any experimental flaws to his assistant. From now on, Stafford begins to pay attention to (and even count) Cantor's uses of the signifier "we" (p. 83). Indeed, the use of the signifier "we" proves highly symptomatic and, from the point of view of critical discourse analysis, a fascinating object of research.

In response to Leah's intervention, Celestine's supervisor makes a telling confession. At a certain point in her career, she decided to change her name from Yardley to Ardley, in view of the importance of alphabetic order in the listing of author names:

> Let me confess something to you … but promise not to spread it around … When I was a senior at Brown [University] – and a very ambitious one, almost unpleasantly so – I paid very much attention to where my name would ultimately appear… To my father's shock, I announced one day that I would change my name from Jean Yardly to Jean Ardley… Yes. I went to the courthouse and did it legally. It's best to be first, it's been true since prehistoric times (p. 51).

She suppressed (sacrificed) a letter ("emasculated" her surname as it were) to further her career in science, in terms of academic authorship, emphasising that the subject of science is subjected to anonymisation anyway (so that a surname becomes something quite functional, something impersonal, allowing other experts to retrieve journal articles, or to assess citation indexes as performance indicators). This is exemplified by "the most anonymous of all appellations: *et al.*" (p. 83).

7.3   The Power Dimension: Cantor's Sherpa

The power dimension is noticeable in various ways, for instance in terms of the hierarchy between top universities (such as Harvard, Berkeley or MIT, represented by Kurt Krauss, where Nobel Prizes come in every few years) and mediocre institutes of smaller scale (such as Cantor's university). But it is notably evident in the power relationship between Master and Servant, between Cantor (the professor) and Stafford (his Sherpa), or even (as Paula phrases it) his "slave" (p. 80). For indeed, although Cantor refers to his junior researchers as "collaborators", Celestine Price

and Paula Curry straightforwardly refer to them as his "slaves" (p. 80). This is exemplified by the following dialogue between Isidore Cantor and Paula Curry:

> "Late in the Fall I thought of an experiment … and I put my best young collaborator on the project".
> "One of your slaves".
> "No, one of my collaborators… I basically told the man that he had to finish the work in three months… We published the work"
> "We?"
> Cantor looked puzzled. "Yes, we. Why do you ask?"
> "Well, if he did the work, why did you publish it with him?"
> "God, Paula, we do have a cultural gulf to bridge…Let me just assure you that in science it's *de rigueur*. *I* thought of the problem and the solution, *he* did the actual work, and *we* published it together. That's how it's always done" (p. 107).

An important aspect of his position as Master is that, although from the perspective of his junior collaborators he seems wholly devoted to research, he actually leads a double life, as we have seen, a secret life as an affluent, high-brow gentleman. In his spare time, he engages in high culture, as an erotic art connoisseur for instance, being the owner of seven original erotic drawings by Egon Schiele. We learn that Cantor inherited a fortune from his father-in-law – a wealthy Jewish industrialist from Vienna, whose only daughter Cantor had married when she was thirty-six – and this heritage included a complete art nouveau interior, a fin-de-siècle Viennese decor, transplanted to Chicago, whose most remarkable item is a seating machine (*Sitzmaschine*). But this sample from Viennese existence is now embedded in the American way of life and combined with a splendid view over Lake Michigan.

In the course of the novel it becomes clear that Cantor's actions are much more calculated, strategic and self-centred than is initially apparent. The race for priority (and indirectly for the Nobel Prize) is much more important to him than something like scientific "truth". And Cantor is quite good at playing the publication game. At a certain point he deplores the abolishment of the *pli caché*, the "sealed envelope" system (p. 62), a reference which requires some explanatory remarks concerning the history of the scientific journal which, originally, was not invented as a communication device, but as a device for solving priority conflicts (Zwart 2001). By establishing formal outlets in the form of journals, discoveries could now be attributed to the scholar who first published about it, or whose paper first reached the editor of an acknowledged journal. And the "sealed envelope" procedure meant that an article could be submitted so that a journal editor, who would date it upon receipt, but would refrain from opening it until the author was sufficiently certain that its content could be validated and replicated, or when a competitor was about to publish something similar. In that case, the original submission data of the *pli caché* would demonstrate priority. If still in place, it would significantly reduce the risk of retraction, and it would certainly have solved Cantor's dilemma. But it would also turn publishing into a kind of card game, with the sealed envelope functioning as a kind of trump card. "I wonder what made me think of the *pli caché* system", Cantor asks himself, "I hope it's not some unconscious wish of mine" (p. 63).

From a Lacanian perspective, one could argue that the sealed envelope system demonstrates the extent to which the fate of the scientific subject may come to

depend on the "itinerary of the signifier", already discussed in Chaps. 3 and 6 (1966, p. 12). The content of the sealed envelope is unknown, in principle quite significant, but potentially quite embarrassing, because its claims may prove false (which is precisely why it must remain sealed until further notice). The scientist has dispatched a "signifier" (i.e. a certain scientific claim, made in writing, whose content is no longer modifiable) which is now deposited in the hand of someone else (the editor), like a playing care ready to be shown, to be put on the table, as soon as the occasion to do so presents itself, or the instruction to do so is given. It is up to the author to decide whether and when the card will be shown. Others only know *that* a claim is made, but are unfamiliar with the secret content of the claim, thereby demonstrating what Lacan refers to as the priority of the signifier over the signified. Rumours concerning the content of the submitted envelope are likely to *precede* its disclosure. Indeed, for Lacan, the content of the sealed envelope is a "signifier", determining the fate of the subject sooner or later, thereby exemplifying what Lacan refers to as the *primacy* of the signifier. But others may have deposited similar claims of course, whose exact content is equally obscure. The signifier has primacy because the fate of the scientific competitors (in terms of recognition by peers) is already literally sealed. In this manner, the race for priority indeed becomes a kind of game, and Cantor's dilemma becomes a prisoner's dilemma. The research teams involved (Cantor versus Krauss) are kept "in solitary confinement" in their labs, unable or unwilling to share or communicate their exact findings. If you submit your envelope sooner, you may claim priority in case you happen to be right, but the chances that your results will prove inadequate or non-replicable will also be greater. So, yes, Lacan would argue, Cantor's reference to the *pli cacheté* system most certainly reveals an unconscious desire. In fact, his unconscious already set this game of cards in motion (namely during the toilet scene) before he consciously became involved in this race for priority. If you want to lay claim to the Nobel Prize (even if you are still uncertain whether your claim is really true or false), there is an opportune moment to submit. In the case of *Arrowsmith*, the decision to postpone submission equalled academic suicide. In other words, what Cantor's unconscious tells him is that the Nobel Prize (the *gold* medal, the "perverse incentive") is really his object *a*, eclipsing even the *silvery* amino acid arginine (the official target of his research). The only problem is that (contrary to the prisoner's dilemma or the *pli cacheté* system), Cantor has to lay his cards on the table straight away, in the form of his *Nature* publication. And yes, his unconscious certainly has reasons to deplore this. Whereas the sealed envelope would have given him and advance (meanwhile checking his results), the current system entails a handicap because now, retraction can no longer occur discretely and the card that is now on the table for all to see can easily be trumped by competitors like Krauss.

Cantor not only plays card games with competitors like Krauss. His most decisive card game concerns his relationship with Stafford, his associate. It begins with the co-authorship card, which buys him Stafford's diligence and labour, while he remains the corresponding author himself (firmly keeping the trump card in his hands as it were). But their card game takes an unexpected turn once the Nobel Prize is awarded to them. With some difficulty, Jerry manages to meet Cantor (now

suddenly famous and besieged by the media) in private, announcing that he has a confession to make (p. 152). Apparently, he wants to lay his cards on the table. Jerry tells Cantor that "he" cannot accept the Nobel Prize (card game terms: that he has decided to pass), but Cantor retorts that he is not authorised to make such a decision by himself. The prize was awarded for what "we" published in *Nature*, not for experimental work conducted by a post-doc and proving somewhat difficult to replicate. Once the card of the Nobel Prize is played, it cannot be repealed or refused. Even Sartre (who refused the Nobel Prize for literature for ideological reasons) is still on the list of Nobel laureates. In response to Stafford's reluctance, Cantor decides to deal the cards (to divide the roles) as follows: while Stafford will be allowed to speak first, to cover the theory, Cantor will subsequently describe his "second" experiment, so that all scepticism concerning Stafford's "first" experiment will be trumped. But Stafford is less frank or naïve than Cantor suspects, and is actually holding his cards close to his chest. There is a secret hidden in the sealed envelope of his Nobel Prize speech.

Initially, everything seems in order. In the main aula of the Karolinska institute, Stafford announces that they will present their work in chronological order, starting with the "theoretical construct" (p. 197). The slides of the presentation are like playing cards, and initially, Stafford puts his cards on the table as expected. But then, suddenly, his tone of voice seems to change: "Let us now turn to the relation of theory to facts… A theory cannot be proven but only disproved. In other words, it must be tested experimentally…Therefore, I would now like to address…" (p. 198). Until now, Cantor had been quite relaxed, but now his "mental radar started to detect the first blips of irregularity. Was it the use of the *first person singular*?" (p. 198; my italics) The "I" form (the use of the first person singular here) is symptomatic and indicates that Jerry suddenly plays his trump card. Actually, he has two surprises in store for Cantor. The first one is that he presents a detailed account of his first experiment. And the second is that, apparently, but unbeknownst to Cantor, this experiment has now finally been replicated by Dr. Ohashi (the post-doc at Krauss's lab at Harvard), so that Cantor's second experiment, as well as his Nobel speech, become quite irrelevant. Initially, there were problems repeating the work, Stafford admits, but when each step was scrutinised carefully, the discrepancy was finally discovered. In addition to the experiment as reported, there are always hidden instructions, apparently trivial details, which may become significant after all, so that "even the smallest detail should be put into one's notebook" (p. 198). Meanwhile, Stafford continues,

> …we had conceived a second test… which is now under scrutiny in Professor's Krauss's laboratory. I have no reason to doubt that it will also be replicated… So we actually have two independent tests in support of our theory. I trust that none of you will consider this just a superfluous crossing of a *t*, the unnecessary dotting of an *i*. After all, 'tumorigenesis theory' has two *t*'s. And the work itself was performed by two *I*'s: myself, and then Professor Isidore Cantor. He will now tell you about that second experiment (p. 199).

And with this little trick (his trump card) emphasised by the resurgence of the "I", or rather the splitting of the "we" into two *I*'s, Stafford quite subtly transforms the magnificent professor Cantor into "just another scientist" (p. 199). Via this oedipal

gesture, Jerry emancipates himself from his "father", – and is now able to marry Celestine: happy ending of a Nobel fairy tale.

And it is only now, in the aftermath of this event, that Cantor is finally able to ask the question which he should have asked much earlier:

> "Jerry, what did you do in my lab on that Sunday evening? The day before we completed the experiment together."
>
> Stafford looked up. "How did you know I was there?" (p. 202)

Stafford confesses that he added some additional enzyme to the incubate, and that he had wanted to tell Cantor, who was too preoccupied to hear him out. Cantor, however, is still dissatisfied. The experiment was allegedly repeated successfully at Harvard, but this happened – while Stafford was also there. Somehow, the success of the replication continues to depend on one decisive factor: Stafford's presence. Facts are fabricated in the lab, facts are laboratory artefacts, but to exclude "fabrication" (in the pejorative, FFP sense) an independent test is required, and this criterion had still not been met, so that fraud could still not be excluded.

7.4   Experimenting and Publishing as Practices of the Self

At a certain point in the novel, Leah (the discourse analyst) scorns scientists for being so secretive:

> Don't you know the Latin root *publicare*, 'to make generally known'? What *do* scientists want? (p. 66)

The latter sentence may be seen as referring to the famous Freudian adage "What does a woman want?" ("Was will das Weib?"), the one question Freud confessed he was never able to answer satisfactorily (Jones 1953, II, p. 421). Building on what was discussed above, the answer to the question "what do scientists want?" may seem obvious. They want to secure their claim to priority, and therefore they want to publish (and be the first to do so). But why, then, has scientific publishing evolved into such a complicated card game, involving multiple variations on the prisoner's dilemma? To successfully address this question, we must take a psychoanalytic stance, because than we will realise that some less obvious meanings, some less praiseworthy associations are obfuscated by the standardised use of this term "to publish" in university discourse. For instance the connotation that to "make publish" etymologically means *to confiscate* (by the public authorities). In other words, as soon as you publish, your intellectual property is turned into *common* property, and scientists may therefore be reluctant to *give themselves away*. As long as some material is unpublished (safely stored in a computer, or kept in a *pli cacheté*) it is still yours. Another intriguing association, psychoanalytically speaking, is connected with this one, namely the pejorative sense of the Latin term *publicare*. A *publica* or *publicus* is actually a prostitute, someone who is at everyone's disposal. So, yes, there certainly are reasons for ambivalence or even reluctance when it comes to publishing your results or your ideas in academic journals. By making

something (by making yourself) public, you give up your control over your "body" of work. This was, as already noticed, the benefit of the "sealed envelope" system, which allowed the author to make a claim without giving "it" (giving himself) away. Yes, scientists do want their websites to be visited and their work to be downloaded and their thoughts to be known, but to *publish* also implies that you are putting your integrity at risk. For as soon as your work is published, there is the possibility of exposure, perhaps even resulting in retraction, hovering like a sword of Damocles over the academic author's head, as a potential dead blow to his or her academic prestige. Publishing your results means that they are formally confirmed (formally acknowledged) by the academic symbolic order, but others may then use these publications (never flawless) to damage your reputation, especially if you try to fly too high (the dimension of verticality). But if you wait too long, until your material is flawless, you may be passed over, like a beautiful soul, as happened to Martin Arrowsmith. This world of meaning is looming beneath the seemingly neutral and unproblematic verb *publicare* as well as behind the question "*Was will der Wissenschaftler*? (What do scientists want? What is the desire that is spurring them on?)".

The wish of the "normal" scientist is to contribute to the knowledge production process, by representing a reliable, self-composed form of agency (S_2 in the upper-left position). But Cantor, in his fixation on arginine, and subsequently on winning the Nobel Prize, becomes exposed to "the object a", falling victim to the matheme of desire ($\$ \lozenge a$). The Nobel Prize is a symbolical entity which transcends the structural formula of cellular biochemistry, causing a split ($\$$) between fidelity to scientific methodological requirements on the one hand and desire for recognition on the other. The Nobel Prize exemplifies the primacy of the signifier, structuring the symbolical realm of science. The Nobel Prize as such (i.e. the Master signifier, S_1) becomes and end in itself, more important than the actual content of the research (the signified). The Nobel represents the summit of the symbolic order, that which is always already there, but may suddenly come into view and within reach, a disconcerting, destabilising experience. As Paula Curry phrases it, just before Cantor is awarded the Nobel Prize: "You're a complicated man; a man of many parts… I want to know what binds together your various personalities. And now, just when I think I'm beginning to understand you, something comes unglued" (p. 139). This split (*Spaltung*) between multiple personalities (suddenly unglued) is the by-product of laboratory life, of university discourse ($\$$, the divided subject, in the lower-right position). It is a contemporary version of what Von Liebig (in a letter to his friend and colleague Wöhler) referred to as the *hysteria chemicorum*: the occupational disease of chemists, due to toxic laboratory conditions. In contemporary laboratories with their clean environment, however, the toxic substance has become toxic in the symbolical sense of the term, as research practices become contaminated by perverse incentives.[1]

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[1] And he is not alone in this of course. His rival Krauss confesses to the vice of "salami publishing" (p. 205), i.e. slicing findings into multiple publications to increase output and impact.

Jerry Stafford follows a different trajectory, moving in the juxtaposed direction. Whereas Cantor initially seems self-composed but gradually "comes unglued", as Paula Curry phrases it, Jerry Stafford increasingly manages to pull himself together and recover his integrity. Initially there is an embarrassing tension between his actual practice (the sloppiness of his research, his notebooks, etc.: the context of discovery) and the exacting expectations of Cantor as his super-ego. The latter is not really interested in the actual work conducted by Stafford, he is focussed on the results (the surplus value, in Marxist terms), but when the Harvard lab fails to replicate the experiment, he decides to photocopy and xerox Stafford's notebook to Krauss. For Cantor, there is nothing improper in copying Stafford's notebooks, because a scientist's laboratory journal is not a personal diary, but rather intended for inspection by others on demand. But as he himself examines Stafford's notebooks just before sending them off, he is disconcerted by what he finds in them, or rather: by what he *does not* find in them, for the actual details are surprisingly scant (p. 86). Too much is missing. Therefore he refrains from sharing them with Krauss (realising that he failed as a supervisor) and decides that they should do an experiment together, so that he can monitor Stafford's doings, and supervise him *in situ* (as an embodied conscience):

> We'll repeat *your* [sic!] experiment together… In my private lab… Everything will be under control… A minor but crucial experimental variable must be responsible…You'll do every step in my presence…We'll find what was missing in the report… Right into the lab and start… [Stafford] had now been ordered to repeat his spectacular experiment under the watchful eyes of the master (p. 92).

And indeed, the assay comes out as expected, with an arginine level which is significantly higher than that of the control (Krauss's group at Harvard had been unable to repeat the Cantor Stafford experiment, but "*we* [sic!] have done so now", p. 93). But the scenario falters, as we have seen, when Cantor is anonymously informed (by a jealous colleague, or a whistle-blower) that Stafford secretly visited the lab on a Sunday, after hours. From now on, Stafford is de facto a distrusted suspect, a potential fraud ($S_2 \rightarrow \$$), or as Cantor phrases it, to explain himself to science-illiterate but erudite Paula: "It's a bit like Othello. Once the seed of suspicion is planted…" (p. 140). Stafford is no longer allowed into the lab, for because of this suspicion, everything he touches becomes symbolically contaminated. But from Jerry's perspective, his sloppiness should not count as fraud ("I had just gone home when suddenly I realised that earlier in the day I had added too little kinase. So I returned to the lab, and added some more enzyme. I don't think it was really fudging… I just made up for it", p. 149).

In Stockholm, by way of compensation or reparation (*Wiedergutmachung*), Jerry announces that, instead of pursuing a promising career in science, he will step back and return to medical school, to earn the degree of Doctor of Medicine, in order to explore clinical implications of tumorigenesis research (the *Arrowsmith* scenario as it were). In other words, also in an ethical sense, he seems bent on overtaking Cantor, for the latter never considered practical implications at all, being solely obsessed with winning the Nobel Prize, for which he saw tumorigenesis research as purely instrumental.

To summarize: eventually the novel becomes a podium for the unfolding of the discourse of the analyst:

$$\frac{a}{S_2} \bigg| \frac{\$}{S_1}$$

This type of discourse starts off with the question raised by Leah, who indeed plays the role of psychoanalyst in the novel,[2] namely: *Que voi?* What do scientists want (p. 66)? Initially, their *cupido sciendi* is bent on symbolisation: replacing the physical, phenomenal suffering of cancer patients by the noumenal, structural formula, for instance concerning "silvery" arginine ($C_6H_{14}N_4O_2$). For Cantor, however, the ultimate trophy is something even more symbolical, namely the gold medal, the Nobel Prize (that which pulls him into action: *a* as agent, upper-left position). This alluring entity provokes him and transforms him (the allegedly self-composed professor) into a craving subject, suffering from *hysteria chemicorum*, but in a contemporary form: the tendency of researchers to forget or disavow their vocation, the constraints of their profession (S_2 now in the lower-left position), so as to give in to "perverse incentives" (coming from *a*). His counterpart Stafford, perhaps disillusioned by the realities of laboratory life, moves in the opposite direction: from the noumenal, symbolical world of chemical formula and academic credits back into the "real" world of biomedical (evidence-based) health care. The by-product of the narrative is a normative lesson (S_1 in the lower-left position). As the author argues in his *Afterword*, although the science in the novel is fictitious, the ethics (the questionable research practices, such as data trimming, data smoothing, etc.) is not (p. 229). And the primary goal of the discourse of the analyst is normative insight (finding out the truth concerning your desire).

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[2] "A small dose of psychoanalysis wouldn't hurt you before you make up your mind", advised Leah (p. 119).

Chapter 8
Tainted Texts: Plagiarism and Self-Exploitation in *Perlmann's Silence*

8.1 Introduction

As a novel addressing scientific misconduct, Pascal Mercier's *Perlmann's Silence* notably revolves around plagiarism (the P in FFP), but the broader normative and discursive ambiance of academic existence comes into view as well. Mercier's novel will be read as a collision between various modes of discourse, mutually exposed to one another, challenging and questioning one another. Four modes of discourse will be distinguished, in accordance with Jacques Lacan's theorem of the four discourses: the discourse of the Master, of the university, of the hysteric and of the analyst. Subsequently, it will be indicated how these four discourses navigate the discursive landscape determined by three "axes" or dimensions of inquiry, as distinguished by Lacan's contemporary Michel Foucault, namely *knowledge*, *power* and the *Self* (Foucault 1984; Zwart 2008c, 2016c). In university discourse, the focus is on knowledge (the *epistemological* dimension): on the ways in which plagiarism reflects transformations in the knowledge production process. The discourses of the Master and the hysteric revolve around inter-generational and global inequalities in academic research (the *power* dimension). And the discourse of the analyst focusses on the *ethical* dimension of the Self: the ways in which academics manage or fail to constitute themselves as responsible subjects vis-à-vis integrity challenges emerging in contemporary research practices.

Concerning the ethical dimension I will argue that Mercier's novel addresses, on an individual level (micro-level), a recognisable problem theme in contemporary research, namely the vicissitudes of mid-life academics who (notwithstanding their academic status) have lost interest in and/or contact with their area of research. Subsequently, I will explain how Perlmann as a prominent academic tries to 'solve' his problem through power abuse, by committing (and subsequently concealing) plagiarism at the expense of a marginalised Russian colleague, deprived of access to Western academic networks. His plagiarism occurs in a situation where, from the point of view of mainstream research ethics, more optimal solutions (more

acceptable scenarios) would have been available. Yet, a psychoanalytic rereading reveals that Perlmann is actually facing a more devastating form of crisis, for which the available guidelines for proper research conduct fail to provide a fix. Indeed, *both* the challenge (loss of motivation and inspiration) *and* the solution (plagiarism) are symptomatic of a more structural problematic pervading the current research system, which I will thematise as *self-exploitation*, resulting in the eradication or obliteration of a former, more prolific Self. This experience is articulated in *Perlmann's Silence* in psychoanalytic (Freudian-Lacanian) terms, namely as an experience of *Spaltung* (splitting). Thus, plagiarism is enacted as a desperate (but faltering) attempt to restore a situation of integrity (or wholeness) which already eroded long before the plagiarism was actually committed. But I will start with a short resume of the novel.

8.2   The Narrative: A Resume

Philipp Perlmann, a prominent German professor of language studies, is invited by a high-ranking representative of *Olivetti* (an Italian firm famous for producing word-processing machinery) to organise a small-scale international expert workshop in a hotel on the Italian Riviera. He is suffering from a mid-life crisis, however, due to the death of his wife (a photographer who died in a car accident), but aggravated by a paralysing loss of interest in his research field. As the host of the workshop, he is expected to present a high quality paper, but unfortunately he can think of nothing whatsoever to say. Instead of working on a paper of his own, he squanders his precious time translating a manuscript written by an unknown Russian colleague named Leskov (whom he had invited to the workshop, but who failed to secure a travel permit), just to learn Russian. In despair, and in order to conceal his intellectual impotence, Perlmann at a certain point decides to present his English translation of Leskov's manuscript as his own work.

But then catastrophe sets in. While the text is being distributed, he receives news that Leskov will be able to attend the meeting after all and Perlmann designs a series of desperate attempts to conceal his perpetration. This includes the destruction of a second manuscript by Leskov, which the latter had wanted to present and discuss during the meeting. But then Perlmann discovers that, due to a series of misunderstandings, a loose collection of impromptu notes has been distributed among the colleagues, instead of the translation. Although nothing untoward has actually happened (besides the pointless destruction of Leskov's second manuscript, which he manages to partly reconstruct), Perlmann is unable to recover from his moral trauma, which he experiences as the disastrous end of his career.

8.3 University Discourse: The Knowledge Dimension

Compared to big natural science research, the humanities seem much less infected by the dynamics of commercialisation, privatisation, and the increase of pace, scale and competition which are so often seen as causal factors in the current misconduct epidemic. In *Perlmann's Silence*, even mid-life scholars tend to act as single authors and are still regarded as producers of their own work. And although there are rumours about elderly colleagues who increasingly fail to publish new results (p. 214), this allegedly does not apply to the academics brought together in the context of the Mediterranean workshop. They are all expected to present and discuss original materials which they have written themselves.

Still, some of the tensions pervading the big natural sciences can be discerned in *Perlmann's Silence* as well. The workshop is funded by a multinational company who definitely has expectations concerning the outcomes of the work. And in view of his mid-life prominence, Perlmann is regularly invited to give lectures as key speaker before prestigious international gatherings. Such activities, in combination with teaching responsibilities, distract him from his intellectual work, thereby aggravating his basic problem, namely loss of inspiration, feeling increasingly inhibited to commit himself to desk research again.[1]

Moreover, linguistics is becoming increasingly interdisciplinary and applied. During the expert workshop, the more established academic approaches (represented by experts like Brian Millar from New York) are challenged by new contributions coming from various adjacent fields, such as psychotherapy, ethology and introspection (phenomenology). But because of his loss of intellectual commitment and fatigue, Perlmann (unlike others) is unable to seize the opportunities offered by this paradigm shift. He is unable to really try something new. His efforts in this direction remain sketchy impromptu improvisations, relying on a kind of automatic writing, switching off his self-censorship in order to subdue his epistemic inhibitions, but discarding the results as un-academic "kitsch". As a language studies expert, he is unable to reset his research agenda and to reinvent himself.

8.4 Master's Discourse: The Power Dimension

Building on the epistemological dimension, the power dimension notably reflects the institutional and interpersonal inequalities at work, such as the power divide between early-stage or geographically marginalised researchers on the one hand and mid-life elite academics on the other. As outlined in the Chap. 2, the political dimension reflects the dynamics of the Master-Servant relationship. The Master is initially

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[1] "Es war ihm der Glaube an die Wichtigkeit der wissenschaftlichen Tätigkeit abhandengekommen… Er fand einfach nicht mehr in die Konzentration zurück, in das Gefühl der Ausschließlichkeit, aus dem heraus seine wissenschaftlichen Arbeiten bisher entstanden waren… Er fand den Weg zum Schreibtisch immer seltener… (Mercier 1995/1997, p. 17).

in control and appropriates the servant's practical, empirical, hands-on knowledge, transforming it into abstract, academic knowledge (ἐπιστήμη, θεωρία). Subsequently, the Master purports to give this knowledge back to the servant, in the form of supervision and education (Lacan 1969–1970/1991, p. 22). But in the end, the newly gained knowledge of the servants is bound to prove more powerful, effective and revealing that the theoretical contemplations of the Master. Thus, the supremacy of the Master becomes subverted by the *real* knowledge of the servant, so that in the end servants will occupy (usurp) the position of the agent themselves.

In the beginning of the novel, Perlmann poses as a Master: a prominent scholar requested by a multinational company to organise an elite gathering of academics in a coastal resort, combining theoretical discussions with abundant otium (leisure time). But it is clear from the very outset that Perlmann has serious difficulties living up to this role and the expectations it entails. He used to be an ambitious young researcher (an academic "servant") himself, but now he looks back in astonishment on his earlier career, painfully realising that, as a promising young academic, exclusively committed to research, he hardly lived at all. He had always existed out of contact with his present.[2] While glancing through a cheap, second-hand, popular, illustrated book about high publicity post-war events, he feels like a convict who has just been released from prison and who is now discovering the world outside, reading about all the things that had passed him by. He now realises that, at the time of their occurrence, all these events had hardly been allowed to enter his insulated, workaholic existence, which had been completely dedicated to academic research, sacrificing everything else in order to achieve his current state of prominence.

Notwithstanding computerisation and word-processing equipment, provided by companies like *Olivetti*, linguistics is still a single-author field. In the arena of international scholarship, the United States (represented by Millar) are definitely the leading super-power. This entails first of all a power of language: all conversations during the workshop are in English, although Millar is the only native speaker, while some other participants, such as an Italian psychiatrist, are hampered by their lack of verbal fluency. But Germany also plays a prominent role. Perlmann himself, for instance, just received an invitation for a professorship in Princeton, the prototypical safe haven, where academics are no longer expected to do any real work. It is clear that this is an elite gathering.

Also the *appropriation* of intellectual labour by the Master is clearly present in the novel. In Perlmann's case, the victim of plagiarism is an obscure Russian colleague who still writes single-copy manuscripts, either by hand or with the help of an old-fashioned typewriter, and who has somehow managed to survive outside the international networks of mainstream discourse, far removed from the world of prominent professorships and conferences. He shared his manuscript with Perlmann in the hope that international recognition would help him to a fixed position and a salary. Strictly speaking, his approach (introspective phenomenological psychology) is quite old-fashioned but, in view of the epistemological transitions outlined

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[2] This is already indicated by the opening sentence of the novel: "Philipp Perlmann war es gewohnt, dass die Dinge keine Gegenwart für ihn hatten" (p. 9).

above (i.e. the erosion of traditional methodological standards of mainstream academic performance), even introspective phenomenology can now be rehabilitated and presented as something potentially acceptable and innovative. So once again, plagiarism is a symptom of power relationships: a prominent scientist (a Master), no longer able to live up to international academic expectations, commits fraud at the expense of an outsider, someone who, in terms of power and prestige, can be regarded as insignificant (plagiarism without too many risks). Perlmann's invitation was a gesture of noblesse: an act of kindness on the part of an enlightened scholarly gentleman, and Leskov is the servant who has to atone for this act of kindness through hard labour, producing two manuscripts, which are subsequently appropriated by Perlmann-the-Master.

But precisely at that point, the stability of the situation (the distribution of roles) becomes subverted. Leskov is in fact the Master, while Perlmann (by acting as his translator and interpreter) is actually settling for the role of servant. Leskov articulates the truth, and Perlmann commits himself to author studies as it were, reading and commenting on the text of Leskov-the-Master. Perlmann *effaces* himself as author. Only the words and the ideas of Leskov-the-absent-Other are worthwhile, and his own texts are discarded as rubbish ("Schutt" in German). The crisis sets in when this absent voice (allegedly kept at a safe distance by Soviet bureaucracy) all of a sudden makes his appearance, confronting Perlmann with his impotence ($-\varphi$), his loss of originality and productivity, but also as a tangible accusation, functioning as the embodiment of his scientific conscience or superego as it were.

8.5   The Discourse of the Analyst: The Ethical Dimension

As mentioned in Chap. 1, case histories, notably the five extended case histories published by Freud himself, are often compared to novels. Steven Marcus regards the case of Dora a literary "masterpiece" and a "great work of literature" (1985, p. 57). And Freud himself, after having pointed out that he was actually trained as a neurologist, almost makes apologies to his readers for the fact that his case histories read like novellas.[3] But the reverse is also true in the sense that a novel such as *Perlmann's Silence* actually reads like a case history, involving a neurotic patient inhibited by an obsession with plagiarism, – comparable to the case of the plagiarist published by Kris (1951/1975) and commented by Lacan (discussed below). Rather than presenting his own views on the topic, moreover, the novelist gives the floor to the tormented subject (the protagonist: $) himself, prompted to become more keenly aware of what is actually spurring him on, and to share with his readers the story of his inhibitions, anxieties and desires. The novel's key symptom (Perlmann's silence)

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[3] "Ich bin nicht immer Psychotherapeut gewesen, sondern bin bei Lokaldiagnosen und Elektroprognostik erzogen worden wie andere Neuropathologen, und es berührt mich selbst noch eigentümlich, daß die Krankengeschichten, die ich schreibe, wie Novellen zu lesen sind, und daß sie sozusagen des ernsten Gepräges der Wissenschaftlichkeit entbehren" (1895/1952, p. 227).

results from a deeply felt aversion against the kind of texts he himself had been producing. And this inhibition can only be lifted through translating (that is: working-through) the textual materials produced by Leskov the absent Other.

