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Methodological rationale and its operationalisation**

GILL, Jameson

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An Investigation of cultural complexity via memetics: Methodological rationale and its operationalisation

Author: JAMESON GILL - Email: Jameson.Gill@shu.ack.uk

University: SHEFFIELD BUSINESS SCHOOL / SHEFFIELD HALLAM UNIVERSITY

Abstract

After introducing the background and motivation for my work a portion of my PhD research is presented which considers issues related to the nature of my literature review and the subsequent decisions I have made in respect of an appropriate methodology for empirical work. Literature related to a neo-Darwinian view of human culture is discussed and a number of difficulties related to an absence of consensus amongst theorists are highlighted. The neo-Darwinian perspective demands a replicator in culture which is analogous to the gene in biology and the candidate for that replicator has become known as the meme. The abduction of a narrative orientated methodology for searching for such a replicator is explained and its application demonstrated through an example of coded data. The analysis is based on a structural narrative approach and in particular on the notion of narrative programmes which interact and perhaps compete in social environments. Following concluding remarks the next steps of my PhD work are described.

KEY WORDS: Meme, Memetics, Narrative, Complexity

1 Introduction

This paper describes part of the work I have undertaken to date on the Sheffield Hallam University (SHU) PhD programme. In particular, the elements described below concern the development of a methodological rationale following a review of the literature pertinent to my subject area, memetics. I go on to operationalise this rationale as a practical approach to gathering and engaging with my data.

2 Background

The work reflected in this paper is the result of a congruence of ideas, some of which I originally encountered whilst working in a sales and marketing role at a small printing firm several years ago. My previous career until that time had consisted of similar roles in which my responsibilities had progressively grown in parallel with gaining the professional marketing qualifications of the Chartered Institute of Marketing (CIM), followed by an MA in Marketing. I think of my study and work careers as progressing in parallel rather than in conjunction because as both developed it seemed to me that the marketing theory I had learned was difficult to apply in, or inappropriate for, the industry settings in which I worked. I found myself having to apply some of the broad concepts in my own way and for my own benefit rather than as part of the wider operations of the organisation I worked for. This mirrored a recurring commentary linked to the CIM which was based around improving marketing's influence in organisations generally and I took this to mean that there were other people experiencing similar circumstances to my own.

I became disillusioned with marketing both as a business function and an academic body of knowledge and subsequently, I began to read more widely. One book which interested me in particular was 'The Selfish Gene' (Dawkins, 1976; 1989). In the book and then later in 'The Extended Phenotype' (Dawkins 1982; 1999a) Dawkins describes his gene centric conception of the neo-Darwinian synthesis of evolution and genetics. I found the discussion of biology engaging and it made intuitive sense to me. However, Dawkins did not stop at discussing biology. On the basis that genetics cannot explain the variation we see in human culture, even though culture seems to evolve in a similar way to biology, Dawkins (1976) speculated that there may be another separate but related evolutionary process at work. This second process was modelled on an alternative to the

gene and Dawkins (1976) coined the term meme with which to name his hypothetical construct¹ before going on to suggest that memes could be passed between people or caught like a virus. The way I experienced some practices seemingly copying themselves in the workplace, even if this was as simple as two people whistling the same tune, lent some anecdotal evidence to the meme concept and I realised the subject would make an interesting area for me to develop through research.

With this in mind I enrolled on the MA, Social Science Research Methods at SHU so that I could develop my research skills and as part of the course I completed a qualitative study at my workplace which investigated the relationships between the sales department and the other business functions such as estimating and production (Gill, 2007). The research, which identified the discourses at play in the organisation, found that what I regarded as a sales/customer discourse was dominated by a production orientated discourse. The battleground was the variation in meaning attributed to concepts such as orders, estimates and proofs. So for example, where sales people saw orders as a relief from the pressures of achieving sales targets those working in the production discourse saw orders as problems which were difficult to solve. Interestingly, the dominant discourse persisted even though the firm was performing poorly and people's jobs were at risk. On reflection, the persistent practices coupled with an example of variation in meaning led me to consider a similar study to be appropriate for the empirical work of my PhD because both issues are consistent with aspects of evolution in biology.

