

Chapter 2

Conceptual and Methodological Framework: Lacanian Psychoanalysis

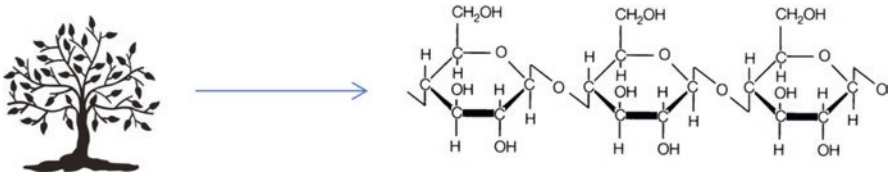
2.1 Lacan on Science, University Discourse and Research Misconduct

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 technicality 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 $\lambda\acute{o}\gamma\omicron\varsigma$ (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 , $\text{C}_6\text{H}_{10}\text{O}_5$, 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).

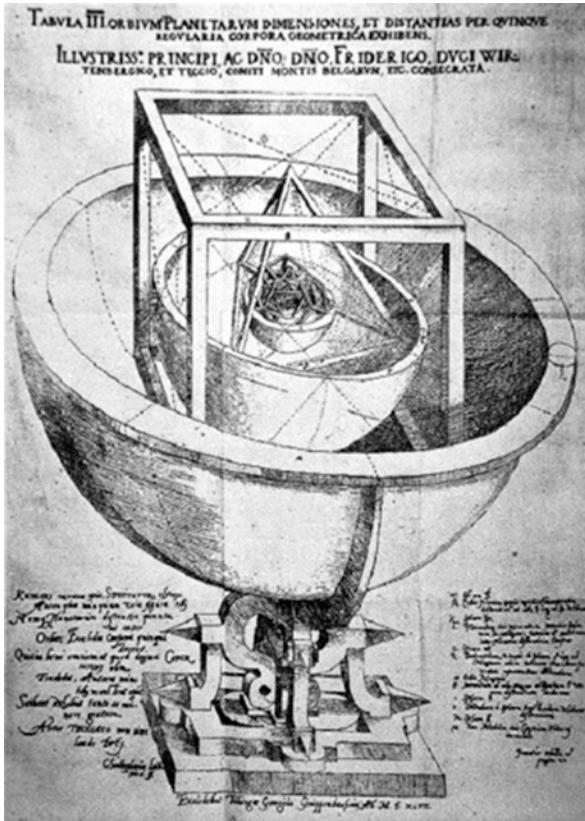
Still, although dialectics urges us to follow Mendel’s negation rather than to persist in Bratranek’s poetic *schöne Seele* approach, the natural entity must nonetheless somehow be retrieved. We must somehow sublimate the negation, the second moment, the negativity of science ($M_2 \rightarrow M_3$). 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

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 misleading. 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

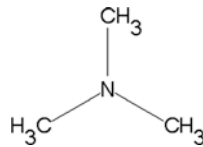
space travellers (locked-in in their capsules) experience time and space? Did they doff their Euclidian intuitions? It would have been highly interesting, Lacan argues, if we had used the opportunity to organise a philosophical conversation, a “phenomenological dialogue” with them about their experiences *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 archetypal 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 *save* 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 (γγαντομαχία) 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.



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 – $\text{N}(\text{CH}_3)_3$ – 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 ($\$ \rightarrow S_2$). Yet, in situations of crisis or chronic malaise, the divided subject may resurge ($S_2 \rightarrow \$$). 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: $\$ \diamond a$. 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 a 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 $\kappa\acute{o}\sigma\mu\omicron\varsigma$ 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.

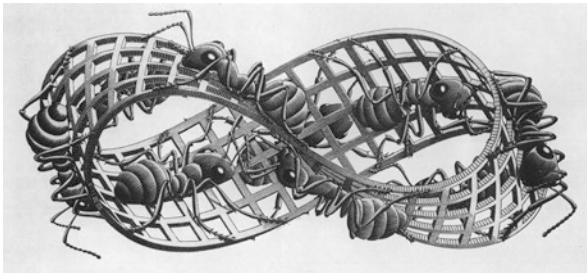
According to Lacan, modern science was inaugurated by Descartes who articulated a new form of subjectivity: the Cartesian cogito, representing an epistemological mutation which resulted in the birth of a new science (Lacan 1966, p. 855), exemplified by classical, Newtonian physics as the new model: a 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 ($\$ \rightarrow S_2$). 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: $-\varphi$). 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: $\$ \diamond a$. In this psychoanalytical equation, the lozenge or *poinçon* (\diamond) points in two directions, indicating not only that the subject is focussed on (or even obsessed with) an inexorable object (which promises to fill 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 $\lambda\acute{o}\gamma\omicron\varsigma$ -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

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 (S_6 , p. 449). The desire to know should be containable ($\$ \rightarrow S_2$). 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: $\$ \diamond a$ (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).

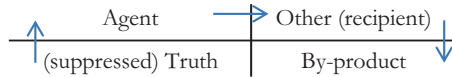
According to Lacan, this ancient desire for harmony was already destabilised by the Christian idea of the fall, but it was even more drastically subverted by modern science, which no longer has the same objective as ancient cosmology, namely: identification with the cosmic whole via contemplation. Modern 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:



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



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 ($\$ \diamond a$).

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 $\lambda\acute{o}\gamma\omicron\varsigma$ -dimension: the basic signifiers, structuring the process:

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

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 meta-physical 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):

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

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 meta-physics 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 top-side 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

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).

(S₂) 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 (S₂). 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 (S₁): a source of frustration but also of pleasure. This situation typically results in books or papers devoted to and revolving around a particular oeuvre (S₁): 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 (S₁): *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 (S₂) is closely related to the development and handling of particular instruments (telescopes, microscopes, galvanometers, spectrosopes, 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 (S₁) will be subverted by the practical know-how of the servants (S₂), so that in the end S₂ will come to occupy (usurp) the