The novel can be regarded as a stage, a battlefield of multiple voices and discourses, and Perlmann plays multiple roles. First of all, he is the magnanimous Master (S_1) who kindly invites Leskov (a plodding marginalised nobody) to attend the elite assembly. But subsequently, as we have seen, Perlmann shifts to the role of "servant" (S_2), translating and explaining the commanding words of the Other (Leskov, now in the role of the authoritative voice: the Master who has discerned the truth). But Perlmann also plays the hysteric's role (*$*), for instance when he experiences vehement waves of hatred against his colleagues, notably Millar: the most prominent and prestigious colleague in the group. But the hysteric's discourse especially flares up in Perlmann's hatred of texts, in his impulsive-aggressive efforts to destroy huge amounts of textual "litter", in his bouts of "*logo*-clasm", to which I will come back later. As a dramatic stage or battlefield of discourses, the novel as a whole concurs with the discourse of the analyst, allowing Perlmann and other subjects to take the floor in various positions (S_1, S_2, *$*), in order to act-out and articulate their anxieties and desires vis-à-vis an impossible, inexorable object (*a*).

Perlmann commits plagiarism out of sheer despair. He suffers from burn-out, partly caused by the death of his wife, but the idea of straightforwardly confessing (before the assembly of elite colleagues) that he failed to prepare a proper manuscript simply because he could not think of something interesting to say, is out of the question. Frantically, he considers alternative solutions and the option of plagiarism only enforces itself upon him when all the other alternatives have evaporated. In other words, in Perlmann's case, plagiarism is not presented as a positive choice, but rather as the only remaining route to take (besides suicide, which is also seriously considered, although one could argue that, for a scholar, an *author* like Perlmann, plagiarism is actually a suicidal act). It is not a conscious and voluntary decision, but rather a process which unfolds more or less automatically, an act which commits *itself* as it were: a course of 'action' which deeply shocks and paralyses its perpetrator. And as soon as he (erroneously believes that he) has committed the dreadful act, a pervasive sense of guilt torments him. The terrible word "plagiarism", uttered by his highly sensitive conscience, becomes a chronic and relentless self-accusation. Again, it demonstrates the supremacy of the signifier (the word "plagiarism") over the signified (the plagiarism which he never committed, but which, under the sway of the signifier, becomes an *idée fixe* that dominates his psyche), − a relationship which in Lacanian algebra is referred to as (S/s).

From a third-person perspective, an intermediate, more acceptable solution – a moral compromise as it were – could have been considered, namely: co-authorship. Perlmann could have contacted Leskov to obtain his consent, could have presented their work as the collaborative effort of two academics working on similar themes. He could even have settled for the role of translator and interpreter, as part of his responsibilities as the workshop's chair and host. And indeed, at a certain point, Leskov, impressed by the way in which Perlmann verbally elucidates and defends his ideas, suggests that they should write something together. It would perhaps have

been an insult to Perlmann's academic narcissism to accept a subordinate role in the ensuing partnership, but it would have offered an acceptable way out, in terms of research ethics.

But this solution presupposes that plagiarism is a moral infringement which is consciously committed and can be consciously evaded. The situation is more complicated than that. The very *concept* of plagiarism is thoroughly problematized in Mercier's novel, so that the guidelines, policies and best practices of established research ethics are challenged rather than supported by the dilemmas and experiences of the main protagonist. Moreover, plagiarism cannot be reduced to a purely individual dilemma (which could have been solved or averted). Rather, it is embedded in the long-term dynamics of the academic system as such.

8.6   What Is Plagiarism?

Perlmann's Silence not only *stages*, but at the same time *problematizes* the concept of plagiarism. The question "What is plagiarism?" is explicitly addressed, on various occasions, while concepts such as authorship and intellectual property are questioned in various ways. At a certain point, for instance, while reading through copies of his previous publications (with all their painfully accurate academic references), Perlmann finds it extremely difficult to believe that he, Perlmann, had actually authored all this.[4] He now reads his own work as if written by another person and feels completely estranged from his oeuvre. How can he still be meaningfully credited for it? He no longer recognises it as his output, no longer values it at all. He is no longer able to read it "from within". In contrast, while reading Leskov's manuscript, he has the opposite experience. He realises with astonishment how he had these same thoughts, or at least parallel ones. Precisely these very ideas, articulated and typed down by Leskov, had gone through his own mind. He had not written them down the way Leskov had done, but he *could* have done so. He is struck by the astonishing proximity between their viewpoints, and Leskov himself likewise recognises in Perlmann a kindred spirit, the only one who really understands him. Someone who, at a certain point, even seems to understand him better than Leskov understood himself and who has really internalised his ideas and words. For that very reason, Leskov at a certain point suggests that they should start writing papers together, as co-authors. In other words, Leskov's text seems much closer to Perlmann's own authentic ideas than his formal academic output had ever been.

But for Perlmann, co-authorship is no longer an option, because it still would suggest that authorship and co-authorship are meaningful concepts, while in fact he has become completely allergic to terms such as "author", "original", "copy", and

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[4] "Er war erstaunt über das, was er las. Maßlos erstaunt. Nicht nur darüber, was er einmal alles gewußt, gedacht, diskutiert hatte. Auch seine Sprache überraschte ihn, sein Stil, der ihm einmal gefiel und dann wieder gar nicht, und der ihm sonderbar fremd vorkam." (Mercier 1995/1997, p. 220).

the like. For Perlmann, all forms of academic discourse, all textual materials have become "garbage" and "trash"; – the German word *Schutt* ('trash') is used as a standard term to refer to written materials throughout the novel. Academic discourse is something to be thrown away, something to be disposed of as quickly and irreversibly as possible. Throughout the novel, Perlmann is destroying and desperately trying to get rid of huge amounts of texts. For him, academic literature has become textual *litter* in a literal sense[5]: waste, trash, garbage, rubbish, kitsch, debris; – basically because, from now on, he sees all forms of academic discourse as infected and tainted by plagiarism.[6] His most important activity, in a novel which otherwise stresses his utter *lack* of activity, is the deliberate, systematic destruction of manuscripts, books, diskettes and other carriers of textual content, consistently referred to as a discursive "mess": as litter, filth, dirt, etc.[7] That is the existential paradox in *Perlmann's Silence*. On the one hand, plagiarism is experienced as a catastrophic trauma which literally *cleaves* his personality, while at the same time discursivity, authorship, originality and everything connected with it have become completely meaningless to him. He commits plagiarism because he does not *want* to be an author anymore, because the very idea of academic authorship, of academic writing *nauseates* him (and this includes co-authorship).

Precisely where authorship and plagiarism are concerned, an important lesson can be learned from Lacanian psychoanalysis. Both in his *Écrits* and in his Seminars, Lacan discusses a case study of a plagiarist published by Ernst Kris (1951/1975) which parallels Perlmann's story in various ways. The case involves an academic patient whose career is seriously thwarted by an obsession with plagiarism (Lacan 1966, 393 ff.; Lacan 1966–1967, 119–120). An inexplicable compulsion to steal other peoples' ideas gives rise to a chronic inhibition: an inability to publish his research. At a certain point, when he has finally managed to finish a manuscript, he discovers a book in the library that allegedly already contains all his ideas. Kris asks for the book, reads it, ascertains that there is not much originality in it, and kindly informs the patient that his self-accusation proves unjustified. The plagiarism is "self-fabricated" as it were. Moreover, it turns out that a close colleague has repeatedly stolen and published the patient's ideas without acknowledgment, so that, when it comes to plagiarism, he is a victim rather than a perpetrator. According to Kris, what is troubling the patient is the conviction that only ideas conceived by others can be truly interesting. In response to this interpretation, the patient makes an awkward confession: his favourite dish happens to be fresh brains.

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[5] The Joycean association between literature and *litter* is a crucial theme in Lacan's later seminars (1975–1976/2005; 1970–1971/2007, p. 113 ff.; cf. Zwart 2016a).

[6] When speaking about texts, Perlmann, the professor of linguistics, consistently uses phrases like "Bergen von Schutt" (mountains of trash), "einen dicken Stoß Kitsch" (a thick thrust of kitsch, p. 332), "Papierwust" (a mess of paper, p. 363); "Stoß Blätter" (a thrust of pages, p. 364), etc.

[7] The novel is reminiscent of the famous story about Thomas Aquinas, an extremely prolific medieval author who (towards the end of his life) experienced a spiritual revelation which so affected him that his opus magnum the *Summa Theologiae* was left unfinished. To his secretary (Brother Reginald) he confessed that he had come to regard everything which he had written as so much straw (Weisheipl 1975).

In his comments on this clinical vignette, Lacan argues that the patient's culinary confession actually shows us that we should not too easily assure someone that there is no reason to feel guilty. In fact, according to Lacan, the question whether or not plagiarism has actually been committed is irrelevant. The guilt stems for the unconscious *desire* to copy others, fuelled by the paralysing conviction that only the thoughts of others are worth publishing. Only ideas taken from others have substance, and the patient discards his own ideas as worthless. This is also the meaning of the favourite menu: the desire (i.e. "brain-picking") is still there, but has found a new target (a psychic mechanism known as displacement): a regressed, oral form of *incorporation* of brain content has been adopted to act-out the secret wish.

Lacan considers plagiarism an impossible concept moreover. According to him, no such thing as intellectual property exists (cf. Borch-Jacobsen 1990, p. 14). We cannot "own" ideas, for they are always already there. We would not be able to think or write at all in the absence of a discourse already established, a stream of ideas and signifiers already thriving, and to which we can only marginally contribute. Originality is a cherished but untenable prejudice and the awareness of our dependence on established discourse entails a painful narcissistic offence. Not *I* speak, but *it* speaks ("ça parle"). We are born parasites, and originality is something marginal at best, occurring in the folds and margins of a λόγος that always already pervades and pre-structures our world (1958–1959/2013, p. 568). And Lacan himself produced texts in accordance with this conviction. As Borch-Jacobsen (1990) phrases it, he absorbed words and ideas continuously and his discourse bulges with allusive references, so that almost every sentence which flew from his mouth or pen contained one or more (usually hidden) quotes. Borch-Jacobsen calls him a "honest", "deliberate" plagiarist, someone who wilfully immersed himself in the discourse of multiple others, although in real life Lacan (as an author who experienced strong inhibitions when it came to publishing his writings) tended to be quite sensitive whenever he felt plagiarised by others, for instance by Ricoeur or Derrida (or some of their followers).

Lacan confesses to feeling quite uneasy about citations (1969–1970/1991, p. 40). Through citations we seek support in the words of a credible other for ideas and arguments that would be too fragile to be put forward without it. Citations indicate that we participate in a pre-structured discourse that is already there. We use it to legitimise our ideas, so that they may enter academic discursivity. And if, in a quote attributed to author X, the author name is replaced by author name Y (if one would attribute a certain quotation to Ricoeur or Derrida, for instance, rather than to Lacan), this would definitely affect the meaning of the phrase. In other words, citations may have various functions besides acknowledgement of intellectual property, which remains a questionable concept in the end.

Derrida reasons along similar lines, by the way, for instance when he argues that the dynamics of "intellectual theft" and parasitism is deeply embedded in language as such (Riley 1997), while both Lacan and Derrida not only build on linguistic theories (developed by De Saussure, Jakobson and others) concerning the anonymity and chronic dependence of speaking subjects on language, but also on Heidegger who relentlessly emphasises the thraldom and subjugation of humans vis-à-vis

language; – as indicated by one of his most famous phrase, put forward on several occasions: *Die Sprache spricht* ("language speaks").

Lacan's downplaying of intellectual property may sound radical but, similar to *Perlmann's Silence*, he does challenge us to explicitly consider a concept which is too easily taken for granted in mainstream integrity discourse (which increasingly revolves around a neoliberal framing of the scientist as a textual entrepreneur, scoring citations on the discursive stock market of citation indexes, known as academic publishing).

Lacan challenges us to question the P of FFP. In dialectical terms, we initially start from an understanding of intellectual property and plagiarism which seems self-evident (M_1). If I am the first person to publish about something (a concept, a formula, an equation, a discovery, a syndrome, a technical innovation, a personality test, etc.), I may rightfully claim it to be 'mine', so that others should at least cite me as the owner. But further reflection will convince us that we always stand on the shoulders of others, and that every novelty presupposes terms, approaches, techniques, etc., developed by others, so that it seems artificial to consider my contribution as something which belongs exclusively to me, as my 'property' even. In other words, the initial concept of intellectual property is challenged or even negated when the original concept is exposed to actual research practices, as fleshed out in science novels for instance (M_2). This is an important experience, for it reveals that mainstream understandings of intellectual property actually build on questionable (neoliberal) framings of scientific productivity, staging scientists as a textual entrepreneurs, scoring citations on the discursive stock market of citation indexes, which allegedly has become the basic objective of academic publishing (which, according to this neoliberal logic, is neither about making discoveries not about working for the benefit of humankind, but about harvesting citations and boosting one's h-score). The various instances of plagiarism presented in novels (as literary case histories) expose this symptomatic misunderstanding and the subsequent subversion of neoliberal interpretations of intellectual property in misconduct novels forces us to critically reconsider the original concept and to actively *work through* the experiences which these novels describe. I will come back to this discussion in the final section, and also in Chap. .

8.7   Writing as Self-Constitution and as Self-Exploitation (Between *Splitting* and *Conflation*)

Perlmann has lost contact with his field and experiences a discursive vacuum, a paralysing deficiency or lack, an experience of "splitting" (p. 170; in Lacanian algebra: $). The challenge facing him is to restore his integrity (which literally means: wholeness) or, to use the Foucauldian phrase: to reconstitute himself as a moral

subject. But the optimal route to achieve this, namely via academic writing *as a practice of the Self*, is no longer accessible. Perlmann is an extremely conscientious and sensitive person, morally speaking, and plagiarism is an internal, introspective, existential affair. No accusation is raised against him and although he is tormented by the prospect that his misdemeanour may be discovered, this evolves into a neurotic projection, a private obsession. Like in the case of Kris's patient, the paralysing experience of guilt is directed towards his illicit *intentions*. His basic activity in the novel, besides systematic text destruction, is excessive and relentless self-critique, a vehement rejection of his own published works and views, culminating in an "orgy of self-criticism" (p. 91) during one of the sessions: an at best cathartic, but actually quite destructive (rather than reconstructive) practice of the Self.

As a humanities professor, writing had been Perlmann's sole vocation, but now he experiences chronic ambivalence, or worse. At a certain point, Leskov explains how, as a political prisoner in Soviet Russia, writing became a practice of the Self for him, allowing him to restore his integrity. For Perlmann, however, discursivity *as such* now means imprisonment. Academic discourse (the necessity to publish) equals lack of freedom. He realises that, throughout the years, his academic career has insulated him; that he never really developed a rapport with the present; that he had been keeping reality at bay. Locked-in in his academic existence (and in his expensive Italian hotel), he realises that he has become anhedonic: insensitive to the pleasures of life.[8]

He could perhaps have re-constituted himself by developing a different style of writing: less academic, but it seems too late for that now. Discourse as such has become "trash", as we have seen. There are some noticeable exceptions: examples of more positive relationships with texts, but these examples consistently concern *texts written by others*. His work on the translation, for instance, seems like a craft, because it involves hardly any creative input from his side.[9] For a "man without views", to become an interpreter seems the ideal profession (p. 163), or even therapy. Another exception is his painfully dedicated effort to restore Leskov's second single-copy manuscript, which he initially tried to destroy (by throwing it out of a rental car on a highway, fearing that it would reveal the plagiarism which he did not really commit). When he discovers that the act of plagiarism has been thwarted (due to sloppiness and misunderstandings on the part of personnel from the hotel), and realising that Leskov's career prospects depend on it, he tries to atone for his mistake by retrieving the document (collecting as many pages as he can find in the grass and shrubbery alongside the highway, drenched, muddy and incomplete) and carefully restoring it, as if it were "a highly valuable archaeological find" (p. 473). This activity not only allows him to partially restore the text, but also to temporarily regain some sense of integrity, subduing his paralysing sense of "cleavage" or

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[8] Perlmann is a contemporary version of Faust in his study, realising that, now that he has finally become an acknowledged authority, the unworldliness and lack of relevance of his activities are more obvious than ever.

[9] Note that Perlmann's careful translation of Leskov's text plays a similar role in Mercier's novel as the "slow deciphering" (p. 331) of the Aldous file in *Solar*.

"splitting" (p. 170). Translating and restoring texts written *by others* works as a form of therapy or healing.

Life in academia entails an ascetic life-style, an ethos of self–renunciation. In order to succeed, Perlmann had to relinquish life, living only for his work, at the expense of everything else. He never experienced any special talent for languages and had achieved everything through hard work, desperately trying to ban the prospect of failure by investing in a future competence. But now that this state of competence and prominence is finally reached, he feels like a prisoner, hopelessly unable to enter and interact with the real world. Now that, due to his status, he should have felt invulnerable, he experiences a paralysing inner "splitting" (*Spaltung*), which disables him to regain a sense of integrity.

Besides translating Leskov's Russian manuscript as a kind of practical therapy, Perlmann is fascinated by its thematic content. This manuscript, written in prison, actually addresses the very symptoms and concerns that are now tormenting Perlmann. Leskov's basic theorem is that the active process of producing a convincing and coherent autobiography is basically a form of "integrity work" (p. 170). It is through the creative appropriation of one's past that the paralysing sense of fission or *splitting* (*Spaltung* in German), which Leskov *had* been experiencing, and which Perlmann currently *is* experiencing (p. 66, p. 112, p. 170), can be overcome, so that the subject's integrity can be sutured. Only an active, therapeutic process of verbalisation of one's own reminiscences may avert psychic disintegration. This theorem captures quite convincingly the existential crisis Perlmann is experiencing: the feeling that his personality is about to "cleave" (p. 179); that he is about to "split" himself.[10]

The German word *Spaltung* ('splitting') is not coincidentally a psychoanalytic, Freudian-Lacanian term (Lacan 1966, p. 842). The term *Ichspaltung* ('splitting of the ego') was briefly introduced by Sigmund Freud in one of his final unpublished, fragmentary notes (1938/1941, p. 60). Jacques Lacan even considers the term *Ichspaltung* Freud's "final word" (Lacan 1958–1959/2013, p. 544) and forges it into a key concept in his own oeuvre. As Lacan points out (1960–1961/2001, p. 81), the word splitting or *Spaltung* (διεσχίσθημεν) makes its appearance in Aristophanes' famous parable in Plato's *Symposium*, about how human integrity was once deliberately demolished by Zeus, namely by splitting or slicing early humans in two, so that we (their descendants) are still frantically searching for our lost "other half": the lost part of what we once were (Plato 1925/1996, 189E–191C). Plagiarism proves a toxic strategy, for it obfuscates rather than solves the ultimate human problem, the basic experience of *Spaltung*. For Perlmann, the experience of cleavage notably refers to the disruptive loss of the connection with his former (prolific) self.

Perlmann alternates between two mutually exclusive positions: he at the same time *is* and he *is not* a plagiarist. He did not really commit plagiarism, but he intended to do so. Instead of *being* a plagiarist, he *thinks* he is. He already produced the insights which Leskov painstakingly describes, and yet he has to translate and

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[10] "Es beschlich ihm das unheimliche Gefühl, daß er dabei war, sich von sich selbst abzuspalten" (p. 112).

appropriate them. Likewise, he both *is* and he *is not* the author of his previous publications, he both *is* and he *is not* identical with his former prolific Self, from whom he has become so radically estranged. This basic uncertainty, this discontinuity, this radical eccentricity, this inability of the subject to coincide with his own position, his own Self, is (according to Lacan) the experience of *Spaltung* par excellence (Lacan 1969–1970/1991, p. 119).
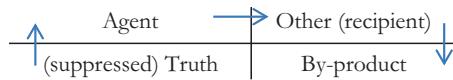
Via plagiarism, Perlmann desperately (but unsuccessfully) tries to overcome the paralysing sense of splitting (*Spaltung*); he tries to *conflate* his present position (of unproductive prominence) with his lost half, his lost former Self (as a prolific author). But committing plagiarism means falling into a moral trap. After the act, the very term, − indeed: the dreadful "signifier" *Plagiarism* –, begins to haunt him, to torment him, to persecute him: literally *cleaving* him. He both *is* and he *is not* a plagiarist, as we have seen, occupying two apparently incompatible discursive positions at the same time. And this acute experience of cleavage reveals a more fundamental inner *Spaltung*: a dramatic process of psychic cleaving[11] which already began long ago: the estrangement from his own authorship, from his being-an-author, from his own oeuvre; a form of paralysis which perhaps *could* have been overcome (but which he *fails* to overcome) through developing a new writing practice (as a self-edifying academic practice of the Self). But the traumatic experience of being *and* not being a plagiarist (both at the same time), definitely taints and ruins his authorship, not merely as a profession, but as a meaningful way of being-in-the-world. From now on, all instances of academic discourse are tainted, are turned into kitsch or trash.

Perlmann's plagiarism is not a calculated act of egoism, but a desperate effort to conceal the loss of his vocation, of his *voice* as an author (the experience that he has nothing to say). Although various possible causes are discussed in the novel (from failure anxiety up to mourning), the basic causal factor seems sheer exhaustion. For decades, he exhausted his intellectual resources. As a plagiarist he exploited a Russian colleague, but the real and ultimate damage is done to himself, via relentlessly and chronic self-exploitation, in order to live up to the expectations of the academic system. Now that he should have reached his "plateau" (Bateson 1973, p. 85), he experiences hollowness and emptiness: the once productive other half seems forever lost, annihilated through self-exploitation. In his frantic efforts to succeed, or at least not to fail, Perlmann has burnt himself out, has emptied himself; and this relentless self-exhaustion now fires back at him in the form of discursive nausea.

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[11] "Er hatte vergessen, wann genau es angefangen hatte… Der Beginn lag in einer Zeit als er, von außen betrachtet, auf der Höhe seiner Produktivität war" (Mercier 1995/1997, p. 18).

8.8   The Four Discourses

On the basis of these interpretations, we can now clarify the basic dynamics of the novel with the help of Lacan's theorem of the four discourses, introduced in Chap. 2. Lacan distinguished four positions, as we have seen. The upper-left position (above the bar) is occupied by the speaking *agent*, while the *recipient* of the message (the Other) is situated in the upper-right position. Beneath the bar, we find the (disavowed) truth on the left side and the (unintended) by-product of the discourse on the right:

$$\text{Agent} \longrightarrow \text{Other (recipient)}$$
$$\text{(suppressed) Truth} \quad | \quad \text{By-product}$$

In these four positions, four key symbols can be inserted (S_1, S_2, $\$$ and a), referring either to the subject pole, – namely the Master (S_1), the Servant (S_2) or the tormented subject ($\$$) – or to the object pole of the knowledge relationship (the intractable, inexorable, alluring object of desire, of our will to know: the object a). These four basic symbols may be inserted as "variables" into these four positions, resulting in a rotating, revolving, quadruped scheme.

In the case of the Master's discourse, this procedure results in the following scheme:

$$\frac{S_1}{\$} \quad \bigg| \quad \frac{S_2}{a}$$

This mode of discourse places Perlmann in the role of prominent authority of international renown (S_1 as agent) who organises a prestigious workshop, putting his signature under the invitation, thereby setting the assembled academics (S_2) to work. In order to play this role, however, the anxieties and doubts which are actually tormenting him must be disavowed and repressed ($\$$ must be pushed beneath the bar). Yet, from the very outset, Perlmann's role as Master is frustrated precisely by his inability to do this. His functionality as Master is hampered by a disruptive truth: his discursive impotence, the disconcerting awareness that he can no longer think of anything worthwhile to write or say. His team of colleagues is eagerly waiting for words, for ground-breaking insights, but Perlmann dramatically fails to produce them.

As a consequence, he desperately starts to look for words and insights somewhere else, and the scheme begins to revolve, to shift. Brain-picking basically means that the "brain" of the other (i.e. the site where, allegedly, these absent truths, these valuable insights can still be found) has become the plagiarist's object of desire: the object a. Thus, an inevitable turn unfolds. For Perlmann, Leskov now becomes the Master (S_1), someone who apparently managed to overcome his obstacles and doubts ($\$$), and Perlmann de facto becomes his Servant (S_2), the *recipient*

(literally) of Leskov's unique manuscripts (one copy only), containing the genuine core ideas which Perlmann was unable to articulate himself (*a*).

This type of discourse is challenged, however, by university discourse, representing normal, established science, voiced by academics such as Millar. Genealogically speaking, such experts are the former academic servants who have emancipated themselves. They no longer rely on authoritative voices (S_1, now pushed back into the lower-left position). Rather, they build on their own acquired expertise (S_2 as agent), reaping the fruits of their academic labour, and apparently being in control of the situation. This type of discourse, however, becomes untenable as soon as the target (the object of attention: *a*) begins to fail the scientific expert, for instance because the linguistic phenomena under study prove too challenging and intractable to capture, so that the expert's tools and concepts are unable to grasp them and come to terms with them. Gradually, such experts become aware of the futility of their efforts, and this gives rise to discontent and doubt, or even to symptoms such as exhaustion, burn-out and depression, as unintended by-products of research ($ in the lower-right position):

$$\frac{S_2 \quad | \quad a}{S_1 \quad | \quad \$}$$

Thus, Lacan's schemes provide the core structure of the narrative in short-hand. Whereas colleagues such as Millar seem perfectly able to uphold the structure of university discourse, in the case of Perlmann this discursive mode becomes increasingly untenable. Eventually, it dramatically collapses, so that university discourse gives way to the discourse of the hysteric. Now, the tormented subject ($) takes the floor, assuming the position of the *agent*, fulminating (albeit in silence) against Millar and the other spokespersons of university discourse, but eventually railing against discursivity *as such*: literally destroying huge amounts of texts as litter, railing against the forbidding supremacy and authority of λόγος as such (S_1), against the imperative to continue to produce more text. Only the ideas put forward by Leskov have value because he is an author who works in the folds and margins of established discourse and can impossibly be identified with the establishment. When Perlmann produces these same ideas himself, he discards them as un-academic and trivial, but when Leskov puts these same ideas on paper, Perlmann is able to recognise the value and validity of this disavowed truth. Thus, the ideas (the "brain") of the Other become the object (*a*), something which Perlmann seems almost *forced* to pick, although technically speaking he perhaps could have produced (or co-produced) these ideas himself. By translating Leskov's text, a new type of discourse is produced, a new subgenre within the field of linguistics, as an unintended by-product; perhaps even the beginning of a new paradigm (S_2 in the lower-right position).

$$\frac{\$ \quad | \quad S_1}{a \quad | \quad S_2}$$

But the hysterical mode of discourse proves a deadlock as well; and eventually is bound to give way to a final shift. The scheme takes a final quarter turn into the discourse of the analyst, which basically poses a question to Perlmann as a tormented subject: What is it that you desire? Why is it that you find the words and the insights of Leskov (the absent Other) so valuable? What makes this object *a* (i.e. Leskov's intellectual property, the products of his "brain") so threatening, but also so alluring, that Perlmann puts his reputation and his career at risk to either appropriate them or to eliminate them (or both)? And why is Perlmann unable to produce these ideas himself, discarding his own notes (which actually move very much in the same direction) as kitsch, while regarded Leskov's ideas as truth? It becomes clear that the ideas of the other (*a*) function as an active agent (in the upper-left position), addressing and provoking Perlmann as tormented subject ($ in the upper-right position), and almost *forcing* him into plagiarism:

$$\frac{a \quad | \quad \$}{S_2 \quad | \quad S_1}$$

The object *a* (the brain-picked property of the other) proves a toxic lure, however. Instead of saving his career, this desire ($ ◊ *a*) actually ruins his academic existence.

The position of S_2 in the lower-left position (below the bar) implies that to *understand* Perlmann (to really *listen* to him), our accepted ideas and convictions concerning plagiarism must be suspended. In order for the discourse of the analyst to work, we must become aware that we *do not really know* what authorship (what originality, what plagiarism, what integrity) really *is*. Rather, the novel stages a collision between multiple possible views, with the analyst-novelist assuming the role of a rhetorician in the Lacanian sense: an expert in the dynamics and modes of discourse (Lundberg 2012; Lacan 1977–1978, p. 4).

As a concept, "plagiarism" is still there, and the signifier "plagiarism" (uppercase *S*) is powerful and functioning, and determining Perlmann's ideas about his works (the signified, lower-case *s*), in accordance with the (S/s) formula mentioned above. Indeed, for Perlmann, as soon as he (thinks he) has committed the act, the dreadful signifier "plagiarism" haunts him, as if uttered by the silent voice of a merciless superego. But the meaning, the signifier (lower-case *s*) associated with this signifier (*S*) may shift, may become displaced. Indeed, the novel forces us to acknowledge that we do not really know what the dreadful signifier "plagiarism" stands for. And it is only on the basis of this admission that we can hope to develop a workable normativity, an ethos of academic authorship which allows individuals to address emerging integrity challenges: S_1 in the lower-right position, as byproduct of the current crisis.

8.9   Conclusion: What Is Plagiarism?

Authors evidently build on and respond to previous authors. As was already indicated above, we all dwell in a profoundly literate and discursive ambiance, so that all our writing is replete with influences, fragments, allusions, appropriations and borrowings (consciously as well as unconsciously) and profoundly dependent upon a world of collectively shared languages (Larochelle 1999, Sadler 2012). We *work* with and on ideas, but cannot meaningfully claim to *own* them. Indeed, given the chronic dependence of humans in general and of academic authors in particular upon discursivity, which is always already there, the concept of intellectual property seems difficult to uphold. We are continuously paraphrasing, repeating, glossing, recombining or parodying the words of others. Research, I would therefore argue, is not about intellectual property, but about intellectual *labour* (Zwart 1999). Or to put it in psychoanalytic terms: academic discursivity is about *Durcharbeiten*: about "working through", a precarious process which unfolds between input and output. Citations and references acknowledge labour (effort) rather than property, for we do not really *own* our concepts, but we do work on them and contribute to them.

In *Perlmann's Silence*, it is precisely this process of working-through that becomes disrupted. The suffering (or even crisis) results from the "death" (the obliteration) of *the former self as author*. Due to a basic experience of rupture (splitting, *Spaltung*), a prominent academic has lost contact with his former prolific self and is therefore no longer able to appropriate and build on his own intellectual labour of the past (a life of effort, resulting in erudition). The prestige is still there, but he has lost his former ability to work-through. He no longer takes to writing as a practice of the Self, an activity which would have enabled him to suture the paralysing deficiency ($-\varphi$). And precisely *because* he can no longer connect with his former Self, he resorts to a parasitical relationship with Leskov as a compensatory Other. His perpetration builds on the conviction that only the unpublished ideas of the (absent) Other are worthwhile to look into and propagate. Indeed, it is only as a translator and curator of Leskov's manuscripts that Perlmann is able to work. The absent Other (Leskov, marooned in Russia) functions as a replacement of an obliterated former Self. Plagiarism is literally brain-picking and the "brain" of the prolific other (Leskov) has become the perpetrator's object *a* as we have seen: an enigmatic entity which is both life-saving and devastating, both alluring and toxic, both familiar and foreign.[12] While intellectual labour (working-through as a practice of the Self) would have resulted in self-edification and self-repair, this option is no longer available to him. Due to the experience of splitting, the subject becomes "kenotic" (empty), falling victim to discursive erosion. Only the appropriation of the ideas of the other can stem this entropic disruptive process and compensate the loss.