3 What is Memetics and why is there no methodology?

The study of memes and their conceptual application to examples of culture has come to be known as memetics and memetics therefore, is an approach to understanding and explaining human culture which is based on evolutionary principles, but in a very specific manner. The evolutionary algorithm of variation, selection and retention which was first described by Charles Darwin (Darwin, 1859) has been applied to culture and specifically organisations in a number of ways. Aldrich (1999) for example, shows how variation, selection and retention can be applied to organisations and groups of organisations as a metatheory with which ecological, institutional, interpretive, organisational learning, resource dependence, and transaction cost economics approaches can be studied via the evolutionary algorithm.

¹ Later Dawkins (1999b) suggested that his initial reason for postulating the meme was simply to draw attention to the gene's role as a replicator and to 'cut the gene down to size' in terms of the influence genes can be assumed to have on human behaviour.

The dilemma faced by scholars investigating purportedly evolutionary processes in organisations and wider culture is that where the theory of teleological design in the natural world was falsified by evolutionary theory and the modern synthesis, the apparent evolution of cultural traits could be the opposite. I.e. where, in reality, human design is at work through the conscious decisions of people, an emergent and mindless algorithmic process is assumed by mistake. In this respect apparent evolutionary effects in culture could simply be humans' narration of events where, actually, associated or temporally local events have been mistaken for cause and effect relationships. Indeed, Landau (1984) points to the need to recognise scientists', often unrecognised, narrativity which can be embedded in their work.

However, memetics is very particular in suggesting how an application of evolutionary thought ought to be applied. Specifically, it calls for a close analogue of the neo-Darwinian synthesis. So, in addition to variation, selection and retention it requires a replicator to play the role the gene plays in biology. The replicator in question is, of course, the meme.

The selfish gene concept (Dawkins, 1976; 1989) is an explication of what a replicator is. It states that life arose on the Earth as the consequence of nothing more than certain molecules beginning to make copies of themselves, i.e. replicate and the actual unit which is copied constitutes the replicator. In a world where there are limited resources for replication, any variation between the replicating units which makes one more able to 'compete'² against the others for those resources will mean it will be more successful in making copies. It will be 'naturally selected'³ therefore and its way of copying will be retained in the copies that it makes. Over time the cumulative variations in chemical replicators has led to more and more elaborate ways of being copied and these 'ways of being copied' have become the range of evolved biology on the planet. Bodies, or phenotypes, are simply complex ways of replicating and the replicators in question have come to be known as genes.

In applying the same process to culture the meme, as a cultural replicator, is simply a unit of culture which inherently makes copies of itself and over time, the variation selection and retention of memes leads to the complex culture experienced by people, a seemingly straight forward process. Unfortunately, what seems to be a simple premise becomes fraught with difficulties because although a number of authors have developed memetic theories of culture there has been very little empirical research to help weed out what theory can be supported by evidence and what cannot.

² No consciousness is assumed. Competition is simply due to the variation in the chemical qualities of the replicator. Hence, Dawkins' use of the word 'selfish' is metaphorical only.

³ The gene, therefore, is the unit on which natural selection operates in biology.

Some of the unresolved issues relate to what constitutes a unit of culture, what is the method of memetic transmission and what are the implications for human agency. Invoking self replicating entities as the prime movers in human culture threatens the notion of free will, of course. Dawkins avoids this dilemma by suggesting that memes parasitize minds (Dawkins, 1993) but this raises problems for a materialistic view of human intelligence grounded in an evolutionary explanation of life. Memetics couched in these terms is missing an explanation of how brains give rise to minds. Writers such as Richard Brodie and Aaron Lynch have not been deterred from developing the 'meme as virus' idea but they either side step the issue of free will (Brodie, 2009) or do not address it at all (Lynch, 1996).

