Romance Revisited

edited by

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Romancing the Helix: Nature and Scientific Discovery

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Scientific pursuit is often described in terms of masculinity and adventure – as a domain of seminal breakthroughs, trail-blazing pioneers and uncharted territories. Such descriptions emphasise and valorize the enterprising activities of scientists as they busy about their colonising practices. They are, moreover, key moments in the gendering of scientific practice, its objects and its subjects.¹

Though generically often counterposed to masculinity or adventure, the idea of romance is also very much a part of the scientific quest for understanding. Romance pervades the pleasures, fantasies and desires which inform the quest for scientific knowledge, complementing its adventurous techniques. Adventure and romance are not only generic conventions, but as such, they are devices of enchantment. Such devices are no less world-building for being either representational or phantasmatic. The theme of ‘romance’ is thus useful in providing a refashioned hermeneutical ground for engaging with the gender and science debate. Using the conventions of romance as an indexing or sighting device, I will address the question of whether the new genetic sciences can be seen as differently gendered from their antecedents. My aim here is to contrast the metanarratives indexed by the idea of ‘nature’ with those that reference emergent ideas of ‘life’, or what I have referred to as ‘life itself’.

To do so, I will explore the scientific quest to ‘unravel the secrets of
life’, to produce a map of the human genome, as a postmodern romantic narrative. Without overstating the unity of scientific enterprise (which is often more happily chaotic and benign than assumed by its interrogators) this tack allows me to explore (in a self-declaredly speculative mode) some components of the desires which have propelled forward the most monumental biophilia of the late twentieth century, that is, the Human Genome Initiative. My interest in these desires attends to their capacity to shapeshift not only organisms and descent lines, but cultural values and possible futures. Of particular interest, therefore, are the relations between scientific discovery and creation, or begetting. My reading of the Human Genome Project casts it as both progeny and parent in a genealogical rendering of science that posits its foundational moves always in dialogue with technologies of gender and generation (including discursive ones). In other words, I am here undertaking science studies as extended kinship theory.

Though pleasures are at issue, their pursuit is not always pleasing. But then, neither is the dictionary definition of romance as beatific as we might assume. Romance is defined as ‘an atmosphere or tendency characterised by a sense of remoteness from ... everyday life’. As a literary genre, it is classed as one which features ‘highly imaginative unrealistic episodes forming the central theme’. It is further described as an ‘exaggeration or picturesque falsehood’ (OED).

The Human Genome Initiative

The Human Genome Initiative is the global scientific project to sequence the genes on the 23 pairs of human chromosomes which comprise the so-called blueprint of humanity, the handbook of man, the code of codes, the mystery or secret of life. It is the largest collective scientific undertaking ever pursued within the biosciences. The aim, in pragmatic terms, is to unlock the secrets of the genes in order to alleviate the suffering caused by genetically-determined pathology, the scope of which continues rapidly to expand, as ever-greater potency is attributed to the gene as source, or origin, of human affliction. There is not a week that passes without reports of yet another discovery of a genetic root to conditions as obscure as shyness, now reportedly inherited. The map of the genome, when it is complete, uncovered, unlocked, penetrated by the masterful authority of the scientific gaze, is imaged and imagined as a great cure-all. It is a quintessentially millennial venture, entirely suited to the late twentieth century.

It is, of course, also a modern, and even premodern romantic narrative, as of the chivalric genre. A romance, according to yet another dictionary definition, is a ‘medieval tale, in verse, of some hero of chivalry’. This too characterises the Human Genome quest, often described as a search for the ‘Holy Grail’ of the biosciences, for that which is most unattainable. This is nothing if not an overdetermined scientific venture: at once a product of postmodern premillenialism, the apotheosis of modern molecular biology and starkly medieval in its resonances.