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[12] Cf. Lacan (1966–1967, p. 119) who argues, in his commentary on the plagiarising patient, that the brain of the other (the target of brain picking, but also the plagiarist's favourite dish) has become the impalpable object of desire: the plagiarist's *object a*.

To some extent the novel can be said to individualise the problem, addressing plagiarism in the form of a case history, but the systemic ambiance is addressed as well. It is in the contemporary academic arena that individuals are spurred into self-exhaustion, and Perlmann's crisis can be seen as symptomatic of transformations within the scientific production system as such. In other words, Mercier's novel amounts to a diagnostics: not only of individual deviance, but also of the current academic crisis. At the same time it is clear that, as an academic individual, the protagonist dramatically fails to live up to the challenge of re-establishing himself as author within a certain discursive constellation, although in principle he *could* have done so, for instance by actively taking up the role of steward of an absent voice. Perlmann's position is captured by a term already discussed in Chap. 4, namely kenosis ($\varkappa\acute{\varepsilon}\nu\omega\sigma\iota\varsigma$,[13] i.e. "emptying") in the sense that he suffers (like Sebastian Bloch) from an experience of emptiness, reflecting a profound *crisis* of academic authorship (perhaps even of authorship as such). But dialectically speaking, precisely such an experience of crisis and self-contradiction (M_2) is valuable, because it may give rise to new discursive practices of the Self, to a shift in discursive position, for instance in the direction of productive collaboration (consciously giving the floor to the voice of the absent Other and acknowledging this other's priority) as an alternative scenario for plagiarism (i.e. appropriating the voice and picking the brain of the other as a misguided strategy to fill the gap, as misconduct).

Science novels contribute to the research integrity debate neither by condoning nor by denouncing plagiarism (or other forms of misconduct) on the basis of established but perhaps questionable or outdated conventions (S_2), but rather by forcing us to reconsider some basic conceptions and challenges of academic authorship from multiple (epistemological, political and normative) perspectives. Via this oblique detour we may explore feasible scenarios that may help us to address (as individuals and as research communities) the current crisis of academic authorship ($\$$), perhaps resulting in the establishment of a new plateau of normativity ($\rightarrow M_3$).

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[13] Saint Paul, *Letter to the Philippians* 2:7.

Chapter 9
Suspicious Minds: Allegra Goodman's *Intuition*

Allegra Goodman's novel *Intuition* (2006/2010) is set in the fictitious Philpott Institute in Boston, more precisely in a laboratory for biomedical research (run by Marion Mendelssohn and Sandy Glass) where a post-doc (Cliff Banneker) suddenly produces promising results, using a cancer-fighting virus named R-7. Preliminary outcomes lead to a publication in *Nature*, generating a lot of media attention and opening up new options for funding. The entire laboratory will from now on focus on follow-up research, but one of the other post-docs (Robin Decker, Cliff's former girlfriend) is unable to replicate the results and soon develops the "intuition" that the data may have been manipulated, although she does not have sufficient evidence to prove that she is right. The only evidence are some sloppy lab notes made by Cliff containing figures which seem to back up her suspicion that something is wrong. She opts for (or is manoeuvred into) the role of whistle-blower, however, and the *Office for Research Integrity in Science* (ORIS, an acronym/signifier which adds an S to ORI, the *Office of Research Integrity*) of the *National Institutes of Health* (NIH) concludes that there is indeed evidence of scientific misconduct, although this verdict is later annulled on procedural grounds. Meanwhile, a U.S. Senator uses the case to further his crusade against science, resulting in a media circus and a formal hearing. To make matters worse, the tumour recurs in some of the mice, while other labs also have problems replicating Cliff's results. As Lex Bouter (2015, p. 149) phrases it: "even on the last page, the reader is still not able to get to the bottom of what really happened", so that the novel "shows that there are many shades of grey along the spectrum that runs from complete integrity to research misconduct". On the individual level, the result is a struggle for survival, but most of the people involved seem able to find a way out, while manager Sandy Glass even manages to significantly improve his position.

9.1   Knowledge and Power

> The Philpott Institute was open as usual. In the Mendelsohn-Glass lab, four postdocs and a couple of lab techs were working. Two to a bench, extracting DNA in solution, examining cells, washing cells with chemicals … inserting new genetic material … operating sinks with foot pedals, measuring and moving solutions milliliter by milliliter with pipettes … preparing liquids, gels. There was scarcely an inch of counter space. Lab benches were covered with ruled notebooks and plastic trays… Glass beakers stood above on shelves, each beaker filled with red medium for growing cells (p. 3).

Philpott Institute is described from the beginning as a scientific "prison" (p. 20, p. 155). Researchers, notably post-docs, are expected to work long hours, almost continuously (24/7). The institute is depicted as a knowledge factory and scientific research as repetitive manual labour (or even as slavery) while any usable results of the post-docs' hard labour is appropriated by the managers without further ado:

> It occurred to [Cliff] now that he'd spent his whole adult life in a prison workshop. Years and years of manual labour went by. New results filtered through only on the rarest occasions… but Cliff and his friends kept on working. Like scientific sharecroppers, they slaved all day. They were too highly trained to stop. Overeducated for other work, they kept repeating their experiments. They kept trying to live on their seventeen-thousand-dollar salaries (p. 20).

There is a clear power divide running through the Mendelsohn-Glass lab between the powerless postdocs and lab techs on the one hand and the management on the other. The management consists of two persons, Marion Mendelsohn, who supervises the research, and Sandy Glass, who reports to higher level Directors and is responsible for the acquisition of research grants. The post-docs are expected to work on projects assigned to them by the managers and to produce results, which may serve as input for publications and grant applications (written by the managers, reaping the fruit of the post-docs' labour). The lab's morality is purely utilitarian and "Darwinian" (p. 17): the talent, intelligence and hard work of the post-docs hardly matters, as the managers are only interested in results.[1]

The managers themselves dwell in a different kind of world, and this notably applies to Sandy Glass, a scientist who combines lab work with treating cancer patients and actually earns most of his income as a "VIP-ologist" (p. 17), treating wealthy patients (business tycoons, investment bankers, Saudi princes, etc.) suffering from cancer. The contrast between his lifeworld and the daily existence of his post-docs is quite striking. Sandy Glass is as a wealthy person, living in a grand Tudor house (with a "Rosewood piano", a "precious library", etc., p. 13). Colleagues hate him for his "egotism", but he "thrives on the brine of their dislike" (p. 17). Every year, he invites his post-docs to his house for Christmas, where they experience his prosperity as "intimidating" (p. 13).

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[1] "Talent and intelligence, not to mention hard work, got lab scientists through the door, but – this was the dirty secret – you needed luck. You might be prepared and bright and diligent, and fail and fail and fail" (p. 18).

Sandy is a descendant from Eastern European Jews who changed his real name (Sam Glazeroff) "in the expectation that that will smooth his career path" (Miedema 2012, p. 75). While he represents the *science* dimension of contemporary elite culture, his wife (who is interested in Jewish history and is writing a book on invalid Victorian intellectuals entitled *Indisposed*) represents the *humanities* dimension. The latter also applies to his daughters, who are interested in science history[2] rather than in science, and in the poetry of John Donne. One of his daughters refers to the contingent of post-docs visiting the house as "lab rats" (p. 15).

Marion is not as wealthy as Sandy, but well-to-do. She and her husband Jacob are Jewish too. The latter was considered a genius in his youth, but dropped out of his career and now plays the violin. His reason for leaving research was that, at a certain point, he identified in himself a fatal inability. While he was able to master all the techniques, processes, methods and languages of laboratory life, even with amazing speed, there was one deficiency: he was not creative; he was not one of the chosen few. Therefore he gave up being a genius, thereby, "emasculating himself" as the novel phrases it (p. 30).

Gender and ethnicity of the main characters seem deliberately chosen. The lab is an ethnic mixture and compared to *The Affair* (Chap. 5), where women basically act as wives, the gender balance has now clearly shifted. In *Intuition*, women are both researchers (Robin) and managers (Marion). Moreover, again in contrast to *The Affair*, the ethnic division of roles has shifted as well. Whereas Cliff is at times affected by moods, a Chinese postdoc named Xiang Feng is depicted as being a completely impassive researcher, who lives solely for his work. Jews are no longer depicted as "other" as in *The Affair*, but rather as the scientific elite: as the managers, funders and publishers of research, while Cliff, the Anglo-Saxon male (the dominant ethnic group in *The Affair*) is now a minority.

The post-docs in the Mendelsohn-Glass lab are toiling academic Nibelung slaves, with Sandy Glass casted as their Alberich. Robin for instance spends 5 years of work on what once had been considered a dazzling project: screening enormous amounts of blood procured from cancer patients for promising biomarkers. But she failed to "spin Glass's dross into gold" (p. 8). Xiang Feng grew up in China and "works constantly", as a "self-deprecating", scientific "ascetic" (p. 24). Much worse off than the post-docs, however, are the laboratory mice, living one floor down, in the animal facility: a room with a red glow, like a room in hell, where quivering pink mice are kept, drug addicted, sick by design, suffering from xenografts and from "grotesquely bulging tumours". They are living tumours as it were (p. 23), creatures that are "sacrificed for the repetition of failed experiments" (p. 26). For indeed: instead of producing gold, the lab became stagnant and infertile. It is against this socio-cultural backdrop that the epistemological drama unfolds.

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[2] Sandy (the scientist) seems insensitive to the humanities culture. When one of his daughters informs him that she wants to study the work of Robert Hooke, who invented the word *cell*, he fails to see why anyone should want "to read about discoveries instead of making them" (p. 54).

9.2   A Knowledge Production Crisis

At the start of the novel, Cliff (once considered a very talented postdoc) is in deep trouble. He had been the first person in his family to earn a Ph.D., and was hired by Mendelsohn and Glass as a highly promising researcher, but now he is "entirely in their power" (p. 5). For years he had been developing a variant of a Respiratory Syncytial Virus, dreaming of using his modified RSV to transform cancer cells into normal cells. But his experiments are not working. Sandy and Marion had ordered him to give up, but he had disobeyed. While trying to "cure cancer in a petri dish", as Sandy cynically phrases it (p. 5), he had established nothing and was wasting expensive lab resources. Cliff had failed to produce results. He did not want to give up, however, because this would mean throwing away two and a half years of hard work. He could not bear to jettison a project that had taken so much of his time. The thousands of hours he had spent on it sickened him (p. 6). Moreover, he argued that he deserved "his own project", but Marion is quick to point out "that here is no such thing as your own project" in this lab (p. 6).

Their dialogue entails a quite straightforward portrayal of university discourse:

$$\frac{S_2}{S_1} \bigg| \frac{a}{\$}$$

A qualified scientific researcher (S_2) should "by definition, be *impassive*" (p. 6, my italics), should not allow "emotions to govern his experiments" (p. 6). Yet, in his exposure to the (allegedly promising) Respiratory Syncytial Virus, he had allowed himself to be deceived by this alluring object, allowed himself to come under the sway of the modified virus (*a* in the upper-right position), desperately looking for an effect of this virus on mice, so that the "impassive" researcher became transformed into a craving subject ($\$$), obsessed by and addicted to an intractable object *a*. As the novel phrases it, "the gene you sought to isolate, the phenomenon you thought significant, could elude you; the trend and significant pattern of disease could evolve into an endless hell of ambiguities" (p. 18). This is exactly what had happened. In other words, the normal knowledge relationship has fallen victim to the matheme of desire ($\$ \lozenge a$). This is why Cliff is so harshly criticised and reprimanded by the managers (representing his super-ego, the laboratory version of a parental couple as it were): Cliff has allowed himself to become emotionally involved. He has been "unrealistic" and "unprofessional". Indeed: he is not a real (impassive) "scientist" (in the S_2 sense of the term), at least not according to the standards of Mendelsohn-Glass. He has not been a purely functional, replaceable and impassive laboratory agent (S_2), but rather someone who allowed himself to be fuelled by desire. For Mendelsohn and Glass, this is dangerous, destabilising and unacceptable.

Cliff's despair is the inevitable by-product of laboratory life ($\$$ in the lower-right position), the inevitable result of his exposure to the allusive yet alluring object *a*. Or, as the novel phrases it, at a certain point "his despair seemed to melt and pool inside him, until … he was no longer desperate, but simply demoralised and

depressed – emotions entirely accepted, even expected, in the lab" (p. 11). He clings to this project (he "knows" that it somehow *must* succeed), because the virus is his only chance to safeguard his prospects for a career in science. But the tension, the *Spaltung* between lab expectations (articulated by Sandy and Marion as his super-ego) and desire, are becoming unbearable. Therefore, Mendelsohn and Glass have decided to remove him from his project, to disconnect him from his object *a*:

$$\frac{S_2}{S_1} \quad \bigg| \quad \frac{a}{\$}$$

Cliff, the supposedly "impassive" agent (S_2 in the upper-left position), is driven by the relentless imperative "go on; continue to produce ore knowledge, never enough!" (S_1 in the lower-left position). As such, he becomes exposed to an object *a*, a "toxic" virus (in the psychoanalytical sense of the term), an inexorable something which not only ruins the health and well-being of his mice (who are infected with cancer cells on purpose), but is also increasingly becoming a threat to his own well-being, his own prospects of survival as a scientist, and even as a person (*a* in the upper right position: the focus of his intentionality, his interactions and his questions). The situation sickens and the whole laboratory is experienced as a sick environment, in a literal, but also in a figurative way. Cliff falls victim to a professional disease, the biomedical version of the *hysteria chemicorum* discussed above, and experiences a dramatic split between laboratory standards and his will to know, between the demands of knowledge production and his desire to discover a revelatory truth. Mendelsohn and Glass decide that Cliff must be replaced, for his epistemological affliction seems untreatable. He had been talented once, but in the Mendelsohn-Glass laboratory talent does not really matter. He failed to produce results, and Cliff fails to accept that "results filter through only on the rarest occasions"" (p. 20). He finds himself in a deadlock. The only option is to keep repeating his experiments (p. 20). But then something unexpected happens….

9.3   Intrusion of the Real or Fabrication?

At a certain point, Marion and Feng enter the animal facility to check the mice. Feng, who "rarely spoke while working" (p. 26), suddenly looks startled. He is inspecting a cage inhabited by mice that are used in Cliff's virus experiments:

> "Where is it?" Feng asked.
> "Where is what?"
> "The tumour," he said.
> She took the mouse herself … the creature flexed its feet as Marion palpated the first set of mammary glands. The tumour was barely perceptible, scarcely protruding on the animal's neck
> "Now look at this one. Three-sixty-five". Feng lifted another mouse from the cage. "This one last week had a tumour point seven centimetres in diameter. Where is it now?" (p. 26)

All of a sudden, the tumours seem to be shrinking. There seems to be a result. The experiment's object *a* is decidedly not the mouse, and it is no coincidence that the mice are furless, that their skin is nearly "transparent", for they actually are a "living library" (p. 25) of proteins and genes. The object *a* is a spectral something *inside* these animals, something which may have invaded these mice, something toxic or at least exceptional which temporarily cures them (from cancer), but eventually kills them, because the mice are merely a kind of living stage, allowing the viral drama to unfold, and bound to be sacrificed in order to study the impact. The mice are merely vehicles or ecosystems: the object *a* is a particular type of virus (labelled R-7), the frustrating, enigmatic target which now suddenly seems to live up to its promises and expectations, for there is something missing in the mice, a disconcerting but at the same time promising abnormality or gap: the tumour has decreased. Marion and Feng discover that three mice have tumours significantly smaller than before. After repeated failure, one of Cliff's viral variants actually seems to have some effect. Is it significant? Or is the atypical tumour decline "contaminated" by some other (unknown) condition?

The responses to this event differ. Whereas Marion (the scientific supervisor, the lab's epistemological super-ego) remains sceptical, Sandy is exuberant, because he immediately sees new possibilities for writing grant proposals for NIH.[3] Sandy takes a U-turn by considering Cliff suddenly as the lab's trump card (Miedema 2012, p. 76). Cliff throws himself into work and experiences a second lease on life. He works even longer hours than before and his appetite for science revives. These are *his* experiments, *his* mice. This is *his* crucial moment. His moods swing "sickeningly between delight and despair" (p. 48), fuelled by "the propulsive energy of scientific questions, the relentless force of an investigation that might succeed", but also tormented by the possibility that "his good fortune might evaporate", that the "remission of the mice is nothing more than a freak occurrence" (p. 48). In other words, he becomes trapped in the matheme of desire ($\$ \lozenge a$). He forgets about the outside world, loses track of time, becoming "paranoid" even ($\$$ in the lower-right position; p. 48). All his previous work had given him nothing, but this was his chance. More carefully than ever before, he keeps and copies his records. Do not move, do not touch! These are *his* mice, his proprietary tumours, his results. Indeed, Cliff develops "a proprietary interest in his virus and his mice" (p. 51). The "we" of normal laboratory research has decidedly shifted to the first person singular. As the novel phrases it:

> All his thoughts and actions served R-7. Cliff saw now that you could not become possessive of this kind of research. Instead, he, the researcher, had become *possesses by his creation* (p. 178, my italics).

Meanwhile, his colleague (and former girlfriend) Robin reacts with scepticism, and even suspicion. She unwillingly replicates his trials but is unable to repeat Cliff's

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[3] "When it came to science, Sandy's motives were not entirely pure… Sandy's work was about building up himself, his ego and his persona. Sandy lacked humility; he lacked respect for the complexity of problems" (p. 32).

results. And the kind of luck that Cliff was experiencing seemed "far too rare" (p. 41). Actually, the unexpected findings function like a litmus test. Whereas Marion and Robin (but this also applies to Feng) remain sceptical and impassive, as really converted scientific subjects should, Sandy and Cliff allow their desire (for truth and funding respectively) to resurge. And now that Sandy suddenly finds "value" in Cliff's work (p. 40), Cliff's positions changes radically, from "failure" to "success": like "a man in Stalinist Russia, suddenly rehabilitated" (p. 40).

A divide begins to unfold in the lab between the sceptics (Marion, mildly sceptical, and Robin, increasingly sceptical) and the believers (Sandy and Cliff), with Feng staying completely neutral.[4] Cliff and Sandy find encouragement in the fact that the virus begins to take effect, that the experimental mice are in remission, and that there is a "measurable difference" (p. 58) compared to the control group. Indeed, "somehow in all the mess of experimental ambiguity" they may have "stumbled upon something true" (p. 58). And Sandy, somewhat prematurely no doubt, begins to compose his grant proposal "poetry". For Cliff, the name R-7 becomes the signifier of redemption. He experiences "utter joy", realizing (while holding his results "by the tale") "that he'd finally gotten what he wanted" (p. 67). From now on, he sees nothing but his naked mice, although they are actually a screen or window into something more essential, more noumenal and biochemical (R-7). After killing six mice and opening their bodies, he is struck by the beauty of their blood vessels, undisturbed by cancer:

> Over and over het looked, and each time he made the discovery again: his virus worked on cancer cells. He had never seen anything more beautiful or more important than the mouse before him on the table. He had never felt so solemn or so full of joy (p. 69).

He is looking at his object *a*, the target of his *cupido sciendi*, but this "object" is actually the *absence* of something, the (temporary?) absence of the tumour.

> All his hours in the lab, working with the virus. All the care and ambiguity and blood and shit involved with tumour models in living mice – all that seemed like nothing now as he looked at the normal, healthy corpse before him. Here was the way forward. Here was the human body writ small (p. 69).

For indeed: the mouse's body is actually a window into the human body, and its biochemistry can be extrapolated in principle to human biochemistry. The biochemical letters or elements (στοιχεῖα): the noumenal, symbolical essence of all mammal bodies is basically the same. The mouse's body is a kind of elementary textbook or manual containing the elements of human biochemistry. These symbols, these letters and numbers, suddenly seem to speak out to him, and to speak for themselves.

Meanwhile, a second line of research is opened up. While Cliff himself focusses on this virus and his mice, Robin decides to change her perspective and to secretly monitor Cliff. Instead of his viruses, she decides to study his practices. Cliff the scientific subject becomes her "case".

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[4] "[Feng] was a skilled scientist… but science did not move him… He would not allow his imagination to seep out" (p. 125).

9.4 Suspicious Minds

Actually, the collision between scepticism and optimism unfolds on two levels, on the level of research practices (between Robin and Cliff), but also on the level of scientific publishing (between Marion and Sandy). Whereas Marion (like Gottlieb in *Martin Arrowsmith*) insists that more data are needed and more research has to be done before a publication can be considered, Sandy wants to seize the moment and use the advantage for putting in grant applications, before they will be overtaken by others. Whereas Sandy argues that "now is the time", Marion counters by saying that "it's premature" (p. 71), carrying her scepticism with her at all times, like "quinine" (p. 139), thereby fostering her immunity to enthusiasm. Eventually, Sandy frames the alternatives quite outspokenly. In science, there were those who triumphed and those who faded: "did she want to end up like Rosalind Franklin or Watson and Crick?" (p. 74).

The collision between Robin and Cliff, however, is more vicious. Robin deplores that Cliff's work now has priority, not only in the sense that she has to drop her own project in order to work on his, but also literally, in the sense that he now has priority when it comes to lab equipment and lab space (a very scarce resource in this competitive arena). Sandy and Marion are preparing a paper on R-7 to be submitted to *Nature* and Robin's assignment merely is to "reproduce Cliff's results" (p. 106). And when Marion notices her resistance, she threatens Robin with expelling her from the lab. Yet, while R-7 is beginning to draw mass media attention, Robin fails to repeat Cliff's results. Cliff's virus "seemed impotent in her hands" (p. 118). Frustrated, she rips the pages on the cells out of her lab notebook and gives them to him. They're yours… They're your cells… It's your virus, you figure out why it didn't work" (p. 119). But as Marion phrases it: "blaming ex-boyfriends for one's failures was not the behaviour of a scientist", and her position soon becomes "untenable" (p. 137).

Cliff increasingly begins to claim ownership for his work, begins to dream about a future lab of his own, and he even gives an interview in the first person singular, for which he is scolded by Sandy ("We are selling R-7. Not you. Not your career", p. 169). He even asks Sandy's youngest daughter (the Donne expert) for a literary quote which he can use at the beginning of "his" paper. She comes up with "What's your dark meaning mouse?" from Shakespeare's *Love's Labour's Lost* (act 5, scene 2). But this sentence is rejected immediately by Marion and Sandy, and sacrificed to the impersonal, hyper-prosaic, academic "we". Even Feng becomes tired of Cliff and "his" discovery.

Meanwhile, Robin still fails to confirm Cliff's results and Jacob (Marion's "opinionated" husband, another sceptic) even calls them "too good to be true" (p. 144). What notably disturbs Robin is Cliff's face, his look of triumph, when gazing at his mice: "jubilant" and "blissful" (p. 152), − as if he is indeed discerning (psychoanalytically speaking) his object *a*, his (impossible) object of desire and jouissance. The lab no longer seems a prison to him, but rather a "sanctuary" (p. 156).

At a certain point, Cliff catches Robin with his lab book under her arms. Why did she take his lab book? But she cannot say, not even to herself, what she is doing with his book, although it is clear that she is driven by the suspicion that there is something wrong with Cliff's work (p. 157). This scene is reminiscent of Sartre's famous keyhole-scene (1943). A scientist (Cliff) is focussed on his object of research, on his mice, his virus, studying them, monitoring his mammals closely, until he suddenly realises that he is actually being studied by someone else. Sartre describes the situation of a person who secretly pierces through a keyhole, trying to see something (a naked body, or two naked bodies, probably?), who *think* they cannot be seen. Suddenly, the sound of footsteps is heard. And now, the voyeur himself suddenly realises that he is *being seen*, that he is caught in the act of seeing, that he himself has become the target of a revealing gaze, that his own activities are suddenly exposed (literally and figuratively), so that his world flows over into the field of vision of this other. It is a scene involving craving humans, on the look-out for something, fuelled by a desire to see, but when they finally seem about to see something (and this applies to Cliff, but also to Robin), they are caught in the act of prying, so that instead of seeing they are *being* seen. While peering at enigmatic "things" (body parts, or other intriguing items), they are actually *drawing attention to themselves*. While Cliff monitors his mice, he suddenly realises that he himself is being monitored and scrutinised. But when Robin is suddenly caught in the act of prying on Cliff, the situation is reversed again. Cliff is Robin's laboratory mouse as it were, infected (she suspects) with the FFP virus. Is he indeed fabricating or falsifying his data?

At face value, there is nothing wrong with Cliff's data, except for the fact that Robin is consistently unable to reproduce them. "I thought there was something wrong", she confesses, "I thought it was me, and I thought it was the cell line, and I thought it was the equipment, but it wasn't. It was you" (p. 158). For a fleeting moment this accusation seems to bruise his self-confidence ($), but soon he is his own confident self again (S_2).

Now Robin is the one who compromises her professional impassivity. She cannot stop questioning Cliff's data (p. 172). She scrutinises his lab books again and again, combing his data meticulously "as a scientific bookkeeper … auditing his accounts" (p. 174), but she cannot find any discrepancies, until she discovers, in a bottom drawer (knowing where the keys are kept), "a messy pile of papers", with notes in Cliff's spiky handwriting, − and dashes off to the photocopier. That night, poring over het photocopies, she develops the impression that there indeed seems to be something wrong with the data. Compared with the journal article, the notes describe too many mice. The numbers in Cliff's "flimsy notes" (i.e. the context of discovery, backstage) and in the "stiff journal offprint" (i.e. the context of justification, frontstage) would not "reconcile" (p. 179). She quickly draws the conclusion that the *Nature* article is a "house of cards". But most of all, she feels "the irony acutely, that this was the one discovery she'd made in almost six years at the Philpott, and the finding was purely negative. She had uncovered not truth, but falsehood" (p. 179). Her intuition, her suspicion now seemed justified, for Cliff certainly

seemed to have repressed results that did not fit. But had he consciously committed fraud, or had he rather deceived himself?

Robin's friends and colleagues are taken aback by her behaviour: stealing and copying someone's notes, examining them "without his permission" (p. 186). Yes, Cliff's scrambled notes (never meant for anyone to see) were sloppy, but this could not justify Robin's "hysteria" (p. 187). Her behaviour seems increasingly erratic and obsessed. She is becoming a living hazard to the lab. In other words, she shifts into what Lacan refers to as the discourse of the hysteric:

$$\frac{\$}{a} \quad \frac{S_1}{S_2}$$

She confronts the managers (the recipients of her message, initially Marion, but eventually ORIS, the *Office for Research Integrity in Science*: S_1 in the upper-right position) with her findings. She expects the lab managers to reconsider the status quo (which combines a privileged positon for Cliff with a marginalisation of herself), but instead she is criticised for the hysteria of her questions and for the erratic, disruptive, and disrespectful nature of her behaviour ($\$$ as agent), while Marion reminds her that scientific work requires "a modicum of trust and respect" (p. 186). She seems unaware of the motive, the desire, the objective that is actually driving her (a in the lower-left position). Is her fanaticism fuelled by a commitment to truth, or rather by a more personal motive, by her "obsession with Cliff" (p. 194)? For Robin, however, "the unpopularity of her position seemed to her the mark of truth" (p. 188). Her assertions are unprofitable, detrimental to her career, her own work is submerged in her suspicions and her days in the lab seem numbered (p. 188). Yes, she has lost control, but this merely reflects the "disequilibrium" of the whole lab environment (p. 190).

But there is a knowledge-effect involved as well (S_2 in the lower-right position). Colleagues begin to take a closer look at the quality of Cliff's results, which, again, "seem too good to be true" (p. 196) and a special meeting is convoked, involving qualified experts from outside the lab (S_2), in order to assess the validity of Robin's assertions. Cliff defends himself by arguing, however, that the papers found (or stolen?) by Robin were scratch notes which he (as soon as his hands had been free) had copied into his notebooks, which he had brought with him, as "an open book for anyone to see" (p. 202). He had been sloppy because he tried to do too much himself. The dates and the data in his notebook match up precisely, and during the meeting his enthusiasm is infectious, because he speaks about research, and everyone seems to relax. While Cliff's results seem beautiful, Robin's results are negative, her arguments "distasteful" (p. 202). The meeting becomes a "research seminar", shifting the focus back again from Cliff to the mice, from the discourse of the hysteric to university discourse: "how delighted they were to return to science". Many researchers were messy, but there was the book way of working (the rules and regulations) and then there was reality, the bumps and jolts of the creative process (p. 203); backstage and frontstage so to speak. In contrast to Cliff's story of perse-

verance (S$_2$), Robin seemed just "malcontent" (*$*). Like a beautiful soul, she had "no useful results, only her critique" (p. 200). She had "cracked in the sterile, claustrophobic quarters of the lab" (*$* as unintended by-product of laboratory life) and had "*transferred* all the frustration from her own failures" unto Cliff (p. 208, my italics). Meanwhile, another malcontent colleague secretly gives her the phone number of someone who knows "some things about this institute" (p. 204).

9.5   Power Intervenes

First, she meets a former employee with a "conspiratorial" worldview who is now "barred" from the institute and has taken up gardening as a "horticultural therapy" (p. 213). The Philpott, he claims, is a feudal system which "sacrifices" not only mice, but scientists as well (p. 211). He tries to restore her self-confidence by saying that "Mendelsohn and Glass are very good at instilling self-doubt, because they have none, they *transfer* it into their postdocs" (p. 210, my italics). Subsequently, he informs her that he has already discussed her allegations of fraud with Alan Hackett and Jonathan Schneiderman of the *Office for Research Integrity in Science* (ORIS) at NIH. Robin, taken aback, retorts that she never gave her permission to do so, and that her claims are about "possible error", rather than "allegations of fraud", but he urges her to "stop thinking like *a servant*" (p. 213, my italics). Robin now realizes that she has in fact already migrated from the world of "dedicated research" (to which she once belonged) to the "muddy land of malcontents" who have "cast science off" (p. 214).

Friends warn her that Alan Hackett is "not a researcher" but "a vampire", dissecting journal articles prying for weaknesses, living on mistrust in science, trying to bring down authors and seeing fraud everywhere: "fraud is his obsession" (p. 218). Hackett and Schneiderman represent "Big Brother watching you" (p. 219), but Robin is still struggling with the gaps between Cliff's raw data and his published works (p. 220) and decides to consult these experts (referred to as experts in "improbable results", p. 221). During their first meeting, Hackett presents himself by saying "We're anthropologists, really… We study data (p. 222)". Their job is to investigate possible misconduct and data manipulations, and therefore they are interested in Robin's "data". Robin on her part decides to continue her "championing the truth" (p. 222).

