

Life ...

On biology, biography and bio-power in the age of genetic engineering

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Figure 1: Michelangelo, The Creation of Man. Reproduced by courtesy of the Bridgeman Art Library.

A spectre is haunting western academia ... the spectre of the Cartesian subject. All academic powers have entered into a holy alliance to exorcise this spectre.

Slavoj Žižek

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Introduction

Let me begin to engage with Michelangelo's 'Creation of Man' and Slavoj Žižek's provocative rendition of the famous lines from the 'Manifesto of the Communist Party' by turning to yet another image, the frontispiece in Nicolas Andry's Orthopaedia, or the Art of Preventing and Correcting Deformities in Children (1741).¹

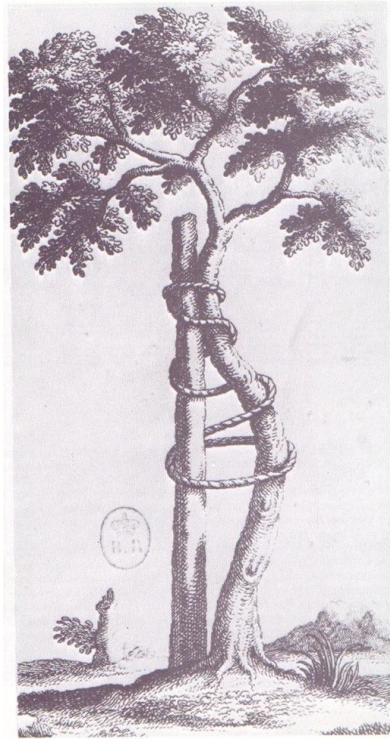


Figure 2: From Nicolas Andry, Orthopaedia, or the Art of Preventing and Correcting Deformities in Children [1741] (London, 1743). Reproduced by courtesy of the British Library.

In this unsettling image, which has proved critically important in my effort to integrate years of work on the history of agricultural and medical genetics, all difference between the straightening of misshapen trees and both the physical and moral education of children, with whom the orthopaedist was once concerned, is erased.²

If this image will seem familiar to some readers, it is because it is also reproduced in Michel Foucault's Discipline and Punish.³ Presumably, Foucault was particularly interested

in the frontispiece to Andry's Orthopaedia because it clearly conveyed how, at some point in the eighteenth century, practices as disparate as orthopaedics and horticulture were increasingly predicated on operative principles that focused on the manipulation of these different life forms' presumed, common material substance.⁴ Moreover, this image begs questions of agency, since it is unclear who exactly bound the tree: No human or divine form is visible anywhere in the background. As such, this image accorded with Foucault's understanding that the operation of these principles was invisible and pervasive.⁵ Of course, Foucault is famous for his discussions of the central role that such principles have increasingly played in the production of modern social and political subjectivity.⁶ Arguably, the decoding of the human genome marks the climax of the historical process Foucault identified.⁷ On the eve of this event, an editorial in the Observer noted with mixed feelings that,

Tomorrow, the first rough draft of the human genetic code will be published — one of the epic achievements of contemporary science. We will know the gene sequences that determine our mental and physical behaviour. We will have the tools that in decades ahead will allow us to understand how much of what we do is predetermined and how much is of our own free will. The moral and social implications are barely discussed ... In the early twentieth century the so-called science of eugenics informed Nazi arguments to justify the Holocaust. Once again we are exposed to the risk that deadly value judgments will be linked to the structure of some gene sequences over others.⁸

Even if the fears evoked by this assessment of the decoding of the human genome may be quite misplaced, there can be little doubt that the contemporary, accelerating identification of political and social being with the contingencies of material substance signals the impending death of the transcendental subject.⁹ Strikingly, however, the official report of the decoding of the human genome, suggests otherwise. While it warns that 'the more we learn about the human genome, the more there is to explore', this otherwise highly technical report immediately seeks to reassure its readers by closing with the following lines from T. S. Eliot's Four Quartets:

We shall not cease from exploration.
And the end of all our exploring
Will be to arrive where we started,
And know the place for the first time.¹⁰

If the first part of these concluding thoughts on the decoding of the human genome speaks to a sense of having embarked upon a search whose end will always be deferred, the closing lines speak of a faith that the end is none the less within reach, and that this end is nothing less than the realisation of the transcendental subject.¹¹

In this essay, I wish to argue that, to understand the relationship between these so profoundly contradictory views on the fate of the subject in the coming age of genetic engineering, we need to examine the common root of the three terms to which the abovementioned visual and verbal fragments speak, namely biology, bio-power and biography.¹² Yet, I do not wish to claim that I am so immune to the contemporary transformation of life and subjectivity that I can provide a positive and coherent account where others are ambivalent, if not contradictory. It seems to me, nevertheless, that Marilyn Frye's thoughts on her own effort to understand the nature of subjectivity offer a productive approach to the reflexive conundrum before me. Frye writes:

The resources for the inquiry are, in the main, drawn from the very scheme whose limits we are already looking beyond in order to conceive the project. This undertaking therefore engages me in a sort of flirtation with meaninglessness – dancing about a region of cognitive gaps and negative semantic spaces, kept aloft only by the rhythm and momentum of my own motion, trying to plumb abysses which are generally agreed not to exist, and to map the tensions which create them. The danger is to fall into incoherence. But conceptual schemes have saving complexities such that their structures and substructures imitate and reflect each other and one can thus locate holes and gaps indirectly which cannot, in the nature of the thing, be directly named.¹³

In other words, I would like this essay to be understood as concerned primarily with performativity and the possibility of an aesthetic understanding of life and subjectivity that is adequate to the political challenges presented by the advent of the age of genetic engineering.¹⁴

On life in the age of genetic engineering

While the human genome might be viewed as the biological repository of human history, the contemporary excitement surrounding its decoding lies more with the prospect of redeeming humanity from its captivity to history, if not from its seemingly inescapable mortality. Thus, a number of geneticists argue today that the length of human life is determined by the logic of 'selfish genes', which seeks to balance the costs of the genes' reproduction and the maintenance of our disposable bodies long enough to ensure such reproduction. Given our current understanding of how genes might be modified, it may then be only a matter of time before we can alter the balance in our favour and live in the eternal present conjured by the geneticist Stephen Jones, in a television advertisement for the personal insurers Equitable Life.¹⁵ Admittedly, this may all be highly speculative, but the more limited prospect of freeing humanity from the burden of inherited diseases has quickly become a reality. In 1995, Lois Rogers, a writer for the Sunday Times, wrote of developing techniques to screen human embryos for a rare genetic disorder that usually leads to the development of bowel cancer in later life, and how these same techniques would be used 'within two years to screen test tube embryos for a predisposition to inherited breast cancer'.¹⁶ This promise of genetic engineering, which impelled my initial delving into the history of medical genetics, has now been realised, and we can expect still more radical applications.¹⁷

In the meantime, protesting voices are dismissed by a new generation of political leaders who call on the public to forget past attempts to transform the human genetic constitution and look instead to the future. A number of quite perceptive cultural

commentators add weight to this invitation. They charge those who would object to the coming age of genetic engineering of advocating the most dangerous conservatism since they appeal to the natural, if not the divine, order of things: 'God' has long been dead, and 'nature' is instead increasingly revealed to be a political artefact that plays much the same constraining role once played by 'god'.¹⁸ At the same time, the human genome becomes the newest 'book of life', whose decoding Richard Dawkins celebrates in his aptly entitled essay 'The word made flesh', by writing that we should 'all be proud of our species as it closes in on this summit of self-knowledge'.¹⁹ The human is truly becoming its own maker and the measure of all things, but at a cost: It is no longer clear what it means to be human.

This hermeneutic void motivates Giorgio Agamben's recent reflections on the Foucauldian concept of bio-power. Following Michel Foucault, but also taking issue with the latter's limited definition of the relationship between bio-power and governmentality, Agamben articulates these reflections along two lines, namely biological and juridical.²⁰

Firstly, Agamben notes that, where we would use the same linguistic term, Classical culture distinguished between two alternative and incommensurable forms of existence, zoē and bios. Zoē referred to the form of life shared by humans and animals alike, a form concerned with material sustenance and reproduction. Bios referred instead to the ethical and political form of life that was orientated toward the realisation of the polis and, as such, was peculiar to humans alone.²¹ Aristotle, who sought to explain the nature of human institutions without recourse to either the Platonic perfect forms, or any of the categorical distinctions of the phenomenal world that were predicated on such forms, called the relationship between zoē and bios into question by famously defining the human as a 'political animal'.²² Consequently, Agamben argues, discovering what is peculiar to the 'anthropophoric animal', that is, what is distinctive about the animal bearing human characteristics, has entailed an endless comparative dissection of animal

and human existence, focusing most recently on the location of animal life in the very inner being of human life. With the decoding of the human genome, the working of the 'anthropogenic machine' set in motion by Aristotle reaches its end: Bios is materially realised in zoē.²³ Secondly, Agamben also argues that, on Aristotle's definition of the human as the 'anthropophoric animal', the law is the sole guarantor of the separation of bios from zoē. Again, because Aristotle rejected the Platonic perfect forms, the law is no more than an abstraction from historical norms of juridical practice. As such, the authority of the law can only rest on the threat of its suspension and consequent reversion to animal life. Today, Agamben notes, this brutal, but essential, truth of the law is everywhere obvious, as the internment of refugees emphasises how much contemporary notions of 'citizenship' and immunity from the arbitrary power of the 'sovereign' do not rest on inalienable 'human rights', but on the contingencies of birth, on the contingencies of humanity's (zoē)logical existence.²⁴