As it is pre- and post- and modern, the Human Genome Initiative is also a site of tradition, novelty and, self-evidently, recombination. It is a classically romantic quest in its constitution of the gene as the object of passionate scientific attachment, beset by obstacles in the path of fulfilment, which must be overcome, and which provide the occasion to produce (romantic) heroism, by pitting the narrative agents ‘against the odds’. Yet, this conventional quest narrative also suggests a departure from familiar themes insofar as it constitutes its object of desire in a manner somewhat at odds with bioscientific convention.

Onlookers familiar with the feminist analysis of science will recognise in the Human Genome Initiative themes well charted by theorists, such as Carolyn Merchant, Evelyn Fox Keller or Ruth Hubbard, namely the conquest of nature by a definitively patriarchal apparatus which constitutes the unknown as distant, other, feminine and secretive, in need of a masculine ordering mechanism provided by detached, objective, rational scientific mastery. This is the critique of post-Enlightenment Baconian science provided by a host of feminist theorists against which is contrasted, for example, a ‘feeling for the organism’, as is said to characterise the work of more feminine biologists such as geneticist Barbara McClintock, who pursued an intimate, rather than distanced, attachment to their object (Keller, 1983).

But, as Donna Haraway points out, even the most patriarchal bioscience has always been romantic. She notes,

Biology is inherently historical, and its form of discourse is inherently narrative. Biology as a way of knowing the world is kin to Romantic literature, with its discourse about organic form and function. Biology is the fiction appropriate to objects called

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organisms; biology fashions the facts ‘discovered’ from organic beings. Organisms perform for the biologist, who transforms that performance into a truth ... Romanticism passes into realism, and realism into naturalism, genius into progress, insight into fact. (Haraway, 1989: 4-5)

Like its epistemological antecedents in the life sciences, biogenetics is a transformative discourse, and, like nineteenth-century biology, it fashions facts out of the objects it selects and colonises according to an origin narrative of form and function, to further paraphrase Haraway. But what is different in the context of the Human Genome Initiative is the constitution and selection of the object. It is not the organism, but the gene, which is historicized as the point of origin, the narrative telos. It is not a natural object but an informational flow which is selected and produced as a certain type of object by this narrative trajectory.6

What is romantic, as is suggested by commentators such as Haraway, about the organism is its embeddedness in a liberal humanist ethos, to which the form and function (ie, the holism) of the organism is metonymically akin. It is, like the Hobbesian body politic, a whole made up of integrated parts and characterised by a bounded ontology. The gene is a very different entity. It is a fragment. The gene is like the postmodern subject, it is a partial segment, a location, a situated agency that relies on its context to express itself, but which can self-replicate, or mutate, into simulacra. It is from this perspective that I suggest a differently gendered moment of scientific hegemony becomes apparent.

The Human Genome Initiative is not so much concerned with Nature, or concepts of the natural, as its point of departure as it is concerned to unclotbe, demystify and manage a new object of knowledge which is the concept of Life. It is from this refashioned point of departure that a different narrative, and, more to the point, a differently gendered narrative of scientific progress, emerges.7

The gender of post-Enlightenment Baconian science’s ‘nature’ was definitively feminine. It had to be feminine, it had to be conquered, the conqueror had to be masculine, and the narrative trajectory, not to mention the necessary obstacle to romantic fulfilment, had to be instantiated by the reproduction of sexual difference this patriarchal fiction both authorised and relied upon. Nature, in this dialogic narrative construction, had to be oppositioned to Science, as did femininity to masculinity; the reproduction of these polarities inscribed as the relation of the active, knowing masculine subject to the passive feminine object of knowledge is what the feminist critique has named as both the gendering and the sexualization of the production of knowledge. Like genes, the polarised Baconian calculus instantiated an auto-replicating apparatus of co-constitutive subject and object positions, to the beat of the forward march of scientific progress (truth, reason, salvation) – and liberty and justice for all.

