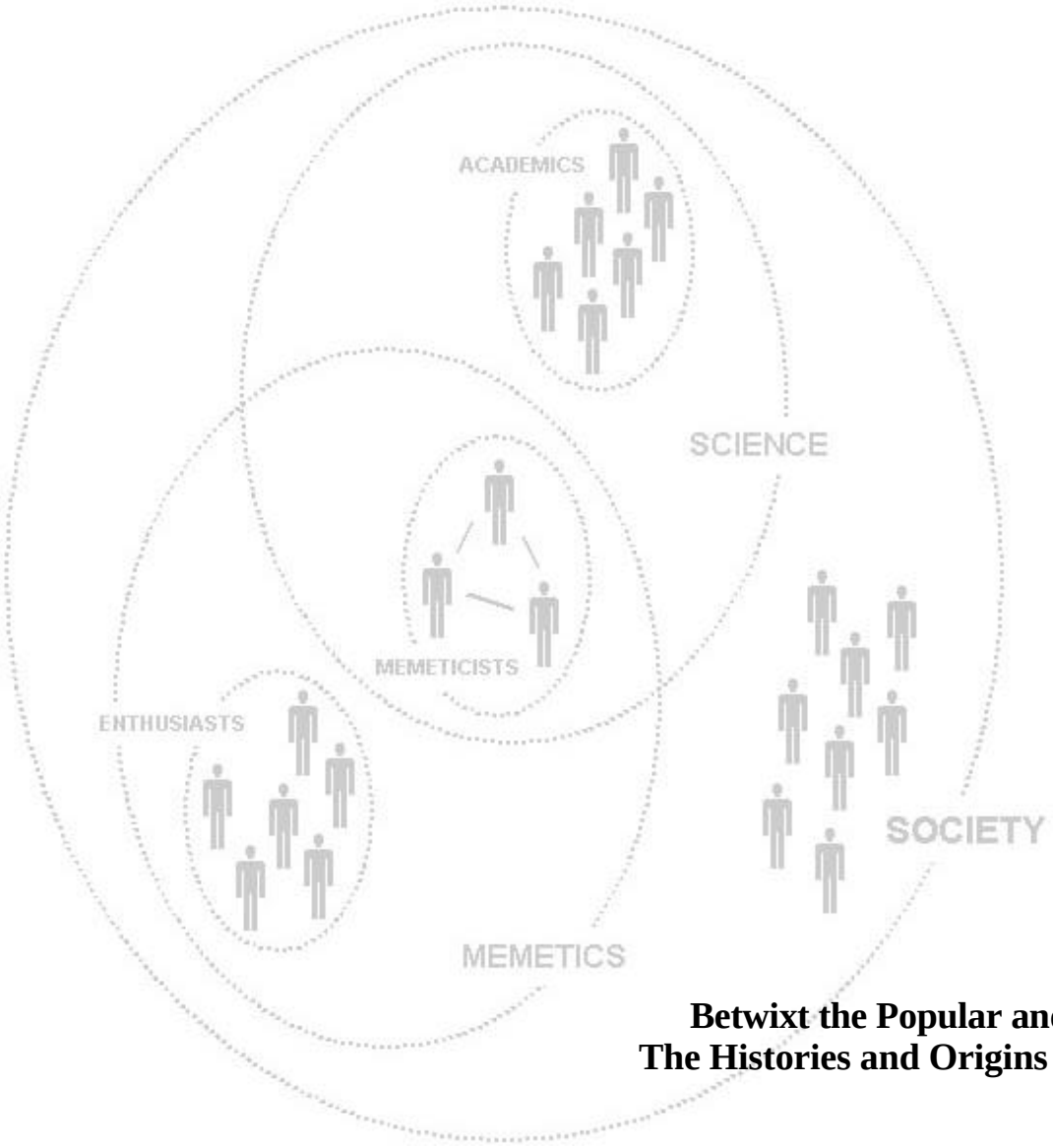

Betwixt the Popular and Academic: The Histories and Origins of Memetics

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Abstract

In this thesis I develop a contemporary history of memetics, or the field dedicated to the study of memes. Those working in the realm of meme theory have been generally concerned with developing either evolutionary or epidemiological approaches to the study of human culture, with memes viewed as discrete units of cultural transmission. At the center of my account is the argument that memetics has been characterized by an atypical pattern of growth, with the meme concept only moving toward greater academic legitimacy after significant development and diffusion in the popular realm. As revealed by my analysis, the history of memetics upends conventional understandings of discipline formation and the popularization of scientific ideas, making it a novel and informative case study in the realm of science and technology studies. Furthermore, this project underscores how the development of fields and disciplines is thoroughly intertwined with a larger social, cultural, and historical milieu.

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Chapter 1: Introduction

The term "meme" has become increasingly pervasive in recent years, particularly on the World Wide Web and in trendy cultural outlets such as *Wired* magazine. Given that I'm a long-time Internet user with a proclivity for exploring esoteric topics, it was perhaps only a matter of time before my encounters with this curious word would lead me to explore it in more detail. And as I would later come to recognize, my earlier experiences as an electrical engineering student and computer programmer probably heightened my affinity for the meme concept. As I started to research the topic, I uncovered a diverse body of authors and texts spanning multiple disciplines and decades, and my inquiries quickly led to more questions and answers. My initial quest to uncover the origin and meaning of the term eventually grew into this ambitious thesis: a contemporary history of memetics, or the field dedicated to the study of memes.[1] At the center of my account is the argument that memetics has been characterized by an atypical pattern of growth, with the field moving toward greater academic legitimacy only after significant diffusion in the popular realm. As I will demonstrate, the history of memetics upends conventional understandings of discipline formation and the popularization of scientific ideas, making it a novel and informative case study in the realm of science and technology studies. Furthermore, this project more generally underscores how the development of disciplines is thoroughly imbricated in a larger social, cultural, and historical milieu. But before I delve into the specific methods, goals, and implications of this project, it is necessary to develop a brief historical primer as an introduction to both the field of memetics and the controversies that surround it.

Memetics: A Historical Primer

An obligatory entry point for an introduction to the meme concept is the work of Oxford zoologist Richard Dawkins. In his first book – the popular science tome *The Selfish Gene* (1976) – Dawkins popularized the argument that evolution should be studied in terms of competition between "selfish genes." His approach was an important challenge to the theory that evolutionary processes are best understood at the organism or species level, a view long trumpeted by authors such as renowned paleontologist Stephen Jay Gould. Along with a number of other texts,

[1] My use of the term "field" is not meant to suggest that memetics has achieved a high level of legitimacy, disciplinarity, or cohesiveness. Throughout this project I use "field" more generally, as in "branch of knowledge" or "domain of inquiry," without any additional normative assumptions.

including Edward O. Wilson's *Sociobiology* (1975), Dawkins's book contributed to the nature verses nurture debates that climbed to a fever pitch as the 1970s wore on. As a key element of his larger argument, Dawkins proposed that genes are prototypical "replicators." In brief, a replicator is any entity able to make identical or nearly identical copies of itself, all while following the tenets of natural selection. In a subsequent book, Dawkins offered this oft-cited definition: "A replicator is anything in the universe of which copies are made" (1982, p. 83).

While the bulk of his 1976 text demonstrated the heuristic power gained by viewing genes as "selfish replicators," Dawkins professed that gene-centered approaches failed to adequately explain the diversity and complexity of human culture: "[F]or an understanding of the evolution of modern man, we must begin by throwing out the gene as the sole basis of our ideas of evolution" (1976, p. 191). After naming a handful of scholars who had tentatively explored analogies between cultural and genetic evolution – including philosopher Sir Karl Popper, geneticist Luigi Cavalli-Sforza, anthropologist F.T. Cloak, and ethologist J.M. Cullen – Dawkins hypothesized that culture must follow an independent evolutionary process (p. 190). Casting about for a novel, non-genetic replicating entity, he posited the "meme" as a "unit of cultural transmission, or a unit of imitation" (p. 192). Dawkins coined the term as an abbreviation of the Greek "mimeme" or "something imitated." It also sounded like "gene," a fitting parallel given the analogous nature of the two entities (p. 192). [2] He added:

> Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation (p. 192).

Further developing the analogies between genes and memes, Dawkins argued that memes must follow the tenets of natural selection, with the consequence that some are necessarily more successful than others (p. 194). In addition to the examples given above, the author also looked at scientific concepts and religious doctrines to explain how memes evolve and spread. Dawkins also strayed briefly from evolutionary rhetoric by describing memes in epidemiological terms.

[2] Dawkins added that the term meme "could alternatively be thought of as being related to 'memory,' or to the French word *même*" (1976, p. 192).

He referred to the "infective power" of particular memes (p. 193), and offered a striking quote from colleague N. K. Humphrey: "[M]emes should be regarded as living structures, not just metaphorically, but technically. When you plant a fertile meme in my mind you literally parasitize my brain, turning it into a vehicle for the meme's propagation in just the way that a virus may parasitize the genetic mechanism of a host cell" (p. 192). Offering additional clarification of where these entities called memes reside, Dawkins stated: "The computers in which memes live are human brains" (p. 197).

Dawkins's selfish gene theory proved both controversial and durable, and his 1976 book moved into position as a long running best seller in the popular science genre. But the meme idea, introduced in a scant twelve pages of text, received only scattered attention into the 1980s. Other scholars were developing their own evolutionary approaches to the study of culture during this time period, but they largely avoided Dawkins's terminology. Of the few authors who did offer early commentary on the meme concept, noteworthy discussions can be found in articles by the eminent philosopher David Hull (1982), astronomer John Ball (1984), scientist and popular science writer Douglas Hofstadter (1983; 1985), and Dawkins himself (1982; 1989). Engineer and research scientist K. Eric Drexler offered an early popular interpretation of memes in his best-selling 1986 book *Engines of Creation*, and introductions to the topic also appeared in outlets such *Whole Earth Review* (Henson, 1987b) and *The Washington Post* (Schrage, 1988). By the mid-1980s, the term "memetics" was first used in reference to the study of memes, and in 1990 futurist and science fiction author Glenn Grant identified a "memeticist" as "one who studies memetics" (1990).[3] Such monikers foreshadowed the movement of meme theory and its proponents toward both greater popularization and a more coherent identity in the 1990s.

One author who contributed significantly to this movement was the philosopher Daniel Dennett, who first discussed memes in a 1990 journal article. Dennett further adopted and adapted the meme concept as an important part of his larger theoretical framework via a pair of popular science texts dedicated to topics such as cognition, consciousness, and evolutionary theory (1991; 1995). In addition to making the ground-breaking argument that "human consciousness is itself a huge complex of memes" (1991, p. 210), Dennett was one of the first authors to evaluate seriously the prospects for a new "science of memetics" (1995, p. 352-360).

[3] For the sake of historical accuracy, the term "memetics" is not an appropriate label for the entire history of the field. Before roughly the mid-1980s, there was only scattered discussion of "meme theory" or the "meme concept."

Looking beyond Dennett's work, we find that the dissemination of the meme concept to various niche audiences of technologists and futurists was apparent by the mid-1990s, as evidenced by the founding of the Internet newsgroup *alt.memetics*, the appearance of articles about the topic in *Wired* magazine, and references to various meme-like entities in a number of science fiction stories. Discussions of meme theory appeared in a diverse assortment of books as well, ranging from the more academic treatments of the topic offered by anthropologist and human biologist William H. Durham (1991) and psychobiologist Henry Plotkin (1993) to the popularized interpretations presented by psychologist Mihaly Csikszentmihalyi (1993) and evolutionary and social theorist Howard Bloom (1995).

More recently, the growth of the field has accelerated. In addition to a plethora of contemporary articles, columns, reviews and web pages, at least five texts wholly dedicated to the meme concept have been published since 1996.[4] The Journal of Memetics – Evolutionary Models of Information Transmission (JoM-EMIT) started publication as an online, peer-reviewed academic journal in 1997, and the first conference on memetics took place in 1999, suggesting that the field was moving toward more substantial academic foundations. In 1997, the term "meme" was officially added to the Oxford English Dictionary, an indication that the concept had to some extent taken root in the realm of popular culture as well (Oxford University Press, 1997). Today the field of memetics enjoys a diverse following. It has an interdisciplinary flavor, with participants hailing primarily from the domains of evolutionary biology, psychology, and various social sciences (Aunger, 1999a). The meme concept has also attracted a variety of popular authors and independent researchers, many with technology backgrounds. Proponents of the idea have developed supplemental terminology, case studies, and mathematical models, and various concepts from memetics have been applied in diverse domains such as marketing, artificial intelligence, and cognitive studies. A handful of prominent meme theorists – including the aforementioned Dennett and the psychologist Susan Blackmore – have challenged traditional notions of consciousness by depicting a de-centered view of the human self, with minds characterized as colonies of memes. Others have pitched memetics as the long-awaited discipline that might unite the natural and social sciences, thereby bridging seemingly disparate fields such as anthropology and biology. And competing approaches to understanding the evolution and transmission of culture – such as Donald T. Campbell's evolutionary epistemology or various

[4] See Brodie (1996), Lynch (1996), Blackmore (1999), and Aunger (2000; 2002).

coevolutionary theories developed by sociobiologists – have failed to gain momentum or form the academic and popular niches for which memetics is known.

But regardless of the relative success of the field, memetics remains somewhat fractured, immature, and controversial, and widespread recognition of the domain as a legitimate scientific discipline remains a hazy prospect. Critics have portrayed meme theory as riddled with intrinsic defects, making it of little value for those who study the evolution and transmission of culture. They point out that the field lacks the solid empirical grounding necessary for a progressive discipline, going so far as to label the meme concept a "meaningless metaphor" and memetics a "cocktail party science."[5] Others argue that meme theorists have overextended neo-Darwinian theorizing and oversimplified human cognition and culture. Even those who identify themselves as proponents of the field remain divided on many fundamental matters. To further explore both the historical development and contemporary state the field, I turn to a number of key schisms that have long divided meme theorists.

Controversies in Meme Theory

While a number of controversial issues have shaped the history of meme theory, three in particular prove most relevant to my analysis. The first issue centers on questions about the history of the field, particularly with regard to the origin of the meme concept. In the preceding primer, I advanced a historical narrative that appears frequently in discussions of memetics: the founding of the field can be traced back to Richard Dawkins's 1976 text, *The Selfish Gene*. Robert Aunger, an anthropologist who has emerged as a prominent spokesperson for memetics in recent years, offers one version of this perspective:

> The product of humble birth, the concept of meme was "invented" by the zoologist Richard Dawkins of the University of Oxford (in his 1976 book The Selfish Gene), as a foil to the idea, prevalent among some biologists, that the evolutionary process applies only to genes. … But the idea has long since outgrown its paternity, and one has the impression that Dawkins's main reaction to his progeny, a bit more than two decades after its conception, is to shake his

[5] Journalist Unmesh Kher (2001) attributes the "meaningless metaphor" condemnation to Gould, and the "cocktail-party science" moniker to evolutionary geneticist H. Allen Orr.

> head in bewildered amazement at the plasticity and staying power of the idea he unleashed (Aunger, 1999b, para. 2).

Far from a simple attribution of credit, Aunger's depiction is steeped in both biological rhetoric and paternalistic overtones, with Dawkins painted as the sole originator of the meme concept. Given the context of Aunger's comment – a book review in which he briefly introduces memetics – readers might quickly conclude that Dawkins is indeed the "father" of the field. Corroboration for this view can be found in the comments of social psychologist and marketing guru Paul Marsden, who writes, "The emerging research project [memetics], and spawn of Richard Dawkins's brain, investigates the spread, structure and selection of memes – which can loosely be defined as infectious units of culture" (Marsden, 2000a). Following in Aunger's footsteps, Marsden singles out Dawkins as founder of the field. Furthermore, these salutary depictions are two examples among many. As I will explore in subsequent chapters, this "Dawkins origin story" is a recurrent theme in the memetics literature.

However, important questions have been raised in recent years regarding Dawkins's position in the history of the meme theory. Contrary to Marsden's claim that Dawkins "spawned" a research project, the meme concept was originally described by the Oxford zoologist as speculation (1976, p. 199-200), and for many years it failed to gain significant attention. In fact, proponents of the nascent theory tentatively started to discuss the possibilities for a new "discipline of memetics" only in the mid-1980s. Even Dawkins himself has stated on multiple occasions that, far from attempting to form a new field of inquiry, his ambitions for the meme concept were originally rather modest. To the present, he remains an ironic founder and reluctant spokesperson, never entirely embracing or distancing himself from the field. And while most commentators agree that the term "meme" was coined in *The Selfish Gene*, the narratives delivered by Aunger and Marsden suggest that the meme concept appeared phoenix-like from the head of Dawkins.

Aaron Lynch, a Fermilab engineer turned author and independent researcher, has surfaced as one of the most outspoken critics of Dawkins's role in the history of the field. He points instead to anthropologist F.T. Cloak as developing the foundations that led to both Dawkins's meme idea specifically, and the field of memetics more generally:

> Yet contrary to common belief, evolutionary cultural replicator theory was not invented by Richard Dawkins, but goes back at least to the cultural anthropologist F. T. Cloak, who discussed it in his 1973 paper [Cloak, 1973] … The idea of Dawkins as originator of evolutionary cultural replicator theory has become so widespread and often communicated (due to Dawkins's popular writing style, ongoing publicity, etc., and Cloak's technical style, obscure modes of publication, and lack of self-promotion) that even people who have read Cloak's early papers and forgotten their publication dates can acquire the idea of crediting the theory's origin to Dawkins (Lynch, 2000a).

In another article, Lynch added that "the word [meme] was apparently coined by Dawkins to popularize Cloak's theoretical paradigm" (Lynch, 2001b). These are no minor charges, for they suggest that Dawkins may have borrowed Cloak's idea, developed catchy terminology to popularize it, and then failed to give credit where due. Even if Lynch's comments prove only partially accurate, they would warrant a substantial revision of entrenched historical narratives. In order to develop a more compelling and inclusive history of the field, it will be necessary for me to grapple with Lynch's claims at some length in subsequent chapters.

But questions of motivation also loom large, especially given that debates over the origins of the field have become more prominent in recent years. As a case in point, Lynch himself offered numerous attributions of credit to Dawkins before abruptly switching to the steadfast promotion of Cloak's work in the late 1990s. On the one hand, promoting alternate origins for the field may be prompted by a desire to set the historical record straight, or to give credit to authors whose contributions have been overlooked. But debates over the origins of memetics also point to a tension in the field between early popularization and delayed academic legitimacy. As suggested by the preceding historical primer, the meme concept started to diffuse in a broad, non-scientific audience well in advance of appreciable recognition by academics. In order to place the history of memetics on more scientific and scholarly foundations, Lynch and other authors have turned to the more technical and theoretical work of authors such as Cloak. Quite simply, a popular science tome such as *The Selfish Gene* is an atypical starting point for what is purported to be a revolutionary new scientific discipline, and invoking alternate origin stories is an important strategy for those who want to raise the apparent legitimacy of the field.

Questions about the origins of the field are tied to a second controversial theme, namely definitional debates over the term meme. Dawkins's original explication of the concept offered readers little more than the assertion that memes are "units of cultural transmission," and subsequent attempts by Dawkins and other authors to refine and clarify the term resulted in a profusion of competing definitions. One question surfacing frequently in these debates is whether memes should be defined as either cultural instructions that reside in the brain versus the behaviors or material artifacts that result from those instructions. Take the case of a pervasive advertising jingle. When viewed as a meme, does the jingle exist as a pattern of information in the brain, as a pattern of notes and words recorded via some other medium, or perhaps some combination thereof? A closely related matter involves the specification of the unit meme. Capturing another oft-discussed musical example, psychologist and author Susan Blackmore queries, "Is Beethoven's Fifth Symphony a meme, or is only the first four notes?" (1999, p. 53).

From a historical perspective, such questions are central to documenting the development of the field. But far from being purely technical disputes over the vagaries of meme theory, debates over terminology and units frequently have a political subtext. Bruce Edmonds, a philosopher and current editor of the Journal of Memetics, reaches a similar conclusion. He remarks: "[T]he political subtext of these definitional disputes are nothing more than the leadership and membership rights of the tribe of memeticists" (1998a). As suggested by Edmonds's comment, redefining terminology or narrowly specifying a "unit of memetic analysis" may implicitly include or exclude large numbers of authors and texts, or even entire swaths of the field's history. Perhaps not surprisingly, many authors have attempted to untangle these issues in recent years, but with only limited success.

A third major source of controversy in the field involves a rivalry between evolutionary and epidemiological approaches to the study memes. Aunger aptly depicts these competing perspectives with the labels "meme-as-gene" and "meme-as-germ" (2000, p. 9). The former draws on the terminology and conceptual framework of Darwinian evolution and genetics, with memes viewed as analogous to genes, but operating in the realm of culture. Treating memes as true replicators, theorists speculate on the three key processes – replication, variation, and selection – required for the evolution of memes to take place. Edmonds offers a succinct description of this approach by characterizing memetics as "the application of models with an

evolutionary or genetic structure to the domain of (cultural) information transmission" (1998b, Section 2).

The "meme-as-germ" perspective, on the other hand, explores the spread of memes via "infection analogies." These tend toward viral or parasitic models and borrow terminology from immunology, resulting in concepts such as the "epidemiology of ideas" (Sperber, 1990; 1996), "thought contagion" (Lynch, 1996), "viruses of the mind" (Schrage, 1988; Dawkins, 1993a, 1993b; Brodie, 1996), and "thought viruses" (Lofland, 1997). Such phrases are often used in reference to particularly nefarious or pervasive memes, with examples ranging from fads and fashions to religious doctrines and cults. A closer look at foundational work in the field reveals that these two analogies are deeply rooted in the history of meme theory. Furthermore, the relatively early popularization of the field can to some extent be explained by the forceful resonance of "meme-as-germ" analogies with popular authors and audiences, while the academic sphere of meme theorizing has generally favored evolutionary analogies.

The controversies outlined here paint a more complex picture of the historical development of memetics. Fortunately, my effort to untangle these debates and develop a compelling depiction of the field is necessarily informed by the work of many other authors. I begin with a handful of texts that provide critical analysis of the history and development of memetics. I then turn to a larger body of work to discuss a number of theoretical and methodological insights that are more generally applicable to my project.

Literature Review

Outsider and Insider Perspectives

In the general realm of science and technology studies (STS), memetics has largely been ignored. Scholars who might perform critical outside analysis of the field's development, such as sociologists and historians, have thus far overlooked meme theory. A handful of philosophers, however, have offered discussions of the topic. David Holdcroft and Harry Lewis, for instance, are recent critics of the meme concept. In an article published in *Philosophy*, their disparagement is leveled rather narrowly at Dennett, and to a lesser extent Dawkins (2000). They fail to mention more recent texts appearing in the *Journal of Memetics*, and while they do cite Blackmore's influential *The Meme Machine* in a footnote, they provide no additional analysis of her book.

Their conclusions and challenges are therefore primarily aimed at Dennett's formulation of memetics rather than the field writ large. More relevant for the current project is the work of two well-known contemporary philosophers. The first, Mary Midgley, has been a stalwart opponent of Dawkins's work generally and the meme concept specifically since at least the late 1970s (1979; 1983). More recently, Midgley authored an article that was highly critical of memetics, categorizing it as an "ethereal, quasi-scientific system" (1999, p. 85). The eminent philosopher of science David Hull, on the other hand, has been labeled a "sympathetic critic" of the field. While it is difficult to determine just how far his sympathies extend, a recent article by Hull titled "Taking Memetics Seriously: Memetics Will Be What We Make It" (2000) suggests that the author views himself as a member of the memetics community. His first discussion of the topic dates back to 1982, and his involvement in the field is an important but often overlooked historical consideration.

Looking beyond the domain of philosophy, three literary scholars have written valuable recent commentaries about memes. English professor Mark Jeffreys provides one the best contemporary introductions and abbreviated histories of the field (2000). He explores many of the key obstacles facing the advancement of meme theory, emphasizing the competing metaphors that have divided the work of theorists. Jesse Cohn, on the other hand, delves into a series of science fiction texts to discuss how "viral imagery and meme theory run parallel with one another" (2001). Focusing specifically at the ways in which viral metaphors foreground power and identity issues for contemporary authors and audiences, Cohn explores various interpretations of memes offered by authors such as Dawkins and Henson. And in her doctoral dissertation, Anne-Marie Thomas offers a thorough analysis of the intersection of memetics, immunology, and technology (2002, Ch. 5). Like Cohn, science fiction texts prove central to her effort, and she adroitly contextualizes viral interpretations of memes in the domain of popular culture generally and among technophiles specifically. I'll return to the work of these three authors in exploring how "meme-as-germ" analogies have resonated forcefully with popular authors and audiences.

While the texts outlined above prove informative for this project, there remains relatively little outside commentary about the history and development of memetics. Hence, I will also draw extensively on first-hand materials for historical details and bibliographic reference. Many authors working in the field have developed informative discussions regarding both the history

of meme theory and the controversies and debates that surround it. For instance, Blackmore's *The Meme Machine* (1999) presents an insightful overview of the development of and main debates in the field. Similarly, Aunger's recent books (2000; 2002) provide substantial commentary on the history and contemporary state of meme theory. *The Journal of Memetics* (JoM-EMIT) is also a focal point of activity and valuable source of recent articles and opinion pieces.