For Agamben, the comatose in a 'persistent vegetative state' provides the most striking contemporary exemplification of the fate of humanity as the historical process he articulates reaches its conclusion. Being dead or alive becomes a matter of the juridical determination of the 'life unworthy of being lived', the notorious legal concept that paved the way to the Holocaust.²⁵ In sum, the present crisis is a consequence of a foundational rejection of any definition of human life 'as such'.²⁶

Strikingly, while Agamben's articulation of the common strategic assumptions that underlie the Foucauldian concepts of bio-power and governmentality is quite compelling, Agamben fails to note that, while Aristotle understood the human to be a 'political animal', Aristotle also conceded that some animals were 'social', if not properly 'political'.²⁷ In other words, the meaning of zoē was as unclear as the meaning of bios. Moreover, the difference between Aristotle and Plato may not have been over the nature of the law, as either a human institution or prior to all human institutions, but over the

location of the law. At the cost of some anachronism, one might say that, for Aristotle, the law was not transcendent, but immanent.²⁸ From this perspective, Agamben would appear to be trapped by the very same terms that he seeks to criticise. To argue, as Agamben does, that bios and zoē are fundamentally different is complicit with the opposite, socio-biological argument that bios is reducible to zoē.²⁹ It then seems more reasonable to return to the original, more historically circumscribed Foucauldian argument that both the categorical distinction between zoē and bios, and the attempt to account for the latter in terms of the former, are characteristic of modern political discourse.³⁰ If this argument also presupposes the effective removal of the transcendental signifier, however, it would have to ignore how the hermeneutic imperative of pre-modern discourse has continued to inflect modern biological discourse.³¹ The protracted and passionate arguments between Stephen Jay Gould and Richard Dawkins over the nature of evolutionary process can certainly be understood as speaking to a persistent and lively concern with the meaning of human life 'as such', and the same might be said of the about the decoding of the human genome.³² As I suggested earlier, the problem is how to account for this contradictory situation.

Like the natural and the divine orders, history is losing the critical power it once held, as historians seek to become more politically relevant by projecting the present ever more explicitly into the past, thus constituting the past as just another space of cultural representation.³³ The consequent uncertainty about the significance of historical recollection was heightened as I began to consider how one might write a 'critical and effective' history of the age of genetic engineering out of the disparate materials on agricultural and medical genetics that I had drawn together over the preceding ten years.³⁴ I noticed William Gibson's Neuromancer (1984) sitting on my bookshelves.³⁵ In Neuromancer, the present alliance of genetic engineering, information technology, and multinational corporations is projected into an indeterminate future. It conjures a world where the material culture that sustains the boundaries between the past, the present,

and the future is erased. If memory has a referent in this world to come, it is nothing but a discrete virtual space in a larger bio-informational matrix. It is no longer the 'archive', the principle of formation of both history and political order, except in the most anodyne sense of the word, as the irreversibility of time gives way to the symmetry of spatial relationships.³⁶ All that there is, is an eternal present, and, consequently, there no longer is any possibility of 'becoming'. Of course, the power of this image rests on a sense of living in a time when the past is still something altogether different, against which the future can be contrasted to dramatic rhetorical effect. On the other hand, by imagining England as a technocracy led by 'Lord Babbage' and 'Lord Darwin', Gibson and Bruce Sterling's The Difference Engine (1990), which sat next to Neuromancer, recreates the political radicalism of nineteenth century English society more engagingly than many more conventional historical accounts. This engaging narrative, however, echoes Neuromancer, which is perhaps not surprising since Charles Darwin and Charles Babbage could legitimately be regarded as the 'fathers' of the age of genetic engineering. The Difference Engine and Neuromancer thus raised difficult questions about the relationship between the then that was, and the then that will be.³⁷ Lastly, Orhan Pamuk's The White Castle (1990), which also sat on the bookshelves, turns to the past, this time to imagine an encounter between West and East, in the aftermath of the Battle of Lepanto. Here, the meeting of the worlds of mind and body, each fascinated and revolted by the other, leads to a disturbing loss of centre, disturbing through the reader's interpolation of a question about the identity of the narrator. If these novels thus begged very difficult questions about how 'I' could possibly write a 'critical and effective' history of the age of genetic engineering, it also seemed to me, however, that there was something uncanny about Babbage's 'difference engine', which sought to approximate the real through the play of 'difference and repetition'.³⁸

Biology, history and melancholia

Let me begin anew, with two fragments from Walter Benjamin's writings on philosophy and history.

A Klee painting named 'Angelus Novus' shows an angel as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage upon wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. The storm is what we call progress.³⁹

A philosophy that does not take into account the power to prophesies from coffee grains cannot be true philosophy.⁴⁰

When I first read the first fragment, I was mesmerised by the evocation of movement and desire. When I finally found a reproduction of Paul Klee's painting, however, I also happened to be watching some very early cinematographic experiments by the Lumière and Pathé brothers — 'Leaving Jerusalem by train' (1896) and 'Dream and reality' (1901). Significantly, these experiments coincided with the rediscovery of the Mendelian principles of inheritance. I came to see Walter Benjamin's angel as ensnared between two historical trajectories. On the one hand there was the modern dedication to capturing the experience of movement in a way that painting or photography never could. On the other hand there was the modernist dedication to shattering the difference between the real and the imaginary. This is perhaps best consummated in Larry and Andy Wachowski's 'The Matrix' (1999): In the exchange between Agent Smith and Cypher, meat, historically the signifier of the real, no longer secures the boundaries between the real and the imaginary. The tension between these two trajectories was

central to what I now appreciate as my impossible effort to remember the materially dismembered.⁴¹

Some years ago, spurred by Stephen Jay Gould and Richard Lewontin's politically charged critiques of genetic determinism and celebrations of historical contingency, I began to work on the history of genetics by turning my attention to the Road Improvement and Development Fund Act.⁴² This largely forgotten piece of legislation, enacted in 1909, established and did much to foster the growth of institutions such as the Plant Breeding Institute, the Welsh Plant Breeding Station and the Scottish Plant Breeding Station into pre-eminent British centres for genetic research. Its remarkable support for the then novel science of genetics was impelled by a vision best captured by William Bateson, who first coined the word 'genetics'. He recommended genetics to the Board of Agriculture because,

There is something that will come out of [genetics] that will equal, if not exceed ... anything that any other branch of science has ever discovered ... A precise knowledge of the laws of heredity will give man a power over his future that no other science has ever endowed him.⁴³

I sought to inject a note of scepticism by returning John Percival and Edwin Sloper Beaven to history. Both were involved in the institutional organisation of genetic research, and yet they were deeply sceptical about the importance that Bateson and Sir Rowland Biffen, the first director of the Plant Breeding Institute, attached to genetics. Even as late as in 1922, Beaven was writing to Percival:

There is a F4 family of 20000 plants – not one (I believe) homozygous. How is that for orthodox genetics? Not much I think. Bateson is coming to see it soon but I wish you could come first to give me a few tips with which to comfort him.⁴⁴

Percival and Beaven's shared scepticism was grounded in a historical understanding of plants' adaptation to their local environment, which established the conditions of

possibility for the emergence of genetics, but also had to be broken to consolidate the hegemony of genetics.