In the context of the Human Genome Initiative, the situation is both the same and different. Feminism describes well what is the same. What is the same is the controlling, managerial and hierarchical construction of scientific truth in the context of genetic science. A postmodern perspective becomes more useful in accounting for what is different. For it is in this context that gender becomes more of a receding horizon,8 and as it recedes all sorts of other boundaries dissolve, in turn releasing different techniques for instrumentalizing knowledge.

Genes, Gender and Nature

The gene, or the concept of the gene, is not gendered in the same way that Nature was. The predominant trope or idiom for the gene is not natural but rather informational. Insofar as it belonged to the realm of the natural, the organism was feminized, as it was romanticised, for the two had been collapsed. The idea of the gene belongs more to an ontological universe defined by the idea of the life force – to a different construction of vitalism, in a sense. Vitalism, in the history of biology, describes the goal-directedness of design (or, put differently, that part of a system’s self-referentiality that is in some sense inexplicable). Earlier vitalisms emphasised the determining influence of the whole upon the parts. This is the language of nature the organism speaks – it is a romantic notion, of the parts losing themselves in a greater whole. The fluidity of the organism is that of a system, whose parts interrelate into a complex function greater than the sum of its parts. This is its vitality.9

It is this view that the idea of the gene reverses. From the perspective of a geneticized ontology, the whole is not the sum of its parts, the parts summarize the whole. The gene is the essence – the segment reigns supreme. The fluidity of the gene is expressed not in the form of a complex organism, but as an information flow. It is described as a code, a cipher. Information is gendered differently from nature. It is more gender neutral. It is more sexless (see Oyama, 1985).
It is for this reason that the Human Genome Initiative raises some interesting questions for the feminist analysis of science, in terms of gendered definitions of the natural, in terms of romance, and in terms of the subject and object positions constructed by the interrelation of the scientific knower and the scientific known. Baconian science relied upon the reproductive metaphor of paternity – of seminal thoughts and fathers of invention, of penetrating gazes and fruitful outcomes. The reproductive imagery it deployed was premised upon the heterosexual model, in its emphasis on male sexual conquest in pursuit of the paternal reproductive function. Neither heterosexual masculinity nor rapacious ‘Baconian’ pursuit attach to the representation of the fecundity of the gene. It is precisely its self-replicating capacity which is definitive of the gene, as distinct from the organism. As Richard Dawkins states, ‘the potential near-immortality of a gene, in the form of copies, is its defining property’ (1976: 37).

By bypassing heterosexual reproduction, and drawing its analogies instead from the less gender-differentiated idiom of information, genetic science inevitably invites a different set of mergings. Whereas earlier versions of biology drew heavily on the imagery of a masculine science unveiling a feminine nature, and emphasised the fecundity of this coupling, the mergings which inspire the awe of biogeneticists are much more expansive and promiscuous. Informing this shift, there is again the indebtedness to a model of replication, rather than reproduction; to an idiom of information flow connecting generations, rather than of a blood tie; and to an interest in the secrets of life, rather than the facts of Nature. In the realm of genetic science, even species boundaries disintegrate, as in the modernist evolutionary accounts of human origins, which emphasise our proximity to apes.

As the infamous sociobiologist E.O. Wilson enthuses, ‘We are literally kin to other organisms ... About 99 per cent of our genes are identical to the corresponding set in chimpanzees’. ‘This does not diminish our humanity’, he adds, ‘it raises the status of non-human creatures’ (1984: 130). He emphasises this fact in *Biophilia: the Human Bond with Other Species*, in which he argues that biology itself urges us to recognise the importance of biodiversity and consequently eco-awareness (see also Wilson, 1992).

As E.O. Wilson speculates on the mergings of the past, the scientist Lynn Margulis and science writer Dorian Sagan also see such mergings in the future. They argue that, ‘We are beginning to see the biosphere not only as a continual struggle favoring the most vicious organisms but also as an endless dance of diversifying life forms, where partners triumph’ (1991: 66).