However, the accounts presented by "insider" sources may prove problematic. Authors are sometimes inclined to entrench questionable origin stories or advance Whiggish interpretations of the field's history. Other writers present historical details as background or introductory material, or in tandem with particular theoretical goals, rendering them incomplete or conflicting. Historian Helge Kragh warns that writing the history of an interdisciplinary field requires the frequent crossing of disciplinary boundaries, an undertaking likely to be dodged by those insiders and historians who approach the field in question with a narrow perspective (2002, p. 56). Furthermore, the development of disciplinary histories is often bound up with "political" interests and motivations. A volume edited by historian Loren Graham and sociologists Wolf Lepenies and Peter Weingart, aptly titled *Functions and Uses of Disciplinary Histories* (1983), brings these issue to the fore. In the Introduction, Lepenies and Weingart note, "One function of such histories is that of legitimating 'political' interests often pursed by the authors of such histories themselves" (1983, p. xvii). The authors add:

> Histories thus serve to legitimate new paradigms and to delegitimate old ones. A different periodization, the mentioning of some, hitherto less known, and the ignoring of others, hitherto highly respected scholars will change the image of a discipline's history, it will restructure the memory of the past and, by way of socialization, structure the future (Lepenies and Weingart, 1983, p. xvii).

Lepenies and Weingart note, finally, that historical accounts are shaped by the individuals or groups that produce them, the audiences to which they are directed, and the uses for which they are written (pp. xix-xx). The diverse historical case studies presented in the rest of their volume – which are drawn from the natural sciences, social sciences, and humanities – both support and extend these major themes outlined.

In light of the issues raised by these authors, a large part of this project involves a critical evaluation and synthesis of the histories already developed by proponents of meme theory. In doing so, it will be necessary to seek out the lesser-known theorists and texts that have been ignored or disregarded by contemporary authors. This effort will also require an exploration of the various "non-theoretical," "external," and "political" issues that have received relatively little attention in the historical accounts developed by insiders. Aunger is one of the few proponents of the meme concept to even acknowledge that "intellectual agendas having little to do with memetics itself" (2000, p. 21) have likely shaped debates in and around the field, but he avoids an extensive discussion of the topic. Looking at how these agendas have shaped both the field of memetics and historical accounts of the field's development are central themes in my analysis. As I will discuss in more detail below, discussions about the historical origins of meme theory frequently involve the political motivations of the participants.

Contextualist Historiography

My emphasis on crafting a more compelling and inclusive historical study of memetics is supported by a bevy of contextualist and constructivist theorists who have convincingly argued that the social, cultural and intellectual milieu in which fields are situated are key considerations that cannot be separated from theoretical content or narrow "internal" processes of disciplinary development. While scholars such as Shapin and Latour pioneered this movement, I am partial to a recent description of contextualist historiography offered by Lenoir. He argues that "science as cultural practice is imbricated in a seamless web with other forms of social, political, even aesthetic practices, and I treat the formation of discipline and scientific institutions as sites for constructing and sustaining forms of social and cultural identity situated in relation to these other cultural frames" (1997, p. 3). Fields such as memetics provide us with unique opportunities to explore this seamless web, raising important questions about how a host of non-theoretical considerations impinge on the growth of fields, shape theoretical work, and influence intra- and extra-scientific knowledge transfer. Of particular relevance to this project are the ways in which various interpretations of the meme concept resonate with historically specific social currents and bodies of knowledge, thereby promoting synergies between memetics and particular academic and popular audiences. In subsequent chapters I look more specifically at how the

ongoing development and dissemination of the meme concept has been intertwined with the increasing prominence of genetics, immunology, and technology in diverse cultural realms.

Disciplinary Development

As suggested by Lenoir's comments presented above, contextual considerations play an important role in discipline formation and legitimation. The edited volume titled "Perspectives on the Emergence of Scientific Disciplines" (Lemaine et al., 1976) provides us with a noteworthy – albeit more traditional – window into such issues. For starters, this text moved significantly beyond the sort of internalist intellectual histories that dominated earlier studies of science. Many of the pieces in this volume are concerned with the role of both internal intellectual and social processes in disciplinary development, while also exploring how internal and external social factors "actually mould the *content* of scientific ideas" (p. 16). Historian Michael Worboys (1976) nicely summarized this more inclusive perspective by arguing that "the cognitive development of science, the socio-institutional aspects of science, and the influence of wider social conditions and social change" must all be taken into account when studying the emergence of new scientific fields (p. 93). And while Worboys explicitly challenged the well-known but theory-heavy historical accounts developed by authors such as Thomas Kuhn, his remark hints at an early movement toward contextualist and constructivist historical approaches.[6]

However, the pieces in the Lemaine volume largely failed to challenge the formulaic views of disciplinary development that were prominent in historical accounts of science in the 1960s and 1970s, Kuhn's work included. In fact, many of the authors in the *Perspectives* book focus their analysis somewhat narrowly on the natural and physical sciences – with articles dedicated to genetics, medicine, biology, and astronomy, to name a few – while also assuming a "standard" model of discipline formation. In the Introduction, the authors noted that "all new areas of scientific investigation grow out of prior research or out of the extension of an established body of scientific and/or technical knowledge" (p. 2), and they went on to argue that new research areas tend to develop in set stages, or "typical sequences" (p. 6). The authors also emphasized "the way in which science grows through the branching of new lines of research" (p.

[6] Worboys' article explicitly discussed the limitations of Kuhn's approach (Worboys, 1976, pp. 76-77). He noted that Kuhn discussed only one or two "mechanisms of specialty emergence" (p. 76), and he added that "Kuhn sees shared paradigms or specialties as essentially theory-based … Kuhn can still be seen in the tradition of intellectual history of science" (p. 77).

7). According to this perspective, scientific disciplines and the subunits thereof predictably move toward stability, built around common theories and methodologies, objects of inquiry, research agendas, institutional structures, and social cohesion. And while the editors admit that this sort of characterization is incomplete, the articles within the volume demonstrate only a dim awareness of the diverse strategies and processes that characterize the emergence and growth of scientific fields. And finally, there was little recognition that patterns of discipline formation may vary significantly depending on whether one is studying the physical, natural, or social sciences.

More recently, authors working in the constructivist and contextualist traditions have challenged these traditional views. Lenoir, for instance, argues that we should "avoid thinking of discipline as monolithic and uniform in favor of the notion of a repertoire of packaged and coadapted practices assembled in diverse local settings" (1997, p. 71). In an article exploring the development of geophysics, historian Gregory Good further summarizes how understandings of disciplinarity and discipline formation have changed in recent decades. In most general terms, he follows a line of reasoning similar to that of Lenoir in arguing that disciplines should be understood as "ever-changing frameworks within which scientific activity is organized" (2000, p. 260). Good adds that achieving disciplinarity is far from a simple yes or no proposition, and that "scientific activities may achieve degrees of identity development" (p. 259). Finally, he states that disciplines "pass through no regular stages on their way from immature to mature status" (p. 259). This rather open-ended understanding of disciplines is borne out in Good's analysis of geophysics, but case studies offered by Lenoir and many other authors point in a similar direction.

Yet questions remain regarding the relationship of disciplines to other organizational units, such as sub-disciplines and specialties. Perhaps not surprisingly, Good argues that the answers to such questions are variable according to the context in which they are being asked:

> A sub-discipline in one context (e.g. seismology against the discipline of geophysics) is interdisciplinary in another context (e.g. seismology related to geology and physics) and is an applied science in another (e.g. seismology in relation to urban policy). Sub-disciplines may focus on a more tightly defined set of research problems, and the more overt importance of pedagogy and political goals may increase with disciplines and supra-disciplines (p. 266).

Good further argues that the various units used to describe scientific fields are difficult to rigidly delineate, and even within a single domain "disciplines, sub-disciplines, inter-disciplinary fields, research schools, research programmes and traditions, and specialisations all participate in a complex continuum" (p. 266). As we'll see, a field such as memetics can be located in any number of these categories, depending on what definitions and criteria are applied. I'll return to this issue in exploring how proponents position memetics with respect to science generally and other disciplines in particular, with the goal of evaluating the status of the field as a province of scientific activity. But we must also take seriously the ways in which fields develop into recognizable and bounded domains of inquiry, no matter what labels are attached to them.

Marginality and Hybridity

While case studies reveal that the development of disciplines and sub-disciplines is a highly variable process, we can uncover general patterns evident in the history of numerous fields. Such an inquiry might involve any number of sorting or grouping criteria, but focusing on the origins of contemporary disciplines and subdisciplines proves particularly insightful. In *Creative Marginality* (1990), political scientists Mattei Dogan and Robert Pahre describe how processes of specialization, fragmentation, and hybridization have shaped the emergence and growth of many twentieth century academic fields. In summary, the authors argue that an increasing density of theorists and theorizing often accompanies disciplinary growth, leading researchers to fragment into specialized subfields. These subfields tend to cluster on the margins of traditional disciplinary bounds, thereby promoting cross-disciplinary exchanges. Offering additional insight into the title of their book, Dogan and Pahre note, "Not only are the margins less densely populated, providing more room to grow, but successful combinations of material from two sub fields typically allows greater scope for creativity. In fact, the greatest accumulation of incremental advances takes place at the intersection of fields" (pp. 7-8). In a vein similar to that of the "boundary work" approach developed by science studies scholars such as Thomas Gieryn (1983; 1999), Dogan and Pahre's remarks shift our focus away from the core of disciplines to the researchers and theories that populate the boundaries, margins and peripheries of science.

Dogan and Pahre describe two types of hybridization that occur as a result of work on the margins, namely institutionalized and informal forms.[7] Institutionalized hybrid fields are characterized by widely recognized and relatively stable identities, either as subfields within a larger discipline, or as permanent cross-disciplinary collaborations (1990, p. 63). As the authors note, this form of hybridization has a long history in the physical sciences. For instance, the aptly titled volume *Chemical Sciences in the 20th Century: Bridging Boundaries* (2001) focuses specifically on the various historical bridges between chemistry and other disciplines, and editor Carsten Reinhardt explicitly references quantum chemistry, geochemistry, and cosmochemistry as examples of "hybrid fields" (Reinhardt, 2001, p. 1-2). Many of the articles in Reinhardt's volume also reveal how these and other hybrids develop boundaries that are shaped by not only theoretical considerations, but also historical and social factors. We find similar examples in biology, as evidenced by the molecular and organismic branches and sub-branches that have long defined the organization of the field. Dogan and Pahre emphasize institutionalized hybridization in both the social sciences and between the social and natural sciences, with developmental psychology, criminology, artificial intelligence, and cognitive science a few of their many examples. A more recent hybrid worthy of adding to this mix is the artificial life field, which is the subject of a noteworthy ethnography authored by anthropologist Stephan Helmreich (1998). Helmreich's book also brings into relief the importance of founder narratives and origin stories in disciplinary histories.

Informal hybridization, on the other hand, involves a wide variety of disciplinary exchanges, with "hybridized topics" one prevalent case in point. Klein lists "analogies, methods, theories, topics, concepts, discoveries, and perspectives" as other examples of informal exchange that are explored in *Creative Marginality* (1993, p. 192). And as hinted at by Dogan and Pahre, the characteristics of both institutional and informal hybridization often overlap. Women's studies, for instance, is described as an "enormous invisible hybrid college" (p. 70) that has not yet achieved a high level of institutional hybridization. The domain of sociobiology, on the other hand, is described as an immature and controversial hybrid that hasn't yet been very productive (p. 203). But in looking at these and other fields, the authors also push their argument beyond the

[7] Sociologist Peter Weingart's earlier discussion of hybridity is also worth noting here as an important predecessor to the work of Dogan and Pahre (Weingart, 1982, pp. 74-78). He used the phrase "hybrid communities" in reference to various configurations of "expert groups" that emerge in science policy-making processes. Weingart framed the hybrid concept to include both scientists and experts more generally, and his study was explicitly concerned with the intersection of knowledge and politics in the formation of expert knowledge communities.

various organizational units and subunits that characterize the contemporary sciences. Discussing the individual actors who participate in hybrid fields, Dogan and Pahre coin the label "hybrid marginals" to describe those "creative scholars whose work at the intersection of many subfields leaves them essentially without a home. Like prophets, they often may have no honor in their own fields, but exercise influence in those more distant" (p. 177). Furthermore, the work of these and other scholars are often found in countless "hybrid journals," the profusion of which has been facilitated in recent years by the ubiquity of information technology and inexpensive electronic publishing (p. 164).

In delving into both the history of meme theory and the more recent emergence of an academic community of meme theorists, I will be exploring both institutionalized and informal forms of hybridization. In line with the former, I turn to the ways in which the proponents of meme theory have worked toward establishing memetics as a more stable and cohesive cross-disciplinary community, complete with "hybrid marginals" and "hybrid journals." But the history of the field is also rife with instances of informal hybridization. While Dawkins's initial presentation of the meme concept is a case of informal hybridization par excellence, the links between memetics and the various coevolutionary theories developed by sociobiologists are another noteworthy example. It should also be noted that Dogan and Pahre's analysis focuses on processes of hybridization that are largely internal to science and academe. As the preceding overview suggests, the field of memetics stands as a novel historical case precisely because of the links between meme theory and the larger social and culture sphere in which it has developed. Hence, it is necessary to look elsewhere for discussions about the role of popular theorizing in the development of fields and disciplines.

Science Popularization and the Boundaries of Science

As recently as 1994, historians Roger Cooter and Stephen Pumfrey bemoaned "our ignorance both of the low drama and the high art of science's diffusion and modes of popular production and reproduction" (p. 237). They begin their critique by problematizing a long influential "diffusionist" approach that assumes scientific knowledge developed by elites is "watered down and then trickled down for popular consumption, along the way losing theoretical content" (p. 248). To counter this view, the authors explore how popular and scientific theorizing might be understood in much more dynamic and interactive terms. Cooter and Pumfrey remark,

"[P]opular culture can generate its own natural knowledge which differs from and may even oppose elite science" (p. 249). They add that "there is no reason to suppose that popular science takes the form intended by its popularizers. 'Successfully popularized' natural knowledge may take on very different *meanings* within popular culture from those intended by its popularizers" (p. 249).

Even more importantly, the authors draw on the work of various constructivist theorists to suggest that scientific and popular domains reciprocally shape one another: "[P]opularization, conceived as a process of translation and enrolment, reconfigures the cultural content of scientific activity and hence – conceivably – reconfigures the nature of science itself" (p. 251). In promoting this line of reasoning, Cooter and Pumfrey urge historians to be more responsive to the diversity of sites and signifiers in which science is produced and reproduced. Their arguments and recommendations are to some extent born out in the special issue of *History of Science* in which their article appears, appropriately dedicated to the topic of "Science Popularization." However, the case studies offered therein focus on nineteenth century examples that sit uneasily with contemporary historical inquiries into fields such as memetics.

Surveying a wider field of literature, we find that many authors have focused on the movement of various types of metaphors and rhetoric to explore how scientific knowledge moves both within and beyond the sciences. Emily Martin's *Flexible Bodies* (1994) is an important piece in this area, and the author explores how biological concepts are represented in the media and understood by the general public and scholars. Martin also looks at how various metaphors and analogies – such as complex systems theory and the notion of flexibility – have become increasingly ubiquitous in various popular and scientific contexts. Elizabeth Shea (2001), on the other hand, uses textual analysis to explore the gene as a "rhetorical figure." She reveals the historical origins of the term "gene" while also demonstrating how the meaning and contextual use of the term have changed over time, particularly in the popular realm. Authors such as the aforementioned Jeffreys, Cohn, and Thomas also offer valuable insights into the complex crosscurrents that connect the rhetoric of immunology and technology with both the field of memetics and popular culture outlets such as science fiction texts.

However, none of these authors are specifically concerned with connecting the topic of discipline formation to the development and maintenance of various boundaries between the scientific and popular. Casting a wider net reveals that authors studying various fields and

disciplines on the margins of science – such as parapsychology, ufology, and creation science – point us toward the various criteria often used to demarcate science from non-science, while also highlighting the historical role of "amateur" theorists and popular audiences in the development of controversial fields. Exploring these cases also reveals how both proponents and opponents of fringe fields use various tactics and strategies in support of their respective agendas. An edited volume (1979) and subsequent article (1985) by sociologist Roy Wallis stand out as noteworthy introductions to these topics, and the diversity of cases presented in these texts supports the argument that the emergence of disciplines is a highly variable and contingent process.

Gieryn's discussions of "boundary-work" (1983; 1995; 1999) also prove valuable to my project as they highlight the construction of boundaries both within and beyond the realm of science. Particularly noteworthy is Gieryn's studies of four central types of boundary-work, namely monopolization, expansion, expulsion, and protection (1995, pp. 424-439). In relating these themes to various historical case studies drawn from the realm of science and technology studies, Gieryn explores how actors use boundary-work to maintain, control, and legitimate their fields. I will periodically return to the work of both Wallis and Gieryn to not only situate my own account with respect to other disciplinary histories and case studies, but also to discuss the strategies and tactics employed by meme theorists and other actors. In the end, however, it will be evident that memetics has followed a historical trajectory quite unlike that of any other field.

Tracing the Emergence of Memetics

My exploration of the unique trajectory of meme theory is grounded in a baseline history of memetics from roughly 1976 to present, as developed in the following two chapters. More specifically, Chapter Two examines the field from the 1976 coining of the term "meme" to the publication of the first full-length texts dedicated to the topic roughly two decades later. During this time period, the field was shaped by a handful of foundational texts authored by prominent popular science writers. Perhaps even more importantly, the meme concept also moved toward wider popularization as lesser-known authors embraced the concept and pushed it in new directions. In addition to evaluating the backgrounds and motivations of these proponents of meme theory, I will look at a number of key themes evident in popular discussions of the topic. As the preceding introduction suggests, "meme-as-germ" analogies figure prominently here. Finally, I'll take a closer look at the resonance between mainstream treatments of memetics and

larger social, technological, and historical themes. In Chapter Three I focus on the academic side of meme theorizing, primarily from 1997 to the present, and with an emphasis on the evolutionary analogies ("meme-as-gene") most prominent in this sphere. This chapter turns to the actors who have promoted memetics as a legitimate scientific discipline, highlighting their backgrounds, institutional affiliations, motivations, and strategies. Finally, I will look at the controversy that surrounds the topic, both with respect to internal debates and the criticisms offered by outsider opponents.

The fourth chapter further problematizes the history of memetics by looking at the multiple and at times conflicting narratives that have been invoked to describe the origins of the meme theory. By further delving into the complex milieu from which memetics has emerged, this chapter will evaluate Dawkins's role as a founding figure, while also situating meme theory in a more inclusive historical context. Chapter Four also brings into further relief the extent to which disciplinary histories are frequently intertwined with the politics of discipline formation. In the Conclusion, I briefly assess both the contemporary state of the field and its prospects as a formative discipline to suggest that memetics might be viewed, quite metaphorically, as a case study in divergent evolution.

Chapter 2: From Popular Science to Niche Popular

> *As scientific concepts go, the 'meme' meme had the best possible start – it was launched in one of the most popular scientific books of the twentieth century. Yet while computer geeks ran away with the idea, generating a popular subculture of meme followers, in academic circles the meme fell on fallow ground.*
>
> – *Kevin Laland and Gillian Brown, Evolutionary Biologists (2002a, p. 200)*

In the history of memetics, the boundaries between the academic and the popular have frequently blurred. The relatively immature state of work in the field has limited highly theoretical and technical discussion of the topic, and many authors with respectable scholarly credentials have published articles and books offering popularized and accessible interpretations of memetics. The opening passage hints at additional complication. Dawkins's original presentation of the meme idea was ignored for many years, and the concept eventually started to circulate in the popular realm well in advance of appreciable recognition by academics. Most generally, the goal of this chapter is to untangle the first two decades of meme theorizing. As a historical foundation, I begin with an overview of the scattered early treatments of the topic developed by a wide variety of scholars and popular science writers. I will then take a closer look at the gradual diffusion of the concept into new domains, with an emphasis on the authors who pitched memes to niche popular audiences. As I will demonstrate, the popularization of the meme concept has not only diverged significantly from its historical origins, but also from recent scholarly treatments of the topic. Furthermore, exploring how particular understandings of memes have resonated with different authors and audiences will begin to reveal the boundaries between the popular and academic spheres of the field, while also hinting at the extent to which the development of meme theory has followed a historically specific trajectory.

Prelude to Popularization

Following Dawkins's discussion of the meme concept in *The Selfish Gene* (1976), the theory failed to attract much attention. Penelope Greene briefly explored the idea in a book review of *The Selfish Gene*, published in *Contemporary Sociology* (1978). She concluded that Dawkins's chapter on memes was not very valuable, but predicted that it might attract undue

attention, especially from critics of sociobiology. The well-known philosopher Mary Midgley – one of Dawkins's long-time adversaries – also offered early comments about memes in the journal *Philosophy* (Midgley, 1979). Painting Dawkins's approach to evolutionary biology as unrealistic and reductionist, Midgley briefly went on to disparage the meme concept as well. She argued that Dawkins's "half-finished meme construction" was "unrelated to facts," and that "even if – absurdly – imitation were the essence of culture, it could not have units" (p. 457). Dawkins's reply to Midgley was published in 1981 and Midgley's counter-reply in 1983, but relatively little attention was paid to memes in these two pieces. Perhaps most noteworthy is a footnote by Midgley that pointed to the parallels between the meme concept and a science fiction book by Colin Wilson titled *The Mind Parasites*, drawing attention to Dawkins's original depiction of memes as potentially parasitic and infective (Midgley, 1983, p. 377, fn12).[8]

By the 1980s, a number of prominent theorists were developing more robust evolutionary approaches to the study of culture, but they generally avoided reference to memes. Most noteworthy are a series of "coevolutionary" theories that posited the simultaneous modeling of genetic and cultural evolution, with a particular emphasis on how the two interact. Laland and Brown (2002a, p. 243) credit geneticists Luigi Cavalli-Sforza and Marcus Feldman for authoring one of the first articles (Feldman and Cavalli-Sforza, 1976) and one of the first books (Cavalli-Sforza and Feldman, 1981) that developed a robust theory of gene-culture coevolution, complete with detailed mathematical models. Sociobiologists Charles Lumsden and Edward O. Wilson (1981) offered their own coevolutionary theory around this time that was based on a unit of culture called the "culturgen." However, genes remained the final arbiter of culture for these authors, as exemplified by Wilson's well-known declaration that "genes hold culture on a leash" (1978, p. 167). In an influential 1985 text, anthropologists Robert Boyd and Peter Richersen advanced a "dual-inheritance theory" that was similar to other coevolutionary models. But as memeticist Susan Blackmore points out, Boyd and Richersen were more inclined to "let go of the leash," thereby treating culture as evolving independently of biological advantages (Blackmore, 1999, p. 35). While this line of reasoning appears similar to that developed by Dawkins, Boyd and Richersen avoided reliance on a discrete cultural units such as the "culturgen" or "meme." On the surface, these coevolutionary models may appear only marginally relevant to a history of memtics. However, many meme theorists have also grappled with the relative importance of and

[8] Additional research reveals that Wilson (1967) is the book to which Midgley referred in her article.

relation between the processes of genetic and cultural evolution, often with explicit reference to the authors discussed here. In addition, authors such as E. O. Wilson would go on to develop closer ties to the memetics community in later years.[9]

But just as evolutionary biology in general and coevolutionary theories in particular were attracting significant attention in the early and mid-1980s – due in no small part to the controversies surrounding sociobiology – the meme concept remained relatively obscure. Biologist John Bonner, philosopher David Hull, and Dawkins were some of the only authors who did discuss memes around this time. In *The Evolution of Culture in Animals* (1980), Bonner expanded the application of the meme concept to any organism with the capacity for culture.[10] Noting the definitional uncertainty surrounding Dawkins's terminology, Bonner remarked, "Dawkins has not attempted a rigorous definition of a meme, nor shall I here … I shall use the word in the sense of any bit or any collection of bits of information passed by behavioral means from one individual to another" (p. 18). While his effort was largely speculative, Bonner's text foreshadowed subsequent efforts to study empirically the evolution of memes in animals. Also noteworthy was the author's call for "a clear distinction between genetical and cultural change" (p. 19), an argument clearly aimed at the coevolutionary theorists who were gaining prominence around this time.

Dawkins briefly revisited memes in *The Extended Phenotype* (1982), but the book was predominantly devoted to more germane topics in evolutionary biology. Noteworthy in this text is the author's clarification of the "meme" as both "a unit of information residing in a brain" (p. 109) and "a unit of cultural inheritance" (p. 290). Also in 1982, philosopher David Hull offered his first remarks about memes in "The Naked Meme." This article was included in an edited volume dedicated to evolutionary epistemology, a somewhat esoteric corner of philosophy that postulates the application of evolutionary theory to knowledge systems. Hull drew on Dawkins's 1976 text to argue for the application of the "replicator" concept to both biological and sociocultural evolution (p. 275), and he promoted the meme as a "unit of sociocultural evolution" (p. 276). Hull's endorsement was certainly a boost to the legitimacy of the term, and it also created a more palpable link between meme theory and evolutionary epistemology.[11] As I'll

[9] In fact, Wilson dropped the "culturgen" concept and adopted the term "meme" in his 1998 book *Consilience*.
[10] Bonner begins this passage by defining culture as "behavior transmitted from one individual to another by teaching and learning" (p. 18).
[11] It is worth noting that Dawkins' first discussion of the meme concept mentions the work of Sir Karl Popper and

discuss in the following chapter, Hull would resurface as an important proponent of memetics in the late 1990s.

