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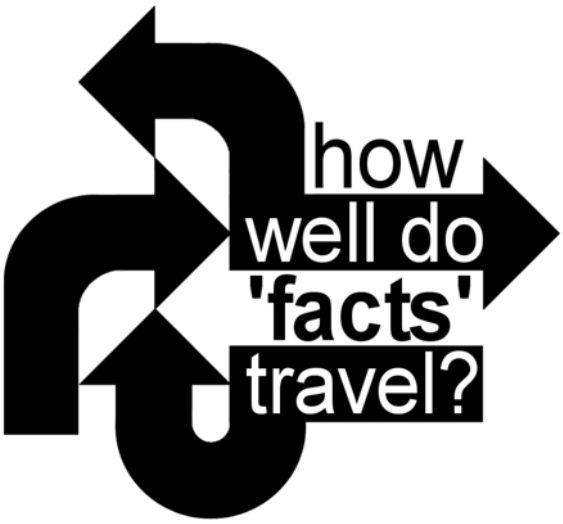

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Abstract

Chronicling the history of science and health popularisation in the United States, John C. Burnham sees a decline from the Victorian "men of science" to a situation in the mid-1980s where what passed as the popularisation of science consisted of little more than a litany of unrelated facts. Burnham's contention is that these "scientific facts" will not travel as such (that is, as *scientific* facts) unless they are firmly embedded within a coherent scientific framework. It is this framework – a theory capable of organising the data – that he perceives to be lacking from the modern popularisation. Whilst this may have been the case at the time Burnham was writing (the mid-1980s), it is a position that is increasingly untenable today. Looking here at the popularisation of psychology, this paper demonstrates how those unifying theories have since returned. Through a close reading of Steven Pinker's 1997 *How The Mind Works* (in comparison with Cyril Burt's 1933 book of the same title), this paper illustrates the ways in which facts and theories are interpolated by the modern populariser in precisely the manner that Burnham feared had been abandoned forever.

PART I

Introduction: Science Studies and Popularisations

Accessible versions of Copernican or Baconian science from the seventeenth and eighteenth century notwithstanding, most commentators take science popularisation in the modern (and significant) sense[1] to have begun in the nineteenth century. For example, Massimiano Bucchi, who, beginning a short survey of the history of popularisation, makes the claim that "[i]t is only since the second half of the nineteenth century, however,

[1] That is, as a type of discourse distinct from professional exchanges written specifically for a non-professional public.

that one can really talk of 'large scale' communication of science, explicitly addressed by its authors not just to specific audiences but to the general public ('grand public')" (Bucchi 1998, 2). By scholars of what has come to be known as science studies and to a lesser extent by historians of science (these being, at their boundaries, interchangeable fields), the popularisation of science is increasingly (and expediently) seen as a politically charged operation: defining, for both the public and, recursively, the community of scientists, a more coherent image of science itself.[2] The popularisation is seen as a point of contact between the scientific profession and the interested public, and a principal channel for the transfer of science information into the public domain. This paper looks at how one prominent account of popularisations no longer serves as an accurate representation of the activity it describes.

How Superstition Won and Science Lost (1987) is John Burnham's historical survey of the popularisation of science and health in the US. Partly as a consequence of the time the book was being composed (the mid 1980s) and partly as an act of allegiance to his chosen title, Burnham claims that the popularisation of science has been deteriorating since the Victorian age.[3] It is not at all clear that such a claim can be supported today. This is not intended as an attack on Burnham's work, but rather, to suggest that the character of popular science writing has shifted in the years since *How Superstition Won* was published (1987), such that the presentation of trivial and unrelated facts (a charge Burnham brings against popularisations of science of the 1960s, 70s and 80s) is no longer

[2] Which may include an agenda for future research, a canonical version of the history of the discipline, and the prioritisation of certain key figures and discoveries, often linking one to the other in a manner that loses in historical accuracy what it gains in simplicity.