Writers *who have* addressed the implications of the meme concept for free will have indentified the difficulties of how such a theory would need to address the issue. Dennett (1991) suggests that memes may be a factor in generating what we experience as consciousness but reserves room for a degree of agency (Dennett, 2003). Blackmore (1999) goes further and suggests that what we consider to be our 'self' is, in fact, no more than a complex of memes⁴ which creates the illusion of a self through which only glimpses of other conscious states can be fleetingly sensed.

The underlying problem which none of the theorists mentioned above have addressed is, as Auger (2002) points out, that there is yet to be a single reliable account of the discovery of a meme. Therefore, to help resolve the matter for I have returned to the original decisive evidence of the existence of particulate units of biological inheritance, the discovery of Mendelian heredity in peas as described by Guttman, et al. (2002). The search for similar replication in culture will be the key knowledge which will be pursued through my PhD empirical research.

4 Constructing a Methodology

Faced with such a disparate range of theoretical perspectives in the literature and little guidance provided from empirical research⁵, I have encountered the need to abduct a methodological approach through what turned out to be, in the end, an exegetic review of the literature from a critical rather than an inspirational point of view (Czarniawska, 2004).

⁴ Blackmore (1999) terms this complex a 'selfplex'.

⁵ All the empirical work I have reviewed to date assumes, at least to some degree, the existence of memes at the outset.

The clue for how I might proceed was found in complexity science's view of evolution. Gell-Mann (1994) identifies complexity, such as that found in both biology and culture, as the product of complex adaptive systems (CASs). CASs occur when something which can be considered an observer encounters an environment, or data stream and generates a schema. The schema which is a set of rules for engaging in that environment will be one of a number of possible schemata and the schema reflects the effective complexity (EC), or regularity, which exists in the data stream.

From a complexity science perspective, DNA records schemata for existing in the data stream of encounters put forth by the natural environment organisms have evolved/are evolving in. Gell-Mann (1994) goes on to suggest that one CAS may spawn higher level CASs which operate in a similar way to the lower levels and that culture could be an example of a higher level CAS. Therefore, a person acting as a CAS could derive a mental schema for existing in the cultural world or, more specifically, an organisational setting. Figure 1 depicts the two ways organisms develop strategies for surviving and reproducing. In animals, a bat for example, the strategies are mostly encoded in DNA which enables instinctive behaviour and perhaps some simple associative learning but in humans or other animals with culture the strategies are not necessarily passed on by biological means. They are, encoded differently as part of a separate CAS. So culture, although dependent on evolved biology, constitutes a higher level of CAS which operates to generate distinct schemata of its own. Where animals' survival strategies are largely dependent on instinct encoded in genes, humans can draw upon a stock of cultural survival strategies which are not inherited biologically and it would be in these alternative schemata that memes might be found, if they exist.

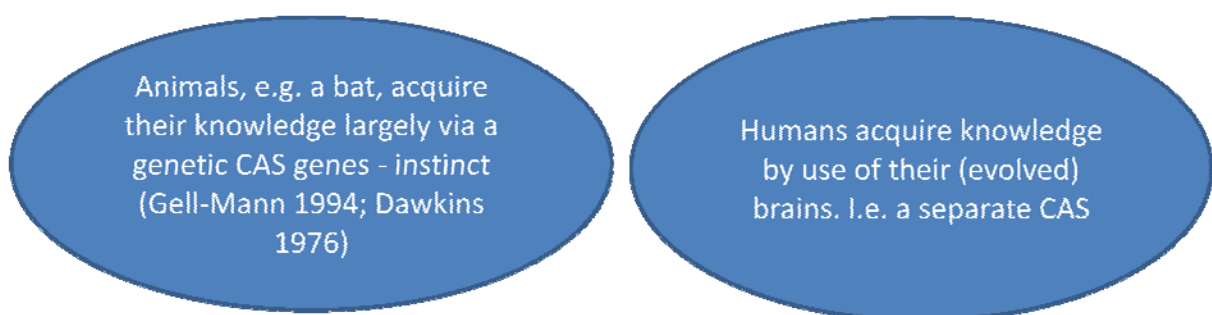


Figure 1 Instructions (knowledge) for survival via alternative CASs

The link to generating a social science methodology suitable for the search for cultural replicators is achieved through Gell-Mann's proposed measure for Effective Complexity (EC)⁶. Gell-Mann, (1994) suggests a succinct written account of the regularity observed by a CAS, in English, as a measure of