The gradual dissemination of meme theory to scholarly and popular science audiences continued in 1983 when Douglas Hofstadter discussed the topic in a *Scientific American* column titled "On Viral Sentences and Self-Replicating Structures." After reviewing the similarities between viruses and self-replicating sentences, Hofstadter summarized the meme concept via two excerpts from *The Selfish Gene* (1985, p. 50-52). The column was later reprinted in the best-selling compilation *Metamagical Themas* (1985), and in a post scriptum following the original text, Hofstadter noted:

> After writing this column, I received much mail testifying to the fact that there are a large number of people who have been infected by the 'meme' meme. Arel Lucas suggested that the discipline that studies memes and their connections to humans and other potential carriers of them be known as memetics, by analogy with "genetics." I think this is a good suggestion, and hope it will be adopted (1985, p. 65).[12]

This is one of the first uses of the moniker "memetics" in reference to the study of memes, and Hofstadter's mention of a "discipline" hints at early recognition of the potential for a new field dedicated to meme theory. Also noteworthy is the author's talk of "infection," a turn of phrase that depicts meme transmission as analogous to immunological rather than evolutionary processes. This interpretation resonated with both Hofstadter's interest in "viral sentences" and Dawkins's earlier references to "parasitic" and "infective" memes (Dawkins, 1976, pp. 192-193).

Around the time of Hofstadter's publications, an article by astronomer John A. Ball titled "Memes as Replicators" (1984) was one of the first substantial discussions of meme theory to appear in a peer-reviewed journal, namely *Ethology and Sociobiology*. In addition to introducing the meme concept to readers, the author pushed into new theoretical territory by "taking several well-known genetic phenomena and translating them into memetic language" (p. 145). Ball favored Dawkins's theorizing and terminology throughout the article, but in line with the topical

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Donald Campbell – arguably the two most important founding figures in the history of evolutionary epistemology – as authors who were also exploring the analogies between cultural and genetic evolution (1976, p. 190).

[12] Archivist and librarian Arel Lucas is married to Keith Henson, another early proponent of meme theory discussed in more detail below.

focus of the journal he also reviewed the coevolutionary models developed by Lumsden and Wilson, along with those of Boyd and Richersen. The article touched on a number of key themes that can be traced throughout the history of meme theory. For starters, the author developed a lengthy comparison of organisms and computer systems, going so far as to suggest that memes in brains are analogous to data or instructions stored in computer memory (p. 154). Furthermore, Ball was one of the first theorists to promote the phrase "meme meme," a clever idiom suggesting that the meme concept can be reflexively understood as a meme itself. Following this line of reasoning, Ball queried, "Does meme theory predict its own success?" (p. 146). By the end of the article, the author's own ambitions for the success of the theory are made plain. He concluded, "The meme meme is an extraordinarily powerful model and world view. It not only bridges the gap between biology and the social sciences, but also between biology and the future" (p. 160). This is lofty rhetoric, particularly from an astronomer pitching a theory of cultural evolution. But as it turns out, Ball stands at the beginning of a long and diverse line of meme theorists, many with atypical backgrounds.

Another important author rarely mentioned in the annals of memetics is K. Eric Drexler, an engineer and research scientist best known for his contributions to the field of nanotechnology. In his popular science introduction to that topic, titled *Engines of Creation: The Coming Era of Nanotechnology* (1986), Drexler connected the basic tenets of replicator theory to the development of next-generation technologies. The author turned to the meme concept in particular to describe how the principles of evolution are applicable in both the domains of technology and knowledge. Drexler offered a number of different interpretations for the term, including this definition in the glossary: "MEME: an idea that, like a gene, can replicate and evolve. Examples of memes (and meme systems) include political theories, proselytizing religions, and the idea of memes itself" (p. 313).[13] The author also described memes as "agents in the mind that are formed by teaching and imitation" (p. 84) and elsewhere in the text argued that human minds have developed "mental immune systems" to defend against "parasitic memes" (p. 49) In line with this theme, he explained:

> At best, chain letters, spurious rumors, fashionable lunacies, and other mental parasites harm people by wasting their time. At worst, they implant deadly

[13] The pagination used here is for the online version of the book and may not correspond to paper-based counterparts.

> misconceptions. These meme systems exploit human ignorance and vulnerability. Spreading them is like having a cold and sneezing on a friend (pp. 48-49).

Drexler certainly pushed the analogy between memes and parasites farther than any prior author. Perhaps even more importantly, *Engines of Creation* went on to become a best-seller, further disseminating Drexler's comments about memes not only to broad general audiences, but also to the sundry science and technology enthusiasts fascinated by the promises of nanotechnology. Furthermore, evidence suggests that Drexler's remarks about the meme concept had a direct influence on the work of later authors.

Another author writing about the topic around this time was Keith Henson, a computer engineer and futurist whose musings about memes appeared in three different outlets in 1987 and 1988 (1987a, 1987b, 1988).[14] An accessible article titled "Memetics: The Science of Information Viruses," originally published in *Whole Earth Review* (1987b), was another early discussion of the meme concept aimed at niche popular audiences. In this piece, the author paid homage to Dawkins as the originator of the meme concept and described the "new field of memetics" as a "science of social prediction." And like Drexler, Henson thoroughly mixed epidemiological and evolutionary interpretations of memes. For instance, he stated that "memes are subject to adaptive evolutionary forces very similar to those that select for genes," but he also described memetics as "germ theory applied to ideas." Henson preferred the latter approach throughout the article, as evidenced by his frequent use of terms such as "infection," "epidemic," "information disease," and "information virus" to describe the spread of memes. Most of the examples presented in the text were drawn from cult-like behavior and religious movements, giving these meme-as-virus analogies a high level of intuitive appeal. Henson applied the meme concept somewhat superficially to a large number of cases, all while avoiding detailed discussions of theory, methodology, or related texts. He also failed to discuss the realistic prospects for a "new science of information viruses."

Viral themes also surfaced in a 1988 piece suggestively titled "Are Ideas Viruses of the Mind?" This article was one of the first discussions of the meme concept to appear in a major, mass media outlet (*The Washington Post*), and it was subsequently reprinted in a handful of other

[14] Henson holds a bachelor's degree in electrical engineering, and has worked as an engineer and computer programmer for many years. In addition to his interest in memetics, Henson has been a long-time critic of the Church of Scientology.

newspapers. At the time the piece was published, author Michael Schrage was a visiting scholar at the MIT Media Lab. Like Henson, Schrage pitched memetics as a "new science" and "new paradigm," able to "explain such diverse phenomena as the spread of innovation, drug addiction, birth control and political campaigns." While the author's overview was aimed at a general audience, Schrage offered a reasonable review of the main authors and theoretical perspectives that informed his topic. He drew on Dawkins's work at length, but he nonetheless quoted Luigi Cavalli-Sforza, paid tribute to E.O. Wilson's "culturgen," and mentioned biologist Marcus Feldman's approach to studying the "epidemiology of culture." Schrage also raised a question central to the coevolution debate: "Do memes really evolve independently of our genetic evolution?" These references hint at the ongoing crosscurrents between the meme concept and the coevolutionary theories mentioned above. Finally, the mixing of analogies throughout the article is revealed by the author's reference to memes as subject to evolutionary processes on the one hand, and "communicable" and "comparable to viruses" on the other.

Dawkins revisited the meme concept in the latter half of the 1980s with two publications. In *The Blind Watchmaker* (1986), he offered relatively little commentary regarding memes save for his ongoing reservations about the utility of the concept. He stated that analogies comparing Darwinian and cultural evolution are "inspiring but which can be taken too far if we are not careful" (1986, p. 196). Dawkins added, "Cultural 'evolution' is not really evolution at all if we are being fussy and purist about our use of words" (p. 216). Similar tendencies can be found in the republication of Dawkins's *The Selfish Gene*, which included a lengthy compilation of endnotes appended to his original text (1989, pp. 322-332). Dawkins noted in this text that his initial "designs on human culture were modest almost to a vanishing point" (p. 322), but he nonetheless offered ten pages of updates and clarifications to his chapter about memes. The author began by stating that the original intention for his 1976 chapter was to "make the case for replicators in general" (p. 322), while also admitting, "The word meme seems to be turning out to be a good meme" (p. 322). Dawkins went on to discuss the mutation of memes by looking at errors in song lyrics and the titles of scientific papers (p. 323-324), reviewed his ongoing interest in "the analogy of memes with parasites" (p. 323), and performed a "memic analysis" to explore how particular ideas seem to spread in an "epidemic" fashion in the scientific community (pp. 325-328). Building on his earlier analogy that "the computers in which memes live are human brains" (1976, p. 197), Dawkins also argued that "[e]pidemics of 'viruses' and 'worms,'

deliberately released by malicious programmers," offered additional evidence for the existence of "self-replicating patterns of information – memes" (p. 329). These analogies with immunology and technology are striking, but the suggestion that computer viruses can be called memes appears inconsistent with the author's prior contention that memes "live" in human brains. Dawkins discussed to similar themes in a 1993 article, which I will return to shortly.

Toward the Tipping Point

As the 1980s wore on, the discussion of memes remained confined to a relatively small number of authors and texts, and only in the latter half of the decade was the concept beginning to inch beyond the confines of academe and pop science. The books and articles outlined thus far delivered the rudiments of meme theory to niche audiences composed largely of academics, popular science enthusiasts, futurists, and technologists. However, there were many important variations in the work of each author discussed above. Not only do we find a profusion of definitions offered for the term "meme" throughout this period, but also an increasing mix of evolutionary and epidemiological rhetoric. These tendencies continued in the 1990s as the meme concept diffused and diversified at an unprecedented rate via numerous book chapters and articles, many produced by authors who were writing about memes for the very first time.

If any one author stands out as a major catalyst for the growth and development of meme theory in the early 1990s, it is philosopher Daniel Dennett. In fact, Laland and Brown claim that Dennett's ventures into meme theory in the 1990s "reinvigorated" memetics (2002a, p. 203). In 1989, Dennett offered his first discussions of the topic in a lecture addressed to the American Society for Aesthetics and subsequently republished in the *Journal of Aesthetics and Art Criticism*. Like prior theorists such as Hull and Ball, Dennett pointed to the heuristic power of a "general and abstract characterization of evolution by natural selection" (1990, p. 127). He drew on Dawkins's 1976 text to argue that memes should be viewed as a "new kind of replicator," and that the evolution of memes "obeys the laws of natural selection exactly" (p. 128). To further emphasize what he called the "meme's eye view," Dennett delivered the now infamous slogan "a scholar is just a library's way of making another library" (p. 128). While his arguments were occasionally sloppy – it is often difficult, for instance, to tell whether Dennett's memes are supposed to reside in the human mind, in physical artifacts, or in some combination thereof – Dennett advanced the novel argument that "[t]he haven all memes depend on reaching is the

human mind, which is itself an artifact created when memes restructure a human brain to make it a better habitat for memes" (p. 133).[15] In *Consciousness Explained* (1991), Dennett extended these claims. The 1990 article summarized here is reprinted nearly verbatim in the text, and Dennett incorporated memes into his larger theoretical framework to conclude that "human consciousness is itself a huge complex of memes" (p. 210). Dennett's writing was both insightful and accessible, and his book quickly moved into position as a long-running best seller in the popular science genre. *Consciousness Explained*, along with the commentary and critique that followed it, likely introduced or reintroduced the meme concept to large and diverse audiences.

In parallel with Dennett's early forays into meme theory, the first print journal to offer extensive coverage of the topic initiated publication. Elan Moritz – who otherwise held a day job with the U.S. Department of the Navy – founded the *Journal of Ideas* in 1990, publishing it via his own dubiously named "Institute for Memetic Research." According to Moritz, the journal was intended to "circulate and nurture inquiry regarding the evolution and spread of ideas, the process of discovery, and the electronic implementation of idea/knowledge generation and processing" ("Journal of Ideas," n.d.). Moritz has stated more recently that he originally viewed the function of the journal as a "service to a broad community of researchers," adding that he hoped his institute would eventually attract financial support (1999). The editorial board of the journal consisted of Moritz and one other individual affiliated with the Institute for Memetic Research, and an editorial advisory board was comprised of two individuals with academic affiliations and a third from the private sector. [16] Moritz claimed that the journal was selective in accepting papers (Moritz, 1999), and authors with academic affiliations were responsible for roughly half of the articles published. The remaining contributors were a diverse lot of independent and private sector researchers, providing us with further evidence for the early recognition of the meme concept and related theorizing in many non-academic, niche audiences. However, this rather atypical outlet turned out to be a short-lived venture. Amidst revenue shortfalls and the competing demands of family and day job, Moritz suspended publication in 1991 (Moritz, 1999).

[15] For a lengthy criticism of Dennett's development of the meme concept, see Holdcroft and Lewis (2000).
[16] I have been unable to uncover additional information about Patricia S. Smith, the second editor. The editorial advisory board consisted of R. Wilburn Clouse of Vanderbilt University, Matthew Witten of University of Texas System (Huntsville), and Peter Kiss of Sentar Corporation (Austin).

Nonetheless, the three issues of the *Journal of Ideas* that were published provide a snapshot of meme theory in the early 1990s, revealing scattered commentary from diverse contributors cohering only partially and tentatively around common terminology and theoretical goals. One specific trend evident in the content of the journal is a shift toward quantitative approaches. For instance, a piece by Moritz titled "Memetic Science: I – Introduction" (1990) treated memes as replicators and offered a discussion of population dynamics and replicator equations. Moritz added that his primary goal was to develop "a rigorous foundation for discussion of memes and approaches to quantifying relevant aspects of meme genesis, interaction, mutation, growth, death and spreading processes" (1990). Similarly, independent researcher Aaron Lynch presented a "population memetics" framework (1991), while Matthew Witten drew on demographic theory to develop a model for the distribution of memes in given populations (1991).[17] Less technical writings include a piece by the aforementioned Bonner, who once more focused on the potential application of meme theory to the study of social animals (1990). Building on their prior efforts, Henson and Lucas tackled "the question of creationism and evolutionary theory in the context of memes" (1990). It should also be noted that many of the articles in the journal were only tangentially relevant to memetics, and others avoided the term "meme" entirely, perhaps not surprising given the relatively broad scope of the publication.[18] As this overview reveals, the demise of the *Journal of Ideas* may have been partially due to the topical, theoretical and methodological fragmentation evident in the articles outlined above. But Moritz's effort stands as an early attempt to build a "hybrid" periodical that would bridge multiple disciplinary domains and a wide variety of independent theorists, private researchers, and academics. And unlike the kinds of academic hybridity discussed by Dogan and Pahre, the journal created tentative connections not only between a diverse lot of researchers and topics, but also between a variety of academic and non-academic niches.

Given that back issues of the *Journal of Ideas* are exceedingly difficult to find – even in university libraries – the publication probably did not contribute significantly to the diffusion of memetics to new audiences in the early 1990s. Looking elsewhere, however, we find evidence

[17] At the time, Witten served on the editorial advisory board of the *Journal of Memetics*, and was also the head of the Center for High Performance Computing at University of Texas System.

[18] Examples include an article by biologist Stanley Salthe (1990), who proposed a new approach to the "study of uncertainties" in information theory, and biologists Daniel Brooks and Deborah McLennan, who worked toward a "general theory of biological evolution" (1990). Other authors discussed cultural evolution but avoided the term "meme." Charles Lumsden, for instance, built on his prior work in coevolutionary theory to develop "a semantic fractal organization for culture" (1991).

for the continued spread of meme theory into new domains. Brief references to memes appeared in journals such as *AI & Society* (Rada, 1991), *Cultural Dynamics* (Costall, 1991), and *Semiotic Review of Books* (Bouissac, 1994). More substantial discussions of the topic include an article in *National Productivity Review* that connected the meme concept with product innovation (Patterson, 1990), and a piece by biologists Alejandro Lynch and Allan Baker that proposed a meme-centered analysis of the evolution of bird song (1993; 1994). Schrage pitched the value of the concept to advertisers and marketers via *Adweek* (1992), while biologist Mario Vaneechoutte proposed memetics as useful for analyzing the evolutionary development of religious beliefs in a correspondence letter published in *Nature* (Vaneechoutte, 1993).

More substantial discussions of meme theory appeared in a handful of science and popular science texts. In *Coevolution: Genes, Culture, and Human Diversity* (1991), anthropologist and human biologist William H. Durham explored the relationships between genetic and cultural evolution. Durham was one of the first coevolutionary theorists – as well as one of the first anthropologists – to use the term "meme," defining it as "the unit of information that is conveyed from one brain to another during cultural transmission" (1991, p. 188). He focused on a number of cases where the evolution of culture appears to operate independently from biological advantage, but as Blackmore has pointed out, Durham ultimately placed memes as subservient to genes (1999, p. 35). In the same year, neurobiologist Juan D. Delius offered his interpretation of memes in an article published in an edited volume (1991). Delius defined memes quite specifically as "synaptic patterns that code cultural traits" (p. 83), and he went on to look at the ways in which particular memes might be viewed as "symbiotic" or "parasitic." The author concluded, "Memes have to be viewed as independently evolving entities whose core habitat happens to be the brains of some high animals" (p. 92). And finally, psychobiologist Henry Plotkin discussed memes in his 1993 text, *Darwin Machines and the Nature of Knowledge*, as a part of his larger effort to develop an accessible treatment of evolutionary epistemology. In his overview of meme theory, Plotkin treated memes as replicators and focused on the parallels between cultural and biological evolution. Dawkins's work informed his effort, and Plotkin briefly looked at the oft-discussed examples of religion and science as domains where the meme concept might prove useful.

While the texts by Durham, Delius, and Plotkin offered rather conservative treatments of meme theory that reached relatively small academic and popular science audiences, subsequent

pieces by psychologist Mihaly Csikszentmihalyi, Dawkins, and media critic Douglas Rushkoff were both more speculative and reached larger numbers of readers. In his popular psychology book *The Evolving Self* (1993), Csikszentmihalyi dedicated a chapter to memes. After briefly reviewing Dawkins's work, the author defined the term "meme" very generally as "any permanent pattern of matter or information produced by an act of human intentionality" (p. 120). The author traded in both evolutionary and epidemiological analogies in the text, and he emphasized how particular memes might be viewed as "parasitic species" that colonize minds. He offered rather informal exploratory discussions about the evolution of ideas and artifacts, the role of the media in transmitting memes, and the relationships between memes and consumerism. Connecting his commentary with the self-help themes central to his book, Csikszentmihalyi concluded, "It is not easy to know when we are serving the runaway replication of memes, and when we are doing something because it is the best for us … we can at least take cognizance of our limits, step back and evaluate where our psychic energy is being directed, and why" (p. 143). Given the success of the author's previous best-seller, *Flow* (1990), it is likely that *The Evolving Self* reached a relatively large audience. The influence of Csikszentmihalyi's work is particularly evident in the work of author Richard Brodie, discussed below.

Dawkins and Rushkoff also turned to the rhetoric of immunology to discuss memes around this time, but with an added technological twist. In an article suggestively titled "Viruses of the Mind," published in both the secular humanist magazine *Free Inquiry* (1993a) and a scholarly edited volume (1993b), Dawkins pursued a number of meme-as-virus analogies while avoiding substantive discussions of replicators or natural selection. Proposing a new model of "informational epidemiology," Dawkins discussed computer viruses at length to both explore non-biological evolutionary environments and to suggest the potential for generalizing the virus concept to cultural transmission. Building on a series of rather anecdotal religious examples, he concluded that "minds are friendly environments to parasitic, self-replicating ideas or information, and that minds are typically massively infected." In a similar vein, Rushkoff offered a simplified interpretation of memes in his best-selling pop culture title *Media Virus!* (1994). After mentioning Dawkins's work, Rushkoff concluded that memes comprise the "code" that undergirds "media viruses." He went on to state that the "[media] virus injects its more hidden agendas into the datastream in the form of ideological code – not genes, but a conceptual equivalent we now call 'memes'" (p. 10).

Two more important texts appeared in 1995, one by Dennett and the other by evolutionary and social theorist Howard Bloom. And while both books quickly turned into best-sellers, the authors offered markedly different interpretations of memes. Dennett's 1995 tome, *Darwin's Dangerous Idea*, was largely premised on the argument that Darwinian theorizing has "an unmistakable likeness to universal acid: it eats through just about every traditional concept, and leaves in its wake a revolutionized world-view" (p. 63). In a chapter dedicated to understanding culture in evolutionary terms, Dennett reworked his earlier writings about memes. Even more importantly, the author developed further discussion of two key topics, "Could There be a Science of Memetics?" and "The Philosophical Importance of Memes" (pp. 352-369). In these sections, Dennett reviewed important criticisms of the "meme perspective," while also exploring the potential value of memetics as both a philosophical outlook and basis for a new science. Dennett's discussion suggests that prominent proponents of the meme concept were beginning to take seriously the prospects for a new discipline of memetics as the 1990s wore on. And while generally classed as a popular science book, Dennett's arguments were reasonably well supported with supplemental references, many of them drawn from the academic realm.

Bloom, on the other hand, turned to a more flexible and simplified interpretation of memes in *The Lucifer Principle: A Scientific Exploration into the Forces of History* (1995). The author's larger effort involved a "scientific" reinterpretation of human history, centered in part on a "bottom-up" view of society in which groups of humans who share common memes aggregate into larger and more powerful "superorganisms." Citing Dawkins as the source of the meme concept, Bloom variously defined memes as "self-replicating cluster[s] of ideas" (p. 10) and "ideas, the snatches of nothingness that leap from mind to mind" (p. 98). The author pointed out that memes are replicators subject to evolutionary forces (p. 101; p. 179), but he also described how memes "infect minds with abstract ideas" (p. 164) and "fan out across the planet carried by vigorously scheming hosts" (p. 179). The author's informal and often confusing use of the term meme is evidenced by his depiction of Marxism as both an assembly of "fragmentary memes" and as a "new ideological meme" itself (p. 98). Like Csikszentmihalyi, Bloom advanced a malleable interpretation of memes that is almost entirely devoid of theoretical foundations or supporting material, save for a number of anecdotal historical narratives.

While the books and articles outlined thus far suggest that variations of the meme concept were being disseminated to ever-larger audiences as the 1990s wore on, the "popular subculture

of meme followers" described by Laland and Brown was also gaining prominence. Additional insight regarding the composition of this subculture has been offered by political and cultural theorist Mark Kingwell, who has referred to the "small circle of Netheads, fringe thinkers, and cutting-edge artists" who first embraced meme theory (1999, p. 84). While writers such as Henson and Moritz would likely be included in the circle to which Kingwell referred, additional evidence reveals a subculture well beyond the authors and texts discussed above. For instance, the Usenet newsgroup *alt.memetics* was founded in 1993, and a bibliography and FAQ (Frequently Asked Questions) file posted to the newsgroup – suggestively titled "Memetics: Sources of Infection" – verifies that numerous articles dedicated to the topic were available online by 1994 (de Hingh, 1994). Furthermore, a number of meme theorists were using the Internet for self-publication and self-promotion. As one example, an article by Keith Henson titled "Memes, Metamemes and Politics" (1994) was posted on the Internet as early as 1992, and the author later admitted that the piece had originally been rejected for publication by *Reason* magazine.

The trendy technology/culture outlet *Wired*, founded in 1993, quickly became another important outlet for musings about memes. Lawyer Mike Godwin (1994), in one early *Wired* article, briefly explored the prospects for a "new science of the meme – memetic engineering." And building on his prior efforts to connect meme theory with advertising and marketing, a 1994 *Wired* piece by Michael Schrage described memetics as a "a new paradigm to explain pop culture." He went on to suggest that the future of advertising might be increasingly reliant on "memegraphics" rather than demographics. A 1995 feature article by Schrage focused on the life and work of Richard Dawkins, and in this piece the author described memes as "ideas that are, to use the felicitous phrase of William Burroughs, 'viruses of the mind.' Memes are to cultural inheritance what genes are to biological heredity."[19]

As both Cohn (2001) and Thomas (2002) have pointed out, even science-fiction novels popular among "Netheads" and futurists, such as *Synners* (Cadigan, 1991) and *Snow Crash* (Stephenson, 1992), featured meme-like entities as central plot elements. Best-selling science

[19] Schrage's characterization is slightly skewed here. The more specific phrase "language is a virus from outer space" is frequently attributed to Burroughs, while "virus of the mind" is not. However, Thomas explains that Burroughs was describing both words and images in viral terms by the early 1970s, and she notes that Burroughs' remarks clearly preceded the science fiction authors who presented meme-like entities in their texts in the 1980s and 1990s. Thomas adds that Burroughs developed "his theory of the Word in his novels years before Dawkins coined the term meme" (Thomas, 2002, p. 174).

fiction writer David Brin – who incidentally holds a doctorate degree in physics – was also writing about memes in the 1990s, and one of his well-known non-fiction treatments of the topic was included in a best-selling collection of Brin's work titled *Otherness* (1994). As described by Cohn, Brin cautioned that his discussion of the meme concept was a "metaphor rather than a scientific explanation" (Brin, 1994, pp. 355-356), but he nonetheless turned to a viral interpretation of memes to develop "a pretty good model for what's been going on throughout most of human history" (p. 349). While initial popularization of meme theory among science enthusiasts, technophiles, and futurists can be traced back to pieces written by Henson and Schrage, the authors and texts reviewed here suggest that the spread of meme theory accelerated in these niche groups as the 1990s progressed. Furthermore, the resonance of immunological and technological interpretations of memes among these authors and their audiences both paralleled the work of subsequent meme theorists and foreshadowed the continued diffusion of the meme concept in the popular realm.