Soon, Marion and Sandy receive the news that ORIS wants to audit their lab, because of a possible fraud complaint. The "barbarians" are at the scientific gate (p. 227). Feng, the colleague from China, is afraid that he will be "deported" and Cliff is paralysed by the prospect that, whatever the outcome, he will be "marked" from now on (p. 229). Apparently, Robin had now really "grown hysterical" (p. 228) and seeks to "destroy her own colleagues' work, their work, their reputation" and "tarnish their results" (p. 229). The paperwork related to R-7 is indeed disorganized and fragmentary and Marion therefore decides to piece the scraps together like "an

archaeologist of the recent past" (p. 230). Unfortunately, the original version of the questionable lab notes discovered by Robin is nowhere to be found.

Robin has in fact taken them to Hackett and Schneiderman, who find the discrepancies between the raw data and the published work "staggering" indeed (p. 234). They explain their way of working, how they trace their way backwards from journal article to data, which tend to get more and more "spotty" as they proceed. Indeed, they refer to their "forensic" methods as "reverse engineering" (p. 235). And they continue to work in this manner until they unravel the "pattern of deception", the "web of deceit" (p. 236) on the institutional level.

Subsequently she meets with Ian Morgenstern, who works for Senator Redfield from Illinois, who wants to find out on what kind of research "the six billion tax dollars received by NIH last year had actually been spent" (p. 238). He is specialised in red-listing "wasteful and decadent research appropriations". Senator Redfield had grown increasingly concerned about the "spectre of fraud", the "culture of deception" within the scientific community (p. 239). In other words, the case becomes a symptom of a much broader epistemic pandemic.

How to assess this intervention by ORIS? At first glance, this intervention seems to adhere to the structure of university discourse, with Hackett and Schneiderman as qualified experts in the role of the agent (S_2 in the upper-left position), seeing themselves as researchers and anthropologist, – as "science studies" experts, focussed on revealing indications of fraud (*a* in the upper-right position) emerging in the gaps between the-research-as-formally-reported and the-research-as-actually-conducted. This is how Hackett and Schneiderman like to see themselves: as researchers studying research. But on closer inspection, the dynamics rather seems to reflect a relapse into what Lacan refers to as the discourse of the Master:

$$\frac{S_1}{\$} \quad \bigg| \quad \frac{S_2}{a}$$

Self-doubt, the basic questionability of their analyses, is disavowed ($\$$ is pushed into the lower-left position). ORIS occupies a position of authority, acting self-assured, both in term of the legitimacy and in terms of the methodology of their endeavour. Precisely when Cliff experiences "the deepest joy he'd ever known", ORIS "blocks his path", disconnecting him from his object,[5] so that he seems to have as little hope of escape as the test animals "scuffling in their cages" (p. 244). Instead of devoting his time and intentionality solely and exclusively to his R-7 virus research, he now has to turn around is it were to face the ORIS experts and answer the questions they address to him (S_2 in the upper-right position). The R-7 virus is replaced by a different kind of object *a*, namely: instances of misconduct hidden somewhere in his files. And S_2 is put to work. Indeed, ORIS pushes scientists into action, forcing them to provide Hackett and Schneiderman with piles of docu-

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[5] "Science is what I love. It's my life and they're trying to take it away from me… But I can't give up research, it's my vocation" (p. 245).

ments, in response to their queries, which somehow should produce the object *a* (lower-right position): instances of fraud as by-products of biomedical research. In other words, Cliff as a scientific subject now finds himself in the role of target (S_2 in the upper-right position). ORIS is allegedly fuelled by normative imperatives (the fight against fraud, S_1 in the lower-left position), but other disavowed motives (the lust for power, resentment against scientists, etc.) may also play a role. The jouissance involved in this inquisitive practice (from the ORIS perspective, that is), is the pleasure of science-bashing, for instance by exposing and red-listing apparently irrelevant research projects.

This is even more obvious when the focus of attention shifts from ORIS to the Redfield Subcommittee on Science and Technology. The integrity of the lab is now seriously questioned. Cliff's notes (allegedly containing the object *a*) are subjected to a forensic ink analysis. The authorities hope to uncover a "whole culture of scientific finessing and fraud" by subjecting the scientists to a formal hearing. When Redfield refers to the institute as a "totalitarian system", an "oppressive regime", this is not completely besides the truth of course as we have seen, but it also seems self-referential. In the post-truth era, science as such now seems to be on trial (p. 291). The Master (the Senator, S_1) is having his revenge on the emancipated scientists (S_2). But in the end the tables are turned again, when yet another panel calls for "an external review of the structures and processes used for ethical oversight at NIH" itself (p. 329).

9.6   Working Through and Reparation? The Level of the Self

From the perspective of university discourse, the most challenging disaster is the intrusion of the real. Suddenly, there is a recurrence of the tumour in the mice, which puts Cliff's data into question. Recurrence could be an interesting finding in itself, revealing something about the complexity of the interplay between virus, immune system and cancerous cells, and initially Cliff is fascinated by the phenomenon. But in view of the pressures, it implies the failure of his R-7 project. To make matters even worse, replication tests conducted in other labs are not getting the expected results. They fail to confirm Cliff's claims. Marion concludes that they published too opportunistically, too soon, and decides to retract the *Nature* paper.

According to Bouter (2015) there are only losers in this novel, but this does not seem completely true. In the aftermath of the crisis, Sandy accepts a new position, as head of a new private cancer facility in Wellesley, a position that is bound to make him an even richer man. But Cliff also seems to recover from the trauma. During the denouement or catharsis stage (the final chapters of the novel), when the discourse of the analyst takes the floor, Cliff realises that he will be able to work again with a clear name. He has lost 2 years of work, but is more experienced now, because of all the turmoil, and resolved to make a better start. He still loves science, the slow, exhausting work, the rush of discovery, and will never give that up. He continues to be susceptible to the quest for knowledge, coming from a promising new object of

research (*a*) and from his scientific vocation (S$_1$) on the other. Moreover, his spirit revives as he discerns in himself a "talent for restoration", an ability to learn from his experiences and to see himself "as a character in a bildungsroman" (p. 329). Thus, he is able to find a new position in Utah. During these self-reflections or reflexive exercises (Cliff's self-analysis if you like), S$_2$ becomes suspended (pushed into the lower-left position) in order to take an oblique perspective on science. He now acknowledges that, although research (the daily toiling in response to and in interaction with the intractable object: *a* in the upper-left position) is a commanding, taxing and frustrating enterprise (M$_2$), this edifying experience allows him to repair his *Spaltung* ($ in the upper-right position), so that he can recover and reconfirm his loyalty to his calling, his "vocation" (S$_1$ in the lower-right position; (M$_2 \rightarrow$ M$_3$)):

$$\frac{a \quad | \quad \$}{S_2 \quad | \quad S_1}$$

Chapter 10
Splitting and Conflation: Plagiarism in Ian McEwan's *Solar*

Solar tells the story of Nobel laureate Michael Beard, a science celebrity who, as a young theoretical quantum physicist, building on the photovoltaic work of Albert Einstein and others, made his name with the so-called Beard-Einstein Conflation: a quantum explanation for the emission of electrons, suggesting new ways of harvesting energy from sunlight. But all that is long ago and Beard has now entered the emerging field of big applied solar energy research, attracting large amounts of funding as the Scientific Director of the newly established *National Centre for Renewable Energy*. The idea is to use chaos theory and quantum photovoltaics for optimising the production of wind and solar energy, as a key contribution to mitigating the emerging global impact of climate change. But from the very beginning of the novel it is clear that Beard no longer is the devoted young researcher he once was. Rather, he has evolved into a spoiled, egocentric and obese opportunist who spends his time on public lectures, hedonism and invitational travels to privileged places (ranging from Italian lakes to Spitsbergen), realising that, due to laziness, boredom and ageing, he has utterly lost track of the physics and mathematics on which the advanced research activities (which he is supposed to lead) ultimately depend.

After the accidental death of a promising and multi-talented post-doc named Tom Aldous, however, he comes in possession of the latter's notes, explaining (in abstruse mathematical equations) how nano-scientists may understand and effectively reverse engineer or mimic the ways of plant leaves: their ability to use sunlight (as "natural solar panels", p. 234) to produce biomaterials and oxygen. Beard decides to decipher Aldous's legacy and to present his ideas as his own, translating his notes into useful applications on an industrial scale. He mobilises ample funding for building a prototype solar energy plant (the LAPP: the *Lordsburg Artificial Photosynthesis Plant*) near Silver City, New Mexico, while filing a series of promising patents for personal gain. When he is about to proudly present his project to the world, as a "world-historical event" (p. 361), however, a lawyer pays him a visit, claiming to represent a client who apparently copied Aldous's original files and now accuses him of theft of intellectual property.

10.1   The Knowledge Dimension

Solar quite convincingly explains how, as a young researcher, Michael Beard had been an isolated, introverted, highly committed, hyper-individual quantum physicist. As an ageing scientist, however, his situation has completely changed. A new arena of "converging research" has emerged, in the intermediate zone between nano-technology, photovoltaics and climate politics. From the 1950s onwards, physicists (with their high-tech contrivances and advanced mathematics) migrated towards the life sciences, employing their powerful physical technologies to understand and mimic the basic processes of life. Artificial photosynthesis, as a sub-field of biomimesis (i.e. the use of biotechnology to mimic living nature on the molecular level), is an exemplification of this trend.

Thus, the epistemological backdrop of the narrative is a transformation that is actually taking place in laboratories world-wide, where biotechnology is evolving into bio-mimesis, i.e. mimicking ('copy-pasting') nature on a molecular scale (Church and Regis 2012; Zwart et al. 2015; Blok and Gremmen 2016). In principle, this biomimetic turn entails a positive ambition. The aim is to develop technologies which, although highly advanced, are nonetheless more sustainable and nature-friendly than the technologies which humankind managed to produce so far. Indeed, artificial photosynthesis basically aims to see plant leaves as biological factories from which human technology still has a lot to learn in terms of efficiency, sustainability and circularity. Nature is the paradigm, the teacher (*natura artis magistra*) for molecular life scientists and bioengineers, notably on the quantum or nano-scale. The down-side is that there is a lot of investment, prestige and politics involved in this type of research, so that it runs the risk of becoming tainted by privatisation, commercialisation and politicisation.

This transformation (presented in *Solar* as an emerging scientific-industrial "revolution", p. 36, p. 211, p. 336; as a "new chapter in the history of industrial civilisation", p. 293) is quite credibly reflected in the novel, and it is clear that author Ian McEwan has conducted a considerable amount of preparatory research.[1] Although Beard is said to hold "an irrational prejudice against physicists who defected to biology, Schrödinger, Crick and the like" (p. 121), he basically follows in their footsteps, moving from 'pure' quantum physics[2] to 'applied' molecular life sciences research. Yet, the most dramatic discontinuity in his career is not the shift from basic physics (studying photons and electrons) to biomimesis, but from original research

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[1] In an appendix, the expert advice and input from Graeme Mitchison of the *Centre for Quantum Computation*, Cambridge, is explicitly acknowledged, notably for his guidance concerning the physics and mathematics discussed in the novel (McEwan 2010, p. 389).

[2] Claims made by Beard such as "Let the philosophers of science delude themselves to the contrary, physics was free of human taint (p. 11)" refer to this *pure* version of physics: the type of research conducted by researchers such as Paul Dirac, "a man entirely claimed by science, bereft of small talk and other human skills" (p. 34); an irrevocably lost world, perhaps. Still, although Beard himself becomes morally tainted during the process, the basic idea is that the world as a whole, polluted by fossil fuels, will be "cleansed" by his photovoltaics (p. 159).

to big science management. Due to this shift, Beard increasingly neglects and loses contact with his science. He is now performing on a completely different podium, working for the "plutocrats" (p. 211): for funding agencies, investors, venture capitalists, managers, international policy makers, the international media and the like, giving lectures to non-physicists and joining artistic elite expeditions. Superficially, there still seems to be some continuity in his life, insofar as his work is still related to elementary particles physics, to which his youth had been devoted, but "that was when he was a scientist, and now he was a bureaucrat and never thought about electrons", at least not any longer in a scientific sense (p. 57). He travels as a VIP, occupying expensive airplane seats payed for by others, addresses conferences attended by institutional investors and pension-fund managers for "unnaturally large" fees (p. 154), and is even paid for "contractual mingling" with the audience, while owning a dozen or so serious patents. All this fuels his megalomania and narcissism, but it also increasingly estranges him from his original scientific inspiration, from his scientific past. He deteriorates physically, as an "overweight", "dysmorphic", "pink mess" of "human blubber" (p. 7), but also morally: falling victim to a chronic state of "restless boredom" (p. 67), becoming increasingly cynical and "anhedonic" (p. 3).

But the most significant damage occurs on the intellectual side. Whenever he introduces himself as a "theoretical physicist", it sounds like "a lie" (p. 90) because he has "done no serious science in years" (p. 92). As a result, he feels increasingly ignorant and incompetent. He no longer has the "mathematical reach" to keep up with those still actively contributing to the field, and experiences "inner and outer decay" (p. 92). And yet, as a prominent scientist and Nobel laureate, he is faced with staggering expectations, which he is increasingly unable to live up to.

The starting point for a Lacanian analysis is the concept of biomimesis or, more precisely, the relationship between photovoltaics and photosynthesis, between technoscience and nature, between the logic (λόγος) at work in human *rationality* and the λόγος discernible in natural *being*. The correspondence theory of truth defines truth as "*Veritas est adaequatio rei et intellectus*", i.e. truth is the correspondence (*adequatio*) between things and the intellect, between being and thinking. Logos (reason) appears on both sides of the equation: on the side of thinking, for a human being is a "rational animal" (ζῷον λόγον ἔχον), but also on the side of being, in the sense that reason (λόγος) is the principle which pervades the universe, as is indicated for instance in the opening sentence of the gospel of Saint John: in the beginning was reason or the word (Ἐν ἀρχῇ ἦν ὁ λόγος). Biomimesis, one could argue, builds on this equation, in the sense that human λόγος, in the form of contemporary technoscience, aspires to correspond to or become adequate to βίος. The starting point of Lacanian epistemology, however, is that this adequacy between thinking and being is disrupted. Technoscience is producing *knowledge* at an exponential rate, but *truth* (in the Hegelian sense of "absolute knowledge") is no longer attainable. There will always be a gap between knowledge and truth. An unsurmountable parallax (Žižek 2006/2009) can be discerned between the noumenal and the phenomenal, between the phenotype and the genotype, between solar engineering and molecular biology, between bio-brick technology and plant cell biology. For Lacan,

truth is something which belongs to religion (Catholicism as the "true religion", 1974/2005, p. 79, p. 81, p. 92) rather than to science, which is focussed on producing specific bodies of knowledge. And even here, the parallax between theology (as a field of expertise) and revelation (truth) will never be overcome.

This also pertains to biomimesis. The objective of modern life science is to understand living nature in terms of the elementary building blocks (the στοιχεῖα of life) such as nucleotides (A, C, G, T) or amino acids (ala, arg, asn, asp, etc.). The next step is to move from analysis to synthesis, from reading to rewriting (or reediting) genomes, proteomes, etc. In contemporary technoscience, this is exemplified by the shift of focus from genomics (for instance: the *Human Genome Project*) to synthetic biology (for instance: the creation of a synthetic cell). How can we be certain that our reading and spelling, our analysis of life is adequate, that *our* λόγος matches or corresponds to the λόγος of living nature? Or that the DNA sequences stored in our computers really match the DNA sequences present in the nuclei of cells? How can we find out whether we have perhaps missed something? Answer: by transforming biology into biotechnology, by actively building something which looks like and functions like a self-reproducing living cell. If a synthetic cell proves unable to function properly (in terms of metabolism, homeostasis, self-reproduction, etc.) than we know that we evidently have *missed* something, that there still is a parallax between what we analysed and what we designed. As long as we are unable to produce synthetic (artificial) life, vitalism cannot be proclaimed dead, where vitalism refers to the idea that some mysterious, unfathomable "force" or "spark" is at work in living nature: a metaphysical something, an opaque signifier (force, spark, soul, etc.) coined to bridge the parallax or gap.

This line of reasoning also applies to photovoltaics (the pole of thinking, of *human* λόγος) and photosynthesis (the pole of being, the λόγος pervading living *nature*). The basic objective of Beard's photovoltaics is to *mimic* natural photosynthesis (i.e. the production of sugar and oxygen by plants), where oxygen is basically a by-product or waste product (from the plant's perspective), but transmuted into something absolutely vital for all aerobic life forms (the object *a*). Artificial photosynthesis basically aims to copy the ways of plants. If this is achievable, then we may conclude that we really understand how natural photosynthesis works. In other words, the first moment (M_1) of the dialectical knowledge process called biomimesis is the claim that artificial and natural photosynthesis are basically similar. This abstract conviction, however, has to be *realised* in practice, via experimentation (M_2), and this may prove a taxing, frustrating endeavour, resulting in the experience that life (natural photosynthesis) proves more complicated than was initially expected. Yet, ideally, a more comprehensive, more sophisticated approach may eventually bring together or reconcile the artificial and the natural, and overcome the parallax, by *conflating* photovoltaics (the technology pole) and photosynthesis (the nature pole) ($M_2 \rightarrow M_3$). But Beard's prototype solar energy plant (the LAPP: the *Lordsburg Artificial Photosynthesis Plant*) is not yet there. He claims to be on the verge of a "world-historical event" (p. 361), a Hegelian moment so to speak, but whether it will really work is still uncertain. Moreover, to reach this position, to bridge the gap, he had to *confiscate* Tom Aldous's scientific notes and *conflate* them

with his own activities as a manager. The epistemic adequacy of his endeavour (tainted by research misconduct) still has to be demonstrated.

As human technology progresses, the difference between technoscience and nature may become increasingly minimal. Yet, something may still be missing; something may still frustrate and hamper the equation of thinking and being, of technoscience and plant life. Has Beard really been able to close the parallax, the *gap*? This minimal difference, this minimal "something" which stands in the way of the complete technological reproducibility of nature (in the form of natural photosynthesis) is the "object *a*" of photovoltaics.

This dynamics can be represented as "university discourse":

$$\frac{S_2}{S_1} \bigg| \frac{a}{\$}$$

The scientific subject, the agent of research (S_2 in the upper-left position) is focussed on and seems about to discern and overcome the *minimal difference* (intractable until now) between photovoltaics and photosynthesis (*a* in the upper-right position). The project meant to achieve this is presented as a techno-scientific endeavour, but its metaphysical grounding is disavowed (S_1 in the lower-left position), namely the struggle of scientific rationality against the remnants of vitalism: a contemporary version of the struggle between Enlightenment and superstition already described by Hegel (1807/1973). From an oblique perspective, however, the project amounts to a philosophical experiment as well. What is attempted here is the *realisation* of the ancient equation (truth = the adequacy of thinking and being, *Veritas = adaequatio rei et intellectus*), as defined by metaphysics (the discourse of the Master, from Parmenides up to Thomas Aquinas: S_1 now pushed into the lower-left position). This metaphysical equation is written and the reverse side of the Moebius surface. While the scientific equation at the top-side (above the bar) reads: "photovoltaics equals photosynthesis", the metaphysical equation on the reverse side of the Moebius surface reads "biotechnology equals life". But in order to realise this taxing and frustrating ambition, this envisioned identity, Beard (the tormented, craving subject) deflects, by committing plagiarism. His misconduct is a by-product of this whole endeavour ($\$$ in the lower-right position). It is only by plundering Tom Aldous's intellectual legacy that he can hope to suture the gap. It is only by posthumously exploiting Tom's intellect that the *adaequatio rei et intellectus* formula can (hopefully) be achieved. Such a triumph would have been unachievable on the basis of Beard's intellect alone. Again, the managerial discourse by Beard and the quantum physics discourse by Aldous represent two reverse sides of the Moebius ring. You can either be a devoted researcher (Beard in his younger years) or a big science manager (Beard in his later years), but it takes plagiarism to overcome the parallax and conflate the two into one coherent discourse.

This exploitation brings us to the power dimension of the big techno-scientific knowledge production process. The question now basically is: was Beard merely a perpetrator, or was he himself being exploited as well? In other words, is the misconduct "individualisable" (attributable to Beard), or rather systemic? Should we focus on the person or the situation?

10.2   The Power Dimension: The Metaphysical Niceties of Plagiarism

Whenever Beard, the Nobel laureate, introduces himself as a "theoretical physicist", it sounds like "a lie" (p. 90), as we have seen, because he has "done no serious science in years" (p. 92). This situation is not unlike what we see happening in real science, although the novel presents a somewhat extreme or blown-up (and therefore somewhat comical) version of the problem. The plagiarism committed by Beard, one could argue, is an exaggerated portrayal of what too often became common practice, namely researcher managers (who once were researchers themselves, but now have lost contact with the actual handiwork of their science) profiting from the work of early stage researchers employed by them (Ph.D. researchers and postdocs), notably in the form of "honorary" authorship (Alberts 2010), which seems as objectionable as it is ineradicable. Although the managers involved no longer actively contribute, neither to the publications written by their younger colleagues nor to the research on which the publication is based (because of lack of time or knowledge, being absorbed by other priorities such as managerial duties and acquisition of funding), they are listed as co-author basically because they chair the research institute and/or secured the financial means. In other words, McEwan's novel works as a magnifying glass by enlarging certain forms of contestable authorship and/or inter-generational exploitation that actually exist (Borenstein 2011; Macrina 2011) and that are actually part of contemporary laboratory life, albeit usually in less dramatic and outrageous forms. What is extreme in Beard's case is that, while real managers are usually willing to settle for co-authorship (which may already be regarded as problematic in many cases), Beard takes this one step further by trying to deny and obfuscate his dependence on Tom Aldous's work *completely*. As a rule, managers (whose names often appear last on the author list) grant their early stage colleagues (who still have to build their career on actual scientific work) the honour of first authorship. But Tom Aldous, as was already mentioned, accidentally and tragically died before his manuscripts could be turned into research papers and proposals. For that reason, Beard sees shared attribution as meaningless (p. 259). In short, the type of plagiarism committed in *Solar* is not unconnected with issues such as honorary authorship, as a symptomatic by-product of big science. Via the magnifying glass of literary imagination, however, Beard's situation enlarges existing integrity challenges of research managers in their role as scientific co-authors, notably in large-scale, converging fields of research such as bioscience and nanoscience. Far from justifying Beard's misdemeanours, this does provide a realistic backdrop in terms of the typical challenges which individuals such as Beard, in their role as research managers of large-scale, private-public consortia, are actually facing.

In *Solar* the scientific work is actually done by a team of six hyper-talented postdocs employed by Beard, who finds it difficult to "tell them apart" (p. 27). But his biggest problem is that he finds it utterly impossible to keep up with them. They speak and think incredibly fast, while the physics they take for granted in their conversations is quite unfamiliar to him. The length and complexity of their calcula-

tions is simply beyond him. Once, when he himself was in his twenties, he had been a person just like that, highly intelligent, excessively devoted to research and scientifically quite up-to-date. But now, during the second half of life, suffering from boredom, lack of self-discipline and alcohol abuse, he looks back at his own youth in astonishment, as if this person he once was and who experienced "those blessed months of frenetic calculation" that lead to his famous discovery is actually someone else, someone completely alien to him. Indeed, he finds it increasingly difficult "to recall the driven kind of person he once was" (p. 69). Moreover, it seems to Beard "that he had coasted all his life on an obscure young man's work, a far cleverer and more devoted theoretical physicist than he could ever hope to be… That twenty-one-year-old physicist had been a genius. But where was he now?" (p. 69). Answer: at the reverse side of the Moebius strip, a position (now barred and beyond reach) once occupied by Beard himself.

Yet, while Beard has lost track of his former Self, expectations continue to increase. Beard had always assumed that, at a certain point, competition would become less severe; allowing him to reach a kind of "plateau" (p. 310),[3] but now it dawns on him that this "calm plateau" of "simply being" will never appear (p. 311). Quite the contrary, expectations assume staggering proportions, notably because he promises the plutocrats who invest in his work that, in the context of the upcoming industrial revolution, exemplified by Beard's program, "colossal fortunes" will be made (p. 211). Being in big science is like running next to the Red Queen who, in *Through the Looking Glass*, keeps crying "Faster! Faster!" (Carroll 1871/1965, p. 135). In the international big science arena, standing still equals catastrophe. But Beard can neither increase his pace nor expand his knowledge. And in the case of his competition with his six post-docs, all he can offer (as his trump card) is his power. They are all completely dependent on him. He can make or ruin their career, and they know it.

The posthumous appropriation of Aldous's file is not the only act of plagiarism Beard commits. Before solving some of the basic challenges in artificial photosynthesis, Tom Aldous had already designed a quadruple-helix rooftop wind turbine, which Beard subsequently claims as his own initiative, although later, when the project falters, he immediately distances himself from this "ridiculous wind turbine" project (p. 347). The costly research of his newly established Centre is running aground and he is spending huge amounts of funding which is getting him nowhere. The plagiarism allows him to leap from the faltering wind turbine project into the bright, inviting future of solar panels ("Let there be light!" p. 199).

Beard becomes increasingly dependent on Tom Aldous's file, which functions like an epistemological placenta, a kind of life-line or umbilical cord, allowing him to connect his managerial and fund raising activities with real science. The actual plagiarism is an act of despair committed when, intellectually speaking, Beard is already in a deadlock, and all the rest is basically "rationalisation". In other words,

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[3] A term probably borrowed from anthropologist Gregory Bateson who noticed that at a certain point, in activities such as music, drama, dance and quarrel, a continuing "plateau" of intensity is substituted for the relentless drive towards climax (1973, p. 85).

although Beard is presented as a perpetrator, this does not mean that he is completely unsusceptible to the ethical side of things. He manages to produce a story that makes life morally liveable for him. During internal, first-person deliberations (long before the accusation of plagiarism is actually put before him), Beard argues that, although Tom Aldous indeed produced all the valuable ideas, it was Beard himself who recognised the true value of Tom's work. In fact, while Tom was basically an intellectual, Beard had been the person who had done the "hard work": securing patents, assembling a consortium, managing the lab work, involving venture capital (p. 258). Via Beard's activities, Tom's work would endure. In other words, Beard defines his collaboration with Aldous in terms of a Master-Servant relationship. Beard appropriates Tom's ideas because he is able to valorise them, by transforming knowledge into money. Ironically, the term "valorisation", so often used in this context, is actually of Marxist origin ("Verwertung"). Instead of simply abolishing Tom's intellectual property rights, Beard claims to be able to *sublate* them, by making Tom's esoteric insights generally applicable. If he had left Tom's ideas unused, it would surely have destroyed them, but now Tom's body of knowledge is resurrected as it were, making his perishable file imperishable. A mere pile of notes becomes a planetary knowledge network (absorbed into what Pierre Teilhard de Chardin referred to as the noosphere).

Beard continues to work on Tom's file while involved in the New Mexico solar project. At the certain point, for instance, he finds himself "thinking with strange lucidity about his old friend the photon and a detail in Tom Aldous's notes about the displacement of an electron. There might be an inexpensive way of improving a second generation of panels, when he was back in London he would blow the dust off that file" (p. 363). In other words, the 'collaboration' between the two continues long after Tom's death. Both Tom's original work and Beard's valorisations are necessary to turn the former's brilliant ideas into a functioning prototype, one could argue. And towards the end of the novel, when he is actually accused of plagiarism, Beard defends himself by claiming that Tom and he had indeed worked together "intensively" (p. 370) on artificial photosynthesis. But then again, Beard relapses into his fatal strategy of down-playing and obfuscating the value of Tom's contribution completely, claiming that he, Beard (whose work had been in light, in energy, in photons and electrons, ever since the age of twenty), had done most of the "thinking and talking", while Tom had only made the notes.

Although these claims are clearly invalid (Tom had written his notes without any intellectual support from Beard), there is some validity in the argument that Beard (as a manager, not as a researcher) had significantly contributed to their joint achievement (the translation of theoretical ideas into useful applications). He could have "solved" his problem, in accordance with formal standards concerning intellectual property, by explicitly *sharing* the honour with Tom, by formally *acknowledging* the latter's decisive contribution. Technically, a solution could have been fleshed out, and it would even have been *genuine* co-authorship, rather than mere honorary authorship. The problem is that Beard opted for "sole attribution" (p. 259), partly for financial reasons: because of the patents involved, but first and foremost because he desperately needed Tom's legacy so as to compensate for the loss of his

former Self, now at the reverse side of the Moebius strip (but I will come back to this decisive issue in the final section).

The Beard-Aldous power-knowledge interplay can be represented with the help of what Lacan refers to as the "discourse of the Master":

$$
\begin{array}{c|c}
S_1 & S_2 \\
\hline
\$ & a
\end{array}
$$

Beard (the Master) claims the role of agency in the knowledge production process (S_1 in the upper-left position). While he, Beard, the Nobel laureate, the authoritative voice, had done most of the thinking and talking, Tom had allegedly been taking notes. Thus, in Beard's version of the story, while Beard does most of the lecturing, Tom Aldous is basically the recipient of the message. And the by-product or surplus value of the allegedly harmonious collaboration is crucial quantum knowledge, contained in Tom's file but valorised, turned into intellectual capital, by Beard (a in the lower-right position). This version, however, is a disavowal of Beard's epistemic situation, his knowledge crisis, the fact that he has lost all contact with his formed science, indeed: that he has lost contact with himself as a scientist, with his former Self. The "suppressed truth" ($\$$ in the lower-left position) is that Beard actually experiences a traumatic *Spaltung*.

As was already discussed in Chaps. 2 and 8 (my analysis of *Perlmann's Silence*) the word splitting or *Spaltung* (διεσχίσθημεν) was used by Aristophanes in his famous parable in Plato's *Symposium*, about how human integrity was once deliberately demolished by Zeus, namely by slicing primordial humans in two, so that current human beings are still frantically searching for their lost "other half": the lost part of what we once were (Plato 1925/1996, 189E–191C). By posing as Master, Beard disavows this traumatic experience, this traumatic scar ($\$$ pushed into the lower-left position).

Plagiarism (the appropriation of Tom's ideas) proves a toxic strategy, for it obfuscates this basic experience of splitting: the disruptive loss of the connection with his former scientific Self. Beard's rationalisation, as we have seen, is that the value of Tom's original ideas (a in the lower-right position) is actually dependent on the *valorisation* (in Marxist terms: *Verwertung*) of these same ideas by Beard. It is only by making Tom's knowledge accessible and available (i.e. the work of Beard) that value is created. In Marxist terms: a is the surplus value of the knowledge production system. This value is not already there, it cannot be found in Tom Aldous's file as such, but requires Beard's contribution, which (building on his control over the means of production, his LAPP solar energy plant) turns mere ideas into valuable knowledge. Herein resides the surplus value that stems from the Beard-Aldous interaction.

10.3   Intellectual Property Rights as Fetishism

Marx's famous argument concerning commodities (1867/1979) seems remarkably applicable to intellectual property (intellectual commodities). Whereas "intellectual property" (ownership of scientific ideas, scientific findings, scientific experiments, scientific papers, etc.) may at first sight seem something obvious ("my ideas are mine"), on closer inspection it is a fairly queer phenomenon, full of "metaphysical subtleties". As long as we are simply dealing with knowledge (valid and potentially useable) there is nothing mysterious about it. But as soon as knowledge is published, as soon as it is claimed (by a team of authors, by a publisher, a research organisation, etc.) as being "property", it becomes more enigmatic, raising a plethora of intricate questions. Things like scientific papers (or even patents) are the products (the condensation) of complex social relationships (between researchers, research managers, funders, publishers, etc.), and these relationships are stamped on it as it were. Although intellectual labour builds on the work of others, the products of this labour can apparently be owned. As soon as scientific work is published, it may become converted into property, merchandise. While manuscripts float across the internet for free, in order to download published papers, readers may suddenly have to purchase them, or pay a subscription fee, indeed: even if the customer happens to be one of the authors. In short, the paper transubstantiates from "work" (use value) into "merchandise" (market value). By transubstantiating Tom's notes into proposals and applications, Beard adds surplus value to the use value of Tom's work.