[3] It's worth noting that Burnham believes that society as a whole is in decline, and has been on this trajectory since the Victorian age. His other publications include: *Paths into American Culture: Psychology, Medicine, and Morals* (1988), *Bad Habits: Drinking, Smoking, Taking Drugs, Gambling, Sexual Misbehavior, and Swearing in American History* (1993).

a definitive characteristic of the genre. His chief complaint with later popularisations is their failure to incorporate a scientific worldview which might act as a substitute for outmoded religious worldviews. However, in contrast to Burnham's pessimism, since the publication of *How Superstition Won*, much mainstream popular science writing has become increasingly oriented towards "holistic" or "unifying" themes – in some cases leading to quite extraordinary statements of scientific evangelism which have (especially in the shade of – and perhaps as a response to – the Science Wars) served as the locus for hostile exchanges between representatives of the scientific and non-scientific disciplines.[4] The trajectory Burnham plotted based upon his research up to the nineteen eighties has, as it happens, proved to be misleading.

Reviewing the history of popularisation of health, psychology, and natural science in the US, Burnham generates a four part model, charting a general theory of the broad development (and decline) of popularisation over extended time. (This axis is in contrast to many commentators, such as Bucchi [1998], Hilgartner [1990], and Lewenstein [2001], who are primarily interested in latitudinal transfer of specialist knowledge.) Burnham is pessimistic about the project (but for different reasons to Stanley Fish [1995, 70+], for example, or Richard Feynman [(1959) 1990, 58] – both of whom think that blocks exist integral to the technical nature of specialist scientific knowledge), believing that the process of popularisation is intrinsically degrading to the material, subjecting "pure" knowledge to market forces, and thus producing a product which will be

[4] Notable among these is E. O. Wilson's *Consilience* (which argues for methodological monism across the disciplinary spectrum), published in 1998. Talk of a scientific worldview is something seen with some regularity in popular science writing: Richard Dawkins (esp. *A Devil's Chaplain* [2003]), Stephen Jay Gould (in many, many essays) and Steven Weinberg (in *Dreams of a Final Theory* [1992], esp. 167+) all offer the scientific perspective as a corrective to methodological and logical errors in fields outside their specialism. But even Carl Sagan's *Cosmos* (1980) or Jacob Bronowski's *Ascent of Man* (1973) (both of which were available to Burnham) offer similarly broad surveys.

increasingly commercialised until it is without scientifically credible content. Epistemological decay is inevitable (says Burnham) as popularised science becomes a commodity, a saleable brand. (Thomas Gieryn, independently, takes the same approach, comparing science with Coca-Cola.[5]) Burnham claims that the history of the popularisation of any branch of science follows a similar pattern consequent upon the functional role played by popularisation:

> 1) Diffusion – when science did not need condensation, simplification, and translation;
> 2) Popularization – when men of science tried to share their vision of the religion of science;
> 3) Dilution – when popularization passed into the hands of educators, who represented science only at second hand, and simultaneously, journalists;
> 4) Trivialisation – when popular science consisted of impotent snippets of news, the product of authority figures.
> (Burnham 1987, 226)

Stage 1 represents a direct transmission of information, stage 2 is a high point of targeted popular communication, but stage 3 signals the beginning of a gradual decay, such that by stage 4 the information is so mangled and distorted as to be almost unrecognisable. In information-theoretical terms, the history records a decreasing ratio of signal to noise. At stage 1, there is no popularisation because there is no functional role for popularisation: the vocabulary and conceptual apparatus of science is

[5] That is, as brands that are marketed – just as Coke succeeds because it has managed to persuade the public that a minor difference (between its own cola and that of rival companies) is in fact a vast and important difference, so science has managed to persuade the public that there is a vast and important difference between scientific claims and claims from other disciplines. See Gieryn 1987.

continuous with the expected intellectual range of the general intelligent reader. By stage 4, the scientific knowledge is abstruse, and popularisation is of very low quality. What is unclear is the causal mechanism at work here.

Burnham's stages are interesting here inasmuch as they suggest a gradual lowering of the reliability of the content of the scientific knowledge in popular presentations as science itself becomes increasingly sophisticated (and increasingly reliable), and the gap between the professional and the lay reader widens to a point where communication involves such a total level of conversion that the received message possesses almost no trace of the original signal. In other words, it *seems* to be the case that the decline of the quality of popularisation is causally related to the difficulty of the science it is trying to popularise and explain. If it were the case that some causal mechanism existed such that popularisation was possible only for a science in its (technical) infancy, then this model would seem to prohibit the successful popularisation of complex science, or at least it would show an inverse relationship between the complexity of the science and the reliability of the popularisation. (It is clear that *some* relation holds between popularisation of science and the technical sophistication of that science inasmuch as the advent of popularisation is occasioned by science's achieving a particular level of sophistication.)