The Meme Enthusiasts

As the preceding overview suggests, by the 1990s the meme concept was developing along two distinct, but to some extent overlapping, paths. On the one hand, a small but diverse lot of authors from the academic realm were tentatively exploring the possibilities and pitfalls of meme theory. On the other hand, the meme concept was being reinterpreted and disseminated by a distinct "subculture of meme followers." Two of these followers, Richard Brodie and Aaron Lynch, surfaced in the mid-1990s to publish the first book-length texts ostensibly dedicated to memetics. Their efforts stand as prominent symbols of the popularization of the meme concept, and Aunger has even singled out Brodie and Lynch as "prominent meme enthusiasts" (2002, p. 17).[20] However, there are also important differences between these two authors. While Brodie has emerged as the archetypical popularizer of meme theory, Lynch is more aptly viewed as a boundary actor who has long negotiated the academic-popular divide. But before I explore these two authors and their texts in more detail, I turn to the curious story of political scientist Adam Westoby, another writer who made an early effort to write a book about memes.

[20] See Lynch (2002b) for his vigorous opposition to the "meme enthusiast" moniker.

Westoby's Ecology of Intentions

While Westoby was one of the first authors to attempt a book-length treatment of meme theory, his credentials and life history highlight the atypical character of many meme enthusiasts. After earning B.A. and B.Phil. degrees in the 1960s from Balliol College, University of Oxford, Westoby was offered a Lectureship in the Department of Education at The Open University, a position that he held from 1970 onward. For much of his career he was an expert on the structure, politics, and economies of communist states, authoring or co-authoring numerous articles and books on these topics. Unfortunately, Westoby was diagnosed with a progressive spinal cord disability in 1973, which he fought until his death in 1994. The deterioration of his condition in the 1980s, combined with rapid changes in the Eastern bloc, made it increasingly difficult for him to keep up with the literature in his original area of expertise. But by the end of the 1980s he had developed an interest in memes and pursued the topic in earnest. Often able to type with only a single finger, Westoby slowly drafted a 50,000-word manuscript titled *The Ecology of Intentions: How to Make Memes and Influence People: Culturology* (1994). Most generally, Westoby's piece is built around the notion that culture can be viewed in organic terms. He drew on prior theorizing by Dawkins and Dennett, among others, and connected various interpretations of the meme concept to a wide range of topics, ranging from laws and norms to economics and artifacts. He further delineated various "parasitic" and "reproductive" traits of memes, and his analysis hinted at the differences between evolutionary verses epidemiological approaches to the study of culture.

While Westoby's text remains somewhat scattered and speculative, the author did develop a number of novel ideas, many of them built upon a large body of supporting literature. Echoing this point, Dennett described the "variety of original and incisive ideas about memes" that appeared in the draft. In addition, Westoby's lengthy bibliography was one of the most inclusive lists of sources that had yet been compiled on the topic of evolutionary culture theory (ECT) in general and meme theory in particular. The final revision of the text is dated July 1994, and Westoby's brother Mark – himself an evolutionary biologist – delivered the unfinished manuscript to Dennett. Westoby's impressive effort was likely an influence on other authors who were working on meme theory in the mid-1990s, especially given that Dennett both distributed the manuscript among fellow meme theorists and subsequently placed the text online. Two of the theorists who received the draft, Richard Brodie and Aaron Lynch, went on to publish their own

treatments of the topic. But unlike Westoby's effort, these authors delivered popularized interpretations of memes to much larger audiences.[21]

Brodie's Virus of the Mind

Richard Brodie was one of the first authors to publish a book-length discussion of the meme concept. Some brief biographical details foreground both the content of the book and the author's role in the field of memetics. Like some of the popular authors discussed above, Brodie's background is limited in terms of scholarly credentials. The book jacket for *Virus of the Mind* claims the author was "educated at Harvard," but elsewhere Brodie admits to dropping out of the famed school to "join the computer revolution" (2000a). While such testimonials might not bode well in the academic community, similar stories are legendary among technology gurus. After leaving Harvard, Brodie went to work for another well-known Harvard College dropout, Bill Gates. Following a successful stint at Microsoft, where he garnered credit as the primary author of Microsoft Word V1.0, Brodie left the company in 1986 to "search for meaning in life" (1996, "About the Author"). He later started his own software and consulting firm, and penned a self-help book titled *Getting Past OK* (1993). In this text, Brodie admitted that he first heard about memes in the 1980s from colleagues at Microsoft, not surprising given the early circulation of the concept in computer enthusiast subcultures (1996, p. 23). His interest in the topic eventually led to *Virus of the Mind: The New Science of the Meme* (1996), a book self-published by the author under the clever moniker Integral Press.[22]

Aimed at popular audiences, *Virus of the Mind* is decidedly non-scientific and non-academic, and the Brodie warned readers, "Although this book is *about* science, it's obviously not a scientific text" (1996, p. 19). The author even eschewed extensive citations and footnotes in his writing, and opted for a "Recommended Reading" list instead of a bibliography. Early in the text, Brodie both introduced memetics as a revolutionary new science and positioned his own project as a part of the field: "Viruses of the mind, and the whole science of memetics, represent

[21] As a tongue-in-cheek promotional gimmick for his most recent book, *The Electric Meme* (2002), Aunger posted a lampoon of the Westoby story on his web site (Aunger, 2001a).

[22] Regarding the title of his book, Brodie explains, "thanks to Richard Dawkins for being so gracious when he discovered I had inadvertently 'pinched' the title he had previously used in an essay" (1996, p. 235). Apparently neither Dawkins nor Brodie realized that Schrage had used the title "Are Ideas Viruses of the Mind?" back in 1988.

a major paradigm shift in the science of the mind" (p. 15).[23] He also posited that memetics was "the long-awaited scientific theory unifying biology, psychology, and cognitive science" (p. 13). Midway through the Introduction, Brodie clarified his agenda. Building on his prior endeavors as a self-help writer, he stated that *Virus of the Mind* was written to "make a difference in people's lives" (p. 18). He further clarified that "understanding memetics can naturally help increase the quality of people's lives" (p. 18), and added that the book was intended to "consciously spread the new paradigm of memetics" (p. 19). Brodie went on to define memetics as "the study of the workings of memes: how they interact, replicate, and evolve" (p. 26). Highlighting the profusion of definitions in the field, the author reviewed biological, psychological, and cognitive definitions of the term "meme" by paraphrasing the work of Dawkins, Plotkin, and Dennett. Brodie also offered his own definition, which he adapted from Dawkins (1982): "A *meme* is a unit of information in a mind whose existence influences events such that more copies of itself get created in other minds" (p. 32). Following in Dennett's footsteps, the author added that memes are "the building-blocks of your mind" (p. 36). As this overview suggests, Brodie generally maintained that memes exist in the brain and are subject to evolutionary processes befitting replicators. The author reinforced this interpretation by later referring the unit meme as "a replicator that uses the medium of our minds to replicate" (p. 82).

Turning to the title of his book, Brodie explained, "A virus of the mind is something out in the world that infects people with memes. Those memes, in turn, influence the infected people's behavior so that they help perpetuate and spread the virus" (p. 36). Throughout the text, the author focused on these "mind viruses" as particularly nefarious memes that spread infectively from person to person. Brodie gave many examples thereof, ranging from fashions and religions to pervasive advertising jingles and pyramid schemes. This somewhat confusing depiction of memes and mind viruses is outlined in Figure 2.1 below. In addition to revealing the extensive mixing of evolutionary and epidemiological terminology that characterizes much of the book, the table hints at the author's tendency to build speculative analogies connecting the domains of biology, computer technology, human culture, and human mind. Further muddying the waters are the self-help themes that run throughout the text, largely premised on the notion that individuals can consciously "deprogram" or "disinfect" their own minds in order to live better lives. Brodie remarked, "Most people are so full of mind viruses, of externally acquired

[23] Brodie also describes memetics as "revolutionary science," but he fails to cite Kuhn in his discussion.

Biology	Computers	Mind
gene	machine instruction	meme
cell	computer	mind
DNA	machine language	internal brain representation of knowledge
virus	computer virus	virus of the mind
gene pool	all software	meme pool
spores/germs	electronic bulletin board postings	broadcasts/ publications
species	operating system	cultural institution
genus & higher classifications	machine architecture	culture
organism	program	behavior/artifact
genetic susceptibility	"back door" or security hole	psychological susceptibility or "button"
genetic evolution	artificial life	cultural evolution

Viruses occur in three different universes: biology, computers, and the mind. This table shows the correspondence between words used to talk about evolution and viruses in each of the three universes.

Figure 2.1. Brodie's Analogies (Brodie, 1996, p. 56)[24]

mental programming, that they don't spend much of their time and energy pursuing what they want in life" (p. 220). Elsewhere he noted, "We can either give up on the hope of having a fulfilling life and a better world, or consciously choose which memes to program ourselves with and which memes we want to spread" (p. 215). As this overview suggests, Brodie's self-help agenda had much in common with earlier work by Csikszentmihalyi. In fact, *The Evolving Self* (Csikszentmihalyi, 1993) even appeared on Brodie's "Recommended Reading" list (p. 232).

Also noteworthy are the ways in which Brodie conveyed and reflexively applied his own theoretical claims, with the explicit goal of spreading the meme concept and selling more books. Indeed, *Virus of the Mind* might be viewed as an experiment in applied memetics. Prominent examples of this approach include the phrase "Warning: live mind virus!" emblazoned on the book jacket, and a disclaimer that appeared at the beginning of the text:

> [W]arning! This book contains a live mind virus. Do not read further unless you are willing to be infected. The infection may affect the way you think in subtle or not-so-subtle ways – or even turn your current world view inside out (Brodie, 1996).

These clever ploys were clearly designed to attract attention and pull in readers, and the author utilized similar tricks throughout the book. Brodie even explicitly described his approach in the book: "*Virus of the Mind* is my attempt to consciously spread the bundle of memes known as

[24] This figure reprinted with permission from *Virus of the Mind: The New Science of the Meme* by Richard Brodie, 1996, Integral Press. Copyright 1996 Richard Brodie.

memetics" (p. 155). In a *Journal of Memetics* discussion list message, the author added: "*Virus of the Mind* is deliberately (and overtly) infected with language designed to plant memes designed to make the reader leap up and recommend the book to others" (1997). There is evidence that Brodie's strategies were to some extent effective. His title was on the *Amazon.com* best-seller list for more than a year (2000b), and his efforts even caught the attention of talk show hosts. Brodie made promotional appearances on the *Donohue* and *Oprah* television shows in 1996 and 1999, respectively, to talk about "viruses of the mind."

Brodie's effort to popularize meme theory is further revealed in a message posted to the *Journal of Memetics* discussion list in 1999. He stated, "My work is not targeted at the academic community. I am trying to reach the general public" (1999). But other evidence hints at loftier ambitions. In the same message, Brodie added, "*Virus of the Mind* IS the seminal work on memetics … . Everyone interested in the subject reads it" (1999).[25] He went on to reflect on his position in the field:

> I would say, in fact, that academics as a group have been more guarded than other folks to endorse my book [*Virus of the Mind*], and understandably so, since I am kind of a "loose cannon" and don't play by academic rules. But that's also why I was willing to publish the first book on memetics, this outlandish theory. I didn't have an academic career to risk (Brodie, 1999).

As evidenced by this passage, the author painted himself as an outsider with respect to the more academic sphere of meme theorists. Furthermore, Brodie clearly had no qualms about describing meme theory as "outlandish," suggesting that he viewed the field as both radical and controversial. And thus far, his work in the realm of meme theory has been relatively limited. Brodie's contribution to the field remains limited to his 1996 book, a promotional web site, and numerous postings to both the *Journal of Memetics* (*JoM-EMIT*) electronic mailing list and the *alt.memetics* Usenet newsgroup.[26] But as this overview suggests, Brodie's effort to popularize the meme concept far exceeded the efforts of any prior author. Furthermore, the influence of his work is particularly evident in subsequent popular texts, a point to which I will return. But before grappling with these issues, I turn to another popularizer of memetics, Aaron Lynch.

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[25] It should be noted that Brodie's bold remark preceded the publication other important texts dedicated to the topic, such as the books authored by Blackmore (1999) and Aunger (2002), and the volume edited by Aunger (2000).
[26] Brodie's web site, titled "Meme Central," is located at: http://www.memecentral.com/

Lynch's Thought Contagion

Like Brodie, Lynch is well known for a popular interpretation of meme theory. However, closer comparison reveals both similarities and differences between these two authors. In terms of academic qualifications, Lynch's undergraduate degrees in physics, mathematics and philosophy are slightly more impressive than Brodie's stint at Harvard. And prior to his work in memetics, Lynch was an engineering physicist at Fermilab (1996, "About the Author"). He claims that in 1978 he "independently reinvented" a theory of self-propagating ideas that was similar to memetics, but subsequently decided to adopt the term "meme" after hearing about Dawkins's 1976 chapter (1996, p. vii). In 1988, an undisclosed private sponsor awarded Lynch a full-time grant for research (1996, "About the Author"), and in 1990 his first treatment of the topic was published in the *Journal of Ideas*.

Thought Contagion: How Belief Spreads Through Society (1996) is the popular text that eventually resulted from Lynch's efforts. The author has stated that the first draft of his text was completed in 1993, but publication was delayed until 1996 when Basic Books "took a chance on it" (2002a).[27] Lynch explains that "standards of simplicity in the trade book market," along with the hope of achieving broad accessibility, resulted in the exclusion of more technical material in the text. The title was pitched to the intellectual lay reader, featuring a somewhat more academic tone when compared to Brodie's work. And while he avoided the extensive evidence and documentation that would be expected in an academic volume, the author did support his effort with some reference material. *Thought Contagion* seems to have fared reasonably well in the marketplace given that it appeared on the *New Scientist* best-seller list in 1998, and a paperback edition was released in late 1999 (Lynch, 1998b).

While Lynch's book was primarily aimed at popular audiences, the author clearly positioned his work in relation to both science generally and memetics specifically. In the preface to the paperback edition of the text, Lynch stated that his original goal for *Thought Contagion* was to provide a "concentrated collection of good examples" of memes, thereby "putting memetics on more serious footing in the sciences" (1996, p. vii). In striking parallel with Brodie's book title, the phrase "The New Science of Memes" appeared on the cover of

[27] Lynch remarked, "a draft manuscript for *Thought Contagion* was first registered in the Copyright Office of the US Library of Congress March of 1993" (2002a).

Thought Contagion, and the author described memetics as "a new branch of science" (1996, p. vii). Drawing explicitly on Thomas Kuhn's *The Structure of Scientific Revolutions*, Lynch argued that memetics is a "paradigm shift" and "revolutionary science" because it "takes the much explored question of how people acquire ideas and turns it on its head: the new approach often asks how ideas acquire people" (pp. 17-18). The author even offered a chapter titled "A Missing Link: Memetics and the Social Sciences," in which he discussed how work in the field might inform disciplines such as economics, history, anthropology, and psychology, to name a few (pp. 17-39).

Further delving into the content of the text, we find that Lynch's interpretation of the meme concept was based on both evolutionary and epidemiological analogies. Early in the book, he stated, "memetics is, in part, an epidemiology of ideas" (p. 9).[28] But Lynch also offered a brief overview of "memetic evolution," pointing out that "memetic evolution keep[s] certain beliefs current and contagious" (p. 12). As suggested by the book's title, the author's primary focus was on a particularly infectious class of memes that he called "thought contagion," defined most simply as "self-propagating idea[s]" (p. 2). In the passage below, Lynch invoked the suggestive imagery of computer and biological viruses, while also appearing to conflate memes with thought contagion:

> Like a software virus in a computer network or a physical virus in a city, thought contagions proliferate by effectively 'programming' for their own retransmission. … Actively contagious ideas are now called *memes* (a word that rhymes with "teams") by students of the newly emerging science of *memetics* (p. 2).

This epidemiological focus appears to have much in common with Brodie's *Virus of the Mind*, but Lynch countered the view that infectious ideas should be viewed in negative terms. The author pointed out that many of these thought contagion are benign, and that "[t]he terms thought contagion and epidemiology therefore carry neutral connotations in the context of memetics theory" (p. 10). Lynch covered a broad swath of examples in the book as he described how memes and thought contagion connect with family structure and sexuality, cults and religions, medical and health beliefs, and even controversial issues such as abortion and gun control. Like

[28] Later in the text, Lynch briefly pondered the potential for a new "germ theory of ideas" (p. 155).

Brodie, Lynch clearly tended toward breadth over depth, often devoting only a few paragraphs to any given topic and relying primarily on anecdotal evidence.

But unlike Brodie, Lynch's publications in the field of memetics extend well beyond this single popular book. In addition to writing *Thought Contagion*, Lynch is listed as an editor for the *Journal of Memetics* and is a frequent participant on the journal's discussion list. Furthermore, he claims to have developed robust technical foundations for the study of memes and thought contagion. In the preface to his book, Lynch explained: "Still, some will ask what would remain of memetics if all analogies to genes, software viruses, and biological contagion were removed. I have published my answer to this question separately – in a technical journal filled with propagation diagrams and mathematical equations, but lacking wide readability" (p. viii). The piece to which Lynch referred was originally published in the *Journal of Memetics* (1998a), and later revised and reprinted on his web site (2001b). Other articles by Lynch looking specifically at thought contagion and stock market trends have appeared in financial journals (2000a, 2001a), and another titled "Evolutionary Contagion in Mental Software" was printed in a recent scholarly volume (2000b). Lynch has also authored shorter popular pieces that connect his thought contagion approach with diverse topics such as the AIDS epidemic, dieting, and mass belief.[29]

Brodie and Lynch stand in a long line of meme theorists with rather atypical backgrounds, such as astronomer John Ball, engineer Keith Henson, *Journal of Ideas* founder Elan Moritz, and political scientist Adam Westoby. All of these authors have lacked advanced degrees – much less any significant formal training – in the academic disciplines that are most often associated with memetics, such as evolutionary biology, psychology, and anthropology. Furthermore, their involvement in the field has either been a side interest or supported via independent sources of funding, and none of them have had academic careers at stake. Brodie and Lynch in particular view their efforts as important contributions to the domain of meme theory, but both have demonstrated a willingness to break or bend widely accepted standards for scholarly conduct, a point to which I will return. These are rather atypical characteristics for authors who purport to be building the foundations of a new science, but they seem to have embraced meme theory at an opportune time. Sensing the far-reaching possibilities for a new "science" of culture, along with a relative lack of highly theoretical discussion on the topic, they

[29] Articles on these and other topics are available on Lynch's web site: *http://thoughtcontagion.com/*

jumped in to fill a void, stake out their own claims, and perhaps garner some recognition for their efforts along the way. In doing so, they disseminated their own interpretations of the meme concept to a wide variety of readers at a historically opportune moment.

But there are also notable differences between these authors, particularly with respect to their respective locations in the field. Brodie's limited publications, self-avowed outsider status, and decidedly non-scientific book place him quite solidly on the popular side of meme theory. Lynch's numerous publications and involvement with the *Journal of Memetics*, on the other hand, demonstrate a somewhat closer relationship with the academic sphere of memetics. If Brodie has emerged as the archetypical popularizer of meme theory, Lynch is more aptly viewed as a boundary actor who has frequently negotiated the academic-popular divide. This distinction will resurface in the following chapter as I take a closer look at how the more academic sphere of meme theorists has reacted to the work of these and other meme enthusiasts. But questions remain regarding why the meme concept gained early momentum among these atypical authors and their ilk. Additional analysis will reveal a number of important themes prevalent in popularized discussions of meme theory, while also pointing us toward tentative explanations for why certain interpretations of memes have resonated with many popular authors and their niche popular audiences.

The Popular Meme

Dilution of Theory

Looking specifically at the legacy of Brodie's work reveals how popular authors have reinterpreted various concepts and theoretical insights from the field of memetics and delivered them to ever-larger audiences. Brodie himself offered simplified formulations of the meme concept by borrowing from the somewhat more rigorous foundations provided by Dawkins, Dennett, and Plotkin. And as evidenced by the sources listed in his book – not to mention the self-help themes and meme-as-virus rhetoric that ran through it – Brodie gained further insight and inspiration from the work of prior popular authors such as Rushkoff and Csikszentmihalyi. A number of writers who followed in the wake of Brodie and Lynch have developed increasingly simplified interpretations of the meme concept. Aunger, noticing this trend, has pointed to the

work of marketing gurus Seth Godin and Malcolm Gladwell as evidence for the "dilution" of meme theory over multiple generations of popular theorizing.

Godin's simplistic bit memorable "ideavirus," developed in his best-selling book *Unleashing the Ideavirus* (2000), is one noteworthy example of theoretical dilution. Godin defines an ideavirus as "an idea that moves and grows and infects everyone it touches" (2000, p. 13), and he subsequently depicted memes and ideaviruses as equivalent (p. 94). A related theme in this author's work is the "sneezer," a person who is especially likely to spread an "ideavirus." Godin cites Gladwell's *The Tipping Point* (2000) as the source of this concept, and Aunger recently noted that Gladwell originally "borrowed" many of his ideas from Lynch and Brodie (2002, pp. 16-17). Further plumbing the historical record, we find a near-identical formulation of the "sneezer" concept in Drexler's discussion of "parasitic" memes in *Engines of Creation* (1986). In exploring these and other instances of diluted theorizing, Aunger concludes that "the rather elaborate analysis in the memetics books have been reduced to a small number of concepts, and these wind up being somewhat vulgarly expressed" (2002, p. 17). But given the wide dissemination of the texts authored by Godin and Gladwell, these "vulgar expressions" of meme theory have been presented to large and diverse audiences. As a result, the understanding of the meme concept in the popular realm continues to diverge from more academic treatments of the topic.

Circular Theorizing

Another trend evident in many popular and popular science discussions of meme theory is the use of self-reflexive or circular depictions of memes. Simply stated, this amounts to the notion that the meme concept can be understood as a meme itself. Ball was one of the first authors to encapsulate this idea with the phrase "meme meme," and he further pondered, "Does meme theory predict its own success?" (1984, p. 146). Hofstadter referred to the "large number of people who have been infected by the 'meme' meme" (1985, p. 65), while Drexler noted that one example of a meme is the "idea of memes itself" (1986, p. 313). Similarly, Henson described the "meme-about-memes" (1987b) and Dennett bandied about the phrase "meme meme" (1990, p. 134). And finally, Dawkins commented that "the word meme seems to be turning out to be a good meme" (1989, p. 322).

By the mid-1990s, the self-referential themes suggested by the "meme meme" were advanced by Brodie and Lynch, but in markedly different directions. As discussed above, Brodie conveyed and reflexively applied his own theoretical claims in *Virus of the Mind*, with the explicit goal of spreading the meme concept and selling more books. Lynch, on the other hand, explored the topic in an epilogue titled "Thought Contagions of Thought Contagion" (1996, pp. 175-177). Unlike other authors, Lynch discussed the philosophical and theoretical implications of self-referential systems, and he drew on Hofstadter's well-known tome *Gödel, Escher, Bach: An Eternal Golden Braid* (1979) to explain that "any consistent theory or system powerful enough to consider itself has to be complete" (p. 177). Lynch went on to conclude that questions such as "What does thought contagion theory forecast for the contagion of thought contagion theory?" remain "formally undecidable" (p. 177). According to this line of reasoning, the circularity of a theory is interpreted as a sign of power rather than as a fatal flaw leading to infinite regress.

While Lynch's argument remains open to criticism, my primary concern here is on the diffusion of meme theory among particular authors and audiences. On the one hand, circular phrases such as "meme meme" serve as a clever encapsulation of the meme concept that is more easily understood by general audiences. But technologically savvy scientists and computer programmers – likely already familiar with concepts such as circularity and recursivity – may be even more likely to find these clever, reflexive concepts both intuitive and appealing. Support for this argument can be found in the remarks of social psychologist Sherry Turkle, who has discussed how recursivity is an important aesthetic in the subcultures of computer technology:

> Escher was a favorite among computer people before [Hofstadter's] *Gödel, Escher, Bach* captured a long standing computer-culture aesthetic by making the point, well known to programmers, that Escher's prints of hands drawing each other or of stairs that continue to rise until they reach their starting point are recursive. These are "strange loops" whose power originates from the fact that they refer to themselves … (1984, p. 220).

As evidenced by Hofstadter's early promotion of memes – which appeared in tandem with musings about other replicating structures such as viral sentences – Brodie and Lynch stand in a long line of authors attracted to the "strange loops" of the "meme meme." Furthermore, the

allure of self-referential theories of culture and cultural transmission enthralled the technologists, futurists, and popular science enthusiasts who have historically composed the core audience for articles and books about memes. But in order to develop a better understanding regarding the popular appeal of memetics, we must also look at how various analogies and metaphors have shaped both work in the field and the reception of the meme concept.