It is the vocation of literature (including science novel) to bring these subtleties and ambiguities to the fore, so that the problematic nature of something which may seem obvious (intellectual property rights, or plagiarism as an *infringement* on someone's property rights) becomes manifest. *Solar* reveals the parallax between legal and moral understandings of intellectual property, for instance, two perspectives which will never completely concur, so that legal understandings may always be challenged from the point of view of moral ones and vice versa. From a moral perspective, ownership of Tom's file is a questionable issue of the Master-Servant type, as we have seen, but from a legal perspective, the rightful owner of the publications and patent applications based on Tom's work is neither Tom nor Beard, but the *Centre for Renewable Energy*, as the Lawyer neatly points out to the latter ("These were the clear terms of his employment, which you can read for yourself" p. 369). And Beard is accused of infringing upon the property rights of the Centre (which he directed when this knowledge was produced there). In other words, *Solar* is not simply a novel *about* scientific plagiarism, but rather a novel which *addresses* the various complexities and entanglements involved in the concept of plagiarism as such. It reveals how intellectual property rights may function as a fetish, obscuring and mystifying what is actually going on backstage.

Let me give a concrete example from the novel. After giving a lecture on solar energy, outlining options for mitigating climate change during the upcoming industrial "revolution", Beard meets a language studies expert who had been in the audi-

ence, specialised in analysing climate discourse from a humanities perspective. This expert is interested in "the narrative that climate change has generated", seeing it as "an epic story, with a million authors" (p. 203). From his perspective, all versions of the climate change narrative (including Beard's own lecture) emerge as parasitical contributions, grafted on an anonymous, multiple-author discourse that is already available out there. He subsequently analyses Beard's own lecture, pointing out that Beard not only employed a series of well-known rhetorical tricks and stock phrases (without quotation marks), but also that a certain anecdote which Beard used to convey the message, and which he claimed to have experienced himself, was actually the enactment of an "unconscious, archetypal" script (p. 218), abundantly used in stories and novels, and intensively studied in the language studies field. Telling such anecdotes is academically known as "communal re-creation", the expert explains.

Initially, Beard is outraged and vehemently rejects the (implicit) accusation that he is an inauthentic "plagiariser" (p. 259), but gradually (recycling his lecture and retelling his anecdote at various occasions) it dawns on him that he is indeed constantly reshaping the story and even "plagiarising himself" (p. 250). Actually, what the language studies expert tried to bring across is that we are constantly plagiarising existing discourse: the concepts, the arguments, the archetypal scripts that are floating about, and that we cannot do otherwise. Our discourse is replete with the discourse produced by countless anonymous others, and we can only partially account for this via academic references and explicit acknowledgements. In other words, plagiarism is, discursively speaking, the default. We commit plagiarism as soon as we begin to speak or write. Originality is a fiction; or exceptional at best. And indeed, Beard himself is well aware of this, for earlier in the novel he had discarded the image of "the revolutionary lone inventor" as "a fantasy of popular culture" (p. 26). Scientific discourse is being continuously produced and reproduced, and originality can only exists in the folds and margins of a collective, pre-structured, multiple-authored discursive enterprise.

Moreover, Beard's research field *as such* already constitutes a form of plagiarism. Biomimesis basically means: plagiarising nature. According to Ohno (1987), for instance, plagiarism is the basic principle of life and all living organisms are continuously "plagiarising" the molecular techniques which nature (notably microbes) produced in the course of evolution (Zwart et al. 2015). Human biotechnology amounts to "plagiarising" (adopting and adapting) the inventions of these microbial pioneers (Ohno 1987, cf. Church and Regis 2012), and this also applies to artificial photosynthesis of course. If we follow this line of thinking, all the basic biotechnological processes and techniques currently in use in laboratories worldwide were already developed billions of years ago. Human biotechnology is "plagiarism" by default. And this notably applies to biomimetic photovoltaics: "copying the ways of plants, perfected by evolution during three billion years" (McEwan 2010, p. 142). Plagiarism is the default, acknowledgement the exception.

The normative implication of this is that all "intellectual property" is theft, to paraphrase Proudhon. All our ideas and concepts are always already there, academic discourse is a common resource, and it is highly problematic to claim a par-

ticular innovation as something uniquely belonging to a "me". Scientific publishing is not about establishing "property rights" or "ownership", but about *recognition*. Researchers are driven by the desire for recognition for a specific attributable *contribution*, based on hard labour as a rule, as was already addressed in Chap. 8 (in the analysis of *Perlman's Silence* as a plagiarism novel). We *work* with and on ideas, but cannot meaningfully claim to *own* them. Scientific discursivity (university discourse) is always already there, and research basically entails *Durcharbeiten*, "working through". We cannot meaningfully claim to *own* certain ideas or concepts, but we do work on them and contribute to them, – and we *publish* our contributions so that they can be used and their value can be *recognised* (acknowledged) by others.

Solar contributes to the philosophical debate on plagiarism, but the problem with Beard himself is that his moral deliberations amount to rationalisations and self-justifications. It is certainly symptomatic that, in the end, the accusation of plagiarism is literally externalised: voiced by a lawyer accusing him of plagiarism, on the eve of what should have been his triumph. This indicates defensiveness rather than moral growth. Confronted with the plagiarism charge, Beard continues to believe that there will be an escape, even when, towards the end, reality is clearly closing-in on him. He perseveres in a course of action (which actually began as a desperate impromptu reflex) because his rationalisations allow him to disavow and suppress a more unsettling issue, namely the loss of contact with his former Self, which has made him become parasitically dependent on the work of others. Plagiarism functions primarily as an act of denial, and effort to obfuscate his sense of failure, of moral and intellectual decay.

10.4   Splitting and Conflation: The Dimension of the Self

Although Beard often seems to relapse into the role of a cynical master-swindler, he does display some interest in ethics, both theoretically and practically. In a discussion concerning the implications of Heisenberg's uncertainty principle for morality, Beard explains that it does not imply the "loss of a moral compass" (p. 106). If there is any moral analogy at all, it would be to re-examine a moral problem a number of times before arriving at a conclusion. Elsewhere, Beard argues that, to steer contemporary civilisation towards a less disruptive, more sustainable course, virtue alone is insufficient: "virtue can motivate individuals, but for groups, societies, a whole civilisation, it's a *weak force*" (p. 206, my italics). As to the moral issues involved in climate change, while not being a climate sceptic in the strong sense of the term, he does seem concerned that climate research may operate as a self-serving industry (p. 208).[4]

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[4] When a close colleague becomes concerned that climate change may in fact be a matter of "framing", a mass delusion, a conspiracy, a plot, so that the socio-economic importance of their LAPP endeavour might be seen as questionable, Beard's replies by saying: "It's a catastrophe. Relax!" (p. 298).

But in order to reflect on the moral dimension of the knowledge production pro-
cess, and on research as a practice of the Self, we have to enter what Lacan refers to
as the "discourse of the analyst":

$$\frac{a}{S_2} \quad \Bigg| \quad \frac{\$}{S_1}$$

Beard suffers from loss of contact with his former scientific Self (S_2 pushed into
the lower-left position). As a result, Beard no longer trusts his own ideas, but rather
relies on the ideas produced by others (notably Tom Aldous). As soon as the latter's
notes fall into his hands, he is *drawn* into plagiarism more or less. He trawls Tom's
files in search for valuable ideas (*a* in the upper-left position) that enable him to
function. Face-to-face with Tom's legacy, his experiences his knowledge deficit, he
experiences his *Spaltung* as a craving recipient ($\$$ in the upper-right position), des-
perately picking the brains and browsing the files of others, spurred on by the object
a, that which allows his project to work and succeed. The question is whether this
will result in an awareness of his dependence and (in the longer) run in a re-
appreciation of science as a collaborative effort perhaps (normative insight as by-
product of the crisis: S_1 in the lower-right position). From a psychoanalytical
perspective we are looking for instances of personal moral growth or individuation.
Will *Solar* actually become a "bildungsroman", or will morality (normative insights
as by-product of his experiences: S_1) primarily consist in the somewhat cynical
aside that virtue is and will always remain a "weak force"?

Individuation refers to the striving towards sublating the paralysing sense of
Spaltung ($M_2 \rightarrow M_3$). The experience of partial loss of Self is articulated in Beard's
outcry already cited above: "that twenty-one-year-old physicist [i.e. Beard as a
young genius, his lost former Self], where was he now?" (p. 69). Beard has lost
track of his former Self, his scientific "other half", his prolific counterpart (now at
the reverse side of the roller coaster-like Moebius ring of his current existence). And
it is because he cannot regain his own lost former Self that he reverts to copying
Tom's work: as a substitute: an *Ersatz* in the Freudian sense. Without this missing
textual supplement (Tom's notes) he simply would not have survived, scientifically
speaking. The plagiarism "reinvigorated his life" (p. 305) and it is only as a *transla-
tor* of Tom's obscure equations into readable and usable text that Beard can continue
to function.

Seen from this perspective, Beard no longer plays the role of Master (S_1). Rather,
the reverse is true in the sense that Tom (the deceased genius) is the Master, while
Beard is the primary recipient or custodian of a sacred file, an intellectual treasure
case. Beard's hermeneutics becomes an instance of soteriology, because the file
contains the seeds of salvation (*a*), for Beard himself initially, but eventually for the
world at large ("Let there be light!"), so that the current global tension between the
prospect of climate change and the use of unsustainable (fossil) energy can be over-
come via solar panels. It is only by plagiarising Tom's files that Beard seems able to

bridge the gap between quantum physics and photovoltaics, two areas of research that revolve around an enigmatic object, the electron (e⁻).

In one of his seminars, Lacan explicitly compares the experience of *Spaltung* to the fundamental unpredictability of an electron, at one time Beard's research object of choice, his object *a*. According to Lacan (1969–1970/1991, p. 119), "splitting" basically means that the subject may occupy two discursive positions at the same time, may be involved in two diverging and incommensurable types of discourse which seem impossible to conflate. In Beard's case, we find the subject on the one hand painstakingly deciphering Tom's notes (as a disciple), while on the other hand he function as the director of a solar energy plant, claiming these ideas to be his own. On the one hand he acknowledges Tom as the real genius, the author of abstruse equations, which Beard tries to decipher (as Tom's student and interpreter). On the other hand he poses as the Mastermind himself, on whose ground-breaking work Tom's work actually built. In other words, he both *is* and he *is not* the author of these ideas, but both stories seem impossible to conflate. And their incommensurability reflects the fact that he both *is* and he *is not* the quantum physicist he once was. He commits plagiarism to compensate for his knowledge deficit because, in his current position, quantum physics represents the reverse side of the Moebius strip.

In McEwan's novel, I would argue, the term "conflation" not only functions as a physical-scientific concept (the conflation of two apparently incompatible positions of an electron into one), but also as an ethico-psychological term. The *conflation* (the piecing together again) of Beard-the-authentic-scientist and Beard-the-greedy-manager is a piece of integrity work which ultimately seems unachievable. Beard fails to recover his integrity in the (literal) sense of wholeness. As a manager, he cannot leap back into his former position, when he was still studying electrons, for the splitting has become so excessively profound that it can no longer be undone. And although conflation-through-plagiarism (plagiarism as a morally objectionable Ersatz for what he really desires) is an unsatisfactory alternative (and a source of chronic, albeit disavowed concern), to take a quantum leap back into his former position of scientific author is no longer an option. From the perspective of the discourse of the analyst, plagiarism is symptomatic for the obliteration of his former Self. It reflects existential despair, rather than calculated, ego-centric cynicism.

Chapter 11
The Catwalk and the Mousetrap: Reading Diederik Stapel's *Derailment* as a Misconduct Novel

11.1 Introduction: Stapelgate

Diederik Stapel (1966) is a Dutch social psychologist who obtained his Ph.D. *cum laude* at the *University of Amsterdam* (in 1997), became professor of social psychology at the University of *Groningen* (in 2000) and subsequently at *Tilburg* (in 2006). Here, he was appointed as Director of the *Tilburg Institute for Behavioural Economics Research* (TIBER) and as Dean of the *Faculty of Social and Behavioural Sciences*. In 2011, however, he formally and publicly admitted to having fabricated and manipulated data for at least 55 publications, from 2003 onwards. Because of the prominence of the perpetrator and the astounding scale of the fraud, Stapelgate quickly became a widely publicised and discussed misconduct case, both in the Netherlands and abroad, – and something of an epistemic trauma: for academic research in general and for social psychology in particular. Indeed, the name Stapel became synonymous with scientific fraud as such. After his formal dismissal and public condemnation (by a triad of committees established by three universities to investigate the case in depth), Stapel became marginalised and fell into a deep depression. Yet, in 2012 he resurfaced with an autobiographical account in Dutch entitled *Ontsporing* (Derailment), the first in a series of literary books written in the wake of his exposure, containing reflections on his experiences from a first-person perspective (Stapel 2012).

   In this Chapter, the focus will be on *Derailment*, a sincere and highly personal autobiographical account which, as will be explained in more detail below, and was explicitly acknowledged by Stapel himself, actually reads like a novel. As Stapel literally phrases it, *Derailment* "is a novel" (Stapel and Dautzenberg 2014, p. 130, p. 132, p. 134) and his book will indeed be treated as such. In other words, rather than on the Stapel case itself (as many commentators have already done), I will focus on *Derailment* as a research misconduct novel, the final one in the series, albeit a novel based on real events. And rather than developing an ethical assessment of the case, or a historical inquiry into the actual truthfulness of Stapel's

reconstruction, my analysis will use *Derailment* as a literary window into the dialectical dynamics of social science as an "impossible profession", focussing on the manner in which the protagonist addressed integrity challenges emerging against the epistemological and political backdrop of contemporary academic existence. Thus, in my analysis, the issue of truth does not refer to the extent to which the autobiographical account actually corresponds with the facts (although overall this seems to be the case), but rather whether the existential dilemmas involved in experimental practice and university discourse are articulated in a revealing and convincing manner. In other words, my question is neither whether *Derailment* is 'fictional' or 'factual', nor whether Diederik Stapel has been sufficiently penalised or something like that (a discussion which is still on-going), but rather what can be learned and gained from this ego-document (both fascinating and disconcerting) when it comes to understanding and preventing scientific misconduct.

Multiple types of documents will be consulted in this chapter. First of all, *Derailment* itself of course,[1] assessed as a research misconduct novel. But I will also include other materials in the analysis, constituting the novel's discursive environment as it were, namely (in chronological order): (a) a selection of papers published by Stapel as a prominent social psychologist (notably the paper published in *Science* in 2011, shortly before his exposure, discussed in *Derailment* and wholly based on fictitious data); (b) formal documents published by three committees of inquiry (a normative trinity), chaired by a triumvirate of prominent academics (Pim Levelt, Pieter Drenth, Ed Noort): I will especially discuss their final joint report entitled *Flawed Science*), (c) comments on the Stapel case by academic peers and (d) Stapel's subsequent literary retrospectives.

As a final preliminary remark, it should be pointed out that *Derailment* not only tells the story of a fraudulent practice and its exposure, but also of a personal metamorphosis and transformation. As a social psychologist, Stapel consistently used *Diederik A. Stapel* as his author name. In his post-exposure oeuvre, however, the "A." is consciously dropped. Starting with *Derailment*, Stapel now uses *Diederik Stapel* as his author name.[2] The elimination of a signifier (A.) actually symbolises a basic shift in terms of modes of discourse (as will be discussed in more detail below). Therefore, I likewise will use *Diederik A. Stapel* to refer to the academic author (i.e. to the pre-traumatic part of his oeuvre) and *Diederik Stapel* to refer to the literary author (to the post-traumatic part of his oeuvre).

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[1] *Derailment* is the literal translation of the title. A pdf-translation of Stapel's account by Nicholas Brown, available on the internet, bears the title *Faking Science: A True Story of Academic Fraud*. [http://nick.brown.free.fr/stapel/FakingScience-20161115.pdf] My analysis is based on the Dutch original.

[2] "I now try living without the A." (Stapel and Dautzenberg 2014, p. 11).

11.2   *Derailment*: **Summary and First Analysis**

Derailment starts with a preamble, a public confession of the author's fraudulent activities: "I derailed… I crashed… causing a spectacular pileup…", but he also emphasises that the writing of this book was actually meant as self-therapy, as an effort to come to terms (literally) with the traumatic events reported. Until his exposure, Stapel claims to have led a somewhat hasty, but nonetheless fairly normal and happy life, and his question basically is: how could it (how could I) come to this? How could something like this happen? To answer this question, and in accordance with the psychoanalytic rule, *anything* (however, trivial, personal, embarrassing, etc.) may prove relevant (Freud 1917/1940, p. 297), which may explain the radical frankness of Stapel's retrospect.

The first chapter of the book takes us straight to a decisive moment in the story. Stapel has just been informed by a close colleague and friend (the chair of the social psychology department) that three younger colleagues accuse him (the powerful professor) of faking his data. At a conference in London, they had taken their Department chair aside. They had been following Stapel for months and had developed well-founded suspicions regarding his fraudulent ways. Stapel responds with disavowal and denies the accusations flat out. What could they have found out? The fraud simply seems too big, too weird to be credible. No one will believe them. Still, the Department Chair decides to inform the Rector.

In despair, and realising that his version of the story from now on has to be as precise and convincing as possible, he jumps into his car and visits some of the places where the fabricated data allegedly had been collected. Eventually, he ends up at Utrecht central station where he claimed to have gathered data for one of his most impressive papers, published in the top journal *Science* in April 2011 (just a few months before the exposure), a highlight in his career (Stapel and Lindenberg 2011). In this paper (a prototypical Stapel-paper, an exemplification of his social psychological style) it is claimed that in a disordered, littered environment, research subjects are significantly more prone to adhere to stereotypical (i.e. racial) prejudices than in clean and orderly places. A unique opportunity for conducting the field experiment presented itself when the cleaners at Utrecht train station (where thousands of travellers pass through on a daily basis) went on strike, so that the area quickly changed into a dirty and disordered environment. Research subjects were allegedly invited to fill in a questionnaire concerning prejudice and stereotypes, and to do so on one of the six chairs lined up by the research team.[3] Respondents ("Caucasians") could choose any chair, except that the first chair in the row was already taken by either a black or a white ("Caucasian") team member. And indeed, according to Stapel, the data convincingly and consistently showed that messy environments resulted in more prejudice (operationalised as the increase of the distance between the chair chosen by the respondents and the chair occupied by the black

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[3] The *Science* paper mentions "six" chairs (Stapel and Lindenberg 2011, p. 251), in *Derailment* the number is reduced to "five" (Stapel 2012, p. 29).

team member). Stereotyping, Stapel and his co-author concluded, is a "mental cleaning device" that helps people to cope with physical chaos (p. 253).

But during his desperate visit to Utrecht station, Stapel discovers that the experiment could never have been conducted as reported. It is simply impossible to line up six chairs in a crowded place like this. For anyone acquainted with the situation, the whole design seems extremely impractical and highly improbable. On his way back home, driving through the dreary night, he finally realises that his sand-castle world is on the verge of total collapse, and that a full confession is the only realistic option left to him.

Subsequently (from Chap. 2 onwards) the book follows the course events more or less in chronological order. The narrator realises that, from now on, all the details of his apparently normal, straightforward (perhaps even "boring") existence become potentially relevant. Anything may provide a cue for someone seeking an explanation.

Initially, Stapel was interested in theatre and theatre studies. He considers becoming an actor himself, and even appears on Dutch television in a drama series,[4] until he realises that, rather than trying to become a performer himself, he wants to study the impact of media and communication in an academic manner. Notably, he focusses on a research field called media ecology, the study of the psychological impact of mass media, inaugurated by Neil Postman's monograph *Amusing ourselves to death: Public Discourse in the Age of Show Business* (Postman 1985). This research basically claims that contemporary audiences have become tamed by and addicted to television and other mass media, to the detriment of rational public discourse. Before long, Stapel decides to focus on social psychology, i.e. the study of the drama of everyday life.

Here, he is confronted with the controversy between "personism" and "situationism". An important source of inspiration is a Dutch psychology classic written by the prominent Dutch existentialist Benjamin Kouwer (1963) who (reluctantly) concluded that "personality" is an empty signifier, and that the human Self lacks a core. Thus, although we are inclined to attribute our behaviour to the kind of person we *are*, must of our responses are actually triggered and moulded by situational and environmental factors. In social psychology, this is known as the fundamental attribution error: the tendency of individuals to place undue emphasis on internal characteristics of the agent (character, intention, etc.), rather than on external factors. Thus, Stapel is drawn into social psychology as the science of everyday life, putting everyday behaviour under a magnifying glass, as he phrases it, studying it with scientific precision, seeing deviance as a result of toxic combinations of personality traits and organisational characteristics (Stapel 2012, p. 93). The social psychology laboratory is a "theatre" (better than fiction) allowing researchers to explore responses to behavioural triggers. Experimentation is an art, performed in a laboratory theatre with actors and actresses, props and scenery. Once you have learned how to press and turn the right buttons, it works. Stapel also learns, however, that there is a substantial tension between the "context of discovery" (the experiment as

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[4] In 1984, in the drama series *Schoppentroef* ('spades trump').

actually performed in a laboratory setting) and the "context of justification" (the study as reported in a journal paper: a smoothened reconstruction of what actually happened in practice). For Stapel, the craft of publishing is: finding out what journal editors wants, learning how to push the right buttons.

Yet, shortly after his appointment as a professor at the *University of Groningen*, the upward curve of his career begins to hamper. Outwardly, Stapel is still very promising and successful, but all this now comes with a price. His teaching, for instance, becomes increasingly theatrical. His basic objective now is to amuse his students, at the expense of depth and content. Also in his work as a research manager (as Institute Director and Faculty Dean in Tilburg) Stapel is apparently quite successful. Shortly before his exposure, he even finishes a vision document, about to be distributed, in which a different style of working is propagated, less bent on churning out publications, and more focussed on quality and relevance. But his research is becoming a problem. Stapel frantically wants to score, wants to reap applause, and yet his publication performance dramatically declines. Increasingly, journals find his papers too complicated, too nuanced. Moreover, social reality proves much more recalcitrant and convoluted than expected. Increasingly, the social world refuses to live up to academic expectations.

2003 is an especially difficult year. Despite all his hard work, Stapel's experiments begin to falter and he fails to publish a single academic paper. Thus, increasingly, he is facing a split between outward recognition and internal crisis. As a manager, he criticises the competitive university climate and challenges the obsession with citation indexes, and he even gives a course on research ethics, but on the personal level he seems utterly unable to contain his craving for success. Two identities in one person as it were (an explosive, if not Faustian situation).

And then, one day, sitting alone in his elegant office at the University of Groningen, he makes some subtle changes in his data.[5] It does not feel good at all, and he has the impression that someone is standing behind him, peering over his shoulder, so that he quickly pushes the *Undo Typing* button. But this ruins the significance of his results, so that he soon relapses into altering some figures again. *Redo typing*, *Undo typing* – eventually he gives up his resistance. The data look beautiful, but it feels wrong. He describes his misdemeanours as a toxic response, affecting him even physically.[6] Before long, falsification becomes an addiction. Increasingly, his research nauseates him. Reality is too chaotic, too contextual and too messy for his approach. The real world consistently refuses to concur with his predictions. He has to *force* reality into compliance, and proves increasingly willing to do so. Although even in this respect he is standing on the shoulders of others, as the saying goes, he begins to overdo it. The data for his *Science* paper, for instance, are *completely* faked: pure fantasy (p. 160). It is no longer a question of tweaking

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[5] The key example of how "a first minor transgression" may "escalate into career-killing behaviour" (Crocker 2011, p. 151); cf. "A gradual escalation of self-serving dishonesty, starting with small acts of dishonesty and escalating into larger transgressions" (Garrett et al. 2016, p. 1727).

[6] And this was only the "minimum variety" of his fraud: changing data of a research that had at least been executed (Abma 2013, p. 44).

some figures. The research has not been conducted *at all*. The whole thing is fabulated. Misconduct becomes addictive and Stapel become a junky, leading a secret life. He feels hunted and beleaguered. All efforts to return to a normal, non-fraudulent existence fail. It seems as if he has been conditioned to commit fraud, as if he himself is deceived by his own lies. Things continue to work out fine for quite some time, however, and luck had always been on his side, − until end of August 2011.[7]

The three young researchers must have monitored him closely for months. The facts are undeniable. Stapel has destroyed all the evidence, has covered his tracks, but in a hasty, sloppy kind of way. As soon as he had entered the data into his computer, he would throw the questionnaires away: deposit them in garbage containers, like contaminated material, as if a yellow and black biohazard symbol had been stamped on them (p. 192), − scenes which are strangely reminiscent of similar scenes in *Perlmann's Silence* discussed earlier. He not only deceived his research subjects (which is normal practice in social psychology, but I will come to that), but also his colleagues. When the Rector of the university confronts him with the accusation, he suddenly realises how weird and erratic his behaviour must have seemed to others: a Faculty Dean, wearing smart expensive suits, allegedly visiting all these schools and train stations himself, to collect his data, handing out chocolate bars and candies as a reward… How could it be that his academic colleagues believed all this? He now realises how feelings of guilt and anxiety had been gnawing away at him. Being 6 feet 5 inches tall, he now weighs almost 250 pounds. He tries to talk himself out of the situation for hours, and desperately tries to convince the Rector (who had become a personal friend) that, although his research style was undeniably sloppy and even bizarre, no real misconduct has been committed. He tries to continue talking, hoping that time will suddenly come to a stop. But then the Rector asks the fatal question: does he himself find all this believable? On the highway, he pushes the gas pedal until his car reaches maximum speed (a suicide attempt?), but eventually he slows down again. Via Zwolle and Groningen, visiting the sites where he claimed to have done his research, post hoc as it were, he ends up in Utrecht Central Station, where *Derailment* begins.

Before the media circus sets in, he has to inform his wife, his daughters and his parents. He confesses that he has faked his data, has written about research that never happened, and that he is about to be dismissed without further ado. His career is over, his world is about to collapse; he has ruined everything. He has created an enormous mess, has contaminated his research field, and is about to face a veritable tsunami of distress (p. 201). Although psychologically speaking the misconduct was due to an "increasingly toxic interaction" between himself and his environment (p. 208, p. 259, p. 291), he now accepts that he and only he takes all the blame, not the situation. It is a double confession, for besides admitting to fraud, he now also

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[7] Ironically, Stapel himself once conducted an experiment concerning a "widely published" misconduct case which drew "intense media attention" and affected "the image of psychology". It had happened exactly 15 years before Stapelgate, namely in August 1996. The conclusion was that the misconduct only affected respondents who considered the case "self-relevant" (Stapel et al. 1999).

renounces "situationalism". He is not the only fraud in psychology, but his misdeeds are his alone.[8] Stapel also confesses that he always hated games, that he could not stand the idea of losing and that he always had to win, so that he often cheated when playing some board or card game: anything to avoid losing. Neither could he accept the idea of becoming repetitive and boring, as happens to so many other academics. He wanted his lectures and publications to be exiting theatrical entertainment, allowing him to play the role of the great illusionist.

In the next chapter, it is wintertime, several months later. Stapel is at home. The thermostat is set to 60 °F, because he is basically bankrupt (no salary, no allowance and no compensation) and must try to spend as little as possible. No babysitter, no cleaning lady, no restaurant dinners, no car. The committees are still doing their work, but his career is definitely over. He has not only ruined his own reputation, but also the careers of many others. He is effectively isolated, a pariah, as everything he touches becomes tainted. News of his unprecedented misdemeanours quickly travels around the world, and discussions and speculations continue almost on a daily basis in the media for months.

In October 2011, the three committees present their interim report, and Stapel releases a short written statement admitting to having failed as a scientist and offering his sincere apologies to colleagues, supervisees and the academic world for the damage caused. In October 30, 2012, he expects to receive a draft version of the final report, to check it for factual errors, but there is a delay, and finally the report is published without his comments. Although it is basically a rehash of the first draft version (the interim report), Stapel finds it particularly annoying that the committee "psychoanalyses" him (p. 224).[9] Meanwhile, the media seem entranced by the fall from grace of a scientific "top-criminal" and Stapel prepares a second statement. What he had done was terrible and almost impossible to understand. The explanatory power of possible explanations (ambition, competition, nihilism, lust for power, arrogance, etc.) seemed insufficient. In his desire to come up with some robust and straightforward understanding of the phenomena he was studying, he had disavowed reality, until he suddenly crashed. Because the committees had concluded that his fraud was incompatible with the obligations of an academic Doctor, he persuades his wife to drive to Amsterdam to hand back his Ph.D. diploma. Meanwhile, he becomes an easy target for journalists an anonymous persons calling him or harassing him with messages.

In October 2011, he has the following dream. He is walking down the big marble stairway of a castle where a big Venetian Carnival festival had taken place. There is mist everywhere and he is wearing a huge black cloak, like a toga. In his hand he

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[8] Brown rephrases the quote "I – not some non-I, not a negation of myself – couldn't resist [the temptation]" (2016, p. 149); cf. "I did it myself, not something or someone else" (Stapel 2016, p. 11).

[9] In Brown's translation, something weird happens precisely here. He writes: "in the earlier document, the Committee had attempted to psychoanalyze me and enumerate the deficiencies in my character, and the final report reprises *its non-factual, non-evidence-based, non-scientific opinions of me*" (p. 160), but the words in italics are absent in the published (Dutch) version.

holds a golden mask. The other guests depart quickly, some of them still wearing their masks, others holding them in their hands. When he tries to look at them, they turn away their heads. Everyone is in groups or pairs and disappears, but he is left behind (p. 230). It is tempting, of course, to identity the castle with the university and the carnival with academic life, so that the removal of his golden mask symbolises his exposure, while others get away with it.

"Super science fraud" Diederik Stapel, the "Lying Dutchman", becomes a national celebrity: the Han van Meegeren of social psychology (p. 249). After his scientific "suicide", the official story of his life is drastically rewritten, so that he suddenly becomes a genius, a high-flyer of the academic scene, able to turn anything into gold by merely touching it. After the crash, a "mysterious metamorphosis" (p. 235) occurs, and his academic status is inflated in retrospect, as if such a spectacular case of fraud could only have been committed by a spectacularly successful wonder-boy. But many other people are damaged as well. Dozens of articles are bound to be retracted. Years of work by supervisees has been contaminated by his fraud. While never denying the facts, Stapel does challenge the committee's view that the misconduct was committed in a calculated manner, on the basis of a masterplan by an arrogant, manipulative and power-crazed "serial fraud" with a vicious and evil personality. As will be elaborated more fully below: what is missing in such assessments is the element of despair, the element of crisis, not only individually, but of a whole field. Even the fact that he invited colleagues to dine at his house and organized occasional barbecues was cited as evidence of his manipulative behaviour. Was he really so calculating? Actually, his fraud was a mess, and had been committed in a hasty and sloppy manner (full of statistical errors and implausibilities, which should have made his fabrications easily detectable).[10] Stapel considers the report remarkably "Stapel-like": it is a fascinating story, but the methodology (how exactly had the data been selected, processed, etc.?) seemed remarkably unclear.[11]

Derailment begins with a quote from Edward Albee's *Who's afraid of Virginia Woolf?*, − the play about a fictitious son made up to fill the existential gap in the life of the protagonists (George and Martha), until George decides to put an end to the self-deceit by solemnly announcing that their son has died in a car crash. *Derailment* is likewise an effort of the author to reconcile himself with the loss of a fictitious part of his Self: that part of him that was able to discern some kind of structure and direction in the messy, meaningless, misty chaos of reality. But *Derailment* is also a

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[10] Most commentators agree with him on this: instead of using smart, sophisticated methods, difficult to detect, Stapel's misconduct was "poorly organised" (Abma 2013, p. 48). "In his autobiography, Stapel gives an alarming account of how easily he was able to keep on fooling himself and others. It is astounding how primitive his deception was and how long it took for him to be unmasked" (Bouter 2015, p. 150).