⁶ Effective complexity is the regularity minus the randomness observed in a data stream.

the EC encoded in the CAS's schema. The longer the written account of the regularity, the greater the EC. In turn, Dawkins (1982; 1999) suggests a similar approach to studying the complexity of biology by suggesting that, even without knowledge of the specific genes in question, genetic influence can nevertheless be investigated via the survival strategies which are deployed by organisms. The strategies can be operationalised by writing them down in English in much the same way that one might write down a computer program *or even reconstruct* its functional equivalent.

“Nevertheless although no program was ever written down, just as in the case of the computer running a program which has been lost, it is convenient for us to think of the animal as ‘obeying’ a program ‘written’ in some easily understood language such as English.”
Dawkins, 1999, p119.

So, a written account can record the EC of both the bat's instinctual schema and the humans learnt schema. Of course, Dawkins suggestion of computer like programs presupposes an underlying genetic dynamic from which the organism's phenotype and instinct are inherited via DNA but the written strategies could form the basis of a search for or *reconstruction of* the genes involved. It was Mendel's written account of heredity in peas which demonstrated the existence of dominant and recessive genes, after all.

Therefore, there is an opportunity to apply the technique of written accounts at two levels of CASs, as depicted in figure 2. Where the genetic programs which constitute genetic inheritance give rise to cultural programs via a higher level CAS both can be written in English. Written accounts are well known in social science as narratives (Czarniawska, 2004) and so by following the route of EC a body of methodological literature can be justifiably made available to the empirically minded memeticist.

So, a narrative methodology is supported by complexity science but the choice of narrative as a basis for defining a methodology to search for memes is also supported by the number of storytelling examples which are used by a number of authors who have contributed to the wide ranging perspectives of the memetic theory mentioned above. Blackmore (1999) makes extensive use of story examples and Dennett not only suggests that memes may contribute to his view of human consciousness as a narrative centre of gravity (Dennett, 1991) but goes on to link an internal narrative to interpersonal narratives (Dennett, 1996c).

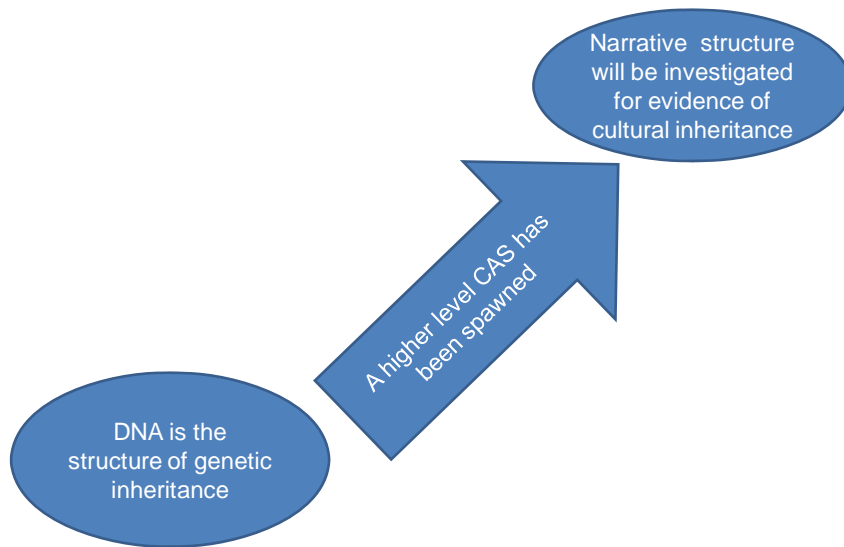


Figure 2 Genetics and culture depicted as two separate but hierarchically associated domains of complexity