**Panhumanity and Autopaternity**

With the formal approval in Britain in 1993 of human genetic engineering trials, the recombinant future promised by novel pedigrees and partnerships is undeniably in the offing. With its emphasis on the life flow as analogous to information circuitry, through which the map of the genome is being produced, the possibilities for merging are virtually infinite as well as simultaneously multiple. Yet, while such protean hybridity – the potential physically to become one with animals, plants and even machines – may appear promiscuous, it is arguably also unsexed by the nature of the bonding process, which is informational and disembodied. It is partly in the context of the loss of the species boundary, through the merging of humanity with other life forms, that an exchange suggests itself. Trading organismic distinction for pan-species genetic information flow pulls the rug out from under the sex/gender system as we know it. It is the possession of a reproductive body, not the possession of a sexed subject position, which has already made of the male genitalia, once a sacrosanct haven from clinical scrutiny, a hot new topic on the agenda of reproductive biology – the human bench of real-time genetic science. Conception is redefined as the union of the genes, whether or not they were preceded by a blood tie; and to an interest in the secrets of life, rather than the facts of Nature. In the realm of genetic science, even species boundaries disintegrate, as in the modernist evolutionary accounts of human origins, which emphasise our proximity to apes.

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to evoke mixture and inclusion. As race in the context of genetic sciences is both purified and reconstituted as a mixture of continuum, so sex and gender are both disarticulated from antecedent cultural matrices and refashioned along a different cultural logic. As race is both reasserted and \textit{deracinatned}, so too is gender both dissolved and \textit{re-genealogised}. This occurs through a decoupling of paternity from heterosexuality in order to achieve what I describe as \textit{autopaternity}. As the gene is primarily defined as an autoreplicant, the corresponding genealogy or pedigree is unilineal. Insofar as paternity has long been associated with the capacity to give form and shape to matter, analogous to the planting of the seed in the soil, the recovery of paternity in the context of genetic science is entirely familiar. What is different is the capacity to redefine maternity along this model (as in cases of 'total surrogacy' whereby the embryo is provided by the commissioning couple, so that both partners contribute their 'seed' to the gestational surrogate). Sex/gender is also refigured in the context of information, where the gene, as 'author' of the message, becomes the agent of its own instrumentality, in a loop of self-determinism as telos that does away with the need for 'soil' (or matrix) altogether.

One could speculate, therefore, the following set of correlations:

\begin{tabular}{ll}
  nature & life  \\
  organism & gene  \\
  sexual coupling & self-replication  \\
  seed and soil & seed and seed  \\
  family of man & panhumanity  \\
  hetero-paternity & autopaternity  \\
  genealogy & information flow  \\
  bilateral or cagnatic & unilineal or recombinant  \\
\end{tabular}

So far, I have suggested that the new genetic sciences might be understood as \textit{differently gendered} from the biosciences premised on older constructs of 'the natural'. The shift I have attempted to outline is away from 'nature' as a foundational object for the biosciences towards an emergent model of life, or 'life itself'. The transitions indicated as pairs above mark out possible trajectories of emergent shifts in terms of science and paternity. The main difference indicated between the two columns is the decoupling of reproductive \textit{telos} from heterosexuality. The concept of autopaternity belongs to a different sex/gender system than does the 'hetero-paternity' it displaces. In this sense, the ways in which genetic sciences may be seen to have a 'degendering' effect in relation to previous accounts of the natural are offset by the regendering inscriptions of, for example, maternity as the mimesis of the male seed.

Here again, the question of romance works as a useful sighting device, enabling a reconsideration of the nature of desire at work in the pursuit of 'man's second genesis', or his birthing of himself, out of the womb of genomic creation. This desire is not so much to conquer nature as it is to create life itself. Is one of the exchanges at issue that for science to assume the maternal function of creating life it must reinscribe maternity as a paternal act? What are the consequences of such shifts for a technologized reproductive imaginary in a world of science we can still safely describe as a patriarchal establishment? Is another of the 'trades' working itself out in this context that, as many more women scientists occupy positions of leadership in the biosciences, particularly in reproductive medicine, but also in reproductive science as well as genetics, their role has to become more isomorphic with that of male scientists? Is science in this sense becoming a gendered performance, rather than an expression of preformed gender attributes? Finally, is the romance of discovery now made manifest as an act of begetting, in a move reminiscent of the many similarities between modern romantic love and older conventions of divine rapture?