However, it seems more likely that Burnham's story is not prescriptive and necessary, but descriptive and contingent. It happens to be the case (so far as Burnham sees it) that science has improved and popularisation has declined during the same period. The decline of popularisation is something Burnham blames variously on television, the market forces that encourage sensationalism in the press (and a press more aware of and willing to respond to these forces than their nineteenth-century predecessors), and – most curiously – what he calls

the “destructive effect of facts” (Burnham 1987, 229). This amounts to “reducing the context of science in popularizing and at the same time emphasizing ‘facts’ so that ‘science’ in the new mode of popularizing consisted of isolated bits and pieces” (Burnham 1987, 229). For Burnham, what’s missing from the popularisations of the later twentieth century is theoretical scope. It is no accident that he (positively) characterises stage 2 popularisation (in which he includes late Victorians – John Tyndall, Thomas Huxley – and some early Science Service bulletins) as preaching a “religion” of science.

Before returning to the relation between fact, theory, and popularization below, it is worth noting at this point that Burnham’s theory of knowledge transfer conflates the worldview (or “message”) of science with science’s technico-epistemic content. In other words, no explicit distinction is made (at least within this schema) between two important types of popularisation:

(a) the efforts made to make science popular, and
(b) the efforts made to make scientific knowledge more accessible.

It ought to be clear that these are two very different tasks (roughly, propaganda and pedagogy). The first can be accomplished with a minimum of the second. Popularising (and reinforcing the status of) science as a cultural practice or institution (such as the men-in-white-coats favoured by advertisers) need not involve itself with the presentation of any substantive material, and usually is more effective if it does not. On the other hand, purely educative materials – such as textbooks – may have almost nothing to say about the so-called “scientific worldview” and usually remain agnostic with regard to science’s potential to serve a religious or quasi-religious function within society. That said, for Burnham, categories (a) and (b) above are to some extent entwined, and

to teach science without the theory of science (including the sceptical, materialist worldview) is not to teach science at all.

In the popular imagination, the scientific is often equated with the factual; or at the very least, inasmuch as the fact is the point at which a given claim (theory, postulate, hypothesis) touches the world, the more facts can be presented in support, the closer the fit between theory and world. Meanwhile, theories are seen as potentially suspect, certainly easier to dispute. (This is noticeable in the manner that creationists choose to dispute evolution: as “theory” not a “fact” or a “law.” By emphasising the semantic proximity of “theoretical” and “speculative,” the security of the theory is eroded). A theory can change, but the facts offered in support are immutable. To say “facts can be made to fit any theory” doesn’t attack the status of the facts, but instead serves as a reminder that facts are mercenary with respect to the theories they serve. Attached to the wrong theory, facts can be misleading – but this ability to mislead is in itself a function of our respect for facts. So aligned, the facts themselves take no reduction in their truth status, but they cease to be evidential claims in support of the truth. The theory here is surely the misleading part. In the absence of theory, the facts may be entrusted to “speak for themselves.” Consequently, to bombard the public with “scientific facts” might seem the best way to persuade them that the scientists have the world figured out. Burnham holds the opposite view. So far as his version goes, the popularisation becomes degraded not because it lacks factual content, but precisely because the factual content increases. What can account for such a position?