Mixing Metaphors

As discussed above, popular discussions of meme theory have tended to favor epidemiological approaches or haphazard comparisons of memes with both viruses and genes, while the more academic sphere of memetics has generally eschewed such references in favor of genetic analogies. Noticing this trend, Aunger has described the field of memetics in terms of competing metaphors that he aptly labels "meme-as-germ" and "meme-as-gene" (Aunger, 2000, p. 9). The former is generally characterized by rhetoric borrowed from immunology, and is often focused on the transmission, diffusion, and "fitness" of memes. The latter tends to view memes as replicators, with a more nuanced emphasis on evolutionary processes. Dawkins captures another important distinction between these two approaches: "Memes travel longitudinally down generations, but they travel horizontally too, like viruses in an epidemic" (Blackmore, 1998, p. ix). Pursuing a similar line of inquiry, Aunger described the differences between the major fields that inform the work of many meme theorists, namely epidemiology and evolutionary biology. He pointed out that epidemiological perspectives are often concerned with pragmatic issues associated with fighting disease, such as the "the spatial dimension of reproduction – or the geographical spread of a phenomenon" (2000, p. 9). On the other hand, evolutionary approaches tend to focus on the "temporal dimensions of replication," such as the study of mutations and selective pressures.[30] Aunger adds that while these two domains have much in common at the elementary level, each school of thought has "distinct intellectual histories, disciplinary agendas, and popular perceptions" (2000, p. 9).

These remarks suggest that analogies based on either a genetic or epidemiological framework may have advantages or disadvantages depending on the context in which they are used. Hence, a given author's tendency to emphasize one or the other is to some extent driven by

[30] Various understandings of the space/time dichotomy, as from fields such as geography and cultural studies, might be valuable here for looking at the larger implications of these theoretical tendencies. I leave this for future analysis.

theoretical and methodological considerations, along with that author's intellectual background, the particular subjects under investigation, the goals of a given analysis, and even the intended audience. But these somewhat commonsensical conclusions only go so far. Noting the prevalence of religious examples in the work of many meme theorists, Jeffreys remarked, "In all these 'virus' and 'contagion' accounts, one suspects that the authors' own convictions that religions amount to no more than dangerous, self-serving superstitions have encouraged the use of virological metaphors" (2000, p. 230). There may be a grain of truth to Jeffreys' comment, but it is surely not the whole story. Speculating about the whims and preferences of individual authors fails to adequately explain more general patterns and tendencies in the field.

Aunger has noted that epidemiological approaches allow theorists to be "intellectually lazy" by shifting attention toward the spread of memes, while largely ignoring the more complex matter of how memes change or evolve over time (2002, p. 18). Hence, authors with limited scholarly credentials may be more likely to pursue the meme-as-germ approach to avoid the difficulties that accompany evolutionary understandings of cultural change and transmission. The popular treatments of meme theory offered by authors such as Henson, Rushkoff, Brodie, and Godin support this claim. But this explanation is not entirely satisfying. For starters, epidemiological approaches are not inherently simplistic. There is a long history of complex modeling by the proponents of various social contagion theories, and Lynch in particular has developed what appear to be highly technical foundations for his own "epidemiology of ideas."[31] Furthermore, Dawkins's "Viruses of the Mind" (1993) article reveals that even respected scientists can speculate about meme-as-germ analogies with very little theoretical rigor. Another consideration that deserves exploration is Aunger's preceding reference to the "popular perceptions" of the parent disciplines. Pursuing this line of inquiry offers additional explanation for why the meme-as-germ approach has proven both prevalent and durable.

Popular Predispositions

The popular perception of a given base domain – whether it be epidemiology or evolutionary biology – also plays a role in determining how particular interpretations of memes resonate with authors and audiences. Far from being a case of neutral analogizing, the

[31] An article by Marsden titled "Memetics and Social Contagion: Two Sides of the Same Coin?" (1998) looks at how social science research on social contagion phenomena parallels much work in the field of memetics.

metaphorical comparison of memes to germs and genes is necessarily situated in and influenced by a larger cultural milieu. Thomas, for instance, offered an exploration of such contextual issues as a part of her more general effort to analyze the "viral reality" of the 1990s. As she compared and contrasted representations of viruses in popular culture outlets and science fiction texts (2002), Thomas explored the complex interplay of computer viruses, mind viruses, and memes. In this passage, she hinted at one of the reasons for the prevalence of viral rhetoric in popular discussions of memetics:

> [T]he meme's metaphorical counterparts, genes and viruses, may be discerned with the proper equipment, though we might have difficulty describing just what constitutes a gene, exactly. We have an easier time imagining viruses, which are self-enclosed entities like bacteria or cells (p. 173).

Thomas's comment suggests that the portrayal of memes as analogous to viruses may prove both less complicated for authors and more palateable for general audiences, especially in light of popular understandings of contagion. This argument is further supported by Shea, who has demonstrated that the term "gene" has long been characterized by a rich diversity of uses and meanings, particularly in the realm of popular culture (2001). While this malleability has likely played an important role in establishing the gene as an iconic cultural symbol, the meme-as-gene interpretation inherits ambiguity from both the definitional uncertainties of the gene and the underlying complexities of evolutionary theory. But other factors also play into the popular preference for particular analogies. Thomas remarks:

> And we now have the terminology of viruses at our disposal, after years of exposure to the AIDS epidemic and years of attempting to "innoculate" [sic] the precious electronic extensions of our minds against marauding lines of code. It is no wonder, then, that the figure of the virus is so readily appropriated by adherents to meme theory, who are themselves well-versed in the language of contagion (p. 173).

Here Thomas clearly follows in the footsteps of Emily Martin, who had earlier explored the diffusion and understanding of immunology concepts both within and beyond science. The work of these authors clearly supports the argument that popular authors and audiences were

increasingly primed for meme-as-germ analogies in the 1980s and 1990s. On the other hand, genetic understandings of memes would come to dominate the more academic corners of meme theory as the 1990s progressed, a point to which I'll return in the next chapter.

But Thomas's comments also hint at the importance of technological rhetoric in discussions of meme theory. By developing analogies that compare memes and viruses, authors are able to extend their discussions of meme theory from the biological to the technological with relative ease, a tendency that appears deeply rooted in the history of the field. Both Dawkins and Ball offered early portrayals of the brain as analogous to a computer, with Ball describing memes as equivalent to data or instructions and Dawkins comparing memes with computer viruses. Such formulations appear to have been particularly palatable to many of the early proponents of meme theory hailing from various technology and futurist subcultures, as reflected in the work of authors such as Henson and Brin. And subsequent popular authors, most notably Brodie and Lynch, both extended these parallels and disseminated the meme-as-virus mantra to larger audiences. Given the increasingly pervasive rhetoric of computer technology in the 1990s, *Virus of the Mind* and *Thought Contagion* appeared at an opportune time. As personal computers and the World Wide Web moved toward cultural ubiquity, so too did computer viruses, e-mail chain letters, and Internet fads. In light of these intertwined trends, viral interpretations of memes were rendered increasingly persuasive for a growing segment of the population, and the appeal of the meme concept was increasingly visible beyond the niche social and cultural spaces occupied by the technologists, science fiction enthusiasts, and futurists.

A number of commentators have taken note of the historically specific synergies between memetics, technology, and society. For instance, Kingwell remarks, "In brains softened up by computer metaphors, the meme meme finds a ready host. We are very much taken with the idea that we resemble the cool machines that dominate our lives from their position on your desk and mine" (1999, p. 88). Journalist Mic Moroney follows a similar line of reasoning, while crafting an even more insightful explanation: "Just as we have always made anxious metaphors of ourselves and society from our dominant technologies, the meme meme, so to speak, ties in with the revival of social Darwinism in visions of capitalism; the infective metaphor of computer viruses, even the viral apocalypse of AIDS" (2000). Moroney's comment adroitly captures the connections between these disparate realms of biology, technology, and society. It is from this

crossroad of anxious analogy that popular interpretations of the meme-as-germ have emerged and taken hold.

Conclusion

As suggested by the preceding analysis, the history of memetics has been characterized by an atypical pattern of growth. Originally and tentatively developed by popular science authors, the meme concept was subsequently advanced by fringe intellectuals, futurists, and technophiles. Without the appearance of rigid boundaries, a diverse body of authors adopted a malleable meme and applied it to diverse domains such as marketing and self-help. Brodie and Lynch stand out as two of the more visible meme enthusiasts, and their texts remain symbols of the ongoing popularization and growth of the field. And while the value of their tactics and theoretical claims can be questioned, their efforts have proven controversial and accessible, further disseminating the meme concept to new audiences. But the theorizing promoted by these authors has to some extent diverged from both the popular science origins of the meme and the more academic sphere of memeticists. The meme-as-germ, framed by the powerful rhetoric of immunology and technology, has resonated with particular niche popular authors and audiences. In a cyclical manner, the viral meme has been further shaped by a pattern of diffusion and diversification over multiple generations of theorizing. By looking at these historical trends, boundaries become more evident. The meme stands as an increasingly tenuous link between the academic and popular, between the viral and genetic.

The next chapter explores the nascent academic community of meme theorists that developed as the 1990s wore on. I will emphasize the evolutionary analogies ("meme-as-gene") that gained prominence in this sphere, and will also take a closer look at some of the arguments that scholars have advanced against epidemiological approaches to understanding memes. But as the preceding analysis suggests, such criticisms may neither reach nor resonate with popular audiences that are increasingly primed for metaphorical "infection" by the "meme meme."

Chapter 3: Meme Academe

> *More entries have arrived in the search for the most outstandingly obscure academic journal. Suggestions include the Journal of Memetics, which contains a paper titled "The six essentials? Minimal requirements for the Darwinian bootstrapping of quality."*
>
> *– The Times Higher Education Supplement, September 6, 2002 ("Obscure Pursuits")*

As we follow the historical traces of meme theory into the 1990s, it becomes evident that the popularization of the meme concept paralleled, and to a significant extent preceded, the gradual and emergence of an academic community of meme theorists. In line with the former, books such as *Virus of the Mind* and *Thought Contagion* grew out of the earlier dissemination of the meme concept among technophiles and futurists. However, these books also promoted the ongoing spread of the concept to general and niche popular audiences, particularly via the Internet. By 1997, "meme" was added to the *Oxford English Dictionary*, symbolizing the movement of the term toward increasing cultural ubiquity. But somewhat ironically, 1997 also marked the founding of the peer-reviewed *Journal of Memetics*, revealing that meme theory was gaining ground in academic circles around the same time. This chapter will focus on the development of a distinct academic community of meme theorists, with an emphasis on how this community has both reacted to and distinguished itself from popular interpreters of memes. In addition to promoting variations of meme theory that appear divergent from the work of many popular authors, this new subculture of memeticists have turned to various strategies and controls that to some extent regulate activity in the field and legitimate their collective endeavor.

Organizing a Discipline

Throughout the 1980s and into the 1990s, only a few scholarly discussions of meme theory were published in peer-reviewed journals or other academic texts. The *Journal of Ideas* was an important early attempt to develop more substantial theoretical and methodological foundations for meme theory and related topics, but in hindsight this "hybrid" journal faced difficult odds from the start. On the one hand, it was published by an early meme enthusiast who lacked the sort of academic and institutional affiliations that often provide essential support for such endeavors. Furthermore, the broad scope the publication resulted in a profusion of topics

and approaches that failed to coalesce around common themes, theories, methods or even terminology. Even authors with impressive academic credentials – such as Dawkins, Plotkin, and Dennett, to name a few – went on to develop relatively accessible treatments of meme theory in the first half of the 1990s, and most of these were published in popular science books. As a result, the first two decades of work in the field were characterized by an abundance of speculation and anecdotal musing but relatively sparse theoretical insights or empirical results. The establishment of the first journal wholly dedicated to memetics and related topics, however, would herald an important new phase in the history of meme theory.

Journals

The diffusion and diversification of meme theory in the first half of the 1990s led to renewed interest in developing more substantial theoretical and institutional foundations for the field. Dennett, for instance, pondered at length the possibilities for a "new science of memetics" in his 1995 text (pp. 352-360). By 1996, a group of scholars was working toward the publication of a new academic journal dedicated to the meme concept and related theorizing. An informational web page nicely captured the state of the field circa early 1997:

> We are confronted with an avalanche of books, essays, and publications scattered over different journals and disciplines, with dialogue flashing up here and there in an unstructured manner. Many dialogues disappear after only a brief lifespan. This chaos exists because a general framework is lacking ("Information about JoM-EMIT," 1997).

Later in 1997, the the peer-reviewed *Journal of Memetics – Evolutionary Models of Information Transmission* (or *JoM-EMIT*) was officially established. Recognizing the difficulty of sustaining a print-based academic journal on a rather niche, controversial topic, the founders opted to publish exclusively on the web. An editorial that appeared in the first issue further clarified the motivations of the founders:

> Although we cannot foresee future developments, we believe that our journal will contribute to the development of evolutionary theory and memetics. We hope that it may help turn memetics into an accepted scientific discipline, and lead to the

> development of fundamental concepts applicable in the biological, social and information sciences ("Editorial," 1997).

As this passage makes plain, the original aim of the journal founders was to turn memetics into a legitimate discipline, while also making important contributions to other scientific fields. This statement, along with the makeup of the advisory and editorial boards, further reveals that the *Journal* was established as an explicitly interdisciplinary – or even "hybrid" – academic outlet. In fact, all six members of the advisory board have respectable scholarly credentials. Blackmore, Dawkins, Dennett, and Hull stand out as the luminaries of the group, while cognitive scientist Liane Gabora and psychologist Gary Cziko are lesser-known but nonetheless qualified scholars. Of the nine permanent journal editors, seven hold advanced academic degrees. The remaining two, computer consultant Mark Mills and the aforementioned Aaron Lynch, appear as the token enthusiasts of the group. The advisors and editors hail from a wide variety of backgrounds, and almost all of them have demonstrated a propensity for crossing disciplinary boundaries in terms of both career paths and research interests. This diversity is also reflected in the content of the journal, which I'll discuss in more detail below.

While the *JoM-EMIT* has quickly turned into a focal point for the academic sphere of meme theory, it should also be noted that a print journal titled *Selection: Molecules, Genes, Memes* was launched in 2000. As indicated by the title, this outlet is dedicated more generally to exploring the evolution of any replicating entity, memes included. An editorial in the first issue explains, "The recognition of selection as the common grand theme of various disciplines prompted us to found this new journal" (Szathmáry, 2000). The journal thus far appears primarily rooted in Europe, and is currently being published in Hungary, and noted meme proponents Robert Aunger and David Hull sit on the editorial board. As of early 2003 most of the articles published in *Selection* were concerned with more germane topics in evolutionary theory and biology rather than meme theory, save for a number of pieces dedicated to exploring the evolution of human language. Nonetheless, the topical focus of the publication suggests that meme theory is gaining ground in broader academic circles, and the editor even noted that "a discourse on cultural evolution is becoming increasingly inconceivable without a discussion of memes" (Szathmáry, 2000). The title of the journal also hints at the prevailing view among many scholars that memes should be understood as replicators.

Conferences

While the founding of journals is one indication that a disciplinary community is forming, the organization of symposiums and conferences is another. The first such event in the field of memetics was convened in 1998 at the 15th International Congress on Cybernetics, yet another testament to the historical links between meme theory, biology, and technology. A "Symposium on Memetics" was organized as a collaborative effort between the Principia Cybernetica Project and the *Journal of Memetics*, and featured a bevy of prominent meme theorists.[32] Less than a year later, the first full conference dedicated to memetics, titled "Do Memes Account For Culture?" was held at King's College, Cambridge. The program for the 1999 event reads like a veritable who's who of prominent meme scholars, including Aunger, Blackmore, Dawkins, Dennett, and Hull, to name a few (Aunger, 1999a). The oft-referenced volume edited by Aunger, titled *Darwinizing Culture: The Status of Memetics as a Science* (2000), is a compilation of papers that were originally presented at the conference. And while recent trends suggest that memetics may be on the road to disciplinarity, the titles of this conference and edited volume hint at the cautious stance still taken by many proponents of meme theory. As additional illustration of both the organization of the field and the controversy that surrounds it, I now turn to a more in-depth discussion of Aunger and Blackmore as authors who have surfaced in recent years as important champions of meme theory. This will lead to a detailed look at the themes and theoretical perspectives that appear most often in the articles and books written by these and other academic meme theorists.

Controversial Careers

For some authors, pursing a controversial, niche research topic such as memetics is likely made easier by a relative lack of institutional and academic ties. In a 1999 discussion list message, for instance, Brodie stated that he was willing to publish the first book on memetics because he "didn't have an academic career to risk" (Brodie, 1999). Lynch is in a similar position. Much of his research in the field appears to have been supported by private sponsors,

[32] The Principia Cybernetica project, launched in 1989, "aims to develop a complete philosophy or 'world-view', based on the principles of evolutionary cybernetics, and supported by collaborative computer technologies" (Heylighen and Turchin, 2002). The links between this project and meme theory go back to at least the early 1990s. Two articles about the Principia Cybernetica project were published in the *Journal of Ideas* in 1991, and Glenn Grant's "Memetic Lexicon" (1990) appears to have been added to the project at an early date.

and one author has characterized Lynch as one of those rare researchers who enjoys the "luxury of independence" (Mende, n.d.). But aligning oneself with the field of memetics may carry major career implications for scholars who maintain ties to academe. Hull remarks, "[n]umerous workers from a variety of backgrounds have devoted themselves to expanding on the notion of memetic evolution – and no standard higher than voting with one's career exists in science" (2000, p. 52). However, we might presume that Hull's comment is not self-referential. His involvement in the field, much like that of eminent figures such as Dawkins and Dennett, represents a small fraction of a diverse body of work spanning many disciplines and decades. If memetics proves a failure in the long run, these scholars will almost certainly remain well known, both within and beyond their respective disciplines. So who are these "workers" to whom Hull alludes, and what careers are they voting with? Robert Aunger and Susan Blackmore stand out as prominent academics who have taken significant professional risks by pursuing memetics. These two authors have recently published full-length texts on the topic, and both are widely recognized and actively involved in the memetics community.

I begin with Aunger, who stands out as one of the only anthropologists to argue for a meme-centered approach to understanding human culture. Aunger received his Ph.D. in biological anthropology from UCLA, and his other research interests include the history of technology and ethnographic theory.[33] While on a multi-year fellowship at Cambridge, Aunger organized the memetics conference mentioned above, and acted as editor for the compilation volume that followed soon thereafter (Aunger, 2000). In an acknowledgement included with the introduction to that text, Aunger remarked, "I would like to thank the Fellowship of King's College for their tolerance and support of somewhat controversial intellectual interests, evidenced by their admitting me into their Fellowship" (2000, p. 12). Aunger is currently affiliated with the Department of Biological Anthropology at Cambridge, but the precise nature of this affiliation is unclear.[34] His most recent book, *The Electric Meme: A New Theory of How We Think* (2002), was eagerly anticipated both within and beyond the memetics community, and it may provide another boost for the continued growth and development of the field.[35] However, it is also clear that Aunger recognizes the risk and controversy associated with memetics. Only

[33] Aunger currently claims to be writing texts on both of these subjects (Aunger, 2001).
[34] It is worth noting that much of Aunger's training and affiliations are connected with biological anthropology. This is somewhat surprising given that social and cultural anthropology tend to have more in common with memetics.
[35] Aunger's book was published by Free Press, a division of Simon & Schuster, Inc.

time will tell if Aunger is able to juggle his commitment to memetics with not only his other research interests, but also his position and reputation as an anthropologist.

Susan Blackmore is another prominent academic whose dedication to the meme concept has involved significant professional risks. As early as 1999, Brodie remarked, "I applaud the courage of people such as Dr. Blackmore who are literally staking their careers to endorse this worldview as a fruitful one" (Brodie, 1999). Delving deeper into Blackmore's background and biography, however, reveals a more complicated story. For starters, her best-known work outside of memetics is in parapsychology, a field that has gained much notoriety over the years as a controversial domain of inquiry. Nonetheless, Blackmore built an impressive academic record in the 1980s and 1990s, rising to Reader of Psychology at the University of West England, Bristol and racking up an extensive portfolio of research results, academic publications, popular articles, and books. And while her research on topics such as out-of-body experiences, psi, and ESP may initially appear controversial, Blackmore's academic reputation has been bolstered by her skill at debunking rather than supporting paranormal claims. She has also lectured and published on more conventional topics such as the nature of consciousness. In a 1996 interview, Blackmore offered additional insight into her personal research philosophy:

> Basically I have, for all of my life, done my research on my own money and by myself, and that's how I like to do it. If you are part of an organization or are doing your research as part of something else, you are inevitably constrained by the needs, desires, political atmosphere etc. of that organisation or its people. I have always done bizarre research and I have always followed my own interest and questions. I like it that way and wish to keep it that way (Williams, 1996).[36]

Blackmore's statement reveals an independent streak and willingness to pursue controversial research topics. And while similar tendencies are evident in the work of Brodie and other meme enthusiasts, Blackmore's remark hints at a tension between her research interests and the academic domain, a point to which I will return.

Blackmore admits that she first read about memes in *The Selfish Gene*, but initially disregarded the idea as "nothing more than a bit of fun" (1999, p. xix). In 1995, she was

[36] While this statement suggests that much of Blackmore's research has been largely self-supported, her curriculum vitae lists a long series of research, lecturer, and reader positions that she has held at a variety of British universities (Blackmore, n.d.). Hence, it seems that only some of her research activities have been self-supported.

reintroduced to memetics and began researching the topic in earnest while – quite ironically – bedridden with a virus (1999, p. xix). When Blackmore eventually returned to health she went to work on *The Meme Machine*, and it was published by Oxford University Press in 1999.[37] Early in the book, Blackmore summarized her general goal: "My aim in this book is to show that many aspects of human nature are explained far better by a theory of memetics than by any rival theory yet available" (p. 9). Following in Dennett's footsteps, much of Blackmore's text centered on the development of a meme-based approach to the study of human consciousness and free will. She also added this brief disclaimer for her ambitious project:

> I shall try to be clear as I can in deriving predictions and showing how they follow from memetic theory. I may speculate, and even, at times, leap wildly beyond the evidence, but as long as the speculations can be tested then they can be helpful. In the end, the success or failure of these predictions will decide whether memes are just a meaningless metaphor or the grand new unifying theory we need to understand human culture. (p. 9)

Apparently pitched to potentially skeptical audiences, Blackmore's remark appears suspended between the far-flung poles of cautious reservation and unbridled enthusiasm. But she also appealed to the potential testability of her predictions, suggesting that memetics should ultimately be verifiable and empirically supported according to widely accepted norms of scientific work.

Looking beyond *The Meme Machine*, Blackmore has penned numerous articles on memetics that have appeared in popular science magazines, edited volumes and peer-reviewed journals. But her dedication to meme theory also goes well beyond a lengthy list of publications. In 2000 she quite publicly announced that she was abandoning her research in parapsychology. Blackmore called her work in this area a "fearsome addiction," and she stated that she was quite simply tired of debunking paranormal claims (Blackmore, 2000a). She gave up her university position in 2001 as well, citing the increasingly difficult demands of the contemporary academic environment, along with her desire to live a "true academic life" (Blackmore, 2002). Blackmore

[37] Those within the field recognized the significance of having a somewhat academic treatment of memetics published by a prestigious publisher such as Oxford University Press. Just before Blackmore's book was released, Heylighen remarked, "as a book [*The Meme Machine*] that will be published by Oxford University Press (which also published Dawkins' *The Selfish Gene*), it is likely to further enhance the standing of memetics" (Heylighen, 1998).

remains a visiting university lecturer, and identifies herself as a freelance writer, lecturer and broadcaster with interests in memetics, evolutionary theory, consciousness, and meditation.

We can only speculate as to whether Blackmore's movement out of the university was caused in part by new pressures and tensions that resulted from her sudden and rather steadfast pursuit of memes. However, there is little question that Blackmore left behind her career in academe so that she could pursue memetics and other topics unfettered by institutional ties, faculty duties, and other research interests. In one letter she noted, "And starting again as a baby in a new field [memetics] is a daunting prospect. So is losing all the status and power of being an expert. I have to confess I enjoyed my hard-won knowledge" (Blackmore, 2000a). But unlike meme enthusiasts such as Brodie and Lynch, who lack extensive academic credentials, Blackmore's prior research and reputation remain important for her acceptance in the scholarly sphere of memetics. Her earlier work in psychology and physiology has also shaped and supported her research agenda, as evidenced by her emphasis on a meme-centered approach to studying consciousness. Blackmore even included a chapter in her book titled "Memes of the New Age," in which she used a meme-centered framework to analyze topics such as alien abduction, near-death experiences, and divination (1999, pp. 175-186).

In many ways, Dogan and Pahre's "hybrid marginal" label appears an appropriate fit for meme theorists such as Aunger and Blackmore. These two scholars have clearly worked at the intersection of multiple subfields, and they are better known and more influential in the field of memetics as compared to their respective parent disciplines. But exploring the background of these authors raises important questions about the controversy that surrounds meme theory. We might ponder, for instance, why the pursuit of memetics is viewed as a risky proposition for academics. However, I have largely skirted the main themes and theoretical claims that typify scholarly discussions of meme theory. Delving into these factors will reveal important schisms between academic and popular authors and texts, while also leading to a more substantial discussion of the controversies that have shaped both work in the field and the careers of the meme theorists.