\section*{Conclusion}

To conclude, the project to map the human genome is, like scientific quests which have gone before it, a potent source of cultural imagination, especially in relation to the future, and inevitably inscribed by gender differences. Importantly, I have argued, the \textit{feitisisation of Life} that is evident in the context of the Human Genome Initiative is not the Baconian romance with Nature revisited. It posits a very different narrative trajectory, in which a universe of unbounded couplings with plants, animals and machines is celebrated as ecological, emancipatory and pleasurable. We might call it in this sense a postmodern romance: a promiscuous pastiche of 'family resemblances' recombined, like elements from different architectural traditions, into a celebratory excess of novel reiteration. In this sense, reproduction in the context of the new genetic sciences is not so much
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'entered-up' as it is 'camped-up', in a mocking re-presentation of 'the real thing' it simulates.

There is another sense in which the refiguring of discovery and paternity in the context of the Human Genome Project invokes an older, quintessentially patriarchal, tradition of insemination as the definitive act of begetting. 1 From this perspective, the romance between the scientific knower and the object that is known is not of the masculine aggressor conquering the feminine adversary, but instead a project of self-realisation. The obstacle in the path of fulfilment here is not elusiveness on the part of the quarry so much as the quasi-divinity of the matter at hand. Thus, a much older tradition of romance, or arguably its antecedent in the form of spiritual transcendence, is suggested.

In either instance, the conventions of romance work as a set of indices, charting the relations between science, discovery and creation. As the pursuit of genetic salvation accelerates in the remaining years of the Human Genome Initiative and beyond, the hermeneutical trope of reading its performance as a postmodern romance thus yields the possibility of pursuing its multilayered dimensions. As its inscriptions of life history, of human history and of inheritance flatten into binary bit space, the recombinant pedigree of genomic science becomes a palimpsest of mixed ancestry. This excess offers the possibility of some novel hybridities which may work to destabilize longstanding patterns of parenthood, procreation and kinship. Yet too celebratory a recognition of such possibilities obscures the extent to which familiar patterns, especially paternal ones, may be not only reinscribed, but re-embodied. Here, as ever, new sighting devices will be as essential as new technologies of encoding, in the formation of the reproductive imaginaries of future generations.

Notes

1 The gendered dimensions of science have been the subject of a rapidly expanding scholarly literature for at least two decades. Indeed the intersection between gender and science studies increasingly reveals how much these two fields are constitutive of one another. Carolyn Merchant's The Death of Nature (1980) related the feminization of nature to the rise of modern science which she characterised as quintessentially patriarchal. The work of scientist Evelyn Fox Keller critiqued scientific epistemology as masculinist within a more contemporary frame (1985). David Noble's recent and unambiguously entitled A World Without Women (1992) charts the exclusion of women from the power-knowledge which is concealed as 'science', an argument paralleled by the work of Londa Schiebinger in both The Mind Has No Sex? (1989) and Nature's Body (1993). This is only an indicative list of titles, in no way representative of the breadth and depth of recent scholarship on gender and science. For an overview of the more philosophical dimensions of this debate from the mid 1980s, see Harding (1986). For counterpoints, see Franklin and McNeil (1988) and Haraway (1991). For more recent assessments see Harding (1991) and Haraway (1989, 1991).

2 For an introduction to the social, ethical and legal issues raised by the human genome initiative, see Kevles and Hood (eds) (1992) The Code of Codes. For a feminist critique see Hubbard and Wald (1993) Exploding the Gene Myth. For other introductory accounts, see Hall (1992), Levy (1992) and Wingerson (forthcoming), Exploding the Gene Myth. For an account of the range of cultural contexts in which it is possible to trace the emergence of new forms of genetic essentialism, see Nelkin and Lindee (forthcoming), Powers of the Gene: Heredity in American culture. See also Franklin (1993a and b).