The consolidation of genetics was achieved in part by erasing Beaven and Percival from the historical record. Sifting through those 'coffee grains' that are the innumerable and scattered archives I visited in my travels between the four cardinal points marked by Dundee, Warminster, Aberystwyth and Norwich, I sought to expose how Beaven and Percival's (dis)membering was the product of a still more momentous historical process. Old wheat varieties such as 'Squarehead Master' were transformed into 'Hereward', which is described by Plant Breeding International, the heir to the Plant Breeding Institute, in a fashion that conjures a technological artefact rather than a living organism:

Hereward is a hard endosperm NABIM Group I variety which has found wide acceptance for breadmaking and is considered the best variety currently available for this purpose ... Hereward has a standing score of '8', average tillering and a relatively slow rate of development. This combination allows a wide sowing window in which to achieve optimal yield –from mid September to mid November. Use of Roundup Biactive™ pre harvest can maintain Hagberg Falling Number and specific weight where changeable weather or harvesting workload risk [sic] delay in cutting.⁴⁵

The phrase 'Frankenstein foods', which the Daily Mail did much to publicise beyond the confines of environmental activism and which helped to mobilise British public opinion against genetically modified organisms, aptly captured the outcome of this transformation of life.⁴⁶ Furthermore, if reporters for the Financial Times were 'surprised' when Monsanto paid £320 million to acquire Plant Breeding International, it was because they overlooked how the birth of the gene was intimately linked with the history of capital.⁴⁷ Genetics, which transforms the multifarious phenomena of biological life into flows of genes, ignorant of history and place, and late capitalism, which instead transforms the multifarious phenomena of economic life into financial transactions,

equally ignorant of history and place, are homologous and mutually reinforcing reterritorialisations.⁴⁸

Under these circumstances, however, remembering Beaven and Percival is a strange affair. As Benjamin himself understood all too well, restitution is a matter for the Messiah alone. In an age that no longer believes in the messianic, remembering can then only be a melancholic affair, ultimately orientated toward death rather than life.⁴⁹

Bio-power and its historiographical production

The natural sciences are virtually synonymous with modernity, for no other area of human endeavour has been more thoroughly dedicated to demystifying the world. For the past thirty years, historians of science, technology and medicine have lived in imitation of their preferred object of inquiry, as they have relocated historical agency from uniquely insightful individuals onto social institutions, and then from social institutions onto the material practices of scientific inquiry and techno-political organisation.⁵⁰

It seems hard to remember, but just ten years ago reading a history of genetics and the political economy of agricultural production was a recipe for boredom. I could only manage to awaken some interest when I mentioned how much Unilever, the first corporate owner of the Plant Breeding Institute after its privatisation, paid to acquire this 'unique national asset'.⁵¹ Perhaps something significant was afoot, which deserved closer attention, but funding bodies simply were uninterested. Echoing the logic of genetics, which recognises no boundaries between plants and humans, I then readily shifted my attention from the arguments between Sir Rowland Biffen, John Percival and Edwin Sloper Beaven to the arguments between Percy Lockhart Mummery and Georgiana Bonser over the significance of genetics for the future of medicine: The phrase 'designer babies' was already attracting public attention.⁵²

In 1940, Mummery, a senior surgeon at St. Mark's Hospital, called into question the use of inbred mice, one of the mainstays of research in medical genetics, by writing that,

Experimental results cannot be applied too closely to the problem in man, because the conditions of mating necessary to demonstrate [genetic influence] in mice never obtain in any civilised community of mankind.⁵³

Bonser, a researcher in the Department of Experimental Pathology and Cancer Research at the University of Leeds, replied to this criticism in a way that recalls the frontispiece of Orthopaedia, by simply stating that,

No one would deny that the Mendelian laws are as applicable to the human as to the tall and short peas which Mendel used in his original experiments ... Similarly, in the study of breast cancer the use of inbred mice is an invaluable aid to the elucidation of the problem in man.⁵⁴

By focusing on Mummery's practical efforts to improve the efficacy of his surgical interventions, I argued that Mummery and Bonser were none the less equally involved in the objectifying project of medical genetics. In fact, Mummery's practices paved the way for the identification of the genetic mutation that lay at the centre of the Sunday Times report of the first screening of a human embryo for genetic disorders. In other words, Mummery and Bonser's arguments were arguments on the margins of a fundamental epistemic reconfiguration that might go by the name of 'discourse of the gene'.

Significantly, the identification of the genetic mutation that lay at the centre of the report in the Sunday Times entailed the entrapment of patients and their relatives, an entrapment epitomised in a letter written by Richard Bussey, the Director of the Polyposis Registry at St. Mark's Hospital, to a corresponding general practitioner:

We have sent our beaters out after some polyposis children who have not been seen for a while or not at all. One of these patients has apparently been caught in your net.⁵⁵

These lines, quite recent and none the less inflected by a racialised understanding of the of the London East End, where many of the families studied by the clinicians at St. Mark's Hospital lived, provoked the ever more assertive return of an authorial voice.⁵⁶ Arguably, the discursive misfire to which Bussey's remarks spoke might be understood as fundamentally important to the vitality of the 'discourse of the gene'. The often difficult negotiations between the clinicians and their patients over access to the patients' relatives and these relatives' medical histories resulted in the introduction of critical genetic concepts such as 'penetrance' and 'linkage'. In turn, the consequent, increasing flexibility of 'gene talk' led to its wider adoption, well beyond the confines of St. Mark's Hospital.⁵⁷ Today, as the British government seeks to encourage the British public to opt for private insurance policies, so as to relieve the increasing financial pressures on the National Health Service, insurance companies are seeking the government's permission to cost personal insurance policies by using the disorder that motivated the work of the clinicians at St. Mark's Hospital as one of seven genetic indicators of general health.⁵⁸ I none the less preferred to conclude that, notwithstanding the shared use of the term 'gene', the corresponding practices of medical researchers, clinicians and patients at St. Mark's Hospital were, and still are, so diverse and heterogeneous as to call into question the notion of a 'discourse of the gene'.⁵⁹ To suggest, therefore, that a locally contingent use of the term amounts to complicity with a discourse that would appear to be opening the door to a new eugenics, this time allied to the logic of advanced consumer capitalism rather than the corporatist state, would itself be complicit with this logic. In other words, the 'will to narrative' perpetuates the very violence that remembering is supposed to exorcise.⁶⁰ Yet, as Paul De Man wrote some years ago,

The power of memory does not reside in its capacity to resurrect a situation or a feeling that actually existed, but is a constitutive act of the mind bound to its own present and oriented toward the future of its own elaboration.⁶¹

Identity and meaning are inevitably constituted in narrative.

Biography and the transcendental subject

As I began to articulate these thoughts about remembering the origins of the age of genetic engineering, there was a simmering disquiet about an increasingly pervasive sociological approach to the history of science. Arguably, Adrian Desmond and James Moore's Darwin (1991), a widely acclaimed biography of Charles Darwin, exemplified this approach. Darwin's name is indelibly associated with a return to the zoē of human existence. This association is not just a matter of metonymy, but the symptom of a persistent, popular attachment to genius, to the remarkable ability of some individuals to withstand the destructive passage of time. Desmond and Moore sought to demystify such genius by reducing Darwin and his ideas to a product of Victorian society and values. The consequent disquiet erupted furiously in the wake of Gerald Geison's still more iconoclastic biography of Louis Pasteur, The Private Science of Louis Pasteur (1994).⁶² Since then, a number of historians, and Thomas Söderquist in particular, have highlighted the nihilism of the sociological approach shared by Geison, Desmond and Moore.⁶³ Söderquist called for an alternative to the underlying hermeneutic of suspicion, an alternative that would return historical narrative to the edifying function it played before it became a human science, now lacking any reason or purpose. In his view, biographies focusing on historical actors' existential struggles would accomplish this purpose. I was not immune to Söderquist's call, and thus returned to Percy Lockhart Mummery.

For Mummery, the fundamental task facing all those interested in understanding the causes of cancer was to explain how its very antithesis, orderly and balanced cellular reproduction, was established and maintained. In The Origin of Cancer (1934), he argued that such reproduction was genetically controlled. He then explained historically why genes usually promoted orderly reproduction and at other times determined that

individual cells should begin to proliferate uncontrollably. Specifically, he argued that the incidence of cancer was increasing among humans because natural selection was no longer operative, which then allowed populations exhibiting high rates of genetic mutation to survive and reproduce. Among these populations there were bound to be a greater number of individuals possessing genes that triggered excessive cellular reproduction. Yet, he also wrote that,

The cancer cell may aptly be compared with the citizen of a community who having previously been a good citizen suddenly becomes a Communist and, believing in the destruction of all law and order, commences to live independently of his fellow citizens to his own advantage and to their detriment and destruction.⁶⁴

Mummery's turn to political metaphor suggests that his biological explanation of orderly reproduction was less than transparent. On the other hand, political discourse provided Mummery with an understanding of such reproduction that was no less opaque. For example, in *After Us* (1936), a collection of essays on the future of humanity, he sought to explain how a more orderly political order might emerge from the political chaos of the inter-war years. Significantly, for someone who attached enormous importance to eugenic planning, he did not believe that this would be sufficient. To realise this political order, Mummery believed that a new religion was needed. Mixing once again the languages of biology and politics, Mummery wrote that,

Man's real God is not God in the attribute of man, but Man himself. Man's God should be the ideal man, not as he is now, but as he should be in the future. We live again in our descendants, whether they are our own creation, or other people. After all, what are individuals? We know that each of us is composed of a mass of millions of individual cells. Each of these cells is an individual living organism, which is part of a great community of cells, which together form a human being. In the same way millions of individual human beings go to make Man.⁶⁵

Such uncertainty, if not ambivalence, about the relationship between politics and biology, bios and zoē, seemed to me to offer a way of returning to narrative the fractures and cacophony of St. Mark's Hospital, paradoxically, by assimilating all actors into Mummery's uncertainty, as they all confronted the bio-political consequences of the modern ambition to become the measure of all things.⁶⁶