[11] In an interview in the Dutch Newspaper *Trouw* (24 August 2013), five ex-supervisees of Stapel complained that the committee's research methods had been biased and unprofessional. The interviews were poorly structured and poorly recorded and the interviewees had not been able to read or comment on the transcripts. In other words, the work of the committee was discarded as "sloppy" and "verification biased".

new beginning, and Stapel quotes an anonymous colleague saying: "your most important research begins right now" (p. 263). Now that his fraud has been exposed, he literally wants to "dis-cover" himself (p. 291). Diederik A. Stapel was a fraudulent scientist, but *Derailment* is written by the ex-professor Diederik Stapel, without the A., and this is someone else (p. 292).

11.3   Epistemological Setting: Social Psychology as the Science of Everyday Life

In November 2012, the three committees[12] published their joint report entitled *Flawed science: The fraudulent research practices of social psychologist Diederik Stapel*. In the *Foreword* it is stated that the scientific fraud committed by Stapel "sent shock waves" across the academic world in the Netherlands and internationally (p. 5), thereby breaching the trust which forms the basis of all scientific collaboration. The universities involved opted for full disclosure, in order to set the "self-cleansing" ability of science in action (p. 5). Co-authors and collaborators of Stapel were interviewed and statisticians were put at the committees' disposal in order to subject all of Stapel's publications to a "rigorous analysis" (p. 5). Indeed, it is not without a hint of pride that the committees state that this was the first time ever that a whole oeuvre, a whole body of scientific work had been scrutinized in this way (p. 5); − a remark which reminded me of the comment by Gospodin Gregg about the uniqueness of the Bloch file, discussed in Chap. 4.

Although the three committees concluded that Stapel was fully responsible for his misconduct, they also found it too simplistic to consider the case as a mere individual or local "aberration" (p. 48). The misconduct was facilitated by wide-spread unsound research practices, sloppy methods and (serious and less serious) violations of proper scientific standards. In other words, Stapel's misconduct was facilitated by a "research culture" in which scientific integrity was "not held in high esteem" (p. 33). Yet, the committees hope that the exposure and analysis of Stapel's wrongdoings "can contribute to this cleansing process", so that Stapel's fraud "may still have a positive impact", despite all the damage and harm it has caused (p. 6).

My argument in this section will be that, by endorsing such a conclusion, something basic still seems to be disavowed by the report. The Stapel file as presented by the committees seems virtually complete, and yet: *something is decidedly missing*. Notably, there seems to be a more profound continuity between social psychological research as such (as a variant of university discourse) and Stapel's derailment than the committees are willing to accept. This might be related to the fact that deception is already a core ingredient of the "normal" social psychological methodology as such, albeit deception of research subjects rather than of the academic

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[12] The Levelt, the Noort and the Drenth committee, investigating the extent and nature of Stapel's infringements of scientific integrity while working at the universities of Tilburg, Groningen and Amsterdam respectively.

community, as in Stapel's case. Stapelgate somehow seems to call the established social psychological paradigm *as such* into question. The case may be symptomatic for a whole area of research, perhaps of university discourse itself, not only of a local "culture". The truth game of a whole research arena seems on the verge of collapse.

That there is more to Stapel's fraud than individual deviance fostered by a sloppy research culture is already indicated by Stapel's inaugural lecture, delivered on a rather ominous date, namely September 11, 2001. According to Diederik A. Stapel, social psychology has demonstrated that we perceive reality not as it is, but as we want it to be (Stapel 2001, p. 4). Reality as we experience it is coloured by desire.[13] Notably stereotypical expectations allow us to come to terms with an overwhelmingly complex socio-cultural environment. It is this process (the colouring of reality in everyday existence) which Stapel intends to disclose. Social psychologists study everyday social phenomena with laboratory precision, so that everyday existence becomes a psychological laboratory. Yet, this increasingly results in a frustrating tension between the desire for explanatory power on the one hand and the astounding complexity and contextuality of everyday life on the other.

Stapel already addressed this epistemological challenge in his "Jos Jaspers early career award" lecture, published in the millennial issue of the *European Bulletin for Social Psychology*. Here, Stapel addresses the question "what is it what we, social psychologists, do? What are the methods and practices of our science? What is it what we do when we do experimental social psychology?" (p. 5). His remarkable answer has been cited by multiple sources, including the committees' report, allegedly as evidence of Stapel's methodological opportunism and questionable research practice, even when he was not yet committing fraud:

> We ruminate about an interesting social phenomenon and come up with a possible answer, a hypothesis…We design an experiment and go to our lab to test our conjectures. And then what happens? Our experiment fails. We don't find what we expected to find… We tweak and fine-tune the experimental set-up until we find something we do comprehend, something that works; something with a P-value smaller than .05. Champaign! Celebration!

> My point is that whatever way we arrive at our theories and hypotheses, the experiments and tests we design are made to verify, not to falsify our conjectures. The leeway, the freedom we have in the design of our experiments is so enormous that when an experiment does not give us what we are looking for, we blame the experiment, not our theory. (At least, that is the way I work). Is this problematic? No… We find what we are looking for because we design our experiments in such a way that we are likely to find what we are looking for. Of course! Should we design our experiments such that we are unlikely to find support for our hypotheses? Should we try to prove ourselves wrong? No… (pp. 6–7)

According to the three committees, but also according to commentators such as Abma (2013), this quote reflects Stapel's "verification bias", which is considered an infringement of the methodological rule that "an investigation must be designed in such a way that facts that might refute the research hypotheses are given at least an

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[13] This view is compatible with Freud's account (1920/1940) about reality as resulting from processing and filtering the flow of information coming from the chaotic and threatening real (discussed in Chap. 2).

equal chance of emerging as do facts that confirm the research hypotheses" (Levelt et al. 2012, p. 48). Stapel's arguments therefore seem quite at odds with the official instruction that hypotheses and predictions should be phrased in such a way that they are falsifiable. Yet, as was already emphasised by Müller (2015), in order to adequately assess this section, it must be placed in its proper context. In other words, we must *read the whole text* (which is precisely what the three committees *fail to do*). For if we do this, if we submit Stapel's lecture to a closer reading, this same text suddenly articulates something else: instead of methodological cynicism and opportunism, it reflects Stapel's experience of *disenchantment* with social psychology as such.

To begin with, it is important to notice that the *Bulletin* is a rather informal podium. In the *Editorial* we are informed that the Bulletin only recently received "an ISSN number", so that articles and reviews published in it can now be properly referred to. This informal atmosphere, however, is even more noticeable in Stapel's introduction:

> I am happy you all decided to come and listen at this late hour. I know that most of you have been listening to talks, have been dazzled with all kinds of hypotheses, data, interpretations, and explanations since 8.30 (!!) this morning. I am really happy that you chose to postpone the consumption of a glass of beer (or wine) for yet one more hour. Because of the late hour of this presentation, I decided not to bombard you with tons and tons of studies and empirical data. I will present some experiments, but a large part of what follows will be argumentations and anecdotes. (p. 4)

In other words, Stapel assumes to role of the jester who, in a decidedly frank, but fairly loose and anecdotal (rather than formal) manner, intends to articulate what is usually bypassed in more formal academic communications. Indeed, he even adds that "part of this lecture will consist of some personal, non-normative ruminations about the science of social psychology" (p. 5). His confession, his coming-out, does not pertain to personal sloppiness, but rather is meant to reflect the problematic nature of a whole research culture. It is, in other words, an exercise in collective self-criticism. Stapel points out, for instance, "that we are often unable to make appropriate allowance for the possibility that other research perspectives may come to different conclusions than we do. Hence, we all have a tendency to be overly optimistic about the generalisability of our research findings" (p. 8). Subsequently, he raises the question "what then determines which scientific perspective will be used in the design of an experiment or in the interpretation of data?" (p. 8). His answer is: fashion. Not all research paradigms are created equal, and some ways of doing research happen to be more fashionable or popular than others, more in line with the trend of the day. Indeed: social psychology is "a catwalk of ideas" (p. 8). And he also stresses that there is a danger that a research paradigm developed for assessing certain responses to certain stimuli may actually *create* the phenomena that are observed (p. 9). This is taken up again at the end of the paper: "Our theoretical perspective *creates* the data we are looking for" (p. 25, my italics).

And Stapel also addresses the replication issue, one of the big methodological quandaries tormenting social psychology as such:

> I think most of us have suffered from "Failed Replication Syndrome". We read an article about an interesting phenomenon, we are thrilled and think there is a nice extension to be made when X or Y is added. We decide to replicate and extend the experiment. In order to do so we read the procedure section and try to perform the experiment in a way as identical as possible to the published study. Everything is in place, but we fail to replicate the results. We try again. No luck. Again. Nothing. What is going on here? I have no idea. It frustrates me. (10)

Stapel provides the following explanation:

> For every type of experiment … there seems to be a "Hidden Procedure Section." I was first confronted by the concept of "Hidden Procedures" when I started my research project on priming effects in person perception. I decided to ask several experts in the field for their stimulus materials. Fortunately, many researchers sent back large envelopes with examples of the materials used in their studies. Pictures, photos, questionnaires, scenarios, pretests, pilots, everything. It was amazing. The vast majority of those materials, however, came with yellow post-it notes. Those post-it notes revealed the World of Hidden Procedures (10–11).

Thus, rather than as a symptom of pre-fraudulent cynicism, Stapel's Jos Jasper's lecture must be regarded as an (albeit anecdotal and non-normative) articulation of budding epistemological despair. What Stapel is pointing out (albeit in a jocular tone of voice, somewhat reminiscent of Erasmus's *Praise of Folly*) is that formal (frontstage) academic accounts of experimental practice in social psychology papers tend to conceal and disavow the continuous improvisations that are actually conducted backstage. Rather than as a cynical swindler, Stapel poses as a disenchanted, divided subject, addressing issues, sharing and discussing his growing discontent in university discourse before an audience of peers.

Let me start with Stapel's concern that social psychological "facts" may actually be *created* by the research paradigm or theoretical perspective we use. This problem was already addressed by Friedrich Nietzsche in his famous exclamation *Facta! Yes Facta Ficta!* published in *Daybreak* (1881/1980, § 307). Nietzsche's exclamation plays on alliteration and highlights an intriguing etymological affinity between *fact* and *fiction*, terms which are usually seen as conceptual opposites. The alliteration reminds us of the fact that the word *fact* is actually derived from the Latin verb *facere* (to make, to fabricate, to create), while the word *fiction* actually comes from the Latin verb *fingere* (to form, to shape; literally: to bring forth with one's fingers). Thus, the etymology reveals that scientific facts are *fabricated* in laboratories. The alliteration emphasises that facts and fictions are related phenomena because 'facts' (like fictions) are *made*, are *produced*, rather than given, and this notably applies to scientific facts. Indeed, all scientific facts are *fabricated*, in the literal, non-pejorative sense of the term. They are *products* of laboratory research practices; they are *artefacts*, produced with the help of experimental set-ups and technical contrivances. What Nietzsche's alliteration reminds us of, is that all scientific facts are 'fingered': they are coloured, tainted if you will, by the knowledge production processes which brought them forth (and whose fingerprints they bear). The etymology reveals that there is something fundamentally artificial about scientific "facts", so that the listing of "fabrication" as one of the three major forms of scientific misconduct is at least

in need of further explanation. What turns *certain* fabrications into fabrications in the pejorative sense?

A similar etymology can be discerned in the word *laboratory*, which builds on the Latin verb *laborare* and literally means "workshop": a locality where certain entities are *handled* (manipulated, literally) and certain products (namely "facts") are fashioned or moulded (in a hands-on, fingering way). This does not mean that scientific insights are worthless. What it means is that any effort to seriously address epistemological issues emerging in research practices such as social psychology should start from this awareness, rather than from a naïve opposition between "facts" (as something which is simply *found* or discovered, as suggested by the term *findings*) and "fiction" (as something which is consciously fabricated, for strictly speaking this applies to facts as well).

This is exemplified by a key symptom of the current crisis in social psychology, namely the replication problem, addressed by Stapel as well, as we have seen. Apparently, in social psychology, replication research does not occur very frequently (there is not much to be gained by it for researchers), but insofar as it is attempted at all, replication remarkably often fails, even when classical, paradigmatic experiments are being redone. And this constitutes an embarrassment, of course, because in principle, scientific knowledge should be replicable, and scientific "facts" should be reproducible by others.

An example of this problem is the inability of a Belgian research team (cited by Abma 2013 and others) to replicate a famous priming experiment conducted by John Bargh et al. (1996). The Belgian publication unleashed a vicious ad hominem attack by Bargh (who was not amused by what ought to be regarded as a normal procedure), while Nobel laureate Daniel Kahneman argued that one should be "sceptical about replications by investigators new to priming research, who may not be attuned to the subtlety of the conditions under which priming effects are observed" (cited in Abma 2013, p. 68). This seems a fairly problematic argument. Should the testability of research depend on the socialisation of the researchers, on their familiarity with hidden modifiers and tricks of the trade (only known to the inner circle), one wonders whether the reported results have any validity at all. Basically, the experiment should be replicable as it is reported. And if not, the missing ingredients should in principle be producible upon request. By seeing research as a privilege of adepts or insiders who are familiar with the subtleties of the art, the difference between science and less highly respected pursuits, such as alchemy or astrology, evaporates.

This discussion again builds on the tension between the "context of discovery" (the experiment as actually performed in a laboratory setting) and the "context of justification" (the study as reported in a journal paper). The latter is a smoothened reconstruction, a "secondary elaboration" if you will, of what actually happened in practice. Still, although the published version will leave out all kinds of frustrations, erroneous attempts and dead ends, it should nonetheless provide a manual useable for replication efforts.[14] Authors such as Bargh should encourage rather than deplore

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[14] Medawar (1963) flatly denies this and calls the scientific paper a fraud because it misrepresents or even travesties the thought process that gave rise to the results reported in the paper.

replication attempts (unless they have something to hide of course). But the objective of this chapter is not to solve the (unsolvable?) replication problem (apparently more challenging even in social psychology than in science in general) about which so many books and papers have already been written. The question rather is what a dialectical-psychoanalytical view can contribute to our understanding of Stapel's misconduct in response to the challenges emerging in his "impossible profession". Was his misconduct perhaps a (misguided) response to the replication crisis and other embarrassing problems occurring in this type of university discourse? There may be more continuity between "fabrication" (in the non-normative sense) of social psychological facts "backstage", and the "fabrication" (now in a pejorative sense) of fraudulent data published in Stapel's papers than the committees (in their persistent use of metaphors such as "cleansing operation") seem able or willing to acknowledge. What I find remarkable is that the three committees, while claiming to have "scrutinized" a whole body of work, fail to address the methodological discussions that are part of this work (discussions which increasingly reflect a sense of despair on the part of the author). As if "scrutinizing" an oeuvre means something else than *reading and addressing its content*, but I will return to this issue below.

Interestingly, Stapel's fraud has been regarded as an experiment in itself. Question: how often and to what extent can an established scientist commit fraud before it is detected? Abma cites a colleague who argued that we should seriously consider the possibility that Stapel's fraud is actually a research trial, involving his peers and colleagues as research subjects, and that we should not be surprised if he (Stapel) at a certain point decides to publish an analysis of his results (2013, p. 157). What is pointed out here is that the technique of deception of research subjects (which is accepted practice in social psychology) is applied by Stapel to the research community as such. What is the crucial normative difference between these two instances of deception?

11.4   University Discourse and the Experimental Mousetrap

As indicated, I will regard social psychology as a particular form of "university discourse", as specified by Lacan:

$$\frac{S_2}{S_1} \quad \frac{a}{\$}$$

Social psychologist *Diederik A. Stapel* occupies the position of the agent (S_2 in the upper-left position) as an (initially quite prolific) producer of scientific papers, in collaboration with 70 or so co-authors. Interestingly, this identification with social psychology (Stapel = S_2), this decision to commit himself to social psychological discourse, was the outcome of an existential struggle as we have seen. In *Derailment* Stapel describes how, as an actor (i.e. before his conversion to academic

psychology) he had been a Harold Pinter adept. The theatre of the absurd, of which Harold Pinter is a prototypical protagonist, enacts an absurdist interpretation of reality, and Stapel performed Pinter plays already as a high school student. Elsewhere (Stapel and Dautzenberg 2014; cf. Stapel 2016 p. 45) he discusses Camus' interpretation of the Sisyphus myth (Camus 1942), an essay about the futile search for meaning in an unintelligible and godless world, where even revolt proves futile, − the very essay in which the term "absurdism" is used for the first time. Stapel's conversion from theatre to psychology implies a renouncement of absurdism and a willingness to adopt a more rational, optimistic and scientific worldview. As a psychologist he endorses the belief that, in principle, social psychology provides the conceptual and methodological tools allowing us to understand human behaviour in a rational manner.

In terms of Lacan's schema, this means that a certain basic position, a certain worldview (or rather a clash between worldviews, namely optimistic technology-oriented rationalism versus existential absurdism) is discarded (pushed into the lower-left position) in favour of the scientific stance requested by university discourse. From now on, S_2 (the objective scientific agent) is supposedly an individual *without* a worldview, although in reality science is spurred on by a particular worldview as well (namely technology-oriented rationalism). Thus, by becoming a scientist, Stapel suspends a (fundamental, philosophical) question which until then had occupied him, namely whether reality is basically rational or basically absurd. Stapel, one could argue, considered both options, wavered between two vocations, two callings: the absurdist option (a career in Pinter-like theatre) and the rational option (a career in science). Eventually, he converts to social psychology: S_2 in the upper-left position, pushing the disconcerting but revealing *truth* of absurdism beneath the bar. But this struggle of scientific rationalism (fuelling a knowledge-production system) against the disconcerting, but nonetheless revelatory truth of absurdism continues to haunt him at times, as we will see, and even resurges in times of crisis (a phenomenon known in psychoanalysis as the return of the repressed).

As a qualified university expert, Stapel focusses on discovering the decisive factor X, the "x effect", as he phrases it in *Derailment*: that which makes the difference between significant and insignificant, between publishable and unpublishable results (the object *a* of social psychology research, in the upper-right position). But this increasingly leads to frustrations. Reality seems too messy and recalcitrant (too absurd?) to comply with his theories; and this leads to loss of productivity and to despair: *$* as an (unintended) by-product in the lower-right position. Eventually it even results in the resurgence of absurdism, but I will come to that.

Psychoanalytically speaking, his scientific vocation remains marked and compromised by the struggle (on the level of metaphysical worldviews, S_1) from the very start. The kind of research to which he became committed, namely experimental social psychology, actually constitutes a kind of middle position (or compromise) between these two vocations, for social psychology, according to Stapel, is both a science and an "art", and the psychological laboratory is basically as a "theatre" where human behaviour can be primed and moulded in various directions

(Stapel 2012, p. 102). An important ingredient of theatres in general (and of the social psychology theatre in particular) is deception. Research subjects (usually psychology students) must be naïve. As soon as subjects are aware of the (objective of) the experiment, this will affect their responses and ruin the results. Ideally, research subjects *believe* that they know what the research is about, but this actually proves to be an illusion, a distraction; a lure. Like Claudius in Shakespeare's *Hamlet* (Act III, scene 2), they are lured into a mousetrap. According to Hamlet, *mousetrap* is title of the play performed by the actors in Shakespeare's drama. While research subjects erroneously believe to know in what kind of situation they are becoming involved, they are suddenly exposed to an unexpected stimulus, while their responses are being meticulously monitored (as happened to Claudius as well, cf. Chap. 3), so that these responses may be considered as an indication of a disavowed flaw (racial prejudice).

The experimental set-up of Stapel's fictitious *Science* experiment at Utrecht train station is a cunning exemplification of the mousetrap theme. The respondents *believe* that, by filling in a questionnaire, they are participating in a survey, and that the chair is merely placed there for their convenience (filling in questionnaires while standing upright seems rather impractical). Thus, they are unaware of the fact that the row of chairs is actually a *mousetrap*. By keeping their distance vis-à-vis the black male, they *betray* their obfuscated prejudices. So, in other words, Stapel is social psychology's *Hamlet*, who masterfully inserts a play into a play (the row of chairs representing the mousetrap scene), while Utrecht station is the theatre of life, where a plethora of prejudices are steering our daily behaviour (in subliminal, unconscious ways). In order to come to terms with them, social psychologists must design a device that *captures* them. The problem is, of course, that Stapel's "play" has never been performed, that his experiment has never been conducted. Like Shakespeare's *Hamlet*, it is fiction. Stapel is actually a playwright and his article a form of drama, parodying the vernacular of fashionable science. The respondents (playing the role of Claudius, but in a contemporary setting) were not really put to the test.

But this means, dialectically speaking, that the prejudices attributed to the research subjects (in the *Science* article) actually reflect the prejudices of the researchers themselves. It is the prejudice if the researchers that their research subjects will prove prejudiced (by keeping their distance to the non-Caucasian male). In other words, the prejudices and stereotypes enacted in this paper are actually the (prejudiced, stereotypical) expectations of the researcher (Stapel) himself, projected onto the research subjects. He *wants* and *expects* his research subjects to be prejudiced, to be biased, even if (all too often) this proves not to be the case, for otherwise he could simply have *conducted* the experiment instead of fabricating it. In Lacanian terms, the hidden prejudice, which *must* be there, proves so difficult to capture because it is the "object *a*" of social psychology. It is that which somehow *must* be brought to the fore (with the help of mousetraps), an objective which is considered so important that it even legitimises the use of deception. To paraphrase Gospodin Gregg (Chap. 4), social psychology is bent on exposing *the Mr. Hyde* in us, the evidence of prejudice, the object *a*, something which somehow remains hidden (first

and foremost in "Caucasians") and stubbornly refuses to give itself away. Thus, instead of capturing the "x effect" (racial prejudice), the mousetrap-paper rather captures (or reflects) the way in which social psychologists tend to frame and perceive their research subjects (to phrase it somewhat bluntly: social psychologists seem to believe that all Caucasians are racists, especially those who claim to be unaware of this unconscious flaw).

The congruency between social psychology and theatre (between fact and fiction) already seems reflected by the fact that experiments as well as plays are "conducted" or "performed", and the similarities multiply once we submit the texts by Shakespeare and Stapel to a closer comparative reading. Hamlet urges his actors not to overdo it, not to overact, for this might ruin the willingness of the audience to suspend their disbelief. "Observe my uncle", he ask his friend Horatio, to see whether, once exposed to the mousetrap, he will give away his "occulted guilt". In other words, Horatio is Hamlet's (Stapel's) experimental collaborator, who assumes an "oblique" perspective: while everybody else is watching the play, he will focus his attention on Claudius instead, who consistently manages to feign innocence, in order to analyse his response to the dramatic stimulus. And after the event, Hamlet and Horatio will compare their judgements in censure, so as to determine whether the revelations of the ghost (the hypothesis) are fictitious or true. In the case of social psychology, naïve respondents, who erroneously believe that they are unprejudiced (i.e. innocent), will be confronted with a critical mirror, which may force them to adapt their self-image. Indeed, "The play's the thing wherein I'll catch the conscience of the King" (*Hamlet*, Act II, scene 2) and the row of chairs is the mousetrap employed to capture obfuscated "Caucasian" prejudices. This is in line with the vocation of experimental social psychology as such, whose founding fathers (Lewin, Festinger, etc.) were Jewish immigrants coming from Europe and personally interested in the question whether Americans might be as prejudiced and anti-Semitic as their fellow-Caucasians in Europe.

Yet, to Stapel's frustration, the mousetraps of social psychology no longer seem to function. The prejudice described in his *Science* paper is the prejudice that research subjects are prejudiced; it is the prejudice which social psychological theory *attributes* to research subjects, as we have seen, a prejudice which exists in the minds and theories of the social psychologists themselves. Therefore, by concocting the missing, elusive data (his object of desire, his object *a*), Stapel captures his scientific peer group (and their prejudices) in his trap. His readers (the social psychologists) believe the data because the outcomes concur with their headstrong conviction that Caucasians are secretly prejudiced.

To understand how such a thing could happen (how next-generation social psychologists apparently fell into this social psychological trap), Lacan's specification of university discourse provides important clues. We have seen how Stapel temporarily resolved the struggle of scientific objectivity (S_2) with persistent absurdism (S_1) by endorsing the first and disavowing the latter. His susceptibility to absurdism (the theatrical calling of his youth) was pushed beneath the bar (into the lower-left position) in order to fully endorse social psychology as a normalised scientific research practice (S_2 in the upper-left position as agent). As an experimental

researcher committed to social psychology (S$_2$), Stapel is desperately looking for what he refers to as the "effect x" (p. 103), i.e. a decisive (but often intractable and allusive) factor which makes the difference between significant and non-significant results (*a* in the upper-right position). Social reality, he discovers, is a messy and convoluted realm, where countless factors interact, and the desire of the normal researcher is to find *one particular effect*, the factor "x", that may lead to a publication in a top journal (and rebut absurdism once and for all). In Stapel's case, *x* becomes connected with the difference between a littered and a clean environment. In a littered environment, the mousetrap is expected to do the trick: racial prejudices will be unmasked. Like Claudius's guilt, the subjects' prejudices will be exposed.

But what if the mousetrap fails to work? Stapel basically decides to extrapolate the element of deception from *research subject* to his professional *readership*. Deception (of research subjects) is a perfectly acceptable ingredient of social psychological research, but Stapel takes it one step further. His *Science* paper becomes an experiment indeed, a mousetrap of the second order, so that peers, reviewers, colleagues, etc. are unwittingly lured into the position of research subjects: will they fall into this trap, will they really believe that this (absurd) experiment actually happened, basically because their second-order prejudice (namely that Caucasians are prejudiced) is confirmed by it? Stapel's experiment seems to confirm what social psychologists expect to happen, namely that the "x effect", the object *a*, the prejudice (as a coping mechanism, as a mechanism of defence) will give itself away in a disorderly, polluted environment. Stapel's parody, a piece of fiction which reads like a *Science* paper, confirms what purports to be "normal science" although it actually reflects – a worldview.

Notwithstanding the success of his *Science* paper, however, his failure to achieve significant results is unsettling for Stapel and even produces despair ($ in the lower-right position). The absence, the intractability of the x effect (the decisive factor, the object *a* of social psychology research) reinforces his inner split, his *Spaltung*, his inability to satisfy his *cupido sciendi*. This *Spaltung* reveals an insurmountable gap between knowledge and truth. Stapel suffers from conflicting imperatives, from the struggle between his rationalistic leanings and his absurdist worldview, a struggle which is still raging beneath the bar. On the one hand, Stapel (as a scientific subject) is fuelled by the imperative which, according to Lacan, drives all contemporary research practices: "go on, produce more knowledge! Never enough!" (Lacan 1969–1970/1991, p. 120). Researchers are never literally *told* to do so, but the imperative (S$_1$) functions as an unconscious injunction, coming from beneath the bar (the lower-left position), fuelling contemporary social psychology as well (p. 121) in order to keep the absurdist alternative at bay. It is only by producing more knowledge that the unsettling realisation that reality may well be a random and meaningless mess can be countered. On the other hand, notwithstanding the avalanche of publications resulting from this imperative, the absurdist attitude is still very much alive in him as well. The decisive factor *x* of social psychology may prove difficult (or even impossible) to detect *precisely because* reality is so fundamentally chaotic and absurd. In other words, the viability of his aim to produce knowledge is *called into question* by an absurdist truth.

For the time being, however, instead of reverting to absurdism (as an academic apostate so to speak), he keeps trying to discern some intelligibility in recalcitrant reality, but he seems only able to do this by tweaking his results. And step by step, the absurdity of his "solution", the absurdity of his fabrications, increases. How is it possible that his professional colleagues fall into this trap? Although tweaking your results may be part of certain research cultures, Diederik A. Stapel somehow manages to take this strategy to the limit, by drastically *exaggerating* this questionable type of behaviour, so that in his case the fraud itself becomes absurd (and indeed, grotesque exaggeration is a well-known technique in absurdist theatre of course). Psychoanalytically speaking this confirms the view that Stapel is basically a craving, tormented subject facing an epistemic crisis, whose misconduct is symptomatic for frustration and despair, as "by-products" of university discourse ($\$$). S_2 becomes an increasingly divided (*spaltet*) subject in the force field between the resurging absurdist worldview on the one hand and the recalcitrant object a on the other ($S_1 \leftrightarrow S_2 \leftrightarrow a$). By taking his deceptions one step further, building on the congruence between experiments and plays, his research really becomes theatre, so that eventually social psychology (as a particular strand of university discourse) gives way to absurdism ($S_2 \rightarrow \$$).

11.5   The Collapse of Truth: Three Responses to the Crisis

The Stapel case is thus a symptomatic by-product of a proliferating crisis which concerns the scientific credibility of social psychology as such. And this, I would argue, cannot be addressed or contained by self-cleansing operations, as suggested by the three committees (the normative "trinity", playing the role of the authoritative voice: S_1). Such a procedure builds on the rotten apple metaphor: the idea that integrity problems can be solved via individualisation (Broad and Wade 1982, p. 60). As a rather embarrassing experience, Stapel at a certain point reports that some of his colleagues actually claimed to have replicated his faked research! After making up his research and publishing his fantasies, some other research team suddenly announces that they successfully incorporated his absurdist fiction into university discourse! What was decidedly fictional becomes factual after all.

The papers published by Diederik A. Stapel (until September 2011) seemingly adhere to the discursive requirements of university discourse, although they increasingly parody or travesty this discourse. After his exposure, university discourse as such becomes challenged.[15] A temporary shift into another mode of discourse now

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[15] When it comes to lessons learned, the results seem fairly disappointing. Abma's most concrete remedy is to enforce a maximum number of academic publications (2013, p. 162), which probably would result in a proliferation of pseudonyms, but the real problem of course is not the number of publications but rather the quality of many of these publications, the ways in which the data are procured, etc. The proposal would result in (yet another) top-down rule, but fails to explain or address what really drives this issue: the *cupido scribendi* – the academic *will* (desire, urgency, *Trieb*, etc.) to publish (a drive which also applies to Abma himself no doubt, as author of his book).

seems inevitable. In the next sections, three responses to this crisis of university discourse will be analysed, in accordance with Lacan's theorem: three moves away from university discourse, in the direction of (a) the discourse of the Master, (b) the discourse of the hysteric and (c) the discourse of the analyst.