Burnham’s stance is that the character of a knowledge claim is externally defined. A “fact” is neither scientific nor unscientific. Only when suitably positioned within a suitable theory does a fact become scientific. Burnham stresses that theoretical consistency is, overall, more important than what could be called “factual mass” – which is to say, it is the

theoretical framework that assures successful scientific communication, not simply the massed presentation of disparate facts. This represents a curious departure from the popular view of facts, but it is not without precedent. Writing in the mid-nineteen forties, Edwin Guthrie argues much the same point in trying to persuade psychologists that what they require is not more facts, but better theories:

> … a scientific theory of learning has yet to be agreed upon by psychologists. Such a theory is essential to progress for several reasons. One of these is that unless the beads of fact can be strung in order and pattern on the threads of a theory, there is a strict limitation upon imparting psychological knowledge to others. Theories are mnemonic devices that make science teachable. And theories are the basis of working concepts. They enable men to confront new facts and deal with them successfully. Furthermore, // theories are required to direct the search for relevant facts. It is theories that endure, not facts. Events are ephemeral and their descriptions also may be ephemeral. It is theory that lasts for years or for generations. It is theory rather than fact that leads to new controls over nature and events. From theory inferences can be made and new applications devised. Facts are likely to be local and temporary. Their application are limited. (Guthrie 1946 [from a speech given in 1945], 3-4)

So it is not that the information isn't there, it is that the information has not been (and is not being) correctly organised. In a similar sense, Burnham's decline-and-fall narrative is explained as a retreat from theoretical orientation as easily digestible "science facts" (what he calls the "impotent snippets of news" [Burnham 1987, 226]) come to replace the "religion of science." Burnham believes that the role of the science populariser is to develop for the public just such a worldview, one which rationally accounts for phenomena and which might serve as a counterbalance to the forces of credulous "superstition." Apparently independently, both Burnham and Guthrie feel that the popularisation of

psychology suffers (in the 1940s as much as the 1980s) for want of theoretical orientation.

In a more general sense (that is, not specifically concerned with the popularisation of psychology but with public knowledge generally), this position is informed and preceded by a piece on the Popular Lecture written by J. G. Holland in 1865.[6] "For facts alone the modern American public does not go hungry," claims Holland. But facts, he goes on to say, are not what the public want: "Men wish for nothing more than to know how to classify their facts, what to do with them, how to govern them, and how far to be governed by them." So far as Holland sees it, "the man who takes the facts … and organizes around them the popular thought, and uses them to give direction to the popular life, and does all this with a masterful skill, is the man whose houses are never large enough to contain those who throng to him" (Holland 1865, 367). In other words, what's required of the populariser (in his or her capacity as a public intellectual) is to arrange and contextualise information, not simply expose the public to facts. Burnham's explicit suggestion (and implicit in Guthrie) is that the scientific facts will not travel as such (that is, as *scientific* facts) unless they are firmly embedded within a coherent scientific framework. What Holland and Guthrie are calling for and what Burnham laments as being from a bygone age is a populariser able to perform this task. Whether or not they existed at the time Burnham was writing, it can be shown that such popularisers of science do exist today.

Recent developments in the popularisation of psychology – a subject which occupies almost a third of Burnham's material, and one whose popularisation he claims "serves as a paradigm for all of the sciences" (Burnham 1987, 116) – stand as a counter-example to the drift

[6] Burnham (1987) quotes very briefly from Holland's 1865 article, so he is obviously aware of it, but although he doesn't refer to the piece again, it seems that his position on the importance of theoretical framework to popularisation is very much influenced by Holland's views.

of his argument. Steven Pinker's *How The Mind Works* (1997) is an exemplary case, where the text is carefully structured around a larger hypothesis. Discrete facts are not intrinsically valuable for Pinker, and *How The Mind Works* is not simply a litany of granular, isolated snippets of information, but is instead presented as a coherent and forceful promotion of a "scientific worldview" (albeit a controversial one), where the facts stand in a similar relation to the governing (scientific) theory as character stands to narrative in a novel (which is to say: the former is embedded within the latter). Pinker, a psycholinguist and cognitive scientist, is one of a group of popular science writers who believe that the human mind has evolved as a modular (that is, task-specific) processor, adapted for the hunter-gatherer lifestyle that obtained before the rise of the great civilisations. This position, called Evolutionary Psychology (or EP), holds that modern humans may be maladapted to modern life. One of psychology's functions is to account for man's anxiety in the world, and evolutionary psychology does this by assuring us that any sense of dislocation and unease is to be expected: our bodies and minds are hardwired in preparation for a world that no longer exists.