The biographical turn speaks loudly about the sources of the insistence on narrative closure, however untenable such closure may be. As Fred Botting has recently noted, smoking could be considered the ultimate act of consumption, and society that is as utterly dedicated to consumption as that of today should then view smoking as the most legitimate of acts. Smoking, however, also betrays the fundamental emptiness at the heart of this discursive formation. The point is neatly captured by Oscar Wilde's aphorism: 'A cigarette is the perfect type of a pleasure. It is exquisite, and it leaves one unsatisfied. What more can one want?'.⁶⁷ The maintenance of perpetually desiring machines that will not come to a halt before such questions then requires an unprecedented intensification of moral policing. Significantly, such policing is now mediated by technologies of the self that are themselves eminently consumable. We can respond to our alienation by reading a biography. Biography is the salve for our longing to feel how it feels to be unique and memorable, but, in seeking to capture the uniqueness of particular figures, that unparalleled ability to withstand the destructive passage of time, that unparalleled ability to never be (dis)membered, by reducing these figures to the commensurate and mundane, the biographical enterprise demystifies exactly that which we desire. The same might be said of the effort to decode the 'book of life'. With the increasing accessibility of genetic technology, and the hope that it offers that we might know 'for the first time' who we are, we will each become, in all our differentiating particularities, the measure of all things, and hence the measure of nothing. The 'we' evoked by the official report of the decoding of the human genome is the 'empty centre' evoked by Wilde's aphorism. As Walter Benjamin noted quite astutely,

desire for the transcendental subject is a 'most fearful drug'.⁶⁸ If capturing the authentic, hermeneutically closed life is impossible and perhaps meaningless, the effort is none the less economically productive: We want more (bio)ographies still, to feel how it feels to be immortal.⁶⁹

Decentering the transcendental subject

Like Walter Benjamin, I do not think that we can rise above the discourse of alienated subjects, which compels the historian's impossible desire to 'stay, awaken the dead, and make whole what has been smashed'. I wish, however, to resist his melancholia. In his more optimistic moments, Benjamin called for a historiographical revolution. If we can no longer share his faith in the historical dialectic, we can none the less strive for a politics of historiographical representation that is more adequate to our post-historical condition.⁷⁰

Ethical relationships, such as that sought by Thomas Söderquist, and all those who would advocate a return to Jules Michelet's 'resurrectionism', cannot rest on 'empathy', as this can easily degenerate into 'substitution'. It must instead rest on an awareness of unbridgeable difference, rather than a functional relationship between 'self' and 'other'.⁷¹ We could then begin to reinstate the moral function of historiography to which Söderquist aspires, without, however, falling into 'substitution', by breaking the boundaries between actor and narrator, trading a life for a life, virtually. Yet, this too would entail an identification that is inconsistent with an anthropological turn, which, by drawing attention to material practices of historiography, would call into question the status of the lost monad that I was constructing out of disparate archival fragments and called 'Percy Lockhart Mummery'.⁷² All there is, is pieces of paper and photographs that are as silent as that most denuded form of life that is a double helix of deoxyribonucleic acid. Significantly, Francis Ponge once encapsulated the situation by writing that,

The diversity of things is really that which constructs me. This is what I mean: Their multiplicity makes me, allows me to exist within silence itself, as the place around which it is organised. If, however, I should view each of these things in their distinctive particularities, and then attend to a single one of them, I am undone. If this one thing is the occasion of my being, if it is responsible for my existence, this can only be thanks to a certain creation on my part regarding this one thing. What creation? The text.⁷³

Sir George Stapledon, the first director of the Welsh Plant Breeding Station and architect of the technocratic refashioning of British agriculture that paved the way for 'Frankenstein foods', lived exactly this relationship to the world of things.

In typically technocratic fashion, Stapledon's hero was the engineer, an engineer with the largest remit imaginable, but his understanding of how such an engineer could resolve the problems of the agricultural economy was more than simply technocratic. Drawing on Henri Bergson, Stapledon argued that those biologists who regarded 'the plant merely as raw material ... and the animal as a machine' were incapable of truly understanding the phenomena of life and their productive potential.⁷⁴ In fact, he viewed their belief in self-identical repetition as directly contradicting the essential nature of their distinctive object of study: The living world. He therefore recommended that these biologists should sometimes try to 'mingle humbly, freely, gladly with other living things and with the universe – without thought, without inquiry'.⁷⁵ Articulating an aesthetic reading of evolutionary theory and genetics, he suggested that these biologists would then come to appreciate the perennial process of transformation that shaped the living world. More importantly still, a true awareness of their own existence depended on uncompromising openness to such transformation. Stapledon thus wrote that,

Never so urgently as at present has there been such a necessity for an abundance of ... men willing and eager to transgress against every canon ... and to explore ... almost de novo.⁷⁶

Only constant experimentation could bring 'man, animal life and plant life into ... one harmonious and purposeful activity'.⁷⁷ In sum, for Stapledon, nature was not a space to be conquered by man, but the place where the truth of being was revealed: Movement and change, including the transformation of 'Squarehead Master' into 'Hereward'.

This understanding of life brings me back to the decoding of the human genome. As Paul Rabinow has argued in his reflections this enterprise and contemporary bio-medicine more generally, the hermeneutic of suspicion is simply inadequate to a world where it has become possible to construct one's identity through playful recombination of cultural artefacts that now include those of bio-medical technology. Such a hermeneutic now betrays how it is in fact complicit with an increasingly problematic, if not untenable, categorical distinction between nature and culture.⁷⁸ In a similar vein, the single archival fragment, such as the frontispiece from Nothing New Under the Sun (1947), should be understood as the site of origin of both the historical subject that was, and the historian that will be.

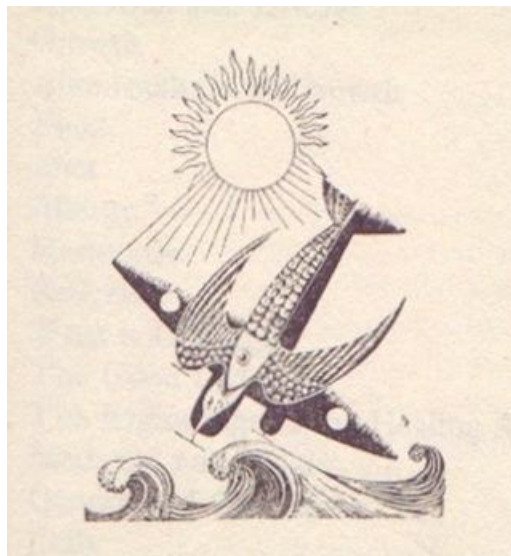


Figure 3: From John Percy Lockhart Mummery, Nothing New under the Sun (London: Andrew Melrose, 1947). Reproduced by courtesy of the Copyright Licensing Agency.

It was only in retrospect and thanks to a sleight of hand that a self-identical 'I' was able to argue that the above one-eyed bird or fish, superimposed on an aeroplane and whose monoclism recalled the opening scene of Ridley Scott's 'Bladerunner' (1982), symbolised the modern, impossible desire for transcendence. Only a narrative that instantiates itself in the endless oscillation between such archival fragments and the future that will have been, can participate in the drama of the 'here and now'. Presumably, what the consequences of this 'will to experiment' will be, is not, and has never been, for us to decide, but for the future, when all these experiments will have been. Yet, it is also clear that the 'will to experiment' entails a most peculiar understanding of the future, if it does not in fact evacuate it of all meaning.⁷⁹

Strikingly, Rabinow draws on Jacques Le Goff's Your Money or Your Life (1984) and The Birth of Purgatory (1988) to understand the profound anxiety that would seem to characterise contemporary debates over the decoding of the human genome and its promises of redemption.⁸⁰ He identifies the atmosphere of suspicion surrounding the alliance between capital and the decoding of human genome with a historical fear that relations of exchange will inevitably undermine the moral bonds between humans. This fear lies at the heart of the Christian condemnations of usury. Rabinow argues further that the consequent protracted debates over 'how best to bring capital, morality, and knowledge into a productive and ethical relationship' take the form of a 'purgatorial discourse'.⁸¹ Purgatory, an invention of the mediaeval imagination, was the place where the less than perfect engaged in self-examination and measured purification so that they too might eventually be admitted into Heaven. Similarly, the overriding presumption in the debates over the decoding of human genome is that, given time enough, it might be possible to arrive to a proper and moral response. Yet, as Rabinow notes, a superabundance of time is exactly that which a properly secular and materialist human does not enjoy. As such, all that the endless debates over 'how best to bring capital, morality, and knowledge into a productive and ethical relationship' accomplish is to

deprive the parents supporting research on the human genome of any hope for a world in which their children will not die of one genetic disorder or another. Despite all the avowed concern about the future, the future is in fact foreclosed.⁸²