5 Data Collection and Coding

Having decided upon a narrative approach to empirical work a review of the narrative methodology literature reveals a degree of reciprocity with aspects of an evolutionary approach to culture. For example, Czarniawska (2004) suggests that narrative is an innate way of human knowing and Cobley (2001) suggests that narratives have an ontogenetic component grounded in the biological constituents of human biology which is coupled with a phylogenetic component grounded in the diversity of human culture. In particular, Latour (1991) identifies the operation of narrative programs and anti programs as being responsible for emerging cultural innovations which is reminiscent of Dawkins' conception of organisms inheriting genetic programs. Latour goes on to suggest that such innovations are 'no more teleological than Darwinian evolution' (Latour, 1991, p120).

Having identified a justification for narrative inquiry into the concept of replication in culture, a study similar to my previous research (Gill, 2007) mentioned above has been designed. The use of my employer's organisation⁷ as a case study subject enabled the collection of naturalistic data (Denzin, 1971) over a prolonged period of time thereby taking advantage of the inherent access gained through being an employee and participant in the firm's culture.

⁷ I left the firm in question some time ago and now work at Sheffield Hallam University.

Subsequently, narrative data has been collected from a period of participant observation which spanned approximately three months. The data has been recorded in a diary in the form of a series of minimal plots (Czarniawska, 2004), i.e. an account of a series of events and actions within the case study firm in which a range of actors⁸ either take actions which lead to events or have events impact upon them which thereby constitute an action. In other words, a state of equilibrium is disturbed and a new state of equilibrium occurs as a consequence. The events/actions can then be regarded as structural elements of the narratives at play. As such, they can then be coded as either a contribution to a narrative program or a narrative anti-program (Latour 1991). This conception of the data is represented in figure 3.

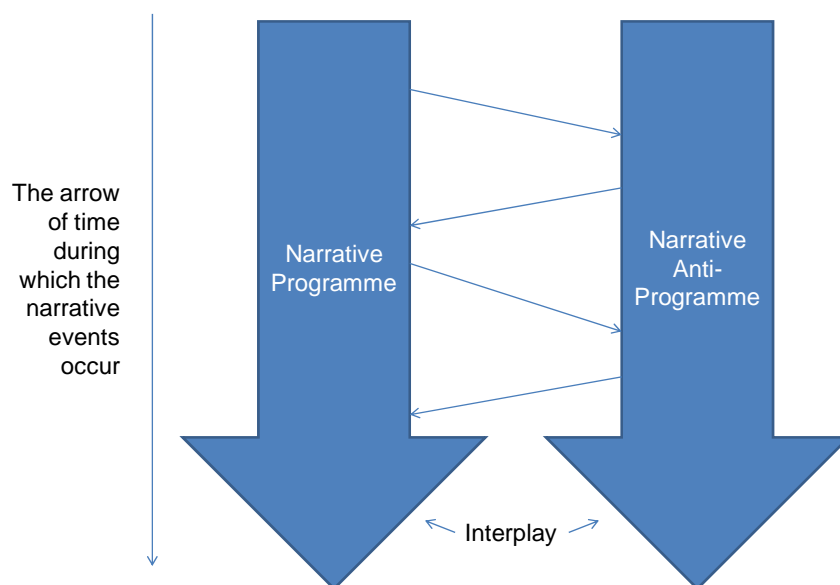


Figure 3 The interplay of narrative programmes and anti-programmes

The distinction between narrative programmes and anti-programmes is situated. If I identify myself, based on my earlier study (Gill, 2007), as an actor whose narrative *raison d'être* is linked to the sales and customer discourse then events and actions in favour of achieving positive outcomes from that perspective would constitute the narrative programme and other events and actions which frustrate those outcomes would constitute the narrative anti-programme. There is a conceptual link between the notion of an equilibrium in a narrative plot and a narrative *raison d'être* but this is difficult to bear out in the data because I have found it difficult to code for equilibriums. They remain implicit

⁸ Abbreviated job titles have been used to identify the actors in the data so individual identities are protected.

rather than apparent in the data. Of course, this is at least partly due to the manner of my data collection which has been based on the collection of events/actions but an equilibrium, by its very nature, is inherently difficult to identify or describe until it is revealed by a disturbance to it by some kind of event or action.