Academic Memetics

Outlets such as the *Journal of Memetics* and texts by authors such as Aunger and Blackmore represent a growing body of scholarly work. But what differentiates the theorizing

advanced by academics from that of the popular science writers and meme enthusiasts discussed in the preceding chapter? For starters, the formation of an academic community around meme theory has spawned a collective body of literature that authors frequently draw upon as needed. In contrast to earlier work – which was often plagued by fragmentation, a lack of supporting evidence and references, and a tendency toward anecdotal musings – more recent discussions of memes are increasingly intertwined with one another. The bibliographies included with the papers published in the *JoM-EMIT* and *Darwinizing Culture* (2000), along with the references listed in the books authored by Blackmore (1999) and Aunger (2002), reveal a growing web of interconnected documents.[38] Scholarly authors, who are often versed in a broad base of literature, further supplement their theorizing by marshalling resources from other disciplines. Writing a convincing academic – or even popular science – treatment of meme theory is almost unthinkable today without a thorough knowledge of contemporary publications, both within and beyond the memetics community. Looking closer at these texts also reveals that much recent work by academic meme theorists touches on two important themes: definitional issues and an awareness of the importance of empirical results.

Recognizing that the term "meme" has been given a multiplicity of meanings and interpretations over roughly two decades of somewhat scattered and fragmented theorizing, many authors have worked toward more rigorous definitions of the concept. This theme was particularly evident in the early years of the *Journal of Memetics*. In an editorial included with the third issue of the journal, for instance, Edmonds pointed out that "all three papers and the letter in this issue have the definition of a 'meme' as one of their central themes" (1998a). Around the same time, psychologist Nick Rose singled out the "ambiguity in the definition of a meme" as a key controversy in the field (1998, Sec. 2). The authors who tackled this particular issue often focused on a question long central to work in the field: whether memes exist in the human mind (as patterns of neurons, perhaps), in tangible "cultural products" (such as tools,

[38] The reading list included with Brodie's text (1996), for instance, features a scant 21 sources, all of them books, and many of them having no direct relation to memetics. Lynch's *Thought Contagion* (1996) is somewhat better documented with a total of 69 sources cited. Turning our attention to the more academic of the meme theorists, Blackmore's text (1999) clocks in at 237 sources, and Aunger's (2002) at 279. On the one hand, the Blackmore and Aunger books are longer and more thoroughly researched and documented than the Brodie and Lynch titles. However, the extensive references provided by Blackmore and Aunger suggests that primary source material in memetics and related fields has increased significantly in recent years. Additional categorization of sources would offer better evidence for this thesis. And while beyond the scope of my analysis, citation analysis would yield a more thorough depiction of the connections between various texts, both within and beyond the field.

books, or images), or some combination thereof. Lynch, for instance, promoted the former by defining the term meme as a "memory item, or portion of an organism's neurally-stored information" (1998a, Sec. 10). In another article, geneticist and meme theoriest Derek Gatherer opted for the second approach by arguing that a meme should be understood as "an observable cultural phenomenon, such as a behaviour, artefact or an objective piece of information, which is copied, imitated or learned, and thus may replicate within a cultural system" (1998, Sec. 9). Blackmore, on the other hand, placed emphasis on the transmission of memes to reach a somewhat intermediate definition: "[O]nly those things that can be passed on by imitation should count as memes" (1998, Sec. 7). Elsewhere she explained, "I shall use the term 'meme' indiscriminately to refer to memetic information in any of its many forms; including ideas, the brain structures that instantiate those ideas, the behaviours these brain structures produce, and their versions in books, recipes, maps and written music" (1999, p. 66).

The three perspectives outlined here only begin to reveal the complexities of definitional debates in the field. My more immediate point, however, is that the efforts of various authors to more rigorously define and clarify terminology and concepts is part of a larger effort to increase the legitimacy of the field. Furthermore, these efforts frequently carry both theoretical and non-theoretical implications, as a preference for one or another definition may include or exclude large segments of the memetics community, or even entire swaths of the field's history. Recognizing this point, Edmonds adds, "[T]he political subtext of these definitional disputes are nothing more than the leadership and membership rights of the tribe of memeticists" (1998a). As suggested by Edmonds's remark, the assumed mode of conduct in the field is based on power struggles between competing factions, with the victors able to not only decree acceptable terminology and methodology, but also to determine who is or is not allowed to participate as a full-fledged member of the memetics community.

More recently, however, an editorial authored by computer scientist David Hales and the aforementioned Marsden – who incidentally took over as co-managing editors for the *JoM-EMIT* in 2002 – declared that "pesky 'definitional debates' have subsided," replaced by an increasing emphasis on "doing memetics and demonstrating its relevance" (Hales and Marsden, 2002). This trend is connected with the intensification of technical and empirical efforts in the field, and in recent years the web pages of the *JoM-EMIT* have become littered with ever more equations, data sets, diagrams, and graphs, with many articles dedicated to relatively narrow sets or subsets

of topics.[39] As further evidence for this trend, a special issue of the journal published in early 2001 was dedicated to the topic of "computational memetics." As implied by the title, this branch of meme theory focuses on the modeling of real-world belief systems via agent-based computer simulations. In an editorial included with the issue, MIT Media Lab researcher Michael Best noted that "this type of research allows us to move beyond historical contingency, to gain new and fundamental insights, and to ground our ideas in solid yet falsifiable foundations" (Best, 2001). Best's comment reveals an increasing emphasis in the field on generating empirical results and following accepted scientific practices. Furthermore, it highlights another way in which the apparent legitimacy of memetics is increased while the less rigorous musings and speculations of the meme enthusiasts are implicitly and explicitly excluded. As standards and expectations rise, it becomes increasingly difficult to publish articles in the *JoM-EMIT* without discussing the complex varieties of modeling, simulation, and theory that characterize much contemporary work in memetics. These barriers clearly reinforce the control wielded by the more scholarly proponents of meme theory over work in the field. I now turn to the competing metaphorical frameworks that undergird meme theory, with a particular emphasis on how particular interpretations of memes are frequently tangled up with the politics and strategies of discipline formation.

Memes, Genes, and Replicators

As discussed in the previous chapter, popular discussions of memetics have long trafficked in epidemiological analogies and haphazard comparisons of memes with both germs and genes. Clever neologisms such as "mind virus" and "thought contagion" resonated with many authors and audiences, leading to a profusion of "meme-as-germ" rhetoric as the 1990s wore on. Conversely, many popular science writers and academics have emphasized evolutionary understandings of memetics, with memes either compared to genes or defined as replicators. Many of these authors also invoke the replicator concept in attempting to dodge the dangers of rampant analogizing. Dennett provides us with one early example of this tactic:

[39] My analysis here is generally informed by Latour's work on scientific controversies, particularly with respect to the role of reference materials and technical details in the "fortification" of scientific texts (Latour, 1987, Ch. 1).

> Meme evolution is not just analogous to biological or genic evolution. It is not just a process that can be metaphorically described in these evolutionary idioms, but a phenomenon that obeys the laws of natural selection *exactly*. The theory of evolution by natural selection is neutral regarding the differences between memes and genes (1990, p. 128) [my emphasis].

According to Dennett's argument, we need not dwell on the similarities or differences between memes and genes as long as we can show that they both function as replicators. Blackmore traces this approach back to evolutionary epistemologist Donald Campbell, who as early as the 1960s argued that "the analogy to cultural accumulations [is not] from organic evolutions *per se*; but rather from a general mode of evolutionary change for which organic evolution is but one instance" (Blackmore, 1999, p. 17; Campbell, 1965, p. 26). Applying this argument to the field of memetics, Blackmore points out that "genes may be just one example of many potential replicators," and she added that "we only have one other well-known replicator with which to compare the meme. … [T]his tends to make us think that all replicators must be like genes" (1996). Hence, the "meme-as-gene" analogy might be viewed more accurately as two distinct correlations, "meme-as-replicator" and "gene-as-replicator," with the laws of natural selection applying equally to both. In his most recent text, Aunger followed a similar line of reasoning (2002). He argued at length that, in addition to genes and memes, computer viruses and prions can also be categorized and analyzed as replicators.[40] In light of this argument, the gene is dethroned as the ultimate replicator, while memes – and perhaps prions and computer viruses too – rise in relative prominence as legitimate topics for further analysis and inquiry.

Many of the scholars who favor the replicator approach also offer forceful arguments against epidemiological interpretations of memes. These authors claim that even if some memes can be viewed as contagious, they nonetheless remain replicators subject to the laws of evolution. Blackmore pointed out that viral depictions of memes may be fitting for those "particularly useless and self-serving replicators" (1999, p. 22). But she added that "viruses are not the only memes, and memetics should not become a science of mind viruses. Indeed, the vast majority of memes (like the vast majority of genes) cannot be considered viral at all" (p. 22). Jeffreys followed a similar tack and concluded, "It is impossible to theorize a distinct process of

[40] Aunger also contends that both Dawkins and Dennett originally identified memes as replicators (2002, p. 20), but as the previous chapter reveals, these two authors clearly dabbled with immunology analogies as well.

selection by making reference to parasitism" (2000, p. 230). According to these statements, memes either follow the tenets of natural selection or they do not, and invoking parasitism does little more than muddy the waters. But Jeffreys – drawing on his literary background – pushed this argument into new territory by critiquing the rhetorical nuances of immunology metaphors:

> The social connotations of "parasite" and "virus" are negative, and of all the life forms on earth, only the disease-causing microorganisms are still targets of unrestrained, guilt-free commitments to extermination, eradication, even extinction. … The meme-virus and meme-symbiont analogies need to be dropped altogether (2000, p. 230).

Thomas extended similar reasoning as she surveyed viral metaphors in the realm of meme theory. She concluded that "a 'viral' meme – as opposed to an apparently non-viral meme – has decidedly negative connotations, constituting its own epidemiology" (2002, p.169). Thomas added that in looking for particularly useless and pernicious memes or complexes of memes, such as in the realm of religion, "[T]he meme continues to be subject to the virus's (mostly negative) metaphorical attachments" (2002, p. 172).[41]

Lynch, however, anticipated such criticisms by declaring the neutrality of his preferred terminology: "The belief that we should love our neighbors illustrates the benign nature of many thought contagions. The terms *thought contagion* and *epidemiology* therefore carry neutral connotations in the context of memetics theory" (1996, p. 10). But regardless of this sort of claim, the selection of a preferred analogy is not a simple matter of decree or preference. Just as Thomas has argued that computer viruses are inextricably linked to biological viruses (p. 149), it is impossible to separate "meme-as-germ" metaphors from the larger social and cultural milieu in which they exist. Support for this argument can be found in the work of historian James Bono, who points out that "scientific metaphors adapt themselves to a larger ecology of contesting social and cultural values, interests and ideologies" (1990, p. 81). Much to the chagrin of meme enthusiasts such as Lynch, the larger ecology that Bono describes is not so easily disregarded. However, the sorts of criticisms outlined above also allow the more academic community of meme theorists to further monopolize their control of memetics via preferred

[41] For a striking example of the interplay of memes with the rhetoric of combat and warfare, see media and culture critic Kalle Lasn's brief *Adbusters* article "Meme Warfare" (2000).

analogies and metaphors, while simultaneously expelling the various authors who fail to adopt the "sanctioned" rhetoric that has come to define much work in the field. Simply stated, the promotion of meme-as-replicator and meme-as-gene analogies tends to discredit and disregard the meme enthusiasts who prefer to muse about "mind viruses" and "thought contagion."

But might not the alternate "meme-as-gene" approach also carry significant, yet perhaps more subtle, connotations? Authors such as Keller (1995) and Shea (2001) have demonstrated that the meaning of the term "gene" is also historically and socially situated, both within and beyond the domain of science. But for meme theorists, recourse to the higher-level "replicator" seems to cleverly dodge any potential incongruities or questionable nuances that result from direct meme-gene comparisons. Aunger, for instance, points out that "memes, even though they are also replicators, need not be the same as genes in every respect" (2002, p. 21). Hence, disanalogy need not be debilitating for the field as long as memes are understood in terms of more general categories. But the apparent neutrality of the replicator category is also open to critical analysis. As linguists such as Lakoff would likely argue, the replicator concept similarly carries its own metaphorical baggage, rendering it far from a neutral concept.

The Geography of Meme Theorists

In light of the preceding analysis, the historical development of memetics appears necessarily intertwined with a larger social and cultural milieu, making particular interpretations of memes more or less palatable for specific authors and audiences. In addition, the ways in which memes are defined, along with the metaphorical frameworks that are used to study them, are largely inseparable from the politics of discipline formation. To further develop these themes, I turn to what may appear a peculiar consideration: the geographic distribution of meme theorists. Indeed, some readers may have noticed that Europe in general and the United Kingdom in particular appear as focal points for the academic sphere of memetics. Many of the biggest names in the field – Aunger, Blackmore, and Dawkins, to name a few – have origins in or close ties to renowned British universities. Furthermore, the advisory and editorial boards of both the *Journal of Memetics* and *Selection: Molecules, Genes, Memes* are dominated by European scholars. How can we explain this seemingly skewed distribution of meme theorists? Heylighen offers this insightful account:

> The number of memeticists from the USA seems relatively small compared to the size of the country … . This is surprising if we note that the two authors who, in addition to Dawkins, contributed most to popularizing the meme idea, Daniel Dennett and Douglas Hofstadter, are American. One reason may be that young researchers, unlike established authorities such as Hofstadter and Dennett, find it difficult to get academic support for investigating such a speculative theory like memetics. Another possible explanation is similar to the one suggested earlier for the dearth of social scientists: the emphasis on individual responsibility and freedom in American culture may make it more difficult for Americans to accept the "memetic stance" (1998).

Heylighen's first point is well taken, but the preceding analysis of Aunger and Blackmore suggests that memetics remains a controversial and questionable pursuit for scholars everywhere, both young and old, U.S. and British. His second argument, however, connects with a number of larger themes in my analysis. As discussed above, popular authors and audiences have tended to favor depictions of memes that draw on the rhetoric of epidemiology. In addition, understanding memes as "mind viruses" or "thought contagion" does not necessarily challenge the agency of an individual who encounters such a concept. In fact, this interpretation of the meme concept may actually reinforce individualism. As Dawkins famously quipped, "We, alone on earth, can rebel against the tyranny of the selfish replicators" (1976, p. 201), and both Csikszentmihalyi and Brodie later extended this general theme into the self-help realm. As all of these authors suggest, there is a "self" that can resist particularly pernicious or useless memes.

But when taken in context, Heylighen's reference to the "memetic stance" hints at a stronger interpretation of memetics wherein memes are viewed as both constituting and controlling human consciousness. According to this view, the "self" is a chimera created by a complex of memes that has Blackmore calls the "selfplex" (1999, p. 231) and Dennett referred to as the "benign user illusion" (1991). This theory has become increasingly influential among a handful of academic meme proponents in recent years, and is most often associated with Dennett and Blackmore. The incongruity between this unsettling theory and the dominant view of the rational, autonomous subject, especially in particular contexts, may offer additional explanation for why certain interpretations of memes have enjoyed only limited success in both the

population at large and in specific audiences. Authors Laland and Brown reach a similar conclusion:

> So why, in an age when Darwin's patronage lends an idea an almost instant authority, is the meme not the centrepiece of a scientific theory of culture? One possible reason is that there is something about memes that people find deeply disturbing. … We are used to thinking in a self-centred way, and initially either fail to get it or else deny that it could be correct. More considered responses range from exhilaration at the insights gained from this altered state of consciousness, to a paranoid aversive reaction, often marked by an irrational refusal to take seriously any sentence with the word "meme" in it (Laland and Brown, 2002b).

As implied by Heylighen's comment above, the aversion to which Laland and Brown speak might explain why memes have been accepted more readily in the European cultural context, where individualism plays a somewhat less forceful role in society. On the other hand, we find that the authors best known for popularizing the meme-as-germ approach – including Henson, Brodie, and Lynch – hail from the more individualistic shores of America. However, this conjecture falls short if taken as the sole reason for the career risks and controversies that many authors in the field have faced. We might ask whether there are there any other significant features of memetics that have contributed to the controversy surrounding the field. Pursuing this question offers additional insight into the position of memetics in a larger disciplinary landscape and the various strategies and tactics used by both proponents and opponents of the field.

Origins of Controversy

While an overall lack of references to memetics in scholarly publications suggests that the topic is by and large ignored by academics, exploring the criticisms offered by a handful of prominent opponents of meme theory brings the controversy surrounding the field into further relief. Philosopher Mary Midgley first disparaged the meme in 1979, and has long persisted as a stalwart critic of the field. In a 1994 article, Midgley referred to memes as "empty and misleading metaphor" and a "useless and essentially superstitious notion." More recently, she argued that "memetics, in fact, is phlogiston and, what's more, it isn't even useful phlogiston"

(1999). Along similar lines, Gould was well known for repeatedly calling memetics a "meaningless metaphor," and evolutionary geneticist H. Allen Orr once dismissed the field as "cocktail-party science" (Kher, 1999). In a particularly prosaic passage, sociologist Richard Barbrook quipped, "Given that the meme concept is nothing more than hip bio-babble, what is interesting about this theory is why anyone would want to believe in such an intellectually dubious proposition in the first place" (Barbrook, 1996). There is little question that memetics offers radical new ways to approach and study concepts such as human consciousness and cultural transmission. But does the "revolutionary" nature of memetics offer a sufficient explanation for such forceful denunciations of memes?

Taking a closer look at the criticisms offered by these and other authors, we do find a number of noteworthy grievances. A comprehensive overview of these issues is beyond the scope of this analysis, but a few key concerns stand out. For starters, scholars argue that memetics overextends neo-Darwinian theorizing, representing a rampant and dangerous form of materialism (Midgley, 1999; Kingwell, 1999). Others claim that human cognition and culture are complex, emergent phenomena that cannot be depicted in terms of individual units such as memes (Midgley, 1999). In more general terms, perhaps one of the most important issues for the field is the scarcity of empirical support for the existence of memes, or even empirical results more generally. Critic Luis Benítez-Bribiesca recently labeled memetics a "pseudoscientific theory" and argued that the field remains "devoid of objective proof" (2001). Linguist Joseph Poulshock added that "memeticists have yet to produce truly empirical results" (2002). Even supporters of the meme concept have discussed many of these issues at length. Jeffreys surmised, "Culture most probably evolves, but relevant empirical evidence is desperately needed" (2000, p. 240), while Andrew Whitten added that "the promise of memetics will only be cashed in when some substantial empirical results are generated within its framework" (Whitten, 2001). And finally, Aunger concluded that "the ultimate test – which would pre-empt theoretical objections – is whether memetics can produce novel empirical work or insightful interpretation of previous results" (2000, pp. 230-231). Like Blackmore and many others, these authors recognize that a new "science" of memetics is likely to fail in the long run if founded on theoretical claims – no matter how novel – that lack substantial empirical support.

There are also significant non-theoretical factors that play into the controversy over memetics. For instance, an aversion to the sort of meme-centered views of human consciousness

offered by authors such as Blackmore and Dennett may be one reason that many academics have avoided meme theory, particularly in the United States. As early as 1990, Dennett recognized another potential source of resistance to meme theory:

> I think what happened to the meme meme is quite obvious: "humanist" minds have set up a particularly aggressive set of filters against memes coming from "sociobiology." Once Dawkins was identified as a sociobiologist, this almost guaranteed rejection of whatever this interloper had to say about culture – not for good reasons, but just in a sort of immunological rejection (1990, p. 134).

As further evidence for this tendency, Dennett pointed to the "vituperative and uncomprehending dismissal of Dawkins" that Midgley offered in response to Dawkins's *The Selfish Gene* (Dennett, 1990, p. 135, fn. 14). Also noteworthy is the way in which Dennett framed the preceding statement in biological terms, suggesting that "humanist" minds resist meme theory as if it were an invading pathogen.[42] But if Dennett's intuition is correct, the long-running relationship between memetics and other fields such as sociobiology and evolutionary psychology has influenced many debates over memetics, both within and beyond the field.

Nonetheless, Dennett fails to generalize his argument to more general questions about disciplinary stakes. Given the diverse backgrounds of meme proponents and opponents, along with the potential for a new discipline of memetics to upset traditional disciplinary boundaries, this issue goes well beyond resistance from humanists. Take for instance the ambitious claims of authors such as Brodie, Lynch and even Blackmore, who have described memetics as a broadly unifying theory that might one day unite broad swaths of the biological and social sciences. Other authors hailing from the more academic corners of memetics have taken an only somewhat more conservative stance, with many arguing that the success of meme theory depends on its encroachment into other domains. Meme theorist Bruce Edmond noted that "the success of the field … will depend largely on the embedding of the field within the wider academic landscape" (1998b, Sec. 2). Gatherer, on the other hand, offered a version of this argument that accords with his more narrow view regarding the utility of the meme concept: "To make it [memetics] into a

[42] Dennett went on to call Dawkins' reply to Midgley's criticisms an "antidote" (1990, p. 135, fn. 14). Dennett also described himself as a "card-carrying academic humanist," as well as a "vehicle," "vector," and "transmitter" of the "meme meme" (p. 134).

science, we need to move forward into territory already occupied by diffusion sociologists and social psychologists" (1998, Sec. 9).

While these statements may appear overly ambitious, Dogan and Pahre note that similar declarations are relatively commonplace as fields move toward a more coherent identity. Speaking specifically about the development of various social science disciplines, they remark, "At some point in its development – usually in the folly of youth – each discipline attempts to exploit its potential for imperialism, imposing its perceived unity upon others and trying to place itself in the center of the social science solar system" (1990, p. 83). Similarly, Gieryn has described how proponents of fields often expand their authority or expertise into other, already occupied domains, thereby heightening boundary rivalries (1995, pp. 429-432). Gieryn notes that this type of "expansion" is evident when "insiders seek to push out the frontiers of their cultural authority into spaces already claimed by others" (p. 429). But these "imperialist" and "expansionist" efforts surely promote skepticism and even resistance from various outside audiences, especially among those wary of any theory that purports to unify the sciences or explain "everything." This resistance is likely compounded if a newcomer field such as memetics challenges another discipline that is significantly entrenched, either historically or theoretically.

As one noteworthy example of this encroachment, anthropologist Maurice Bloch explains that "memeticists have freely chosen to explore *exactly* what anthropologists have been studying for more than a century" (2000, p. 192). But Bloch also appears sympathetic to the meme concept when he remarks that social and cultural anthropologists "have simply refused to pay attention to people they considered merely as intruders" (p. 202). Bloch adds that the criticism directed at the meme concept by anthropologists "has become theoretically more and more vague, pretentious and epistemologically untenable" (p. 202), and he encourages a renewed dialog between the two fields. Bloch's comments begin to reveal the complex interplay of theoretical concerns and "intellectual agendas" that have shaped debates over memetics. However, it also suggests that the meme theorists have achieved a level of legitimacy that makes it increasingly difficult for other disciplines to ignore their efforts.

Disciplining the Amateurs

Just as the academic establishment has to some extent ignored and marginalized meme theorists and their controversial subject, the memetics community has taken a similar tack toward

the enthusiasts in their midst. In fact, the sorts of strategies used by both the opponents and proponents of memetics are surprisingly similar, even if directed at different targets. As suggested by Bloch's comments above, disregarding or overlooking particular authors or texts is one such tactic. To take a specific example from the field of memetics, meme theorists have for the most part ignored Brodie's work. He is rarely referenced in the academic community, and scholarly reviews of *Virus of the Mind* are nonexistent. He has been cited only occasionally by other meme theorists, as evidenced by a smattering of references in the *Journal of Memetics*. Blackmore turns to Brodie for an occasional example in *The Meme Machine* (1999), but she avoids commenting on the value of his work. Aunger's recent references to Brodie are limited to reviewing the work of meme enthusiasts and arguing against viral interpretations of memes (2000, p. 27; 2002, p. 17). While Brodie has described *Virus of the Mind* as "seminal," meme scholars apparently view it as a mostly irrelevant popular text.

The snubbing of Brodie's work, however, is but one element of a more general theme. The structure and organization of edited volumes, peer-reviewed journals, and academic conferences is also likely to exclude those with limited or questionable credentials. Furthermore, the increasingly technical, theoretical, and interdisciplinary nature of the memetics literature makes it difficult for all but the most committed enthusiasts to make meaningful and original contributions to the field. Roy Wallis, in an early overview of strategies invoked by marginalized research programs, describes this as a process of "sanitization," where a field's more notorious representatives are by default excluded (1979, p. 398). Similarly, Gieryn has discussed how actors often monopolize, expand, and protect their own authority and control in a given field while simultaneously excluding and expelling rivals by painting them as "amateurs" or even "deviants" (1995, pp. 424-439).