3 The Holy Grail both refers to the chalice used by Christ at the Last Supper, and is an allegorical term for the object of a prolonged and arduous quest. In particular, the search for the Holy Grail is also associated with the conventions of knighthood, such as bravery, honesty and courtesy, otherwise known as chivalry. That the object of the genome quest should be understood in terms of masculine codes of conduct related to battle and protection of the feminine sex (the chivalric code) is suggestive both of Noble’s (1992) analysis of science in terms of christian clerical culture and Shapin and Schaffer’s (1985) emphasis on masculine modesty as a component of scientific virtuosity in the rise of ‘the experimental life’ connected to modern science. See also Haraway (1993).

4 Accounts of the discovery of the double helix are many and celebrated, in particular of late on the occasion of the twentieth anniversary of this event. For an analysis of this account of discovery as a ‘conventional quest narrative’, see Franklin (1988).

5 The redefinition of the natural in the context of the new genetics has been the subject of commentary by anthropologists Paul Rabinow (1992) and Marilyn Strathern (1992). Both argue that ‘nature’ has lost its grounding function to the extent it has become something that can be added on to, or, as Strathern puts it, ‘entered up’. Rabinow indexes this to a shift ‘from sociobiology to biosociality’ and describes the process as excessive or ‘meta’ modern. For Strathern the excess is that of consumer choice as an end or identity in itself,
coupled to technological innovation, producing a postmodern condition of loss. For a collection which explores these and other related anthropological debates concerning the status of nature and the natural, see Naturalizing Power, Delaney and Yanagisako (eds) (forthcoming).

For analysis of the emergence of 'life' as a concept within science, see Georges Canguilhem, A Vital Rationalist (1994); Michel Foucault, The Order of Things (1970); Francois Jacob, The Logic of Life (1973); Steven Levy, Artificial Life (1992); Ernst Mayr, The Growth of Biological Thought (1992) and Carl Sagan, 'Life' in the Encyclopaedia Britannica (1992). For a discussion and critique of the way in which 'life itself' is being sacralised, see Barbara Duden, Disembodying Women (1993). For a juridically-based philosophical argument in favour of understanding life as essentially sacred and inexplicable, see Dworkin (1993). For a review of these and other accounts, see Franklin (forthcoming).

I am grateful to Penny Harvey for this formulation. See also Duden, 1993.

Vitalism is often contrasted to mechanism, the view of animation associated with the rise of modern science and positivist empiricism, or the experimental method. Whereas mechanism accounts for animation in terms of the function of parts, as in the ticking of a watch, vitalism carries with it more of a suggestion of mystery and inexplicability in relation to the 'life force'. Both vitalism and mechanism can be seen as important epistemic techniques in the context of genome science. Clearly, the impulse to provide a 'map' of the genes in order to influence phenotype articulates a parts-control-the-whole mechanism. Yet, the imagery of mystery, secrecy and divinity which also attaches to the genome, and descriptions of the project to map it as a 'second genesis', index older vitalistic models of life itself.

Conception is now defined as the union of the genetic substance whereas fertilization is the union of the two gametes. In other words, for example, human fertilization would be the fusion of egg and sperm whereas conception would be the merging of their genetic substance. This distinction is now widely recognised, including within the Human Fertilisation and Embryology Act of 1990 (in Britain).

The term 'panhumanity' as used here emerges out of discussions with Celia Lury and Jackie Stacey in the context of recent collaborative work on new forms of universalism associated with global culture.

For analysis of Benetton advertising as productive of a global and transracial 'panhumanity' expressed through an appeal to consumer desires, see Lury (forthcoming). For an extension of this analysis of the 'Benetton effect' of racial flattening to international adoption, see Castaneda, 1994.
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