A small portion of the diary data is presented in figure 4. In this example I have coded for an initial equilibrium in an attempt to bound a minimal plot which includes an event/action followed by subsequent complicating events/actions (Czarnaiwska, 2004) before returning to a re-equilibrium but the concept of a minimal plot will have to be flexible. It could be argued that an equilibrium/re-equilibrium occurs between each complicating event/action and what I have coded here as a re-equilibrium is not actually a resolution of the initial event/action, rather it is simply the closing of an exchange in terms of the temporal proximity of the preceding complicating factors. At this time I do not think the issue of equilibriums will be 'solved'⁹ during my study but a discussion of how the concept can play a role in interpretation may well prove to be insightful in its self.

Diary 1, Line: 18 to 35

Equilibrium: I arrive at the office at 8am and spend the day getting back up to speed with orders etc after the Christmas break. The CS, CAM and CAE are in the office as well. The MD and E1 are still on holiday and the PM is working a late shift. There's general post Christmas chat and good natured banter in the office.

Action: The CS asks the CAE to process some paper work so a van can be despatched.

Anti-Action: The CAE insists on having a cigarette first despite being asked a number of times to do the job before taking a break.

Reaction: The CS keeps a banter-like attitude despite being knocked back.

Anti-action: The CAE returns to her desk and addresses the CS "Why are you cluttering my desk with jobs" – CAE

Action: And a little later the CS asks again for the delivery paperwork

Reaction: The CAE answers "I'm waiting for you" – CAE

Re-equilibrium: So the CS goes over to her desk.

Figure 4 An example of coded observation diary data¹⁰

⁹ I expect my findings to be reported in a situated manner which reflexively recognises the constructed nature of the concepts used rather than demonstrates any objective finality related to a correspondence theory of truth.

¹⁰ The abbreviations in the data refer to job titles. Customer Secretary (CS), Customer Account Manager (CAM), Customer Account Executive (CAE), Managing Director (MD), The first Estimator (E1), Production Manager (PM).

The sample data in figure 4 shows how the program of action aimed at providing a solution for the customer in question is frustrated by the anti program. When the Company Secretary (CS) makes an action to have some paperwork processed there is an anti program response coded as an (anti-action) by the Customer Account Executive (CAE) who experiences the action as an event. Structural elements of the narrative which mitigate but do not resolve an antecedent event/action are coded as responses, i.e. they are neutral to the interacting programs.

Subsequently, the structural elements can be listed in code to demonstrate the pattern of the exchange between the two narrative programmes, as follows:

E,A,AA,R,AA,R,RE (where the letters represent the initials of the coded structural narrative elements.)

Depicting the pattern of the interplay of the narrative programmes mentioned earlier (figure 3) in this way enables a measure of EC. Gell-Mann's (1994) conception of simplicity and complexity, using information theory, is demonstrated in figure 5. Where a very 'complicated' but simple string would need to be described by repeating it verbatim the complexity of a string which includes regularity (EC) can be summed up, in English, by way of describing its program.