Scholars have also reclaimed meme theory from the amateurs and enthusiasts via articles and books aimed at popular audiences. For instance, texts by Blackmore (1999) and Aunger (2002) are rapidly displacing *Virus of the Mind* (Brodie, 1996) and *Thought Contagion* (Lynch, 1996) as obligatory primers for newcomers to the field. The authors of these books even traffic in many of the same topics that meme enthusiasts are known for, as evidenced by Blackmore's meme-centered analysis of religion (1999, Ch. 15) and Aunger's lengthy argument that computer viruses should be viewed as replicators (2002, Ch. 4). Blackmore has been particularly prolific in delivering her interpretation of the meme concept to larger audiences, churning out a series of

popular science articles for outlets such as *New Scientist* (1999), *Scientific American* (2000), and the *Times Higher Education Supplement* (1999). And like Brodie and Lynch, both Blackmore and Aunger maintain their own promotional web sites featuring various articles and book excerpts.[43]

Nonetheless, the academic community of meme theorists has established venues, such as the *Journal of Memetics* e-mail discussion list, where participation by amateurs is permitted and even encouraged. The list is not moderated, meaning subscription and participation is open to anyone with an e-mail account. A glance through the archives of the list suggests that while a number of scholarly meme theorists – including Marsden and Gatherer – participate in many discussion, the list also features a large contingent of academics and enthusiasts whose interest in memetics appears more a sideline than a career. The conversations that take place on the list range from the scholarly to the banal, and the sheer volume and diversity of topics makes it difficult for all but the most committed participants to stay actively involved. If the sanctioned, orderly pages of the *Journal of Memetics* represent the academic sphere of meme theorizing, its associated discussion list is more akin to a chaotic playground for the meme enthusiasts.

There remains the possibility, however, that the enthusiasts will venture into the domain of the scholars, as evidenced by the actions of authors such as Lynch. For starters, Lynch's popular title *Thought Contagion* (1996), and his research in more general terms, have received only limited acknowledgement in the field. Blackmore referenced him for just a few examples in her 1999 text, and Aunger made a perfunctory reference to Lynch in each of his most recent texts. But unlike Brodie's outsider status, Lynch's more scholarly and technical writings – along with his position as an editor for the *Journal of Memetics* – demonstrate a somewhat closer relationship with the academic side of the field. In fact, a lengthy article by Lynch, titled "Units, Events and Dynamics in Memetic Evolution," was published in the *JoM-EMIT* in 1998 (Lynch, 1998a). This piece offers a lengthy discussion of sundry issues and questions central to meme theory, but with an emphasis on developing "strong theoretical treatments, formal definitions of terms, mathematical analyses, discussions of empirical methodology, and criteria for falsifiability" (Sec. 1). Lynch even develops a series of complex differential equations that

[43] Blackmore's site can be found at http://www.susanblackmore.co.uk/, but some of her work is also available on the "Meme Lab" web site, located at http://www.memes.org.uk/meme-lab/WELCOME.HTM. The "Meme Lab" is described as a "small research unit based at Bristol (UK)" and its members include Blackmore, Gatherer, Marsden, and Rose. Aunger's site, on the other hand, is available at http://www.cus.cam.ac.uk/~rva20/.

purportedly provide a "non-metaphoric" approach to memetics, along with a "stronger platform for mathematical and empirical investigations" of cultural evolution and transmission (Sec. 2).

The character and content of Lynch's work has been more difficult for other meme theorists to ignore, and numerous critiques of his book and articles have been authored in recent years. For instance, one of the few academic reviews of Lynch's *Thought Contagion* was a scathing evaluation written by Marsden (1999a), who contended that the author ignored a vast body of prior work in areas such as social contagion theory and evolutionary culture theory (ECT). Marsden further argued that "Lynch draws on little besides Dawkins's 'meme' label," and "redefines memes somewhat mysteriously, and without elaboration, as 'actively contagious ideas'" (1999a). Derek Gatherer, in a paper suggestively titled "Why the 'Thought Contagion' Metaphor is Retarding the Progress of Memetics" (1998), offered a more inclusive critique of Lynch's work. Akin to Marsden, Gatherer claimed that Lynch had both ignored prior theoretical work and advanced inconsistent theoretical and mathematical foundations. Similarly, Michael Best contends that Lynch's 1998 JoM-EMIT paper ignores important, early models of cultural evolution while also offering a new model that is weak and immature. Lynch subsequently replied to all three of these challenges with a vigorous series of defenses and counter attacks. I'll return to a more lengthy discussion of Lynch's strategies and counter-strategies in the following chapter. However, the preceding discussion not only points to the diverse strategies used by the scholarly meme theorists to control their domain, but also the extent to which adversarial modes of communication are standard conduct for both proponents and opponents of the field.

Conclusion

In recent years, the academic sphere of meme theorizing has coalesced into a nascent academic community. But as this chapter reveals, the formation of such a community is a complicated and collective effort, requiring significant vigilance and foresight. The field has largely organized around evolutionary approaches to the study of culture, and the "meme-as-replicator" interpretation appears an odds-on favorite among many scholars. Sanctioned outlets such as the *Journal of Memetics* have taken center stage in the field, and articles dedicated to meme theory appear increasingly fortified by complex technical details and recourse to prior theorizing. Most of the meme enthusiasts have been discredited or disregarded, relegated to either the annals of history or unsanctioned venues, such as e-mail discussion lists or self-

published web pages. The establishment meme theorists have clearly adopted a wide variety of strategies to maintain and control work in the field, including the promotion of particular interpretations of memes, the establishment of peer-reviewed journals, and the publication of more generally accessible books and articles.

But in spite of the appearance of greater order within the field, meme theory remains enveloped by controversy as a cadre of establishment scientists and scholars direct a steady stream of disparagement at meme theorists and their subject. Furthermore, various popular interpretations of the meme concept continue to spread like wildfire on the Internet and in the popular media, well outside the control of even the most influential memeticists. In my fifth and final chapter, I take a forward-looking perspective as I assess the contemporary state of the field and its prospects as a formative discipline. Before doing so, however, a rearward view is necessary to further problematize the history of the field. While my narrative has largely focused on the development of memetics from 1976 onward, recent historical accounts raise important questions about the origins of meme theory. By further delving into the complex milieu from which memetics has emerged, meme theory can be situated in a more inclusive historical context. Perhaps even more importantly, I will look at how debates over the origins of the field are necessarily intertwined with the strategies of discipline formation and legitimation.

Chapter 4: Whose Meme Is It, Anyway? Exploring the Origins of Memetics

> *We are not pioneers (despite the 'new science of memetics' rhetoric that occasionally surfaces), but just a new wave of settlers.*
>
> *– Geneticist and Meme Theorist Derek Gatherer (1998)*

The history of meme theory presented thus far has centered on a pair of distinct but overlapping spheres, one tending toward the popular and the other toward the academic. In this chapter, I will further contextualize those spheres by seeking out the origins of memetics. The historical narrative developed in the previous chapters retreads an oft-repeated origin story by tracing the development of the meme concept forward from 1976, the year in which Richard Dawkins first introduced the term in a scant twelve-page chapter of *The Selfish Gene*. But since that time, Dawkins has come to occupy a peculiar position in the field. On the one hand, he is often cited as a founder of memetics, and his name frequently appears in tandem with discussions about memes. On the other hand, it is apparent that Dawkins never expected his initial presentation of the idea to serve as a founding document for a burgeoning new field of inquiry. As this chapter will reveal, Dawkins has become an inadvertent founder and ironic spokesperson, never entirely inside or outside of the memetics community. Taking Dawkins's role in the field as a starting point, a general goal of this chapter is the development of a more inclusive history of meme theory. But other important themes will also surface, including a review of Dawkins's predecessors and a look at how competing origin stories and paternalistic founder narratives are central concerns in the recent work of many authors. As I will demonstrate, debates over the history and foundations of meme theory are intertwined with ongoing strategic efforts to both raise the legitimacy of the field and perhaps even establish a "new science of memetics."

Dawkins's Meme

To further explore Dawkins's historical presence in the annals of memetics, I turn to a series of texts that cite his work. These examples are clearly not a comprehensive representation, but rather a historical sampling of how Dawkins is often depicted as an originator or even "inventor" by a wide variety of authors. I begin by tracing such attributions back to early work in

and around the field. Midgley, for example, in an article that otherwise critiqued the entirety of *The Selfish Gene*, suggested that both cultural evolution generally and the meme concept specifically were formulated exclusively by Dawkins: "[H]e [Dawkins] produces for once an idea of his own … [T]he idea that cultural evolution is a process on its own, taking place in units called *memes*" (1979, p. 456). Hull, on the other hand, presented a somewhat more complex portrayal. In one of his earliest discussion about memes, Hull appeared partial to Dawkins's terminology, but he also offered brief references to the parallel efforts of authors such as Campbell, Cavalli-Sforza, and Cloak (Hull, 1982). Hull also noted that German biologist Richard Semon used the term "mneme" as early as 1904, but he left readers guessing as to the similarities between "mnemes" and "memes" (1982 p. 276). Hofstadter's first article about memes pointed to three authors who discussed "self-replicating" ideas prior to Dawkins, namely physicist Pierre Auger in 1952, neurophysiologist Roger Sperry in 1965, and biologist Jacques Monod in 1970 (1985, pp. 49-50; p.66). Hofstadter nonetheless emphasized Dawkins's work by presenting lengthy excerpts from *The Selfish Gene*. And in his 1984 article, Ball stated that Dawkins "invented" the term "meme" (p. 145), but he also reviewed competing approaches advanced by a handful of coevolutionary theorists who were gaining prominence around the same time.

Similar tendencies can be found in the more popularized discussions of memes that surfaced later in the 1980s. Henson, for instance, gave primary credit to Dawkins for the term "meme," and added that "Dawkins credits several others for developing the concepts, especially the anthropologist F.T. Cloak" (1987b). Schrage stated that Dawkins "devised an ingenious new way of looking at culture change" (1988), but he also mentioned Feldman's "epidemiology of culture" and the coevolutionary models advanced by Wilson and Cavalli-Sforza. And finally, Moritz discussed how a lengthy series of authors and texts set the stage for the emergence and ongoing development of the meme concept (1990). Moritz's discussion was primarily focused on the work of the coevolutionary theorists, but he also noted Dawkins's early references to authors such as Popper, Cloak, and Cullen.

As these examples suggest, early discussions about memes credited Dawkins for coining the term, while also recognizing that his approach was to some extent preceded and paralleled by the work of others. But as discussions of the topic diversified and diffused in the 1990s, Dawkins was increasingly depicted as the sole originator of the concept. For instance, Dennett's first treatments of the topic cited Dawkins's work almost exclusively (1990; 1991). Dennett pointed

out that Dawkins originally coined the term, and he pulled extensive quotes and theoretical insights from *The Selfish Gene* (Dawkins, 1976), and to a lesser extent *The Extended Phenotype* (Dawkins, 1982). But unlike many of the authors mentioned above, Dennett failed to mention other scholars – either prior or parallel to Dawkins – who advanced similar theories. His return to the topic in 1995 was better supported with reference material, but Dennett's primary sources were prior texts authored by Dawkins and himself. Dennett did offer brief references to related theorizing by Campbell, Delius, Hull, and Sperber, and he mentioned various criticisms of memes advanced by Pinker, Gould, and Midgley. And while Dennett admitted that Dawkins drew on the work of others in originally formulating the meme concept, he failed to identify any of Dawkins's predecessors (1995, p. 342).

On the one hand, the lack of references in Dennett's early texts might be explained by his emphasis on developing a meme-based framework for the study of cognition and culture. Quite simply, the authors who had explored evolutionary approaches to culture prior to Dennett's work had not pursued such topics. But Dennett's more extensive 1995 foray into meme theory would seem to call for a more comprehensive review of prior work in the field. The lack of such a survey is even more surprising in light of the author's lengthy discussion of the topic "Could There Be a Science of Memetics?" Such omissions are also noteworthy given the broad impact of Dennett's texts. The author's rather narrow historical depiction of meme theory was certainly disseminated to large audiences.

Looking beyond Dennett's work, we find similar historical narratives in many of the popular science texts from the 1990s that offered discussions of the meme concept. Csikszentmihalyi (1993) and Bloom (1995), for instance, developed widely varying interpretations of memes, but both authors gave sole credit to Dawkins for coining the term and providing basic theoretical tenets. Plotkin (1993) – who offered an exploration of meme theory that was better theoretically grounded as compared to many other treatments of the topic that were published in the early 1990s – failed to mention anyone aside from Dawkins as the developer of the concept. Brodie (1996), on the other hand, pointed out that Dawkins coined the term "meme" and offered a somewhat more inclusive overview of the field by referencing Hofstadter, Plotkin, and Dennett. Nonetheless, all of these authors perpetuated a simplified historical narrative, with Dawkins positioned as both the source of the meme concept and the defacto originator of evolutionary culture theory.

Prominent memeticist Susan Blackmore has also described Dawkins's work as seminal. In one of her earliest discussions of meme theory, she stated, "In just those few pages he [Dawkins] laid the foundations for understanding the evolution of memes" (1996). In the same piece, Blackmore referenced Dennett and dedicated a footnote to a brief survey of coevolutionary theories, but she failed to mention any of Dawkins's predecessors. In *The Meme Machine* (1999), Blackmore offered a somewhat more complex historical account. In addition to admitting that Dennett's work was influential in her rediscovery of memes in the mid-1990s (1999, p. xix), Blackmore dedicated a chapter to discussing a broad swath of work both within and beyond the domain of memetics. Her lengthy literature review touched on many of the authors already mentioned, such as Popper, Campbell, Hull, Cloak, Lumsden and Wilson, Cavalli-Sforza and Feldman, Dennett, Durham, and Plotkin. Particularly noteworthy was her discussion of texts that preceded Dawkins's well-known chapter about memes, including a reference to Popper's early musings about the evolution of scientific ideas (1972), which later gave rise to Donald Campbell's evolutionary epistemology (1974).

Even more importantly, Blackmore discussed a 1975 article by Cloak. According to Blackmore, Cloak's paper was one of the first to differentiate between the cultural instructions that reside in the brain – Cloak called these units "i-culture" – versus the behaviors or artifacts resulting from those instructions, or "m-culture" (1999, pp. 31-2). She added that Dawkins originally drew on Cloak's work, but failed to make this important distinction until *The Extended Phenotype* (1982). Hence, it appears that Cloak may have beat Dawkins's to the punch on this particular theoretical point. But Blackmore also explained that Dawkins discussed units of culture as true replicators in his 1976 text, while Cloak did not. She made a similar argument regarding Popper's work: "Popper did not use the idea of a replicator" (p. 29). By emphasizing Dawkins's role in calling units of cultural evolution "memes" and treating them as replicators, Blackmore's history of meme theory ultimately rests on foundations provided by Dawkins. In fact, she more recently stated that Dawkins "invented the idea of the meme" (2000b, p. 65) and "laid the groundwork for memetics" (2001).

Turning our attention to contemporary texts by other authors, we find many more attributions of credit bestowed upon Dawkins's work. In a journal article, anthropologist Scott Atran remarked, "His [Dawkins's] idea is that there may be cultural units that function in social evolution just as there are biological units that function in biological evolution. He calls these

units of cultural transmission ‘memes’” (1998, p. 556). And in an article discussing the tentative connections between memetics and semantics, independent researcher Robert Grimes offered high praise for both Dawkins generally and the meme concept specifically:

> The brilliant Darwinist biologist, Richard Dawkins (Oxford University Faculty - England), coined the term [meme] which first appeared in his original, thought-provoking book, *The Selfish Gene*, in 1976. He conceived of an entity (specifically, a ‘unit of cultural transmission’), similar in action to a gene, that both replicated itself and evolved (1998, p. 30).

Not only did Grimes point out that Dawkins is a member of the prestigious Oxford faculty, he used the words “brilliant” and “original” to emphasize the importance of Dawkins’s efforts.

Biological rhetoric has also surfaced occasionally in discussions about the origins of memetics – perhaps not surprising given that metaphors borrowed from biology are common currency in the field. Psychologist Andrew Whitten noted, “The idea of ‘memes’ was born in Richard Dawkins's *The Selfish Gene”* (2001, pg. 25), and Marsden went so far as to describe memetics as the “spawn of Richard Dawkins's brain” (2000a, p. 46). Aunger offered this striking version of the story:

> The product of humble birth, the concept of meme [sic] was “invented” by the zoologist Richard Dawkins of the University of Oxford (in his 1976 book *The Selfish Gene*), as a foil to the idea, prevalent among some biologists, that the evolutionary process applies only to genes. … But the idea has long since outgrown its paternity, and one has the impression that Dawkins's main reaction to his progeny, a bit more than two decades after its conception, is to shake his head in bewildered amazement at the plasticity and staying power of the idea he unleashed (Aunger, 1999b, Par. 2).

We might expect Aunger to develop a more complex historical narrative given both his prominence in the memetics community and extensive knowledge of the topic, but in this passage he seems to have no qualms about delivering a simplified and even mythical origin story. Far from a simple historical reference, Aunger’s depiction is steeped in biological rhetoric and paternalistic overtones, painting Dawkins as the sole originator of the meme concept.

As we look beyond the proponents of the field, we find that even recent critics of meme theory attribute the concept to Dawkins. Luis Benítez-Bribiesca, for one, explained that Dawkins "proposed the existence of an immaterial replicator, 'a unit of cultural transmission', a 'unit of imitation' for which he coined the very appealing neologism 'meme'" (2001, p. 29). And in a critique penned by Holdcroft and Lewis, Dawkins was singled out as "the originator of the idea" (2000, p. 161). As all of these examples suggest, the profusion of texts dedicated to meme theory that have appeared since the early 1990s have been accompanied by frequent acknowledgement that Dawkins deserves significant – if not primary – credit for building the foundations of the field. Further analysis reveals, however, that this "Dawkins origin story" is far from universally accepted dogma. In fact, debates over the history of the field are increasingly imbricated with the politics of discipline formation.

Memetics in Historical Context

Surveying a wider swath of literature, we find that many authors have questioned Dawkins's role in the field, often in tandem with alternate origin stories and explanations for the popularization of the term "meme." In one early discussion about the origins of meme theory, psychologist Alan Costall remarked, "Indeed, apart from a reference to Popper's comparison of cultural and genetic evolution as Darwinian processes, Dawkins manages to leave us with the impression that he has come up with a pretty bright idea" (1991, p. 323). Costall turned to a large body of texts – some dating back to the late nineteenth century – to demonstrate noteworthy parallels between theories of cultural and biological evolution. He even cited a somewhat obscure 1956 article by Gerard, Kluckholm and Rapaport as one of the earliest attempts to define a unit equivalent to the gene in the domain of culture (1991, p. 323).

Despite Costall's early insight, Dawkins's historical role in the field was not subjected to much additional scrutiny until many years later. Edmonds, for example, remarked in an early *JoM-EMIT* paper that "[t]he subject matter of memetics has developed at least partly as a matter of historical accident. Although the etymology of the term 'meme' goes back only to Dawkins in [*The Selfish Gene*], the ideas can be traced back much further" (1998b, Section 2). Extending a similar line of reasoning, Jeffreys offered this perspective: "Dawkins was by no means the first or last theorist to speculate about an entity akin to a social gene. However, his coinage has proved the catchiest, and the meme-gene analogy as he presented it is not only memorable, but

ideologically appealing" (2000, p. 227). Even more recently, Aunger offered this striking (and unattributed) paraphrase of Jeffrey's comment:

> Dawkins was neither the first nor last theorist to speculate that there might be something akin to a gene operating behind social communication. However, his coinage – a neologism that combines hints of "memory," "mimetic," and "gene" in one pithy package – has proved popular. And the analogy to genes embodied in the term is not only memorable but also ideologically appealing (2002, p. 15).

As suggest by all of these authors, Dawkins's historical prominence may largely be the result of happenstance and catchy terminology. Furthermore, the accessible style of presentation that characterizes Dawkins's books and articles is also frequently mentioned as a factor in both the broad appeal of his work and the wider dissemination of the term "meme."

Yet there remain important questions about the authors who may have preceded and paralleled Dawkins's work. Additional insight can be gained by turning to the *Journal of Memetics*, which has become an important focal point for discussion and debate regarding the origins of the field. Delving into the contents of the journal reveals that a number of meme theorists have promoted alternate origins for the field by drawing on a diverse body of authors and text. In attempting to paint a more inclusive history of meme theory, Derek Gatherer admitted, "Dawkins acknowledges his indebtedness to Popper, and to Cloak, for paving the way to the meme concept. Memetics thus has both philosophical and anthropological precedents" (1997, Sec. 6). In the same article, Gatherer uncovered numerous similarities between memetics and the work of various twentieth century philosophers and social anthropologists, including an extensive look at the parallels between Popper's "World 3" (or the "world of ideas") and Dawkins's early delivery of the meme concept. Marsden, on the other hand, called early sociologist Gabriel Tarde the "forefather of memetics," citing texts from 1884, 1890 and 1903 (2000b). He also suggested that researchers in memetics might get new ideas from Tarde's work, particularly from the idea of "generative imitation." Author John Wilkins argued that the idea for Dawkins's meme can be traced back to a 1966 text by ecologist G.C. Williams (1998). He used Williams' work to raise important philosophical and theoretical questions about the meme concept. And Michael Best contended that studying cultural change via evolutionary approaches predates even Darwin's work, and he grounded his comments with numerous references to what

he viewed as nineteenth and twentieth century predecessors of memetics (1998). Like many other authors, Nick Rose focused on the work of F.T. Cloak. He argued, "Cloak's work is worthy of greater consideration than it currently appears to enjoy, as it generates some rigid definitions and distinctions which much of memetics has so far lacked" (1998, Sec 2). And finally, it should also be noted that many articles in the *Journal of Memetics* have cited the various coevolutionary theories that were developed in parallel with memetics.

As these examples suggest, pinning down the historical origins of memetics is a difficult proposition. The field clearly brings together multiple worlds of theorizing, often resulting in competing claims and shifting historical narratives. But tackling questions of motivation may offer additional insights. For instance, why do some authors simply point to Dawkins as the founder of the field, while others make significant efforts to draw upon the work of predecessors and competitors? Furthermore, why have questions about the origins of the field become the subject of more intensive discussion and debate in recent years?

For starters, early texts by meme proponents such as Dawkins and Dennett provided notoriously meager foundations for a new field of inquiry, leaving authors casting about for supplemental reference material. Hence, many scholars turned to a broad base of literature to bolster and support specific arguments or theoretical goals. Others consulted early texts in search of particular insights or issues that had been ignored in the field. A given author's preference for origins may also depend on how he or she positions Dawkins's work. At least three specific considerations seem to shape these preferences: the coining of the term "meme," the advancement of a generalized replicator theory with potential application to the study of culture, and the definition of a cultural analog to the gene. For any author, an emphasis on one or more of these considerations may tip the scales of credit toward certain founding figures. Blackmore, for instance, emphasized Dawkins's role in advancing a generalized replicator theory and coining the term "meme," thereby overshadowing the contributions of other scholars. Lynch, on the other hand, has emerged in recent years as one of the most vocal critics of the Dawkins origin story. And as we delve into Lynch's work, it will become increasing evident that debates over the origins of memetics are not only theoretical and historical, but also significantly political.

Lynching Dawkins

As explored in the preceding chapters, Aaron Lynch has occupied a somewhat unique position in the domain of meme theory. Unlike other popular authors, Lynch has carved out a niche as a boundary actor, trafficking in both the popular and more academic spheres of memetics. However, further inquiry reveals that Lynch's relationship with the scholarly side of the memetics community has become increasingly tenuous in recent years. For starters, his work has been subjected to significant criticisms, particularly from authors such as Marsden and Gatherer. Even more important for the present inquiry, Lynch has surfaced as a vocal critic of Dawkins. Before I delve into such criticisms, I briefly turn to some of Lynch's earlier texts. In doing so, we find that the author bestowed significant credit on Dawkins as the originator of the meme concept. In the first chapter of *Thought Contagion* (1996), for instance, Lynch wrote:

> Though the analogy between cultural and biological contagion was recognized at least by the 1950s, the evolutionary biologist Richard Dawkins expressed it at full strength in the last chapter of his 1976 book, *The Selfish Gene*. This short chapter, in which Dawkins coins the word meme, launched a slowly smoldering first twenty years of memetics. Those decades also saw comparable contributions by Douglas Hofstadter and Daniel Dennett, among others (p. 3).

As this excerpt reveals, Lynch offered a rather typical view of the field, somewhat reminiscent of the preceding comments by Edmonds and Jeffreys.[44] Later in the text, Lynch mentioned Dawkins's "seminal chapter" and explained that Dawkins extended replicator theory beyond genetics to information transmission in more general terms (p. 27). And in both his 1996 text and a 1998 *JoM-EMIT* paper (1998a), Lynch frequently used terminology from the field of memetics and referenced Dawkins for numerous examples and insights. In his 1998 paper, Lynch's loudest criticisms were directed at Dawkins and Dennett for vague definitions of the term "meme" (1998a, Sec. 11). Lynch countered by clarifying his own use of the term and borrowing Donald Campbell's "mnemon" in reference to discrete neural memory abstractions.[45]

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[44] Also note that Lynch, unlike many other authors who have described the term "meme" as a "social gene" or "cultural replicator," framed Dawkins' work in terms of "contagion."

[45] The "mnemon" is conceptually similar to both Cloak's "i-culture," or the meme viewed as a unit of information stored in the brain. But as Best (1998) pointed out, Lynch introduced the "mnemon" without giving Campbell credit. As we will see, this is ironic given Lynch's later challenges to Dawkins over inadequate references to predecessors.