Rabinow's argument is undoubtedly appealing. Yet, one can also read Your Money or Your Life rather differently. One might argue that Christianity abhorred usury because it literally sought to bring the future into account. The same goes for speculation and interest, the historical heirs to usury.⁸³ Thus, in 1998, Monsanto invested in the future, not in the present portfolio of Plant Breeding International. The value of this future portfolio was so calculable that Monsanto was prepared to pay £320 million, banking that, after 'discounting' the future, this would yield more than might be gained by, for example, putting the £320 million in government bonds. Thus, if Rabinow wishes to ground his criticism of Michel Foucault's hermeneutic of suspicion, of Foucault's 'will to knowledge', in Gilles Deleuze's Foucault, there is a cost to not thinking about the dynamics that underlie Deleuze and Félix Guattari's more general historical narrative and motivate their critique of Foucauldian thought.⁸⁴ Rabinow fails to notice the meaninglessness of his evocation of a 'will to experiment' that is more open to the future. In the age of genetic engineering, there no longer is any future. Of course, life has a way of getting in the way. In 1998, no one could have foreseen how the phrase 'Frankenstein foods' would disrupt Monsanto's carefully crafted corporate strategy. Of course, this may not be what Rabinow has in mind when he evokes the future, by calling for:

An experimental mode of inquiry ... where one confronts a problem whose answer is not known in advance rather than already having answers and then seeking a problem.⁸⁵

In other words, the 'will to experiment' is always already orientated toward the realisation of something different. There can be no 'will to experiment' without 'will to knowledge'.⁸⁶

Conclusion

For Slavoj Žižek, the answer to the denial of all forms of transcendence and to all that such denial entails, chiefly the abdication of responsibility for the chaos wrought by capital, is to evoke St. Paul's unique understanding of the relationship between the law and the good. Yet, it seems to me that this turn is as melancholic as Walter Benjamin's evocation of the 'angel of history'.⁸⁷ It seems to me that Jean de Labadie, a perhaps mythical witness to that other end of history that was marked by the wars of religion, provides a closely related, but more affirmative answer. In the Mystic Fable, Michel De Certeau writes of Labadie:

A man of the South ... Labadie went north... From Guyenne, where he was born and became a Jesuit, he went to Paris, Amiens, Montauban, Orange ... then thought perhaps he would go to London, no, it was Geneva, then the Netherlands, Utrecht, Middleburg, Amsterdam, then farther, to Altona in Denmark, where he died... The inner journey was transformed into a geographical one. Labadie's story is that of indefinite space created by the impossibility of place. The stages of the journey are marked by the 'religions' he passes through, one by one: Jesuit, Jansenist, Calvinist, Pietist, Chiliast or Millenarian, and finally 'Labadist' – a mortal stage. He passes on. He cannot stop.

He brings to mind John the Baptist, the walker, sculpted by Donatello, in the instant at which movement is loss of equilibrium. That falling becomes walking if it happens to be the case that a second place exists to follow the first, but the artist, by isolating the figure, makes that hypothesis uncertain. How can we be sure whether he is falling or walking? ... To walk is to propel oneself outward, to jump out of the window. Labadie falls out of the places that cannot hold him. ... It ends up being a story because each time, miraculously, other places 'receive' him, or, more precisely, as he constantly repeats, they 'preserve' his body from falling by 'supporting' him.⁸⁸

Like a deconstructionist avant la lettre, Labadie's incessant wandering, marked by the staccato of a sequential, but not cumulative, engagement with, and refutations of, the 'Jesuit, Jansenist, Calvinist, Pietist, [and] Chiliast or Millenarian', marks a fundamental

incommensurability.⁸⁹ This is the incommensurability between an ever expanding wilderness that will not allow Labadie, arguably the literal and symbolic embodiment of zoē, to 'stay, awaken the dead, and make whole what has been smashed', and thus realise the polis to come. De Certeau commemorates this incommensurability by closing The Mystic Fable with the following lines by Catherine Pozzi:

Très haut amour; s'il se peut que je meure
 Sans avoir su d'où je vous possédais
 En quel soleil était votre demeure
 En quel passé votre temps, en quelle heure
 Je vous aimais

Most high love, if I should die
 Without having learned whence I possessed you,
 In what sun was your abode
 Or in what past your time, at what hour
 I loved you

Très haut amour qui passez la mémoire
 Feu sans foyer don't j'ai fait tout mon jour,
 En quel destin vous traciez mon histoire,
 En quel sommeil se voyait votre gloire,
 O mon séjour ...

Most high love that passes memory
 Fire no hearth holds that was all my day,
 In what destiny you traced my story,
 In what slumber your glory was beheld,
 Oh my abode ...

Quand je serai pour moi-même perdue
 Et divisée à l'abîme infini,
 Infiniment, quand je serai rompue,
 Quand le présent don't je suis revêtue
 Aura trahi,

When I am lost to myself,
 Divided into the chasm of infinity,
 Infinitely when I am broken,
 When the present presently enrobing me
 Has betrayed,

Par l'univers en mille corps brisée,
 De mille instants non rassemblés encor,
 De cendre aux cieus jusqu'au néant vannée
 Vous referez pour moi une étrange année
 Un seul trésor

Through the universe in a thousand bodies shattered,
 Of a thousand not yet gathered instants,
 Of winnowed ashes windblown to the heavens' void,
 You will remake for a strange year
 One sole treasure

Vous referez mon nom et mon image
 De mille corps emportés par le jour,
 Vive unité sans nom et sans visage,

You will remake my name and image
 Of a thousand bodies borne by days away,
 Live unity with neither name or face,

Coeur de l'esprit, ô centre du mirage

Très haut amour.

Spirit's heart, of centre of mirage

Most high love.⁹⁰

The rhythm of these poetic lines, like Marilyn Frye's reflections on her own effort to understand the nature of subjectivity, speaks to the presence of the law within zoē itself.⁹¹ Finally returning to Michelangelo's 'Creation of Man', and emphasising the gap between Adam's and God's fingers, I would also note that the very fragmentary nature of the present narrative would testify to an understanding of this law as that 'constitutive absence', which the practices of biology, bio-power and biography seek to represent, by first distinguishing bios and zoē, and then reducing the former to the latter, but, at the same time, eludes biology, bio-power and biography. It is that directed movement impelled by the gap between, on the one hand, the faith to which the lines from 'Little Gidding' speak:

We shall not cease from exploration.
And the end of all our exploring
Will be to arrive where we started,
And know the place for the first time.

On the other hand is the awareness that 'the more we learn about the human genome, the more there is to explore'. Echoing Roy, the all too human 'replicant' of 'Bladerunner', I will then begin to close by wondering whether this newest attempt to render the gap into words will again 'be lost in time, like tears in rain ...'.⁹² In the meantime, the protesters in Seattle, Göteborg and Genova also bear witness to this gap, as they protest against the myriad of small and not so small developments, such as the production of 'designer babies' and 'Frankenstein foods'. Strikingly, they have no coherent and well-defined political platform: Like Labadie, all that they can say in unison is that 'this isn't it! ...'. Their power lies in exactly this frustrating utterance. It is a protest against this world, fully engaged in this world, but orientated toward something not of this world:

They desire (no)thing. They cannot then be reintegrated into political discourse. For a moment, that smoothly running machine that is capital does not know what to do ...⁹³

Acknowledgments

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Notes

¹ The thrust of Žižek's argument is not to rescue the Cartesian subject, understood as 'the self-transparent thinking subject'. It is instead to emphasise both 'the excessive, unacknowledged kernel of the cogito, which is far from the pacifying image of the transparent self', and the politically debilitating implications of the failure to separate these two distinct aspects of the Cartesian subject; see Slavoj Žižek, The Ticklish Subject: The Absent Centre of Political Ontology (London: Verso, 1999), pp. 1-2.

² See Paolo Palladino, Plants, Patients and the Historian: (Re)membering in the Age of Genetic Engineering, (Manchester: Manchester University Press, 2002), pp. 9-33.

³ Michel Foucault, Discipline and Punish: The Birth of the Prison [1975] (London: Penguin, 1991), fig. 10.

⁴ Foucault, Discipline and Punish (n. 3 above), pp. 135-169.

⁵ Foucault, Discipline and Punish (n. 3 above), pp. 195-228.

⁶ See Michel Foucault, History of Sexuality [1976] (London: Penguin, 1990); and 'The birth of social medicine [1977]', in James Faubion (ed.), Michel Foucault: Essential Works of Foucault, 1954-1984 (London: Penguin, 1998-2000), Vol. 3, pp. 134-156.

⁷ See Paul Rabinow, 'Artificiality and enlightenment: From sociobiology to biosociality', in Essays on the Anthropology of Reason (Princeton: Princeton University Press, 1996), pp. 91-111; and Giorgio Agamben, L'Ouvert: De l'Homme et de l'Animal (Paris: Rivages, 2002). Significantly, while Agamben and Rabinow both draw on the work of Michel Foucault to argue that the contemporary development of the bio-medical sciences marks a fundamental transformation of all traditional understanding of what it means to be human, there is

little agreement between them over the social and political implications of this transformation. For a comparative analysis of their arguments that is more detailed than that which will be articulated in this essay, see Paolo Palladino, 'The politics of death: On life after the end of history', Journal of Cultural Research/Cultural Values (forthcoming, 2003).