Simplicity
101100001000110111101111001010010000

To describe this data the whole string would need to be repeated

Complexity is the patterns which can be identified
11101110111011101110111011101110

The Effective Complexity therefore is:

“Type one three times, then a zero and then repeat this nine times”

Figure 5 Simplicity and Effective Complexity

Actually figure 5 also demonstrates the elusive nature of EC because although I attempted to type an entirely random string of binary digits to demonstrate simplicity, on closer observation there is a small amount of EC apparent. Near the middle of the string there is the recurring pattern of 0111101111 and indeed, Gell-Mann (1994) acknowledges that EC cannot be systematically recognised and derived; it must be *discovered* through observation. The example of how you can recognise regularity in figure 5 shows how people acting as CASs can derive EC as an emergent property of a learned schema. However, the emergent quality of patterns which can be coded as E,A,AA,R,AA,R,RE, for example, means that a global survey of the patterns in my data would be difficult to achieve. Instead, recognising that the approach describes potential regularity suggests that an investigation of the 'linkages' between adjacent events/actions could be fruitful. The description of such an interpretation of the regularity in the data would constitute the measure of EC in the cultural patterns which are being expressed, therefore.

6 Next Steps

To enable the next stage of my search for cultural replication the data, of which figure 4 is a typical example, will be analysed to interpret the links between the narrative events belonging to each programme and their antecedent in the data. The subsequent account, written in English, will represent the effective complexity of the cultural circumstances being enacted which can then be investigated more closely for evidence of replication.

7 References

- ALDRICH, Howard. (1999) *Organisations Evolving*. Thousand Oaks, Sage.
- AUNGER, Robert. (2002) *The Electric Meme: A New Theory of How We Think*. New York, Free Press.
- BLACKMORE, Susan. (1999) *The Meme Machine*. Oxford, Oxford University Press.
- BRODIE, Richard. (2009) *Virus of the Mind: The New Science of the Meme*. London, Hay House.
- COBLEY, Paul. (2001) *Narrative: The New Critical Idiom*. Oxford, Routledge.
- CZARNIAWSKA, Barbara. (2004) *Narratives in Social Science Research*. London, Sage.
- DARWIN, Charles. (1859) *On the Origin of Species by Means of Natural Selection*. London, John Murray.
- DAWKINS, Richard. (1976) *The Selfish Gene*. Oxford, Oxford University Press.
- DAWKINS, Richard. (1982) *The Extended Phenotype*. Oxford, Oxford University Press.
- DAWKINS, Richard. (1989) (2nd Edn) *The Selfish Gene*. Oxford. Oxford University Press.
- DAWKINS, Richard. (1993) Viruses of the mind: In *Dennett and his Critics: Demystifying Mind*, DAHLBOHM, B. (ed) pp13-27, Oxford, Blackwell.
- DAWKINS, Richard. (1999a) (2nd Edn) *The Extended Phenotype*, Oxford University Press, Oxford.
- DAWKINS, Richard. (1999b) Foreword: In Blackmore, S. (1999) *The Meme Machine*. Oxford, Oxford University Press.
- DENNETT, Daniel C. (1991) *Consciousness Explained*. London, Penguin.
- DENNETT, Daniel C. (1996c) Producing future by telling stories. In FORD, K and PLYSHYN, Z. (1996) (eds) *The Robots Dilemma Revisited: The Frame Problem in Artificial Intelligence*. New York, Norwood.
- DENNETT, Daniel C. (2003) *Freedom Evolves*. London, Penguin.
- DENZIN, Norman K. (1971) The logic of naturalistic enquiry, *Social Forces*, **50** (2), 166-182.
- GELL-MANN, Murray (1994) *The Quark and the Jaguar: Adventures in the Simple and the Complex*, Little, Brown and Company.
- GILL, Jameson (2007) Life in a medium sized printing firm: making sales and keeping customers, *Qualitative Research 2 Assignment*, Sheffield Hallam University, SSRM MA.
- GUTTMAN, B. et al. (2002) *Genetics: A Beginner's Guide*. Oxford, Oneworld.
- LANDAU, Misia (1984) Human evolution as narrative, *American Scientist*, **72** 262-8.
- LATOUR, Bruno (1991) Technology is society made durable. In Law, J. (Ed) (1991) *A Sociology of Monsters: Essays on Power, Technology and Domination*. London, Routledge.
- LYNCH, Aaron (1996) *Thought Contagion: How Belief Spreads Through Society: The New Science of Memes*. New York, Basic Books.