More recently, Lynch's rhetoric has undergone a dramatic shift. Perhaps most striking are his repeated challenges to Dawkins's position as both originator and spokesperson for the field. The first hints of such criticism appear in the paperback edition of *Thought Contagion*, published in late 1998. In a new Preface, Lynch stated that that he had "independently reinvented" a theory similar to memetics in the late 1970s, and added that "I had coined a different neologism back then, but later adopted the term *meme* after a friend told me about Dawkins's meme chapter" (p. vii). While Lynch failed to support this claim with evidence, his remark is an implicit challenge to the view that Dawkins is the sole originator of the field. Elsewhere, Lynch's disputes are more explicit. He included this disclaimer with the web-based reprint of *Thought Contagion* Chapter 1:

> Post-publication note: Evolutionary cultural replicator theory and the theory of self-propagating ideas were first expressed formally not by Richard Dawkins's 1976 book, but by F. T. Cloak's 1973 paper … The 1976 book by Dawkins does not mention this fact, and the fourth paragraph of *Thought Contagion* (first edition) Chapter 1 contains a historical error and omission (Lynch, n.d.).[46]

In addition to challenging Dawkins as theoretical innovator, this reference to Cloak suggests that Lynch is promoting alternate origins for the field. Additional examples leave little doubt as to the origin story that Lynch has come to prefer, while also raising questions about his strategies and motivations more generally.

Lynch limited the revision of his 1996 text to post-publication notes, but he took more drastic action with his 1998 article. The original was published in the peer-reviewed *JoM-EMIT*, but Lynch offered an "elaborated and refined successor" of the article on his own promotional web site (2001b). Even a brief comparison of the two versions of the article reveals striking differences. For example, the body of the 1998 article relied on terms such as "meme," "memeticist," and "mnemon" throughout, but the revised copy avoided these terms almost entirely in favor of more general expressions such as "memory item" and "idea."[47] Lynch also included new challenges to the Dawkins origin story via other revisions, beginning with a lengthy review of Cloak's early work (Cloak, 1966a; 1966b; 1973; 1975). He pointed out that

[46] The paragraph to which Lynch refers appeared on page three of *Thought Contagion*, and is also copied verbatim and in entirety above.

[47] Lynch even changed the title of the paper. The original, "Units, Events and Dynamics in Memetic Evolution" (1998), was revised to "Units, Events, and Dynamics in the Evolutionary Epidemiology of Ideas" (2001b).

while many memeticists have cited Cloak's 1975 article, a 1973 piece in particular both "proposed and elaborated an evolutionary cultural replicator theory" and featured significant "non-metaphoric technical work" (Lynch, 2001b, Introduction). By depicting Cloak's work as both *technical* and *non-metaphorical*, Lynch appeared particularly concerned with tracing work in the field back to more robust theoretical foundations. Elsewhere in the text, Lynch described how later work by both Dawkins (1982) and Dennett (1991, 1995) was characterized by shifting definitions of the term meme, all while ignoring the substantial foundations provided by Cloak, thereby entrenching the idea that Dawkins was the primary theoretical innovator. Lynch further challenged Dawkins in a footnote, where he stated that "the word [meme] was apparently coined by Dawkins to popularize Cloak's [1973] theoretical paradigm" (2001b, fn1). In this passage, Lynch clearly suggests that Dawkins borrowed Cloak's idea, developed catchy terminology to popularize it, and then failed to reciprocate credit where due. In the realm of academe, this is a very significant challenge to Dawkins's credibility and reputation as both an author and scholar.

Lynch's revisionary tactics raise many important questions. For instance, modifying and republishing an article that was previously printed in a peer-reviewed journal is a questionable tactic, especially when the author takes it upon himself to include forceful new challenges to the work of other authors.[48] Furthermore, Lynch's efforts go well beyond the revision of already published texts, and has become increasingly apparent that wide dissemination of his views is a high priority. For instance, Lynch dedicates significant space to many of the challenges outlined above on his web site, going so far as to post a number of Cloak's more obscure texts as further evidence for his claims. A popularized overview of memetics that was authored by Dawkins and published in *Time* magazine in 1999 also elicited Lynch's ire. In a letter to the editor published in a subsequent issue, Lynch remarked:

> Richard Dawkins discussed memes, the self-replicating units of culture, and mentioned a variety of nontechnical books and Web pages about them. But he neglected to take note of any of the highly technical and mathematical expressions of meme theory. This leaves the meme open to the charge of "cocktail party science," while keeping Dawkins' [sic] prized achievement in

[48] It is unclear whether Lynch obtained permission from the *JoM-EMIT* editorial board to reprint a revised version of the article on his web site. According to an informational page on the journal web site, authors must seek permission before reprinting articles that were previously printed in the journal ("Information for Authors," 1997).

> selfish-gene theory on safer sociological ground. This should surprise no one familiar with the areas of rivalry between proponents of the two theories (Lynch, 1999b).

Again, Lynch emphasized the importance of technical work in the field, some of which he had authored himself. His comments also hinted at a tension between selfish-gene theory and memetics, but it is difficult to pin down the "rivalry" to which Lynch refers. Is he suggesting here that Dawkins's work is at cross-purposes with regard to sociobiology and memetics? Or is he claiming that meme theorists are more generally in conflict with the sociobiologists, who ultimately relate cultural evolution back to genetic factors? Either way, Lynch's comments paint Dawkins as an inappropriate representative for memetics. On the *Journal of Memetics* discussion list, Lynch has entered into extensive debates over Dawkins's role in the field. In one particularly provocative post, Lynch stated:

> If he [Dawkins] is going to be a weak or ineffective spokesperson, he should expect his work to come under critical review. As someone who independently re-invented the concept (perhaps for the millionth time) of natural selection in self-spreading ideas, I do not feel I owe a debt of unconditional gratitude to Dawkins. (1999a)

In addition to reasserting his claim of independent invention, Lynch also suggests here that Dawkins's work has been exempt from critical review in the field. In a related message, Lynch once more pointed to "potential conflicts of interest in Dawkins's work," and added that "we may want to think twice about having a sociobiologist as the main spokesperson for memetics" (1999a).

Many meme theorists admit that Dawkins stands in a much longer line of theorists, but Lynch is one of the only authors to so openly and brazenly challenge Dawkins's role as an originator of and spokesperson for the field. Exploring his comments is revealing, not only because of his unique position in the field, but also because of the political overtones that have accompanied his shifting historical narrative. Within a relatively short period of time, Lynch distanced himself from memetics and become a stalwart opponent of Dawkins, while simultaneously throwing his support behind Cloak. Further analysis reveals that Cloak – now a

retired anthropologist – has played little more than a tangential role in the field. In fact, Cloak's closest association to meme theory takes the form of an article that was published in a volume edited by Dawkins (Cloak, 1986). In this particular piece, Cloak advanced his own evolutionary approach to the study of culture, but failed to cite the 1973 article that Lynch argues is so important. Somewhat ironically, however, Cloak mentioned his own 1975 article, along with two of Dawkins's books (1976; 1982). In light of these considerations, Lynch's promotion of Cloak appears a retrospective construct, only partially aligned with historical reality.

But we are left to ponder the motivations that undergird Lynch's about-face. For starters, Lynch's efforts are likely a counter measure in response to his own marginalization in the memetics community. His critiques of Dawkins have escalated in recent years, often in parallel with the increasing exclusion and criticism of meme enthusiasts such as himself by the academic sphere of the field. Lynch's call for a more critical review of Dawkins's work may reflect his own frustration at the critique that his own work has been subjected to. We might also posit that Lynch is attempting a sort of coup in the field, hoping to lure other theorists to both his own theoretical framework and preferred origin story. However, Lynch's efforts often appear at cross-purposes with his own research agenda. On the one hand, he has emerged as a vocal proponent of the rhetoric of immunology, as evidenced by his promotion of phrases such as "thought contagion" and "epidemiology of ideas." On the other hand, Lynch's endorsement of Cloak places emphasis on evolutionary approaches, vis-à-vis the replicator, to the study of culture. Hence, it is unclear whether Lynch's theorizing is even compatible with Cloak's earlier efforts. But even more importantly for Lynch, emphasizing Cloak's more technical work shifts the historical origins of the field away from the ulterior motives and lack of rigorous theorizing of which Dawkins stands accused. More generally, we might ask whether the alternate origin stories presented by Lynch and other authors are also intended as a way to raise the apparent legitimacy of the field. But before grappling with such themes at length, it is necessary to more directly assess Dawkins's own words and deeds.

Dawkins: Inadvertent Founder and Ironic Spokesperson

An investigation into the origins of memetics would be incomplete if we dodged Dawkins's own comments on the topic. Such an inquiry reveals first and foremost that Dawkins did pay a modicum of tribute to other theorists in his early texts. In *The Selfish Gene* (1976), he

pointed to Popper as having explored the analogy between scientific progress and genetic evolution (p. 190), and he also mentioned Cavalli-Sforza, Cloak, and Cullen as authors who were tentatively pursuing projects similar to his own. Nonetheless, Dawkins failed to point out specific insights that he gained from these authors, leaving us to wonder how much of his seminal chapter is original work. In *The Extended Phenotype* (1982), Dawkins dedicated only a few pages to memes, and his discussion was primarily focused on replying to various criticisms of the concept. Perhaps most importantly, Dawkins mentioned that his original treatment of the topic failed to adequately delineate the meme from its "phenotypic effects" or "meme products" (p. 109). In doing so, he referred to Cloak's important distinction between "i-culture" and "m-culture." This clarification lends support to Blackmore's exploration of the same topic, as discussed above. Dawkins also admitted that he didn't expect his 1976 book chapter to later act as the founding document for a cottage industry of theorizing. As both Dennett and Lynch have pointed out, Dawkins both clarified his intellectual agenda and downplayed his knowledge of human culture in *The Extended Phenotype*:

> My own feeling is that its [the meme concept's] main value may lie not so much in helping us to understand human culture as in sharpening our perception of genetic natural selection. This is the only reason I am presumptuous enough to discuss it, for I do not know enough about the existing literature on human culture to make an authoritative contribution to it (1982, p. 112).

Turning to later writings by Dawkins, we find additional disclaimers. In an endnote included with the 1989 reprint of *The Selfish Gene*, Dawkins added that "my designs on human culture were modest almost to vanishing point" and "my purpose was to cut the gene down to size, rather than sculpt a grand theory of human culture" (p. 323). Even Dennett subsequently painted the portrait of a reluctant originator: "Dawkins himself has never claimed to be founding a new scientific discipline of memetics" (1995, p. 353). And author John Wilkins later noted out that Dawkins clearly had "other fish to fry" when he first discussed the meme concept (Wilkins, 1998). Given such statements, we might temper our critique of Dawkins for not offering a more substantial discussion of his predecessors. Dawkins clearly admitted that he was not well versed in the massive body of literature on the study of culture, and his primary intention with the meme concept was to promote a general replicator theory rather than a "general cultural theory."

Turning our attention to the more recent history of the field, we might guess that Dawkins would eventually pursue memetics in earnest or distance himself from it entirely. However, recent comments reveal continued hesitation and uncertainty. As the field gained momentum in the latter half of the 1990s, interviewers repeatedly queried Dawkins about his position on memes. In a 1997 interview with *the evolutionist*, Dawkins remarked, "I must say I blow hot and cold on the whole idea. I sometimes think it has an interesting contribution to make to the understanding of human culture, and other times I just think it's a way of explaining to people that you don't have to have DNA, all you need is something that's self-replicating" (Currey, 1997). Later in the year, Dawkins's comments regarding memes were printed in a *Salon* magazine article: "There are people who take memes seriously and there are people who don't. I sort of sit on the fence, and don't mind seriously one way or the other. That wasn't my purpose in producing them" (Brown, 1997). And in 1999, a segment topically dedicated to "memes" on the NPR radio show *Talk of the Nation* featured a brief interview with Dawkins. While host Ray Suarez referred to *The Selfish Gene* as the "birth pangs of the meme," Dawkins downplayed his role in the field:

> Dawkins: "The term meme is very often used without citing me, and that's very good, because the Oxford dictionary has just included the word in the dictionary. And the Oxford dictionary's criterion for including a word is that it should be used without reference to where it comes from. So, I'm pleased that the word meme is being used without reference to where it comes from."
>
> Saurez: "Well that may be a milestone in scholarship itself, an academic saying that he's glad to see his ideas mentioned without having his own name in there."
>
> Dawkins: "That's right, it's an achievement in memetics." (Dawkins, 1999b)

And finally, in a foreward penned for Blackmore's *The Meme Machine*, Dawkins offered this perspective on his position in the field: "I am occasionally accused of having backtracked on memes; of having lost heart, pulled in my horns, had second thoughts. The truth is that my first thoughts were more modest than some memeticists, including Dr. Blackmore might have wished" (Blackmore, 1999, p. xvi). He added, "I was always open to the possibility that the meme might one day be developed into a proper hypothesis of the human mind" (p. xvi). Amidst

increasing interest in memetics among ever-larger audiences, a condensed version of Dawkins's preface was printed in *Time* magazine the following year (Dawkins, 1999a).[49]

Dawkins continues to occupy a peculiar position in the field, especially for someone who is oft recognized as the "inventor" or even "father" of the meme. He is an ironic spokesperson and inadvertent founder, on the one hand willing to share his own insights and comments on the current state of meme theory, but on the other expressing reservations and alluding to his own mixed agenda. Perhaps it should come as no surprise that Dawkins has not publicly responded to the aforementioned challenges from critics. Much to the chagrin of Lynch in particular, Dawkins's career and reputation are clearly not staked on the long-term success of memetics as a new discipline, and his primary scholarly interests remain quite solidly in the realm of evolutionary biology.

Conclusion

Memetics remains a relatively immature field that continues to be shaped by competing origin stories. But given the complex and competing claims outlined above, with what conclusion are we left regarding the origins of memetics? Even amidst the sloppy definitions and somewhat fanciful theorizing that have characterized some of his writings on the subject, Dawkins did introduce novel concepts and analogies in his early texts. Furthermore, he probably deserves credit for coining the catchy "meme," and we might also concede that he was one of the first authors to describe a generalized theory of cultural replication that was both accessible and compelling. But his controversial chapter appeared in a book overwhelmingly dedicated to his work in evolutionary biology. Were it not for Dawkins's status as an up-and-coming popular science writer and forefront sociobiologist, his chapter about memes would have surely received considerably less attention, resigned to relative obscurity with the work of authors such as Cloak.

But we might ponder why Dawkins is often cited as the sole founder of the field when his work clearly stands in a longer line of theorizing. It might be a matter of simple convenience and historical simplification – especially in condensed popular texts. There might also be a tendency for scholars to fall back on antiquated and paternalistic views of science, where it is presumed that original ideas frequently spring forth from the individual and intellectual "founding father."

[49] Dawkins' article in *Time* was what triggered Lynch's letter to the editor (Lynch, 1999b), as discussed above.

But citing the efforts of predecessors such as Cloak is not out of the question, as demonstrated by the work of authors such as Blackmore and Lynch. In addition, Dennett's support for meme theory in the 1990s is also a likely factor in further entrenching the Dawkins's origin story, and we might be justified in directing some criticism at Dennett for avoiding a more substantial discussion of Dawkins's predecessors. We also find that other widely disseminated interpretations of memes, such as those offered by Csikszentmihalyi (1993) and Bloom (1995), give readers the impression that Dawkins alone was originally responsible for the idea. Perhaps, then, the Dawkins's origin story is most accurately viewed as "benign myth," not entirely true, nor entirely false.

In more general terms, the historical narratives outlined in this chapter underscore the importance of origin stories in the development of disciplines. They give scholars working in a given field historical reference points, allowing them to situate their own work with respect to both a larger body of theorizing and a more substantial intellectual heritage. Authors may also invoke particular historical references in order to raise the apparent legitimacy of memetics. Lynch provides us with a prominent example of this trend by invoking Cloak's theoretical and technical work as a rejoinder to Dawkins's presence in the history of the field. Similarly, the emergence of a more academic sphere of meme theorists as the 1990s wore on was accompanied by more frequent discussions and debates about the origins of meme theory. To take other examples, Gatherer specifically explored the "philosophical and anthropological precedents" to memetics. Marsden, on the other hand, pointed to sociologist Gabriel Tarde as the "forefather of memetics," while many authors cite Popper and Campbell as Dawkins's predecessors. And as discussed above, others have placed particular emphasis on the coevolutionary theories that were developed in parallel and even in tandem with memetics. While exploring these various origins is clearly an important strategy for authors wishing to gain methodological and theoretical insights, there is little question that pointing to prior texts raises the legitimacy of memetics by both placing the field in a larger historical and theoretical context and establishing tentative links between meme theory and the work of other respected scholars.

Dawkins may be on to something when he compels the proponents of memetics to eschew the origin question altogether and just use the term without attribution. Along similar lines, David Hull has suggested that those working in the field should not be overly concerned with debates over "unappreciated precursors" and the origins of the term meme (2000, p. 50-51).

While memeticists may find it fruitful to draw on the theoretical insights of predecessors, a forward-looking view does not necessarily require a broad resolution to origin questions. Even more importantly, such a resolution remains unlikely in the near future since the ongoing direction of the field will continue to shape the preferred origin stories and founding myths in a sort of dialectic. This is particularly evident as today's scholars turn to yesterday's theorists in promotion of one or another theoretical framework. But authors such as Dawkins and Hull likely underestimate the extent to which the proponents of meme theory have relied on dominant models of disciplinarity, complete with assumed intellectual paternities, adversarial modes of communication, and traditional strategies of legitimation.

Conclusion

When people first hear about the meme concept, they are sometimes inclined to see the world through "meme-tinted" glasses. That is, once we understand the rudiments of meme theory, everything around us begins to look like a process of meme evolution or transmission. This tendency is evident in many of the insider historical accounts reviewed in the preceding chapters. Many authors have described the development and diffusion of memetics using basic tenets borrowed from the field itself, leading to a clever but questionable circularity. Given that my initial interest in the topic was closely intertwined with my affinity for the meme concept, it has been challenging to distance myself sufficiently from the allure of the field to craft a reasonably balanced historical view. But I nonetheless remain intrigued by the prospects of using evolutionary approaches in general and memetics in particular as theoretical scaffolding for exploring a wide variety of topics in the realm of science and technology studies. For instance, what would a thoroughgoing history of memetics look like if it were based on a meme-centered approach? Would it turn out to be little more than a "history of ideas," centered on the various definitions and theoretical developments in the field that have replicated and evolved in sundry human minds? In taking such an approach, how might we discuss various biographical details, institutional structures, and larger social and cultural considerations? While the diversity and complexity of the field clearly problematizes such an endeavor, the relatively immature state of meme theory itself further compounds these difficulties. Perhaps a more realistic approach would be to use memetics in tandem with other theoretical tools, such as actor-network theory. Treating the meme concept (or the "meme meme") as an entity that marshals resources and enrolls other actors might provide further insight regarding the development of the field. I hope to pursue this line of inquiry in subsequent work.

For now, I leave this project as a more conventional disciplinary history in the contextualist vein. And it is a truism, of course, to point out that historical accounts such as this are necessarily incomplete. But pondering the incompleteness of this project illuminates both the thematic focus of my inquiry and the potential for future work. For starters, I've developed a narrative that delves into the history of meme theory and memetics in terms of a variety of theoretical developments, biographical details, institutional features, and larger social and cultural themes. There is little question that even this relatively broad swath of exploration leaves

questions unanswered and topics treated in insufficient depth. In addition, my account engages with only a fraction of the contemporary work in the field, both from the academic and popular realms. Quite simply, the rapid increase in literature that has characterized roughly the last five years of memetics has forced me to single out the authors and texts that have had the most profound influence on recent work in the domains of meme theory. But even more importantly, my efforts have been oriented toward the central argument that the field has been characterized by an atypical pattern of growth, with memetics only moving toward greater academic legitimacy after extensive diffusion in the popular realm, thereby upending conventional understandings of both discipline formation and the popularization of scientific ideas.

In light of my major thematic emphasis and the content of the previous chapters, it is worth offering a brief, revised historical narrative that summarizes the development of memetics. As many authors have discussed, the apparent similarities of biological and cultural evolution have been explored since at least the late nineteenth century. However, interest in the topic seems to have spiked in the 1970s, with Cloak one of the first authors to advance the idea that the transmission and evolution of culture might be understood in terms of discrete, replicating units. Popper pursued related themes in the philosophical realm by looking at the development of science using an evolutionary approach, and Campbell's evolutionary epistemology applied these principles to knowledge more generally. In his 1976 text, Dawkins coined the catchy "meme," and popularized the idea that culture might be understood in terms of replicating units subject to evolutionary forces. From the mid-1970s onward, a number of gene-culture coevolutionary models were also being developed in earnest by authors such as Cavalli-Sforza and Feldman, Lumsden and Wilson, and Boyd and Richersen. The term "meme," however, received relatively little attention in the 1980s, save for scattered commentary from authors such as Hull, Ball, Hofstadter, Drexler, and Henson.

The first half of the 1990s would be an important period for the meme concept. To begin with, a diverse cadre of authors started to take seriously the possibilities for a new field or science called memetics. The *Journal of Ideas*, published in 1990 and 1991, was an early attempt at establishing a hybrid publication dedicated to meme theory and related topics, and by 1995 even Dennett was pondering the potential for a "new science of memetics." This period saw a profusion of articles and book chapters that discussed memes, and they ranged from the thoroughly academic to the highly popularized. Other important developments evident around

this time include the spread of the meme concept to niche popular audiences of technologists and futurists, the increasing comparison of memes to viruses and contagion, and a general tendency for authors to adopt malleable interpretations of memes that could be adapted to any number of ends. These three trends were particularly prominent in the popularized book-length discussions of memes provided by Brodie (1996) and Lynch (1996). By 1997, the term "meme" had officially been added to the *Oxford English Dictionary*, signaling the diffusion of the concept into ever-larger social and cultural realms. The *Journal of Memetics* was also founded in 1997, suggesting that a more cohesive academic community of meme theorists was forming around the same time. Even more importantly, these developments were significantly intertwined with the rising prominence of genetics, immunology, and technology – both in the realms of pop culture and academe – as the 1990's wore on. One need only look to the parallel emergence and growth of fields such as bioinformatics – another influential hybrid discipline that bridges the life and computational sciences – for further evidence of the unique historical context in which meme theory has taken root.

But since the mid-1990s, memetics has developed along increasingly divergent popular and academic paths. On the one hand, the term "meme" has become common currency for the discussion of various fads, trends, and "selfish ideas." On the other hand, the more academic spheres of meme theory remain on the margins of both science and popular culture. *The Times Higher Education Supplement* recently encapsulated the state of the field by highlighting the *Journal of Memetics* as a prime example of an "outstandingly obscure academic journal" ("Obscure Pursuits," 2002). Yet this "obscure" journal and its contributors have been working toward more rigorous foundations for the field by clarifying definitional issues, expelling the amateurs in their midst, and establishing more robust theoretical and methodological frameworks. Authors such as Aunger and Blackmore have been particularly active in developing accessible popular science treatments of meme theory that overshadow the less rigorous work of earlier meme enthusiasts. Recognizing the unusual popular science origins of the meme concept, many other authors have supplemented and reinterpreted the history of the field in an attempt to gain new theoretical insights and boost the apparent the legitimacy of their endeavor. This trend in particular reveals the extent to which the proponents of meme theory have frequently fallen back on traditional understandings of disciplinary development, complete with paternalistic origin stories, confrontational modes of conduct, and long-entrenched strategies of boundary-

work and legitimation. No matter how unique the subject matter of memetics or the context in which it has emerged, the history of the field appears both shaped and constrained by these dominant images of disciplinarity.

Hence, it remains difficult to forecast whether the field will continue to develop along the divergent paths outlined here. The more academic proponents of the meme concept appear increasingly conscious of their position in a larger disciplinary matrix, as exemplified by many of the articles published in both the *Journal of Memetics* and the edited volume *Darwinizing Culture: The Status of Memetics as a Science* (Aunger, 2000). Authors such as Hull have even pondered the relative "progressiveness" of the field. He contends that memetics as an "active research program" is no more than a dozen years old, and he adds, "Now that the science of memetics has begun to develop, the clock is ticking. Progress must be forthcoming" (2000, p. 52-53). For Hull, such progress centers on carefully and coherently articulating theoretical principles, responding to the objections of opponents, and carrying out empirical testing (p. 64). Many authors in the field appear highly cognizant of such considerations, but whether or not their efforts will be successful is difficult to forecast. Hull notes, "Very few new research programs ever gain much currency. Even fewer succeed, but in such matters the results are all worth the effort" (p. 64). But even if the academic sphere of memetics fails to achieve wide acceptance as a bona fide science, the stories presented above suggest that variations of the meme concept will likely live on in other circles, perhaps as a heuristic widget, philosophical viewpoint, or even science fiction trope.

Given the gulf between the more academic and popularized treatments of memes, we might go so far as to ask what we're referring to when we talk about "memetics" or even "memes." The history outlined in the previous chapters could certainly be used to support the argument that there is no single meme theory or concept, no one field called memetics. For instance, "meme-as-gene" and "meme-as-replicator" accounts frequently appear at odds with the more popularized and numerous "meme-as-germ" analogies. The term "meme" has emerged as a sort of "boundary object" or "hybrid signifier," standing at the intersection of numerous theoretical, disciplinary, and cultural worlds. The meme remains a tenuous and historically specific link betwixt the viral and the genetic, the academic and the popular.

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