⁸ 'The book of life: Gene science spells out our destiny', Observer (London), 25 June 2000, p. 28. For a review of the many other public issues raised by the evermore common genetic explanation of disease and social pathology, see the recent collection of essays, 'Sociological perspectives on the new genetics', which was edited by Peter Conrad and Jonathan Gabe, and published in Sociology of Health & Illness, 215 (1999): 505-706. For discussions of the difficulties involved in maintaining a distinction between 'old' and 'new' genetics, that would secure contemporary developments in medical genetics against accusations of renewing eugenic discourse, see instead Sarah Cunningham-Burley and Mary Boulton, 'The social context of the new genetics', in Gary L. Albrecht et al. (eds.), Handbook of Social Studies in Health and Medicine (London: Sage, 1999), pp. 173-187; and Jon Turney and Brian Balmer, 'The genetic body', in Roger Cooter and John Pickstone (eds.), Medicine in the 20th Century (Amsterdam: Harwood Academic Press, 2000), pp. 399-415.

⁹ On the relationship between the transcendental subject and Foucault's historicist understanding of subjectivity, see Michel Foucault, 'Afterword: The subject and power', in Herbert Dreyfuss and Paul Rabinow (eds.), Michel Foucault: Beyond Structuralism and Hermeneutics (Brighton: Harvester, 1982), pp. 208-226.

¹⁰ Eric S. Lander et al., 'Initial sequencing and analysis of the human genome', Nature, 409 (2001): 860-921, on p. 914.

¹¹ Caygill advances a similar argument by re-reading Plato, Friedrich Nietzsche and Wilhelm Johannsen; see Howard Caygill, 'Drafts for a metaphysics of the gene', Tekhnema, 3 (1996): 141-152. For an alternative, but not necessarily incompatible, approach to understanding the origins of the effort to decode the human genome, see Lily E. Kay, Who Wrote the Book of Life? A History of the Genetic Code (Stanford: Stanford University Press, 2000).

¹² As some readers may immediately notice, the subtitle of this essay echoes Walter Benjamin's famous essay 'The work of art in the age of mechanical reproduction [1936]', in Hannah Arendt (ed.), Illuminations (London: Fontana, 1973), pp. 211-244. It thus signals an intention to critically engage with Benjamin's thought on the possibility of authentic experience, history and the dynamics of capital, both by explicit reference to Benjamin and, more indirectly, by examining other works that are also inspired by Benjamin.

¹³ Marilyn Frye, The Politics of Reality: Essays in Feminist Theory (Freedom: Crossing Press, 1983), p. 154.

Frye's approach provides a revealing answer to critiques of reflexivity such as those offered in Trevor Pinch and Trevor Pinch, 'Reservations about reflexivity and new literary forms, or why let the devil have all the good tunes?', in Steven Woolgar (ed.), Knowledge and Reflexivity: New Frontiers in the Sociology of Knowledge (London: Sage, 1988), pp. 178-197.

¹⁴ While the subtitle of this essay echoes Benjamin, the title echoes instead Jacques Deleuze's 'Immanence: A life ...' (1995); see Giorgio Agamben, 'Absolute immanence', in Potentialities: Collected Essays in Philosophy (Stanford: Stanford University Press, 1999), pp. 220-239. The title thus signals the further aim to engage with the Deleuze's elliptical definition of life and subjectivity, by attending to both performance and what might impel performance. For an alternative discussion of Deleuze and the possibilities his thought might offer for a reconceptualisation of political engagement, see Nikolas Rose, Powers of Freedom: Reframing Political Thought (Cambridge: Cambridge University Press, 1999), pp. 282-284.

¹⁵ This advertisement promotes the personal pension plans offered by Equitable Life by linking the promise of genetics to extend lifespan well beyond current expectations and growing public concern about financial security in old age. For an introduction to genetic theories of senescence and death, which emphasises the theory of 'disposable soma', see Tom Kirkwood, Times of our Lives: The Sciences of Human Ageing (Oxford: Oxford University Press, 2000).

¹⁶ Lois Rogers, 'Doctors to create cancer-free babies', Sunday Times (London), 5 November 1995, p. 24.

¹⁷ See Antony Barnett, 'Gene test to help you beat death sparks row on ethics', Observer (London), 19 January 2003, p. 3.

¹⁸ Rabinow, 'Artificiality and enlightenment' (n. 7 above), pp. 107-108.

¹⁹ Richard Dawkins, 'The word made flesh', Guardian (London), 27 December 2001, p. 11.

²⁰ Agamben's approach, whereby the problems of modern bio-political order are traced back to a Classical compact, also echoes Jacques Derrida's critique of Folie et Déraison. See Giorgio Agamben, Homo Sacer:

Sovereign Power and Bare Life (Stanford: Stanford University Press, 1998), p. 6; and Jacques Derrida, 'Cogito and the history of madness', in Writing and Difference (London: Routledge, 1978), pp. 31-63.

²¹ Agamben, Homo Sacer (n. 20 above), pp. 3-5.

²² Aristotle, The Politics (London: Penguin, 1992), p. 59.

²³ Agamben, L'Ouvert (n. 7 above), p. 30.

²⁴ Agamben, Homo Sacer (n. 20 above), pp. 126-135.

²⁵ Agamben, Homo Sacer (n. 20 above), p. 136.

²⁶ As Agamben writes: 'one of the first and most instructive observations in any genealogical investigation of 'life' is that, within our culture, the concept is never defined as such. While this concept has always remained undefined (*indéterminé*), it has nevertheless been articulated through a series of divisions and oppositions, which have invested it with a pivotal, strategic function in domains as disparate as philosophy, theology, politics and, only later, in medicine and biology. In other words, it is as if life were beyond definition, but it should none the less be endlessly dissected and articulated'; L'Ouvert (n. 7 above), p. 26 (author's translation).

²⁷ Aristotle, Historia Animalium (Cambridge, Mass.: Harvard University Press, 1965), pp. 13-15. For a discussion of the ambiguities arising from Aristotle's definition of the human as a 'political animal', see Richard G. Mulgan, 'Aristotle's doctrine that man is a political animal', Hermes 102 (1974): 438-445. For a more comprehensive discussion of Aristotle's complex understanding of the relationship between humans and animals, see instead Geoffrey E. R. Lloyd, Aristotle: The Growth and Structure of his Thought (Cambridge: Cambridge University Press, 1968), pp. 181-271.

²⁸ See Richard A. H. King, Aristotle on Life and Death (London: Duckworth, 2001), p. 7; and Linda Martín Alcoff, 'Becoming an epistemologist', in Elizabeth Grosz, Becomings: Explorations in Time, Memory, and Futures (Cornell: Cornell University Press, 1999), pp. 55-75, esp. p. 74. On Agamben's scepticism about immanent critique, which he views as collapsing *bios* into *zoē*, see Agamben, 'Absolute immanence' (n. 14 above).

²⁹ For an introduction to Richard Dawkins' understanding of evolution, which might provide the basis for an argument to the effect that Agamben's own understanding of the relationship between zoē and bios is not fundamentally different to Dawkins', at least insofar as they share a common Kantian project, see Tim Shanahan, 'Methodological and contextual factors in the Dawkins/Gould dispute over evolutionary progress', Studies in History and Philosophy of Science 32 (2001): 127-151. On the link between Agamben and Kant, see Slavoj Žižek, Welcome to the Desert of the Real: Five Essays on September 11 and Related Dates (London: Verso, 2002), pp. 136-141.

³⁰ Michel Foucault, The Order of Things: An Archaeology of the Human Sciences [1966] (New York: Vintage Press, 1973), pp. 250-302.

³¹ For a discussion of the relationship between theology and the rise of the modern political order, see William T. Cavanaugh, "A fire strong enough to consume the house': The wars of religion and the rise of the state', Modern Theology, 11 (1995): 397-420. On the effects of the consequent removal of all onto-theological considerations, which mirrors the transformations to which The Order of Things speaks, see Michael Hardt and Antonio Negri, Empire (Cambridge, Mass.: Harvard University Press, 2000), pp. 4-8.

³² See Andrew Brown, The Darwin Wars: The Scientific Battle for the Soul of Man (London: Penguin, 1999); and Shanahan, 'Methodological and contextual factors in the Dawkins/Gould dispute over evolutionary progress' (n. 29 above). Strikingly, Agamben supports his remarks to the effect that biology is no longer concerned with life 'as such' by turning to Peter Medawar, whose uncompromising logical positivism can hardly be held as representative of biological thought generally. See Giorgio Agamben, Means Without End: Notes on Politics (Minneapolis: University of Minnesota Press, 2000), pp. 7-8.