The three committees (the normative trinity) try to re-establish order by operating in accordance with the dynamics of the Master's discourse, denouncing Stapel's wrong-doings in a top-down, apodictic manner and calling for a cleansing operation, so that the resurge of absurdism can be abated and university discourse can become functional again. This Master's discourse (discussed more fully below) is exemplified by their final report, published on 28 November 2012.

A few days later, however, Stapel responds with a document of his own which adheres to a completely different mode of discourse, namely the book *Derailment* which, as an autobiographical *Fallgeschichte* (or self-analysis) rather reflects the basic structure of the discourse of the analyst, as specified by Lacan. Now, the question basically is how the pervasive desire to discover the x effect (the object *a* of social psychology research, occupying the upper-left position of the agent) could have such a derailing impact on an ostensibly normal and successful researcher, driving him into such desperate, fraudulent actions ($a \rightarrow \$$).

A third response is Stapel's subsequent relapse into the theatre of the absurd, notably exemplified by his dialogues with literary author Dautzenberg (Stapel and Dautzenberg 2014), an instantiation of the discourse of the hysteric as we will see, of cynicism even, in the sense as it is discussed by Sloterdijk (1987). But I will now further explore these three responses in the upcoming sections.

11.6   The Normative Trinity: The Power Dimension and the Master's Discourse

The narrative of Stapel's derailment can be briefly summarised with the help of the standard dramatic curve or arc, described by Freytag (1863) and others, consisting of five successive steps. During the "exposition" stage (1) Stapel is presented as an actor who decides to become a scholar, and the next stage (2) describes his rise to fame. At the climax of his career (stage 3), however, the tension between academic prominence (his appointment as Director and Dean, his managerial standing etc.) on the one hand and his faltering research practice on the other becomes unbearable, giving rise to fraud, although other, safer, more acceptable and more respectable options could have been available (such as the decision, made by many scientists in his position, to relinquish his ambitions as a researcher altogether and to focus exclusively on his managerial tasks). Exposure leads to his inevitable yet spectacular downfall (stage 4) and finally, looking back on what has happened, he decides to make a new beginning by analysing his own case (stage 5: denouement or catharsis: the writing of *Derailment* as a practice of the Self). Thus, Stapel's rise to academic power reflects the dimension of verticality already referred to earlier, a combination

of prominence and *Fallhöhe*, also known as the Icarus complex (described in Chap. 4), ending with Stapel's "plunge" into depression (Stapel 2016, p. 11), because the wax in his wings had molten (2016, p. 8).

On the epistemological level, we have analysed this tension as the *Spaltung* between knowledge and truth. Scientists, driven by the imperative to produce more knowledge, are increasingly unable to satisfy their *cupido sciendi*, the thirst for truth that drove them into research in the first place. But it is also a tension between knowledge and power. In response to the depressing trauma of Stapel's fraud, the triad committee (the normative trinity or triumvirate) aims for reparation and restauration. Yes, a career has dramatically imploded, but the republic of science (the castle in Stapel's dream) can still be repaired, provided the self-cleansing mechanisms of science are put to work to remove this rotten apple.

The three committees were established "in mutual consultation between the three universities" (*Flawed Science*, p. 5) where Stapel had worked, chaired by Pim Levelt (the Levelt Committee), Pieter Drenth (the Drenth committee) and Ed Noort (the Noort committee). Who were the members of this triumvirate and why were they appointed? Prof. Pim Levelt is a psycholinguist who became the founding director of the *Max Planck Institute for Psycholinguistics* in Nijmegen and President of the *Royal Netherlands Academy of Sciences* (KNAW) (2002–2005). Prof. Pieter Drenth was a psychologist who became rector of the *Free University Amsterdam* (1983–1987) and president of the KNAW (1990–1996) and of ALLEA (*All European Academies*) (2000–2006). Prof. Ed Noort was professor of ancient Hebrew literature at the University of Groningen, but also dean of the faculty and pro-rector of the university (2005–2008), board member of the KNAW and Vice-President of the European Federation of National Academies of Sciences and Humanities (ALLEA). In short, these academics were appointed, not because of specialised expertise concerning FFP or research misconduct (S_2), but because of their institutional prestige, their aura of authority (S_1), so that their report reflects the discourse of the Master (S_1 in the position of the agent). Stapel is condemned, and the research community is called upon to rebuild and strengthen its epistemological super-ego by dealing with the culture of sloppiness.

The report (S_1) addresses the experts in the field (S_2 as recipients) and orders an operation of cleansing and repair, in accordance with the mode of discourse referred to by Lacan as the discourse of the Master:

$$\frac{S_1}{\$} \quad \bigg| \quad \frac{S_2}{a}$$

The authoritative voice (the normative trinity) functions as agent (S_1 in the upper-left position). Doubts and uncertainties concerning the validity or viability of the social psychological paradigm *as such* are pushed beneath the bar ($\$$ shifting into the lower-left position). The imperatives of proper scientific conduct (S_1) are presented as indisputable, and the normative trinity acts as the guardian of these principles, which are to be reaffirmed rather than questioned (S_1 as agent, upper-left

position). These guardians are respected authorities who formally address the research community of academics in a top-down manner (S_2 as recipient of the message). This involves social psychologists in particular, but also other academic professionals such as editors, funders, research managers and so on (S_2 in the upper-right position). Basically, Levelt, Noort and Drenth belong to the older generation of emeriti professors ("fathers") who sternly address the younger generation, those who are still in active service and apparently take their job too lightly.

These "fathers" are allegedly taken aback by the sloppiness of the "research culture" they encounter, but they also clearly enjoy the confessions about deflections. There clearly is some *satisfaction* involved in what they have brought to the surface, in what they have produced and achieved (*a* in the lower-right position): "As far as we are aware, this was the first time ever that the whole of a fraudster's body of scientific work had been scrutinized in this way" (p. 5).[16] Trawling through a complete oeuvre is without precedent, it is an accomplishment which is likely to draw attention (as well as citations, etc.). And yet, something essential, which would enable us explain the whole enigma (the object *a*), still seems missing, still seems to elude them, but I will come to that.

The power dimension is addressed in their report on several levels. First of all, they address the power games of Stapel himself, the powerful professor who seemed invulnerable because of his power position. Stapel is depicted by the three committees as a gentleman-swindler (S_1 in the upper-left position) who fabulated his data while others conducted the actual, hands-on work. The Dutch name Stapel literally means 'pile' or 'heap' and is strangely reminiscent of the German word *Hochstapler*, i.e. gentleman-swindler. His position of Master (S_1) is emphasised by the fact that Stapel "occupied a special position in the Faculty. The Executive Board granted him a variety of exceptional allowances and reimbursements, he was extremely generously facilitated and in a special position" (p. 45). It is stated that he "Mr. Stapel used his position of great prestige and power", his "considerably powerful position" (p. 37) and "the power derived from his celebrity-like status" (p. 54) to "commit fraud and to stifle any possible doubt about his methods" (p. 37). As a gentleman-researcher, he was a "solo performer to the extreme", who "did not hesitate to use his power, prestige and charisma to prevent the detection of fraud" (p. 38). In other words, Stapel as the absolutist Louis XIV of social science: *l'université, c'est moi*.

At the same time, Stapel is clearly depicted as a kind of rebel (*$* now in the upper-left position), whose blatant, provocative and absurdist practices threaten to subvert established order, sending a "shock wave" though the scientific community, so that order has to be restored by expelling the imposter (who *posed* as a master but who was actually a kind of boisterous cynic or actor).

In one of his papers (Johnson and Stapel 2011), Stapel portrays himself as an "alchemist", able to convert ambiguity into positivity, namely by reinterpreting ambiguous information (Johnson and Stapel 2011 p. 165), but the committee now

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[16] The Committees arrive at the conclusion "that the extent of Mr. Stapel's fraud is very substantial. The Committees encountered a total of 55 publications in which fraud has been established. (34 in Tilburg), from 2004 onwards".

seems eager to reverse-engineer the process by converting Stapel's "gold" back into messy research. What is remarkable in this portrayal of Stapel as Master-swindler (alternating between S_1 and $\$$), however, is that, although his whole body of scientific work is allegedly scrutinized, something is missing, namely: the work itself, the work as such, the work in terms of content! By this I mean that the committees, while scrutinising his oeuvre, focussed on producing a quantitative estimate of the extent of the misconduct ("The Committees encountered a total of fifty-five publications in which fraud has been established", p. 25), but for some reason they do not really *read* Stapel. But as soon as we *do* read his (pre-exposure) papers, in a textual, content-oriented manner (as philosophers are inclined to do), a rather different picture emerges. What Diederik A. Stapel (rather consistently) articulates is that he is driven, not by a lust for power and prestige, but first and foremost by a kind of epistemological desire, namely to use the symbolisation techniques of social psychology to discern (or fabricate) some extent of order in a chaotic, *littered* environment known as "culture". Social psychologists map the world with the help of dichotomous patterns (*littered* environments vs. *clean* environments; *stereotypical* responses vs. *non-stereotypical* responses, etc.) to enhance some kind of order in the Real. To relinquish this vocation would mean to give up social psychology as a meaningful endeavour, and to revert to the absurdist credo of his youth. A faint echo of Stapel's self-analysis is audible in the Committees' report when Stapel is quoted as saying that, although the fraudulent practices started in Groningen in 2003, in Tilburg the manner of fabrication became "ever crazier, faster and stranger" (p. 32), a phrasing which indeed presents Stapel as a divided, craving subject ($\$$) rather than as a cunning Mastermind. But in the committees' report, Stapel is not really given the floor, − which explains why he decides to publish his own ("bottom-up") version of the events (i.e. *Derailment*) just a few days after the formal presentation of the ("top-down") report.[17]

But Stapel is also portrayed as a dangerous rebel, as we have seen, as someone who, while feigning to act as a successful researcher, was actually an intruder, posing a threat to the knowledge production system (S_2) as such. Therefore they urge S_2 (the recipient of the message) to "sanitise" the ecosystem in which someone like Stapel was able to hide and flourish. This is reflected in the use of the cleansing metaphor. The "self-cleansing ability" of science should be put to use for a drastic "self-cleansing operation" (p. 5). In order to restore credibility, the scientific "literature", the scientific "record" must be *completely cleansed of everything that is fraudulent* (p. 6, my italics).

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[17] This also pertains to Abma (2013), who distrusts Stapel and decidedly keeps his distance. When Stapel at a certain point tries to contact Abma, the latter seems embarrassed or even intimidated ("Diederik Stapel is back in town", p. 11). Apparently, he refused to speak to him (refusing to consider the first-person perspective as a valuable source of information). He is even concerned that, by writing his book, he may provide Stapel (who already received so much attention, etc.) with yet another podium. In a letter to Stapel, Dautzenberg reverts this by arguing that Abma is actually creating a podium for Abma via Stapel (Stapel and Dautzenberg 2014, p. 69), while scolding the latter "for seeking contact with the world again!"

As indicated, the "fathers" deplore the "general culture of careless, selective and uncritical handling of research and data". A methodologically defective research practice ("sloppy science") constitutes "an unintended and unexpected finding" of the inquiry (p. 47). "Numerous discrepancies were found between the way the experiment was actually carried out as could be deduced from the available data and the research material, and what was stated in the article", thus obscuring what actually had happened and thereby "rendering the experiment unverifiable for others" (p. 51). But it is clear that in such statements the fathers are articulating their imperatives in a top-down, distanced manner (M_1). Researchers who are actively involved in a work-floor setting will be aware of the inevitable discrepancies between context of discovery (the laboratory world) and context of justification (the paper world of research papers). This discrepancy is part of their daily experience no doubt (M_2). In real laboratory life, there will always be the parallax between context of discovery and context of justification; there will always be a gap between "monitoring procedures" on the one hand and the actual research culture on the other (which enabled Stapel's violations to go unnoticed for quite some time). For all the complaints about the "impossibilities" the committee members discover (such as: "impossible p-values"), or about the "peculiarities" and the "sloppiness" of the work of Stapel and his environment, the public degradation by the committees fails to answer questions such as why, in 1999, a formal international visitation committee had given this same research environment an exceptionally high score, suggesting outstanding international excellence.

But the key question, dialectically speaking, is how to sublate this crisis, how to bring this mess of contradictions to a higher level ($M_2 \rightarrow M_3$)? As indicated, I find it remarkable that, while trawling through Stapel's oeuvre in search of indications of fraud, the committees more or less ignored the *content* of this oeuvre: the actual papers in which many of the tensions between discovery and justification (M_2) are explicitly addressed. As if the normative trinity did not *read* the 137 papers which they "scrutinised". And this is remarkable because precisely this seems to be part of the malaise: the widespread malady of counting, citing, indexing and processing scientific papers instead of *really reading* them. This reluctance to really *read* the content may actually reflect a major aspect of the current academic crisis, which is confirmed rather than repaired by the report. The committees analyse the oeuvre[18] in a rather functional manner, using the hashtag symbol (#) to indicate whether a particular paper is considered contaminated by fraud. But they ignore, for instance, the content of a paper by Stapel and others (not-retracted, without the # label, and therefore apparently non-fraudulent) which analyses a previous, widely-discussed Dutch scientific misconduct case, namely the Diekstra case (Stapel et al. 1999). The authors had asked Dutch social psychologists (as respondents) to reflect on "a widely published plagiarism scandal involving a Dutch psychologist which affected themselves and the image of their profession" (p. 397) and their analysis resulted in the intriguing conclusion that "expert investigators of social influence" (i.e. social psychologist) who feel "framed of "tainted" by certain manipulations may often

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[18] "…het gehele oeuvre van een fraudeur [is] op de korrel genomen…" (p. 6).

become "victims of the phenomena they investigate" instead of being "inoculated" by the insights they produced (p. 401). In other words, if you study fraud you may *become* a fraud. And in another (non-retracted and therefore apparently non-fraudulent) paper, Lammers and Stapel (2009) analyse the connection between morality and power, arguing that, whereas powerful agents (such as the Trinity committee) tend to rely on rule-based (deontological) styles of moral thinking, less powerful agents (work-floor researchers) rather rely on outcome-based (consequentialist) styles. In other words, while the powerful are more inclined to defend the rules, the powerless are more inclined to improvise. According to this theory, the committees can be expected to embrace a deontological approach (focussed on rule-compliance) because they are powerful, while Stapel commits fraud because he experiences himself as relatively powerlessness (in view of Stapel's increasingly frustrating inability to bridge the gap between knowledge and truth, between social phenomena and first-generation psychological theories). In other words, the social psychological expert *Diederik A. Stapel* (S_2) may pose as an impassive researcher, but actually experiences himself as a tormented subject (*Diederik Stapel*, without the A.), who is facing an existential crisis. And this suggests that the return of the repressed (of absurdism) cannot be contained only by reverting to S_1 (the Master's discourse, represented by the Committees). In order to understand the depth, the content of the crisis, we must give the floor to two others modes of discourse which aim to respond to the collapse of university discourse in the Stapel case, namely the hysteric's discourse ($\$$), – represented here by a series of publications in which Stapel indeed seems to relapse into the absurdism of his adolescence years –, and the discourse of the analyst, represented by *Derailment* (Stapel's self-authored *case history*).

11.7   Cynicism and Absurdism: The Hysteric's Discourse

University discourse places S_2 (qualified knowledge) in the position of the agent, but eventually, the divided, craving subject ($\$$) re-emerges as a by-product. The split (*Spaltung*) between knowledge and truth becomes unbearable, as the pretentions of qualified knowledge cannot be realised in practice (Lacan 1966, p. 794). This gives rise to a repositioning of the divided, tormented subject ($\$$) vis-à-vis this knowledge (S_2). The position of the impassive academic agent becomes subverted ($S_2 \rightarrow \$$), and the divided subject ($\$$) now emphatically takes the floor in the position of the agent ($\$$ in the upper-left position).

As Lacan indicates, in academic experimental psychology (as a social or human science, notably in its American version), the subject of research (i.e. the professional researcher as an individual) tends to be eliminated and obliterated. The social scientist is not an Author with a capital A: someone with a distinguishable style, with a vocabulary and a world-view of his or her own, but a person *ohne Eigenschaften* (without qualities) as it were (besides his or her professional academic qualifications). He or she tends to be fully replaceable. Foucault (1969/1994) thematised this as the "death" of the academic author. The experimental researchers, as co-authors

of academic papers, become replaceable as scientific discourse becomes fully standardised and cleansed of anything too personal. In reality, however, this is never fully realised. Already as a social psychologist, Diederik A. Stapel developed and maintained a style of his own. His (quite lively) papers reflect a recognisable stylistic signature. He evidently knew how to write and engaged his readers. His papers convey a *cupido scribendi*, a lust for writing. Already in this, Stapel may have been exceptional.

Precisely this radical anonymity of normal social science is reverted in the "discourse of the hysteric", a type of discursivity which is blatantly subjective. In Stapel's recent publications, the replaceable, anonymous subject of science has given way to a more "hysterical" position (in the Lacanian sense), due no doubt to the impact of the "shock wave" of the Stapel case on the individual micro-level, where the divided subject now emphatically speaks out as agent:

$$\frac{\$}{a} \quad \Big| \quad \frac{S_1}{S_2}$$

Impassive, professional and self-contained objectivity now gives way to boisterous frankness, to an all-too-personal type of discourse, notably when it comes to challenging the establishment, the authorities (the recipients of the message: S_1 in the upper-right position). A provocative gesture may already be discerned in Stapel's decision to publish his personal account only a few days after the formal report by the three committees was distributed, as if *Derailment* is basically a reply, not in the sense that the author challenges or retorts the arguments and conclusions of the report, but in the sense that he publishes an account of the events that is fully his own and written in a completely different discursive mode. In the formal assessment, the voice of Stapel himself is barely audible,[19] but in *Derailment* as a case history, he speaks in his own voice. It is a text which emphatically bears his signature as a (born again) author.

But this confrontation between $\$$ and S_1 (above the bar) is only part of the story. Something more subtle is going on beneath the bar. According to Lacan, divided subjects ($\$$) tend to ignore what is really fuelling their activities (a basic truth, which has nested itself at the reverse side of the Moebius ring). A pose of excessive cynicism, for instance, may actually obfuscate a disavowed fidelity to the quest for truth. Unwittingly, the knowledge gap, the knowledge deficit is still speaking out to him. Allegedly, Stapel has given up his quest for the "x effect": the intractable target of his will to know as a social psychologist, but this object *a* (the missing link between findings and predictions) may nonetheless still haunt him, as an unfinished project, an unquenched desire (*a* now in the lower-left position). At the same time, it is clear that he began to look for the object *a* elsewhere, not in the restricted environment of

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[19] As indicated, his voice is audible only once, as far as I can tell, namely when he is quoted as having remarked that at a certain point his fraud became "ever crazier, faster and stranger" (p. 32).

social psychological experiments, but in literature and cinema as laboratories of the imagination (Stapel and Dautzenberg 2014; Dautzenberg and Stapel 2017).

This relapse into hysteria, this second adolescence, may constitute an intermezzo, in preparation for a second start, as Stapel recently embarked on a new career, as an expert in derailment management (S_2 resurging in the lower-right position, as a by-product of the crisis), although on closer inspection this rather seems a parody of the very concept of expertise.[20]

As indicated, Stapel's biography follows a curve, beginning with a fascination for theatre, which becomes eclipsed by his conversion to scientific rationalism (social psychology, American style, grafted on a natural science methodology), so that theatre is now something to be studied rather than something to be performed (for instance: Utrecht train station as a socio-cultural "theatre"). But after his downfall, the theatrical dimension resurges, notably in the form of a fictitious collaborative theatre project, which apparently faltered, but which nonetheless resulted in an epistolary dialogue with co-author A.H.J. Dautzenberg, in whose work the dividing line between fact and fiction is consciously obfuscated. The extent to which the events reported in Dautzenberg's stories are fabricated or really happened (for instance: his decision to become a voluntary, Samaritan kidney donor) remains unclear, notably because of various contradictory statements about these events made by the author himself. Their joint publication bears the title *The Fiction Factory* (Stapel and Dautzenberg 2014). For Stapel, this project exemplifies a relapse into the theatrical absurdism of his youth. It is a conversion into what Sloterdijk (1983) refers to as the ancient strategy of cynicism.

Dautzenberg is an absurdist[21] author who made his debut with a collection of short stories entitled *Vogels met zwarte poten kun je niet vreten* ("you cannot stuff yourself with black-legged birds"). In 2011 he published a prize-winning book called *Samaritan*, about his decision to volunteer as a kidney donor,[22] but subsequently he published a short story in which he claimed that the story about his donorship was actually fictitious. In short, the confusing fluidity of the dividing line between fact and fiction is a key motif in his writing, and the author seems to be conducting experiments by making confessions which are later revoked. *Samaritan* is Dautzenberg's counterpart of *Derailment*, apparently a truthful autobiographical account which may nonetheless be fabricated and which functions as an experimental window into the socio-cultural theatre of the transplantation industry. Stories which may or may not be true are used as literary mousetraps to capture the latent convictions (prejudices, etc.) of the author's readership.

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[20] See for instance his website where he, albeit in a slightly ironical tone of voice, advertises himself as advisor on things like organisational change and dilemma analysis, or even as a kind of taxi driver with whom clients may discuss their existential problems, a chauffeur who is at the same time a kind of existential therapist [http://diederikstapel.com/ consulted December 2016].

[21] https://nl.wikipedia.org/wiki/Anton_Dautzenberg [consulted December 2016].

[22] The kidney (present/absent, life-saving/intractable, foreign/intimate etc.) is the "object *a*" of transplantation medicine (Zwart 2014b).

In their unruly stream of letters to each other, the authors are bent on "celebrating" absurdism, and they explicitly opt for "derangement", "nihilism" and "provocation" in their textual materials. Initially, the idea is to create a theatre production and their intention is to appear naked on stage, as swaggering show-offs (much like the provocative Cynics of the ancient school). And indeed, their epistles contain ample body talk, especially focussing on asses and dicks. Science as such is criticised because it has grown into a secular religion, a questionable effort to overcome chaos, absurdity and human deficits.[23] Indeed, science and religion are both regarded as "fiction factories". According to the authors, the ivory tower of academic research has refashioned itself into a publication industry. In short, they raise a voice of protest against highly respected institutions (S_1) in order to demolish self-serving illusions.

Although the literary quality of the work (basically a collection of free-floating, epistolary confessions of two slightly overweight males experiencing a mid-life crisis) may be questionable (I myself experienced the book as rather mediocre compared to *Derailment* and *Samaritan*), it is nonetheless an interesting document, precisely as a prototypical exemplification of what Lacan refers to as the hysteric's discourse. For *The Fiction Factory* does contain some intriguing passages. At a certain point, for instance, Stapel discusses the question whether the "why?" of his fraud can be satisfactory explained on the basis of experimental psychology. From a psychological point of view, Stapel seems a perfectly normal person. Should a CT- or MRI-scan be made, nothing unusual about his brain would be detected (no object *a*, no x effect would suddenly light up on the screen). There will be no green stain or button somewhere in his brain where normal people have a red button. As a dyed-in-the-wool professional psychologist, he had filled in countless questionnaires in the course of his academic existence, had been tested multiple times, but nothing unusual or remarkable had ever been found. Stapel simply seems to be a perfectly normal person. Stapel's problem was of an existential nature: he could not cope with the idea of chaos and disorder. He really believed in science and his oeuvre is marked by a persistent fidelity to a truth event (Badiou 1988), namely September 11 1956, the birth of the social psychological paradigm, commemorated on the opening page of his inaugural lecture (2011). Because of this persistent fidelity to the quest for the object *a* (lower-left position) he could not accept that theory now clashes with reality. And therefore, in order to escape the unbearable tension between knowledge (the mass production of social psychological papers) and (dwindling) truth, he reverts into absurdist literature and theatre. He now looks back on his scientific career as a rationalistic intermezzo (university discourse as interregnum).

Another interesting section, psychoanalytically speaking, is Stapel's and Dautzenberg's discussion of Pinocchio. For Stapel, Pinocchio, the wooden doll produced from left-overs, is a reality born from desire (p. 57). His key feature is his nose, which becomes hard and suddenly grows into embarrassing proportions whenever he tells a lie, whenever he claims something to be present which is not, so

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[23] Cf. "Human existence is a perpetuum mobile of distressing lack" (Stapel 2016, p. 12).

that his nose is actually a kind of phallic lie detector or tangible conscience (p. 58).[24] From a Lacanian perspective it is interesting that Geppetto needed the piece of wood because one of the legs of the table was too short. A piece of wood that should be there was missing, there was a gap, and a replacement was therefore needed. But as soon as he strikes the piece of wood, so as to mould it into shape and to fabricate the missing piece (to make his furniture more robust), he suddenly hears a voice and discerns a gaze. The missing, intractable piece is the "object *a*" of wood carving, comparable to the "factor x" of social psychology, which was absent in reality, so that Stapel "fabricated" the missing piece so as to fill the disconcerting gap, so as to maintain his fidelity to his truth event. But instead of fitting smoothly into the picture, the object *a* proves a fairly recalcitrant entity, taking on a life of its own, speaking out against its fabricator, − precisely as in the case of Stapel.

That there is a connection with *Derailment* is emphasised by a quote from Albee in the beginning of the book, about the fictitious son, "fabricated" by George and Martha to cover up the painful domestic gap. But there is also a connection with Stapel's most recent novel *Zuchten* ("sighing") which contains a scene about a speaking, ventriloquist puppet. The narrator tries to deny the puppet's existence, tries to tape the puppet's mouth, but it keeps coming back to him shouting "It is all rubbish! Everything is meaningless!" By focussing on this puppet, however, Stapel's (externalised and reified) object *a* comes into view, which is actively addressing the divided subject, as recipient (*$* now in the upper-right position), exposing him to an inconvenient truth. But this means that we have already entered another mode of discourse, involving another clockwise quarter turn, taking us from the discourse of the hysteric into the discourse of the analyst.

11.8   Writing as a Practice of the Self: The Discourse of the Analyst

While university discourse gives the floor to the qualified, replaceable subject (the academic expert in the upper-left position), in the discourse of the analyst the qualified person (S_2) is literally called into question, by someone who is "qualified", but not in the usual (university discourse kind of) way (Lacan 1966, p. 794). Psychoanalysis is not a science, but rather a practice in which the *subjects of science* are questioned, not as carriers of knowledge (S_2), but as craving and deflecting subjects (*$*). In comparison to the discourse of the hysteric, however, rather than simply allowing the craving/deflecting subject to take the floor so as to challenge and provoke the establishment (as happens in *The Fiction Factory* for instance), the craving subjects are *questioned*, and the question basically is: what is their desire, what is the object *a* (the object of desire) that is driving, haunting and addressing them, what is it that they *want*? The dynamical interaction between *a* and *$* (rather than

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[24] Dautzenberg's analysis focusses on the Walt Disney movie version rather than on the original story which, as Dautzenberg demonstrates, is full of subliminal Freudian symbolism.

between *$* and S$_1$) is now given the floor (occupying the upper-left and upper-right positions above the bar). The discourse of the hysteric had barred the subjects from assessing their desire. This relationship between subject (*$*) and object (*a*) is captured by Lacan's matheme of desire (*$* ◊ *a*) where the lozenge (an arrow pointing in both directions) indicates that the subject is not only focussed on (or even obsessed by) the object *a* (zooming in on it as it were), but is at the same time actively *drawn towards* this toxic and intoxicating target. As if the deflecting subject is actively addressed by the object *a* (as blinking figures on a computer screen for instance), so that this enigmatic object actually occupies the (upper-left) position of the agent:

$$\frac{a \quad | \quad \$}{S_2 \quad | \quad S_1}$$

The object *a* takes the initiative and *draws* the recipient, the craving subject into action. Pinocchio (object *a*) deflects the life of Geppetto (*$*), for instance, while the seductive nature of the "effect x" deflected Stapel from his initial course. Psychoanalysis aims to reconstruct this dynamics by following the *Fallgeschichte* with evenly-poised attention. The psychoanalytic reader is not interested in social psychology (for instance: in prejudice studies) as such, but rather in the question: what exactly is it that is drawing/deflecting the tormented subject into this apparently desperate trajectory.[25]

What is the difference between experimental social science (the field for which Stapel qualified until he *disqualified* himself) and psychoanalysis? In his inaugural lecture, Diederik A. Stapel (2001) defined social psychology as "the science of everyday life", combining specificity with precision, a title which is reminiscent of one of Freud's publications, namely *The Psychopathology of Everyday Life* (*Zur Psychopathologie des Alltagslebens* 1904/1941). In this book, Freud aims to demonstrate how minor, everyday instances of malfunctioning (forgetting names, memories or foreign words, slips of the tongue, reading errors, etc.) are symptomatic of unconscious complexes and inhibitions. Quite a few examples used by Freud involve ethnic prejudices and anti-Semitism, and this is comparable to social psychology as we have seen. For the prototypical social psychologist, the Mr. Hyde of European Caucasians is an anti-Semite (especially the ones who do not know this about themselves). According to Freud, psychologists such as Wilhelm Wundt cannot really explain *specific instances* of forgetfulness or mistakes. His laboratory knowledge fails to elucidate concrete examples taken from everyday life. In the case of psychoanalysis, however, whenever a specific mistake occurs, a dialogue will evolve, building on free associations, which is expected to disclose the inconvenient, obfuscated factor. Whereas social psychology aims at discovering general mechanisms,

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[25] "Desperado, why don't you come to your senses?", to quote a well-known piece of *Eagles* lyrics ("These things that are pleasing you will hurt you… you only want the things that you can't get…", etc.).

psychoanalysis focusses on the subject, who is haunted by idiosyncratic existential challenges.

In his inaugural lecture Stapel tries to move away from social psychology as a field of research focussed on general (generalisable) mechanisms (inaugurated by first-generation social psychologists on September 11, 1956, his truth event) and to establish a kind of neo-paradigm (social psychology 2.0), guided by what he refers to as the specificity principle. According to this principle, our responses are often triggered by highly unique and transient aspects of the situation. The question is how to conduct social psychological research (whose generalisations no longer seem to work) in such a way that it becomes sensitive to seemingly trivial, situational details? Stapel feels increasingly inhibited by the traditional social psychology paradigm (the legacy of the founding fathers). He is a qualified social psychologist who increasingly experiences the limitations of his own paradigm. But the question is whether social psychology will ever be able to achieve the level of microscopic specificity Stapel is after (which only seems to be realised in works of fiction, as well as in psychoanalytical case studies).

In his inaugural lecture, which basically strives to unleash a re-inauguration and revitalisation of his field, Stapel recalls the birth scene of cognitive social psychology in detail. It all happened during a (now famous) conference at MIT in Boston, where a series of seminal papers was presented, on – September 11 [sic] 1956: exactly 45 years before. Time seems right to call for a new paradigm shift, no longer focussed on the general principles of behaviour, but rather guided by the *specificity principle*. Why did Stapel's paradigm shift fail? Should he have deflected to psychoanalysis to make it work?

After his downfall, in the post-traumatic part of his oeuvre, the opening to psychoanalysis is finally made in the sense that he develops a therapeutic writing practice, meant as self-analysis and resulting first of all in *Derailment* as a *Fallgeschichte*. Stapel's dramatic exposure proves a liberating experience in the end, releasing him from his epistemological imprisonment within the confines of the classical paradigm. Unlike the report by the three committees discussed above, a psychoanalytic reading is not bent on detecting misconduct with the help of statistical devices. Rather, Stapel's case study challenges us to come to terms with the (potential) "fraudster within us all", as Crocker (2011, p. 151) phrases it.

