

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 physics² 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

¹In 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).

²Claims 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 paid 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 (*adaequatio*) 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”:

S_2	a
S_1	$\$$

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 post-docs), 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 post-docs 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,

³A 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”:

S ₁	S ₂
\$	a

Beard (the Master) claims the role of agency in the knowledge production process (S₁ 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 exist 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

⁴When 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 process, and on research as a practice of the Self, we have to enter what Lacan refers to as the “discourse of the analyst”:

a	$\$$
S_2	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, he experiences his knowledge deficit, he experiences his *Spaltung* as a craving recipient ($\$$ in the upper-right position), desperately 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 *translator* 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 overcome 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.

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