³³ See, for example, Hutton's provocative reflections on Simon Schama's publicly acclaimed History of Britain, in Will Hutton, 'Great television, but is it great history?', Observer (London), 16 June 2002 (<http://www.observer.co.uk/commentary/story/0,6903,738290,000.html>). For a more sustained discussion of the issues raised by Hutton, see Gayatri Chakravorty Spivak, A Critique of Postcolonial Reason: Toward a History of the Vanishing Present (Cambridge, Mass.: Harvard University Press, 1999), pp. 198-311; and Robert Young, White Mythologies: Writing History and the West (London: Routledge, 1990), pp. 157-175.

³⁴ The phrase 'critical and effective' is borrowed from Dean's discussion of Michel Foucault and his historiographical method, a method that would eschew all forms of transcendence; see Mitchell Dean, Critical and Effective Histories: Foucault's Methods and Historical Sociology (London: Routledge, 1994), pp. 3-4.

³⁵ On books and the construction of the subject, see Walter Benjamin, 'Unpacking my library: A talk about book collecting [1931]', in Arendt, Illuminations (n. 12 above), pp. 61-69.

³⁶ On the problematic status of the archive as principle of formation of both history and political order, see Jacques Derrida, Archive Fever: A Freudian Impression (Chicago: University of Chicago Press, 1996), pp. 1-5; for a discussion of the practices whereby the archive becomes so important, see instead Michael Lynch, 'Archives in formation: Privileged spaces, popular archives and paper trails', History of the Human Sciences, 12 (1999): 65-87.

³⁷ For a provocative discussion of The Difference Engine, see Elisabeth Kraus, 'Gibson and Sterling's alternative history: The Difference Engine as radical rewriting of Disraeli's Sybil' (<http://node9.phil3.uni-freiburg.de/1997/kraus.html>).

³⁸ This rephrasing of the calculating mechanics of Charles Babbage's difference engine draws on Deleuze's insight into the productivity of the interplay of difference and repetition; see Gilles Deleuze, Difference and Repetition [1968] (London: Athlone, 1994).

³⁹ Walter Benjamin, 'Theses on the philosophy of history [1940]', in Arendt, Illuminations (n. 12 above), pp. 245-55, on p. 249.

⁴⁰ Walter Benjamin, as quoted in Gershom Scholem, Walter Benjamin: Die Geschichte einer Freundschaft (Frankfurt: Suhrkamp, 1975), p. 77 (author's translation).

⁴¹ For a discussion of these two historical trajectories, see Tom Gunning, 'An aesthetic of astonishment: Early film and the (in)credulous spectator', Art and Text, 34 (1989): 31-44. For a further discussion of film, which is quite important to understand both how Benjamin could elide the tension between disparate events and their concatenation into a single narrative, and how the geneticist can do the same with respect to the relationship between the gene and evolutionary history, see Mary Ann Doane, The Emergence of Cinematic Time: Modernity, Contingency, the Archive (Cambridge, Mass.: Harvard University Press, 2002). On remembering

and dismembering, see instead Jacques Derrida, The Gift of Death [1992] (Chicago: University of Chicago Press, 1995), pp 1-34.

⁴² See Steven Jay Gould, The Mismeasure of Man (New York: Norton, 1981); and Richard Levins and Richard Lewontin, The Dialectical Biologist (Cambridge, Mass.: Harvard University Press, 1985). For an introduction to the debates in which they were involved, see instead Ullica Segerstrale, Defenders of the Truth: The Sociobiology Debate (Oxford: Oxford University Press, 2001).

⁴³ William Bateson, 'Toast of the Board of Agriculture, Horticulture and Fisheries', in Report of the Third International Conference on Genetics (London: Royal Horticultural Society, 1907), p. 76.

⁴⁴ University of Reading Archives (Reading): Percival Papers: Edward Sloper Beaven to John Percival, 20 June 1922.

⁴⁵ http://www.pbi-camb.co.uk/cp_wheat_hereward.htm.

⁴⁶ For a discussion of the recurrent references to Frankenstein during the historical development of genetics, see Jon Turney, Frankenstein's Footsteps: Science, Genetics and Popular Culture (New Haven: Yale University Press, 1998).

⁴⁷ Nick Tait and Maggie Urry, 'Monsanto pays £320m for UK crop breeding business', Financial Times (London), 16 July 1998, p. 33.

⁴⁸ For an introduction to Deleuze and Guattari's thought on the profound reconceptualisation of biological existence, which can be associated with the advent of genetics, and how this might relate to the dynamics of late capitalism, see Gilles Deleuze, Foucault [1986] (London: Athlone, 1988), pp. 124-132; and Gilles Deleuze and Félix Guattari, A Thousand Plateaus: Capitalism and Schizophrenia [1980] (London: Athlone, 1988), pp. 424-473.

⁴⁹ Arguably, historians' endless and often ambiguous arguments over the relationship between historiographical representation and the past signal an uneasy oscillation between mourning and melancholia. For a useful introduction to the relationship between melancholia, mourning and historical recollection, see Bann's review of

Michael Roth's The Ironist's Cage (1995); Stephen Bann 'Mourning, identity, and the uses of history', History and Theory, 37 (1998): 94-101.

⁵⁰ See Steven Shapin, 'Here and everywhere: Sociology of scientific knowledge', Annual Review of Sociology, 21 (1995): 289-321.

⁵¹ Anonymous, 'Seeds of dogma', New Scientist, 13 August 1987, p. 20.

⁵² For an introduction to the cultural history of 'designer babies', see Susan M. Squier, Babies in Bottles: Twentieth-Century Visions of Reproductive Technologies (New Brunswick: Rutgers University Press, 1994).

⁵³ John Percy Lockhart Mummery, 'Summary', Annual Report of the British Empire Cancer Campaign, 17 (1940): 8-21, on p 17.

⁵⁴ Georgiana M. Bonser, 'Influence of heredity on breast cancer', British Medical Journal, (1941), Vol. 1: 456.

⁵⁵ St. Mark's Hospital (London): Polyposis Registry: Family 30: H. J. R. Bussey to M. Orr, 23 February 1977.

⁵⁶ For a discussion of the persistence of a racialised vision of the inhabitants of the poorest areas of Britain, such as the London East End, among those charged with slum clearance and urban renewal, even as recently as in the 1960s, see Elizabeth Wilson, The Sphinx in the City: Urban Life, the Control of Disorder, and Women (Berkeley: University of California Press, 1991), pp. 100-120.

⁵⁷ See Foucault, History of Sexuality (n. 6 above), pp. 100-102. Significantly, Keller has coined the phrase 'gene talk' to capture the proliferation of discourse centring on the 'gene', notwithstanding the increasingly problematic epistemological status of the 'gene'. See Evelyn Fox Keller, The Century of the Gene (Cambridge, Mass.: Harvard University Press, 2000), pp. 1-10.

⁵⁸ See James Meek, 'Insurers to take on government over gene tests', and 'Gene test plea to cut cancer of bowel risk', Guardian (London), 13 October 2000, p. 13 and 27 June 2001, p. 5.

⁵⁹ This perspective echoes De Certeau's more general critique of Michel Foucault's understanding of the relationship between discourse and practices, in Michel De Certeau, The Practice of Everyday Life (Berkeley: University of California Press, 1984), pp. 45-49.

⁶⁰ See Deleuze, Foucault (n. 48 above), pp. 130-131. In 'Micro-techniques and panoptic discourse', De Certeau has also noted how Michel Foucault's representations of discourse deploy the very techniques that enable the panoptic power of discourse. As such, they might be understood as reproducing panoptic power. De Certeau, however, suggests that narrative gesture somehow escapes panoptic power. This is a highly debatable claim. See Bann 'Mourning, identity, and the uses of history' (n. 49 above); and Michel De Certeau, 'Micro-techniques and panoptic discourse [1982]', in Heterologies: Discourse on the Other (Minneapolis: University of Minnesota, 1986), pp. 185-192. For a recent and very provocative discussion of the renewal of eugenics, see instead Paul Virilio, The Information Bomb (London: Verso, 2000). Admittedly, other authors have advanced the argument that the medical applications of the 'new' genetics mark a return to eugenics long before Virilio, and they have done so in much greater detail than Virilio; see, for example, Troy Duster, Backdoor to Eugenics (London: Routledge, 1990). Virilio, however, integrates the argument into a much more widely ranging critique of the relationship between technology and the evolution of advanced consumer capitalism.

⁶¹ Paul De Man, Blindness and Insight: Essays in the Rhetoric of Contemporary Criticism (London: Routledge, 1983), p. 92.

⁶² For an introduction to the exchanges prompted by Geison's biography, see Max Perutz 'A pioneer defended', New York Review of Books, 21 December 1995 (<http://www.nybooks.com/articles/1688>); and William C. Summers, 'Pasteur's private science', New York Review of Books, 6 February 1997 (<http://www.nybooks.com/articles/1289>).