The dialectical movement in *Derailment* can be represented as follows. Initially (first moment, M_1) Stapel is interested in theatre and literature, in fiction, which at a certain point leads to a painful, but nonetheless decisive experience: I am *not* an actor, not *really*, because it will never evolve into a monomaniacal vocation, which should be the case if an actor wants to become successful, rather than mediocre. Therefore, he decides to shift his perspective and to *study* communication and interaction, rather than enacting it in a hands-on manner. Rather than *practicing* film, literature or theatre, he becomes interested in film and theatre *studies*, in media studies, as an instance of university *discourse*. This negation of Stapel's original vocation (M_2) guides him into social psychology, the socio-pathology of everyday life. And yes, as is reflected both in his Jaspers Lecture (Stapel 2000) and in his Inaugural Lecture (Stapel 2001), this exposes him to an important, albeit frustrating

and eventually derailing experience, namely that social psychology (as an established paradigm) is unable to reach the level of specificity needed to comprehend everyday existence the way novels, plays and movies do. The contradiction resurges between the *specificity* of fiction and the *generality* of academic research (M_2).

In order to reconcile the two, established social psychology must be *sublated* (in the Hegelian sense of the term *Aufheben*) by combining the experimental method with the "specificity principle", so that social psychology becomes sensitive to the complexities, nuances and idiosyncrasies of everyday life. It would also entail a reconciliation of social psychology with the genres of the imagination practiced by Stapel during the pre-academic stage of his career. In other words the specificity principles aims to achieve a *negation of the negation*, a convergence of the quest for general cognitive mechanism (social psychology) with a radical openness to the transient theatre of everyday existence, bringing social psychology on a higher level of complexity (M_3). But unfortunately, this third moment proves unreachable ($M_2 \rightarrow | M_3$) so that his project of transforming (sublating) the paradigm falters.

The reconciliation of social psychological theory and everyday phenomena proves unattainable. More precisely, Stapel is unable to overcome the tension between reality as a *littered*, messy, disorderly environment and the mapping techniques of social psychology. He keeps looking for the causal factor x which allows us to address a problem by pushing a button, but this presupposes that the world is as makeable and modifiable as the behaviour of test animals in research facilities. While aiming to develop a level of specificity comparable to novelists or playwrights, Stapel continues to turn research subjects into lab rats in a labyrinth. But the human world proves too recalcitrant and transient to be captured in Stapel's mousetraps. This leads to discontent and stagnation (*$*). The publication factory falters. This crisis precedes his misconduct. Fabrication and falsification are desperate efforts of a craving subject to remain faithful to the logic of the established paradigm, so that the infringement could be seen as a desperate act of fidelity, committed in response to the fact that the social psychological *fact-fabricating factory* as such is faltering. But social psychology fails to realise a cleansing of reality, so that it is ironical that the normative trinity eventually calls for a "cleansing operation" to clean up the Stapelgate mess.

Could journal articles such as Stapel's *Science* paper (a fingered, fabricated story) be regarded as a piece of fiction, a Zola-like, literary experiment? This interpretation is negated by the decidedly *dichotomous* or even stereotypical style of thinking of Stapel's paper (*clean* versus *littered* environments, *prejudiced* versus *non-prejudiced* subjects, etc.), while novelists and playwrights tend to depict a greyer and more ambiguous ambiance. The stereotyping inherent in social psychology itself is a mental cleaning device for cleaning up the messy chaos of reality.

Stapel becomes a novelist only in his subsequent, post-traumatic effort to overcome the crisis, namely via writing *Derailment* as a "therapeutic" practice of the Self, an auto-pathography which at least partly allows him to overcome his διεσχίσθημεν (Aristophanes), his *Spaltung* (as discussed in Chaps. 2 and 8), while being sufficiently "specific" to acknowledge reality's messiness. It is an act of apostasy, mirroring or counteracting Kouwer's classic, for whereas Kouwer's publication

exemplified the paradigm shift from "personism" to "situationism" (the Dutch version of the 1956 inaugural event), Stapel now moves from a situationist study of general mechanism back to a highly personal account whose singularity, concreteness and specificity is on a par with novels and movies. It is the true story of a fabrication. Thus, *Derailment* represents a shift from the imperative of knowledge production to a quest for truth. Rather than trying to "make the world more beautiful and predictable", *Derailment* concurs with Rainer Werner Fassbinder's final play, a severely criticised masterpiece which thematises the world primarily in terms of *garbage* (1975/1998; Stapel and Dautzenberg 2014, p. 185). The collision between the rational desire for order and the artistic acknowledgment of garbage is sutured via a "therapeutic" writing practice.

In *Sighing*, Stapel articulates an idiosyncratic experience, namely the sense that something (a particular organ?) has been removed from his body, that some intimate piece is suddenly missing, a partial object, psychoanalytically speaking, so that what is left is basically packaging. But the absent partial object suddenly resurges in an externalised form, namely as a ventriloquist puppet. Where Dautzenberg voluntarily donates a kidney, in Stapel's case the extimate thing or object (both intimate and foreign, both familiar and intimidating, both me and not-me: Zwart 2017a) seems to have escaped from his scarred body spontaneously, acquiring a voice of its own. And the moment the duct-tape (that temporarily silenced the puppet) is removed, it ventriloquizes the absurdist credo ("I believe in and celebrate the ultimate absurdity of everything"). Stapel tries living on neuro-pharmaceuticals, as if the brain can be chemically modulated like a machine. But because the happiness-pill inevitably disappoints him, he commences his daily writing practice.

Both in *Derailment* and in *Sighing*, Stapel continues to refer to social psychological theories, but in a Bachtinian, heteroglossia-like context, because the *Fallgeschichte* stages collisions between multiple forms of discourse. Social psychology no longer represents a hegemonic position, translating the theatre of everyday life into its dichotomous schemes, like a mechanical word processor. *Derailment* is "a novel" about a person who at a certain point decides to opt for academia rather than theatre (Stapel and Dautzenberg 2014, p. 130) and who, like Musil, sees humans as "beings without qualities", controlled by external incentives and moulded by their social environment. But his absurdist nihilism resurges when he fails to discover the beauty and order he is looking for (p. 132) and which allows him to produce fashionable academic papers; and therefore he derails. This denouement concurs with the dream scene where Stapel removes the mask of his social psychology persona. It was Kouwer, of course, who already argued that "life is a masquerade" (1963, p. 378). Contrary to what Jakob Böhme envisioned, this "tragic unmasking" does not expose the "valuable jewel" within (the intractable object *a* of personality theory), but rather empty nothingness. The mask was covering up a gap, a trough, a deficit (p. 379). In *Derailment*, social psychological expertise is suspended (S_2 in the lower-left position), so that the focus shifts to the object *a* of social psychological research (*a* in the upper-left position), the missing entity "x", frustrating the tormented subject ($ in the upper-right position). This results in the awareness

that there is no core Self and that the subject, as Lacan already argued (Chap. 2) is structured like a Möbius ring.

Stapel's misdemeanour concurs with the problem of the plagiarist as described by Kris: ironically, only *fabricated* data are publishable or worth publishing, meaningful, *significant*. This is the *negation* of social psychology as the *negation* of absurdism (the negation of the negation) which allows Stapel to develop a more sincere and revelatory style of writing, oriented towards ἀλήθεια rather than *adequatio*.

In his most recent book, Stapel (now using the signature "d.") compares two types of discourse on cinema, namely the scholarly writings of David Bordwell (representing contemporary university discourse in film studies) and those of his flamboyant antagonist Slavoj Žižek (wavering between the discourse of the analyst and the discourse of the hysteric). These types of discourse represent a "parallax" (p. 313), Stapel argues (borrowing the term from Žižek), for both open up important perspectives, although both perspectives remain impossible to converge into a comprehensive, overarching view. The pre-traumatic and post-traumatic parts of Stapel's oeuvre likewise represent reverse sides of a Moebius ring. From his position as a social psychologist, Stapel spiralled back into a more literary form of authorship, and the cover of his latest book announces that he is currently working on "three plays".

Chapter 12
Concluding Remarks

12.1 University Discourse, the Research Parallax and the Moebius Ring

The aim of continental philosophy, as Hegel phrased it, is to develop a diagnostics of the present. This monograph adheres to this vocation by regarding research misconduct as a symptom, reflecting current changes in the ways in which knowledge is produced and evaluated. From a continental philosophy of science perspective, scientific research is a profoundly socio-cultural phenomenon, a transformative practice pervading society while at the same time being affected by social dynamics. Our overall starting point has been Lacan's formula describing university discourse:

$$\frac{S_2 \text{ (expert knowledge)}}{S_1 \text{ (the imperatives of the dethroned Master)}} \quad \frac{a \text{ (the recalcitrant object)}}{\$ \text{ (epistemic despair)}}$$

This formula reflects a topology, as we have seen. The basic objective of laboratories (in the natural sciences) or libraries (in the humanities) is to create compartmentalised podiums (above the bar) where knowledge can be quietly produced, while the noise and turbulence of the outdoors world is kept at bay. This divide between inside and outside is represented by the horizontal line. The researcher (S_2) is supposedly objective and impassive, neither influenced by ideological creeds (S_1), nor by perennial metaphysical collisions ($S_1 \leftrightarrow S_1$), nor by subjectivity (i.e. prejudices, emotions or conflicts of interest: $\$$). Such intrusions and disturbances are kept beneath the bar, so that researchers may quietly interact with their objects of research (molecules, model organisms, survey data, historical documents, archaeological finds, etc.).

But this topology of compartmentalisation may become destabilised, by the recalcitrance of the object (a), or by the intrusion of the real (the recurrence of something that had been overlooked), or by clashing convictions (philosophemes)

at work beneath the bar (S_1), guiding and fuelling the research. A genomics researcher, for instance, may be convinced that human beings *are* their genome. A brain researcher may be convinced that human beings *are* their brain. And a social psychologist may be convinced that human beings *are* individuals without inherent qualities, whose behavioural repertoires are conditioned by past experiences and moulded by actual situations. While putting this basic conviction (reflecting a worldview: M_1) to the test, the researchers involved will be confronted with the frustrating yet decisive experience (M_2) that their initial convictions are biased and one-sided. The object (allegedly in control) refuses to live up to the expectations, so that the worldview is shattered by the real and scientists are challenged to address and sublate this negativity by developing a more comprehensive view ($\rightarrow M_3$).

From a Lacanian perspective, however, scientific research will never be able to completely overcome the parallax between the research as actually conducted (the context of discovery) and the research as reported (the context of justification): the two reverse sides of the Moebius ring of scientific research. Science is both a practice and a discourse, so that scientists are both practitioners and authors, but there is a chronic tension between both roles. Whereas normal philosophy of science tends to focus on the scientist-as-a-practitioner (for instance by concentrating on the empirical cycle or the experimental method), research misconduct shifts the focus of attention to the researcher-as-an-author (Zwart 2001). Research misconduct typically emerges in the gap between research as conducted and research as reported. The parallax between these two roles (researcher and author) may give rise to epistemic despair: the experience that paradigms refuse to function ($\$$), or even that scientific research as such proves an impossible profession, so that researchers slide into deflection ($S_2 \rightarrow \$$), or relapse into fundamental discussions about the viability of the philosophemes that are guiding the research (S_1), so that the program falters. At this point, misconduct may become an option (to maintain the apparent functionality and performativity of the paradigm involved). But the researchers involved may also find ways to work-through these experiences of frustration and despair, opting for the path towards self-knowledge and individuation (self-analysis).

The researchers depicted in the science novels discussed in this monograph can all be positioned along this continuum stretching from the fraud pole up to the reparation pole. Martin Arrowsmith for instance proved unable to reconcile the imperatives of research methodology with the normative restrictions of applied research and, instead of working through these conflicts, opted for a strategy of retreat into the beautiful soul position. Donald Howard (*The Affair*) was not interested in rehabilitating himself as a scientist (sticking to his role of uncommitted researcher who had merely tried to play the game) and settled for legal and procedural expiation. In *Cantor's dilemma*, while Jerry learns from his experiences, Cantor allows his intentionality to shift from discovering the missing link (the object *a* of cancer biology) to playing the game of publication politics, to secure his Nobel Prize. In *Perlmann's silence* plagiarism is an act of despair, provoked by self-exploitation, which resulted in the loss of a former prolific Self (now lost on the reverse side of the Moebius ring). In *Intuition*, Cliff is able to recover from his epistemic trauma and to restore his tainted integrity, seeing his experiences as part of an individuation process, a

bildungsroman. In *Solar*, plagiarism is a desperate but abortive attempt to conflate the growing divide between real science (quantum physics) and managerial activities (again experienced as reverse sides of a Moebius ring). And *Derailment* is likewise structured as a (roller coaster-like) Moebius strip, taking the subject from absurdist theatre to university discourse, to despair, deflection and fraud, and via cynicism (the discourse of the hysteric) up to self-analysis (the discourse of the analyst).

But these analyses not only result in an inventory of possible scenarios, but also in a further elaboration of the oblique methodology for studying them, presented in Chaps. 1 and 2. In other words, these analyses in terms of the four discourses also have repercussions for philosophy of science itself as an intellectual practice. Philosophy is not regarded as a purely theoretical or apodictic type of discourse, where an autocratic Master (M_1) addresses his disciples (S_2: the custodians of his truth claims), in accordance with the logic of the discourse of the Master. Rather, philosophy analyses the other discourses, most notably university discourse, from an oblique perspective, focussing on the interactions between researchers and their objects (above the bar), but also on the philosophemes: the basic truth claims (below the bar) which guide or hamper the research, often without being explicitly addressed (S_1). The various experiences of frustration may at times result in deflection: research misconduct as a by-product of an "impossible" profession ($).

In other words, misconduct is a fascinating phenomenon (from a continental philosophy of science perspective) because it provides a window into the vicissitudes and challenges of contemporary scientific research. In standard integrity discourse, research misconduct is often addressed from a *university discourse* perspective, by qualified experts specialised in analysing misconduct issues from ethical or legal, economical or governance angles. But this type of discourse is often repetitive and moralistic as we have seen, bent on blaming the individual researcher, or on calculating the costs of misconduct, or on formulating and imposing guidelines and deontological rules. This monograph approaches the problem from a different viewpoint, revolving around the *why* question. To formulate it in terms of the case study discussed in Chap. 11: in order to come to terms with research misconduct, Stapel's introspective self-analysis *Derailment* is more revealing than the formal report published by the triumvirate Levelt, Noort and Drenth. Rather than scrutinising his whole oeuvre ("the whole of a fraudster's body of scientific work"), as the authors of *Flawed science* claim to do (p. 5), the triumvirate focusses exclusively on the upper half of Stapel's university discourse: on the events occurring above the bar: the tinkering of the researcher (S_2) with his precious but disappointing findings (a):

S_2 (the tinkering researcher)	a (tweaked or fabricated data)
S_1 (methodological imperatives versus absurdism)	$ (epistemic despair)

Thus, the triumvirate focusses on the texts emerging on the top side of the Moebius strip, analysing them in a quantitative manner. Specialised expertise is

called in, notably statistical support: "the Committees' work was supported by teams of statisticians" (*Flawed Science*, p. 9), functioning as the triumvirate's "servants" (S$_2$). Like Hackett and Schneiderman in *Intuition* (discussed in Chap. 9), these experts employ forensic methods to "reverse engineer" their way backwards from journal article to data, in order to unravel the fraudster's "pattern of deception". But this means that they only asses half of the story, eclipsing the other half. The narrative of Stapel's misconduct is sliced in two (like Aristophanes' egg), and the exclusive focus on the manifest half (above the bar) works as an immunisation strategy, a frantic effort to keep the disconcerting other half (the epistemic despair, the struggle with absurdism, etc.) at a safe distance. I would therefore recommend *Derailment* as mandatory reading for anyone interested in the topic, so that his N = 1 retrospect, together with the triumvirate documents, present contrasting and conflicting views: reverse sides of the Moebius ring. The one serves to highlight the blind spots and deficits of the other. A psychoanalytic approach gives the floor to the first-person perspective, albeit exposing it to and confronting it with contrasting interpretations, thus staging a dramatic dialogue. Stapelgate, notably the documents by Stapel and by the triumvirate (published simultaneously more or less) represent reverse sides of a Moebius ring: a convoluting surface covered with text. The objective of this study is not to produce a consensus statement on the basis of such documents, nor an assessment in the sense that the one is sincere and the other misguided. Rather, it is possible to enter both types of discourse (both sides of the Moebius surface). It would be inadequate to read the one, but refuse to read the other. By solely consulting the triumvirate document (S$_1$) we would miss the element of epistemic despair and absurdism articulated by Stapel (already in his pre-traumatic oeuvre) and by solely reading *Derailment* we run the risk of sliding into the discourse of the hysteric ($) instead of developing an oblique perspective on the *cupido sciendi*, the will to know at work beneath the bar.

12.2   Generation, Gender and Ethnicity

This monograph develops an oblique perspective on research misconduct which foregrounds a number of dimensions that may easily become eclipsed if treated in a top-down, managerial manner. But how does it contribute to our understanding of those aspects which (in normal integrity discourse) are often listed under headings such as "demographics" or "diversity", in other words: aspects such as generation (age), gender and ethnicity?

On the basis of our case studies we may conclude that generational conflicts indeed constitute a key dimension of the integrity landscape. Most if not all research misconduct novels consulted in this monograph stage a struggle between representatives of different generations, notably between mid-life and early stage researchers. Initially, the more senior researchers tend to pose as custodians of normativity and deontology (Gottlieb versus Martin, Cantor versus Jerry, Mendelsohn versus Cliff, the triumvirate versus Stapel, etc.) rebuking younger researchers for their lack

of impassivity, their sloppy methods, their lack of precision, and so on. Yet, in the course of the story, the moral profile of these antagonists, representing different generations, begins to blur. Behind the conscientious persona of the mid-life researcher (or even: *éminent grise*), a lust for power and control, for expropriation and exploitation becomes discernible, at the expense of the younger (dependent) colleague who, in response to these experiences, may enter a process of personal growth. Eventually, Gottlieb proves an unsettling fanatic of scientific truth (to which everything else is sacrificed). Cantor (the senior researcher) is introduced as an exemplary scientist, but while he demands unconditional commitment and complete impassivity from his post-doc, he himself is living a secret second life and allows himself to fall victim to the matheme of desire (his obsession with winning the Nobel Prize).

As to the gender dimension: in all the novels I consulted the perpetrators (or, in grey novels such as *Intuition*, the persons suspected of research misconduct) are consistently male. This reflects criminology in general, where statistics consistently report men to be more prone to commit crimes and misdemeanours than women. It is also consistent with the findings of Fang et al. (2013) who established, in their analysis of almost 20 years of cases of scientific misconduct reported by the U.S. *Office of Research Integrity* (ORI), that 65% offenders were male, while of the 72 faculty members who committed misconduct, 88% were male (cf. Kaatz et al. 2013). In terms of our novels: *Arrowsmith*, the Oppenheimer case and *The Affair* reflect an epoch when research was still almost exclusively conducted by males. Although women may catalyse events (for instance: Laura Howard's role in the reopening of her husband's case), they are basically cast as companions, providing moral support or witnessing the escalating destabilisation of the scientific subject (for instance: Tanya Bloch's role in witnessing the progressive emaciation and intro-version of her husband). In *Cantor's dilemma*, however, things have clearly changed. Celestine and Paula are active women pursuing successful careers, whose intimidating athleticism, bodily strength and height underscore emancipation (compared to the older novels). Still, female scientists (Celestine as a biologist, but also her super-visor), although likewise working in competitive academic environments, provide a contrasting backdrop or benchmark of adequacy, commitment, collaboration and integrity compared to Cantor's style of working (which becomes increasingly calcu-lated and exploitative), but also compared to Jerry's style of working (his sloppi-ness). In *Intuition*, the female researchers (Initially Robin, but eventually also Marion) are the ones who develop intuitive suspicions vis-à-vis Cliff's research, while they themselves put more weight on maintaining integrity standards than on personal success. Yet, in *Perlmann's Silence*, *Solar* and *Derailment* the focus decid-edly shifts again to male offenders. Thus, although these novels indicate that the contribution of (autonomous, professional and effective) women to scientific research is decidedly increasing, perpetration and deflection are still represented as something typically male. To the extent that women are on the advance in science, however, both quantitatively and qualitatively (occupying increasingly prominent positions), this may affect case histories as well. The recent autobiography by Jennifer Doudna entitled *A Crack in Creation* (Doudna and Sternberg 2017) may

perhaps be mentioned as an example: a personal retrospect on the CRISPR/Cas9 revolution which, besides loads of molecular biology, also contains interesting instances of dream interpretation for instance. This redistribution of roles may come to affect misconduct novels as well.

As to ethnicity, we must realise that it is more important to psychoanalysis than is sometimes acknowledged. Freud's *The psychopathology of everyday life* (Freud 1904/1941), for instance, is at least as much about ethnic prejudice than it is about sex. The title of *The Affair* is a literary signifier which unequivocally refers to ethnic prejudice, and *Derailment* is devoted to a research field (social psychology) which is more or less specialised in exposing prejudice. In the novels consulted, ethnic roles seem fairly predictable or even stereotypical, however, for instance in *Intuition* (the extremely impassive Asian researcher, the risk-taking Arian, the wealthy Jew, etc.). Overall I would argue that the conflict between generations is fleshed out in much more subtle and intricate ways in these novels than the ethnicity dimension.

12.3   From Diagnostics to Therapy

So far I indicated how Lacanian psychoanalysis entails a diagnostics, helping us to understand the *why* of research misconduct, but this still leaves open the question of therapy: what is to be done?

Issues of research misconduct may be addressed in various ways, first of all in a top-down, apodictic fashion, from the perspective of a *Master's discourse*. This option is enacted by Gottlieb in *Arrowsmith*, for instance, where the teacher poses as a master whose apodictic imperatives are internalised in the form of an uncompromising super-ego. But when Martin tries to effectively apply these inflexible imperatives to genuine dilemmas (emerging both inside and outside laboratory life), they prove impossible to realise in practice and even result in catastrophic instances of sacrifice and self-sacrifice. Martin is not only forced to sacrifice his priority (his claim to fame) in order to live up to the stern methodological requirements imposed on him by his super-ego, but these same requirements also force him to sacrifice scores of research animals, while the violent and impossible nature of these imperatives becomes even more manifest when conducting his trials involving illiterate human subjects.

Dialectically speaking, this could have led to an important experience, namely that the initial apodictic requirements (Gottlieb's fanaticism) were abstract and one-sided. Martin's experiences in the real world outside the laboratory might have resulted in an acknowledgement of normative complexity. That is, he could have elaborated his experiences, thereby contributing to the process of reconciling methodological requirements with ethical constraints (an important objective of post-War bioethics discourse). Instead, he retreats into the position of the beautiful soul, as we have seen, forsaking his loyalty to his truth event (his meeting with Gottlieb) altogether. The discourse of the Master thus reverts into the discourse of the hysteric (deflecting form the world of research as such). From a psychoanalytical perspective,

a process of critical self-reflection and working-through would have proved more fruitful and might even have contributed to an endeavour which became important notably during post-War decades: the bioethical challenge of aligning methodological requirements and bioethical constraints. The novel as such remains a valuable resource, but in a negative way, by demonstrating why this alignment is important and what can go wrong if the tension is ignored (*via negativa*).

The reconciliation of methodological requirements with ethical constraints became an important objective of bioethical discourse as a specific branch of *university discourse*, staging bioethicists in the role of experts. In their rehabilitation of casuistry, Johnson and Toulmin (1988) fleshed out the genealogy of this type of university discourse. They explain how this quarter turn to the left (from the discourse of the Master into university discourse, so that the qualified ethical expert now takes the floor as agent) entailed a shift from a top-down, deductive ethics (*more geometrico*) to more practical forms of moral deliberation: a shift which corresponded with a historical transition, namely the growing reliance of the absolutist monarchs of early modernity (as prototypical Masters) on qualified moral advisors or consultants (as their Servants), notably in the form of court confessors. Especially Jesuits acted as court confessors, as qualified professionals, and this, Johnson and Toulmin explain, resulted in an academic genre, an immense discourse, in voluminous tomes of casuistry, devoted to addressing real-world dilemmas.

The paradigm of the integrity expert continues to exist up to this day, however, although the court confessor of old has emancipated into the autonomous expert (S_2 in the upper-left position), teaching ethics courses and publishing assessments in bioethical journals. Integrity issues are analysed by qualified experts who developed tools and know-how to address challenges emerging in actual research, functioning as integrity experts, or engineers even, developing a conceptual toolbox for solving integrity dilemmas. This may include the use of vignettes: short stories or narrative cases which present stock problems that are solvable in principle.

Yet, such exercises may result in a frustrating parallax experience in the sense that, in real life cases, there remains a persistent gap between guidelines or principles or even vignettes on the one hand and practical intricacies on the other, between solution and problem, between ought and is, between written and unwritten laws. And this may lead to anomalies and frustrations as depicted in our novels (*$* as by-product).

In the novels we consulted, however, the figure of the professional integrity expert (S_2), especially the qualified ethicist, is more or less absent, which may be considered remarkable. In *Intuition*, integrity experts are brought in, but they act as forensic experts rather than as bioethicists, as specialised fraud detectives, interested in hunting down perpetrators rather than in addressing integrity challenges (their role is quite comparable to, for instance, Gospodin Gregg in Chap. 4). In *The Affair*, two legal experts are brought in, but they focus on procedural issues, on defending the rights of their clients, rather than on exploring how issues of research misconduct are to be addressed or prevented. And in Chap. 11, the triumvirate members (Levelt, Noort and Drenth) were neither ethical nor legal experts as we have seen, but rather *éminences grises*: eminent academics, father figures (S_1), who there-

fore represent the discourse of the Master. Indeed, Schuyt (2014) explicitly berates their lack of (notably legal) expertise.

A third option is the discourse of the hysteric, criticising the perversity of the system *as such*. From a psychoanalytical perspective, even the (apparently negative) figure of cynics/hysterics may play a positive role, revealing gaps in established discourse, highlighting blind spots or deliberative routines which rightfully invoke objections, because something of importance has been forgotten or eclipsed, something of value which now has become impossible to articulate (Zwart 2016b). Yet, although the discourse of the hysteric may be effective in the sense that others are pressed into action, it often represents a temporary and unsustainable option, resulting in a deadlock, in self-marginalisation.

Ultimately, a Lacanian analysis endorses the discourse of the analyst, taking the floor when others (S_1, S_2, $\$$) have already spoken, revealing the extent to which these others *are* spoken and driven by desire, by a truth unknown to themselves (Verhaeghe 2001). The analyst is basically a rhetorician, an expert in the dynamics and modes of discourse (Lundberg 2012; Lacan 1977–1978, p. 4). In the case of university discourse, the analyst focusses on symptoms of professional uncertainty, ambivalence and unease, camouflaged by the expert's apparent fluency and subtlety. And whereas the use of vignettes (as part of the tool-box of university discourse) often entails the suggestion that it is possible to bridge the gap between problem and solution, the discourse of the analyst will focus precisely on these gaps, because it is precisely here that the *real* challenges are likely emerge ("mind the gap": Verhaeghe 2001).

Moreover, the discourse of the analyst is closely connected with education, with the "formation of the scientific mind", as Bachelard once phrased it, although now the focus has shifted from epistemology as such (the methodologies and technologies of knowledge production) to academic authorship as a practice of the Self, fostering individuation. The oblique perspective challenges the science – humanities divide ($M_2 \rightarrow M_3$). Instead of vignettes (short, formulaic stories), the discourse of the analyst prefers to work with extended case histories, in the form of science biographies and autobiographies for instance, or in the form of science theatre, science cinema and science novels:

$$\frac{a}{S_2} \quad \bigg| \quad \frac{\$}{S_1}$$

Above the bar (on the manifest level) the discourse of the analyst first of all addresses issues of object choice (*a* in the upper-left position). Why do researchers focus on and respond to this particular object of research? As a rule, object choice is a matter of "displacement" (*Verschiebung*). Instead of on the object of desire as such, researchers focus on "something else", something which seems more neutral, but which is nonetheless somehow connected with the object *a* (the object of desire) which may suddenly reveal itself, coming into view as an alluring substitute. In *Carmen*, the archaeologist initially focusses his *cupido sciendi* on archaeological

remains, until he becomes intrigued by something intrusive, emerging in the contemporary world. In *Gradiva*, − a novel about an archaeologist analysed by Freud (1907) –, the focus likewise shifts from an ancient replica of a woman's foot to a contemporary female tourist, and in *Carmen* intentionality becomes displaced from battlefield spoils to the voice and gaze of an itinerant Romani fortune teller. In the Hwang case, the focus of attention shifts from stem cells (already a sensitive item) to oocytes procured from Ph.D. researchers (even more sensitive). In the Oppenheimer case, the hydrogen atom is replaced by uranium and (eventually) by the gadget (the atomic bomb). In *Arrowsmith*, we notice a displacement from bacteria to the bacteriophage (as a laboratory artefact) to phage therapy, i.e. phage vaccines, which prove a φαρμακόν (both beneficial and life-threatening for the research subjects involved). In *Cantor's dilemma*, the focus shifts from arginine via cancer cells up to the Nobel Prize. And in *Solar*, the focus shifts from electrons via solar cells up to patents, and so on. Such displacements (suddenly replacing an apparently more neutral object by an object of desire) destabilise the (allegedly impassive) subjects of research, causing them to become divided or even deflecting subjects ($ in the upper-left position). The subjects divert from their original area of research (archaeology in the case of *Carmen*, microbiology in the case of Martin Arrowsmith, quantum physics in the case of Michael Beard, etc.: S_2 in the lower-left position) so that they enter hazardous terrain, resulting in a number of problematic or even traumatic experiences which, from the perspective of the analyst, have to be worked-through.

The by-products of these vicissitudes are normative insights (S_1 in the lower-right position). Here, the science novel becomes a bildungsroman (a signifier which is literally used by Cliff in *Intuition* for instance) so that the challenged subjects deepen their understanding of what research really is. They discover, for instance, that research is not only devoted to producing true (i.e. valid, adequate) knowledge, but that truth (*veritas* in Latin) presupposes *truthfulness*, that *veritas* is intrinsically connected with *veracity*. While the use of vignettes may reflect an engineering approach to ethics, as a sub-branch of university discourse (to every problem there is a solution), the discourse of the analyst rather builds on more extended and multi-layered case material, as we have seen: on full-fledged case histories, in the form of science biographies and autobiographies, but also in the form of science drama, science cinema and science novels. Novels reflect the complexity of the integrity challenges emerging in contemporary research. The term *novel* (*novella*) comes from novelty (*novum* in Latin) and science novels describe the experiences of researchers who are exposed to something unexpected (Idema 2013): an unexpected find, a new contraption (which opens up a new way of doing research), or an unexpected (apparently disastrous) event, an intrusion of the real. In this no man's land (or parallax land), between the human law (of guidelines, procedures, codes of conduct, legal constraints, etc.) and the unwritten law (the voice of conscience), novels allow us to explore and assess plausible scenarios for action.

Thus, science novels, more specifically research misconduct novels, may provide valuable materials for ethics and integrity courses for future researcher in various fields (natural science, social science, humanities, etc.) both inside and out-

side academia. As to the question *how* to read such novels, this monograph presented an oblique technique of reading, building on Hegelian dialectics and Lacanian psychoanalysis, which can be adopted for this purpose.

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