⁶³ See Thomas Söderquist, 'Existential projects and existential choice in science: Science biography as an edifying genre', in Richard Yeo and Michael Shortland (eds.), Telling Lives: Studies of Scientific Biography (Cambridge: University of Cambridge Press, 1995), pp. 45-84; and Robert J. Richards, 'Historiography and cultural studies of nineteenth century biology', in David Cahan (ed.), From Natural Philosophy to the Sciences: Historiography of Nineteenth Century Science (Chicago: University of Chicago Press, in press). Strikingly, Söderquist's reading of Darwin as an example of the limitations of the sociological approach to the history of science amply illustrates the indeterminacy of texts, since Robert Young has also criticised Desmond and Moore, but for being insufficiently attentive to the sociology of knowledge. See Robert M. Young, 'Desmond and Moore's Darwin: A critique', Science as Culture, 4 (1994): 393-424.

⁶⁴ John Percy Lockhart Mummery, The Origin of Cancer (London: Churchill, 1934), p. 1. For a discussion of contemporary cultural representations of cancer, which also attends to metaphor, see Jackie Stacey, Teratologies: A Cultural Study of Cancer (London: Routledge, 1997).

⁶⁵ John Percy Lockhart Mummery, After Us, or the World as it Might Be (London: Stanley Paul, 1936), p. 148.

⁶⁶ For a highly pertinent discussion of modernity, ambivalence and the politics of closure, which suggests that any closure around ambivalence must necessarily prove unstable, see Zygmunt Bauman, Mortality, Immortality and Other Life Strategies (Stanford: Stanford University Press, 1992), pp. 18-39.

⁶⁷ Wilde, as quoted in Fred Botting, 'The art of smoking in an age of techno-moral consumption', New Formations, 38 (1999): 78-97, on p. 78.

⁶⁸ Walter Benjamin, 'Der Sürrealismus: Die Letzte Momentaufnahme der europäischen Intelligenz [1929]', in Angelus Novus: Ausgewählte Schriften (Frankfurt: Suhrkamp, 1966), Vol. 2, pp. 200-215, on p. 213 (author's translation).

⁶⁹ See Bauman, Mortality, Immortality and Other Life Strategies (n. 66 above), pp. 51-87.

⁷⁰ On Benjamin and historiography, see Franco Rella, 'Critica e storia', in Rella (ed.), Critica e Storia: Materiali su Benjamin (Venezia: Cluva, 1980), pp. 9-29. For an introduction to the issues confronting historiography today, see instead Young, White Mythologies (n. 33 above), pp. 1-20.

⁷¹ See Megan Boler, 'The risks of empathy: Interrogating multiculturalism's gaze', Cultural Studies, 11 (1997): 253-273. On 'resurrectionism', see instead Raphael Samuel, Theatres of Memory (London: Verso, 1994), pp. 139-202.

⁷² For an introduction to this anthropological approach, see Michel De Certeau, The Writing of History [1975] (New York: Columbia University Press, 1988).

⁷³ Francis Ponge, 'My creative method [1947]', in Le Grand Recueil: Méthodes, (Paris: Gallimard, 1961), pp. 12-13 (author's translation).

⁷⁴ Sir George Stapledon, The Way of the Land (London: Faber & Faber, 1943), p. 223. For an introduction to the ongoing re-evaluation of Bergson among philosophers and cultural critics, which stems largely from the centrality of Bergson in Jacques Deleuze and Félix Guattari's thought, see John Mullarkey (ed.), The New Bergson (Manchester: Manchester University Press, 1999).

⁷⁵ Stapledon, The Way of the Land (n. 74 above), p. 64.

⁷⁶ Stapledon, The Way of the Land (n. 74 above), p. 197.

⁷⁷ Stapledon, The Way of the Land (n. 74 above), p. 222.

⁷⁸ Rabinow, 'Artificiality and enlightenment' (n. 7 above), pp. 91-93. See also Caygill's discussion of Stelarc, the performance artist whose work would appear to vividly instantiate Rabinow's ethic of self-experimentation, as well as Butler's discussion of Michel Foucault and his problematic understanding of embodiment; Howard Caygill 'Liturgies of fear: Biotechnology and culture', in Barbara Adam et al. (eds.), The Risk Society and Beyond: Critical Issues for Social Theory (London: Sage, 2000), pp. 155-164, and Judith Butler, 'Revisiting bodies and pleasures', in Vikki Bell (ed.), Performativity & Belonging (London, 1999), pp. 11-20.

⁷⁹ On the paradoxical complicity of the emphasis on the 'here and now' with the transcendental thought it would claim to oppose, see Bauman, Mortality, Immortality and Other Life Strategies (n. 66 above), pp. 161-199.

⁸⁰ Paul Rabinow, French DNA: Trouble in Purgatory (Chicago: University of Chicago Press, 1999), pp. 17-23.

⁸¹ Rabinow, French DNA (n. 80 above), p. 20.

⁸² For a more detailed discussion of this issue, see Bruno Latour, Pandora's Hope: Essays on the Reality of Science Studies (Cambridge, Mass.: Harvard University Press, 1999), pp. 145-173.

⁸³ See Alliez' brief, alternative interpretation of Your Money or Your Life and The Birth of Purgatory, in Éric Alliez, Capital Times: Tales from the Conquest of Time (Minneapolis: University of Minnesota Press, 1996), pp. xxii-xxiii and 8-16.

⁸⁴ See Rabinow, 'Artificiality and enlightenment' (n. 7 above), p. 92; and Gilles Deleuze and Félix Guattari Anti-Oedipus: Capitalism & Schizophrenia [1972] (London: Athlone, 1984), pp. 240-262.

⁸⁵ Rabinow, French DNA (n. 80 above), p. 174.

⁸⁶ For a more detailed critique of both Rabinow's position and Bruno Latour's more radical exposition of the same, Palladino, 'The politics of death' (n. 7 above).

⁸⁷ Following St. Paul, Žižek's understanding of the relationship between the good and the law is that attaining the good requires a disposition toward the spirit of the law that exceeds the requirements of the law; as such, the true subversion of the law does not lie in its refusal, but in its wholehearted embracing, which discloses the limitations of the law as representation of the good and thus opens an alternative space of possibility. Considering his discussion of 'The Shawshank Redemption', it seems to me that Žižek's argument rests none the less on an all too problematic, prior understanding of a positively identifiable, transcendental truth. See Slavoj Žižek, The Fragile Absolute: Or, Why the Christian Legacy is Worth Fighting For? (London: Verso, 2000), pp. 143-160. From this perspective, Žižek's critique of Agamben is less than compelling; see Žižek, Welcome to the Desert of the Real (n. 29 above), pp. 136-141. It instead leads me to focus on what may be a shared rejection of the immanent critiques offered by Gilles Deleuze and Félix Guattari; see Agamben, 'Absolute immanence' (n. 14 above); and Žižek, The Ticklish Subject (n. 1 above), pp. 250-251.

⁸⁸ Michel De Certeau, The Mystic Fable: The Sixteenth and Seventeenth Centuries [1982] (Chicago: University of Chicago Press, 1992), pp. 271-272. Strikingly, by toying with historiographical conventions, inserting references to contemporary plays such as Jean-Paul Sartre's The Condemned of Altona where the historian might have expected references to documents from the seventeenth century, De Certeau casts doubt on the historical location of Labadie. This only strengthens De Certeau's claim that his peregrinations end 'up being a story because each time, miraculously, other places 'receive' him, or, more precisely, as he constantly repeats, they 'preserve' his body from falling by 'supporting' him'.

⁸⁹ On mediaeval mysticism as a form of deconstruction, impelled by a negative theology, see Denys Turner, The Darkness of God: Negativity in Christian Mysticism (Cambridge: Cambridge University Press, 1995), pp. 252-273.

⁹⁰ Pozzi, as quoted in De Certeau, Mystic Fable (n. 88 above), pp. 295-296.

⁹¹ Significantly, while the structural organisation of this essay purports to articulate the concept of performance as a theoretical resource, Frye's reflections only became meaningful retrospectively, in the light of an effort to organise quite disparate archival fragments concerning the genesis of the age of genetic engineering. Arguably, the reference to Frye's reflections in the opening, prefatory remarks then denies the thrust of this essay, by effectively reinstating the reflective, Cartesian subject. For an important discussion of the 'preface', see Spivak's introduction to Derrida's Grammatology as well as Derrida's own thoughts on the same subject; Jacques Derrida, Of Grammatology [1967] (Baltimore: John Hopkins University Press, 1976), pp. ix-lxxxviii and 6-26.

⁹² See also Howard Caygill, 'Surviving the inhuman', in Sam Brewster et al. (eds.), Inhuman Reflections: Thinking the Limits of the Human (Manchester: Manchester University Press, 2000), pp. 217-229.

⁹³ Oddly, 'anti-globalisation' protesters have no place in Hardt and Negri's reflections on the future of political opposition to the process of globalisation; see Hardt and Negri, Empire (n. 31 above). This especially problematic since Hardt and Negri's theory is supposedly grounded in the writings of Gilles Deleuze and Félix Guattari. Rather than embracing Deleuze and Guattari's notion of 'lines of flight', their understanding of an authentic form of opposition rests on a historically specific reterritorialisation of life; see Deleuze and Guattari, A Thousand Plateaus (n. 48 above), pp. 208-231.