Before moving on to discuss Pinker's book at more length, it is important to note that the popularisation of psychology is a special case of popular science writing. In addition to the problems attendant to any work attempting to translate technical knowledge into an accessible format (what Aldous Huxley called the "necessary evil of abbreviation," [Huxley 1959, foreword] but Richard Feynman described as teaching music to the deaf [Feynman [1959] 1990, 58]), there are obstacles peculiar to the popularisation of psychology. Where popularisations of physics or biology struggle to invent new ways to make their subject matter appealing to a readership with little or no investment in the discipline, the popular psychologist does not have to work hard to get our attention. Unlike cell biology or mathematics, psychology doesn't need to

be “popularised” in the sense of “made attractive.” Psychology is already a selling point for other material. As a discipline whose principle focus is also its readership, psychology appeals to (and offers an explanatory account of) our narcissism. A self-interested audience seems guaranteed. There is, however, a downside to this attraction.

When a populariser of cosmology presents information as factual, the readership is (usually) in no position to contradict such claims (not, at least, from personal experience). The popular cosmologist is not really competing with what we already know. The populariser of psychology, on the other hand, is writing on a subject about which everyone already feels that they have expert knowledge. Consciousness means that information about our minds is at all times available to us. If a psychologist makes a particular claim about human experience, we can (often) immediately check its veracity against our own experience. All of which means that the popular psychologist must pull off a clever trick: the question of how the mind works must be answered in such a way that there is no clear contradiction with what the reader already knows from their own experience, and yet with sufficient novelty that the material presented cannot be taken for simple commonsense.[7] As a by-product of this prior intimacy with the subject-matter, the type of knowledge psychology produces has obvious utility value for the public. Learning that a star of a certain size may collapse into a white-dwarf is not something that can be used in everyday life, but learning that there are typical physiological

[7] Accordingly, one of the first tasks is to deflate the expertise of the audience. One of the most powerful and elegant solutions to this problem was provided by Sigmund Freud. Recognising that “man feels himself to be supreme within his own mind” (Freud [1917] 1955, 141). Freud took it upon himself to persuade his audience that things were not as they seemed. His ingenuity here was the introduction of a whole category of mental phenomena inaccessible to the conscious mind. The so-called Unconscious was defined as just that sort of mental activity that is not registered by conscious awareness yet nevertheless exerts an affective power over behaviour. In addition, the Unconscious was accessible only through what Freud called psychotherapy, and this in turn was a treatment that could only be performed by the trained (expert) psychotherapist.

responses indicative of certain mental states may be very useful indeed. There is a very large body of popular instructional literature (loosely) based upon what psychology can tell us about social behaviour, Dale Carnegie's *How To Win Friends and Influence People* (1936) being the paradigm case.

As this last example indicates, an additional obstacle for popularisation (in the pedagogic mode) is the territorial overlap between *psychology* as a natural science whose focus is the human mind-brain, and *psychiatry* as a branch of medical science whose aim is the diagnosis and treatment of mental illness and distress. Consequently, the domain of popular psychology intrudes upon the domain of therapeutic literature ("self-help" and "well-being").[8] These conflations reflect the fairly recent development of the science of psychology in its present form, and that the history of the popularisation of psychology overlaps the development of those disciplines to their present form.

Psychology contra Psychiatry

In *The Problematic Science* (Woodward and Ash, eds. 1982), a collection of essays about psychology's struggle for disciplinary autonomy during the nineteenth century, William R. Woodward makes a useful distinction between being a science and being a profession (1982, 1-14). He does this because he wants to leave room for a professional psychology that is nonetheless not (yet) methodologically consistent with the sciences. That is, psychologists are recognised as having particular

[8] The differences between *Men Are From Mars, Women Are From Venus* (1992) by John Gray PhD, and *The Mating Mind* (2000) by Geoffrey Miller, may not be immediately obvious: both offer a theory of human relations conditional upon the existence of innate differences between the sexes. Miller's book, however, locates the source of these differences in evolutionary history, and is intended as a work of educative popular science writing; whereas Gray's book posits no (serious) material cause for the innate differences, and is intended as therapeutic-instructional literature for troubled heterosexual couples.

practices and terminological conventions which are unique to their discipline, and which set them apart from doctors, geographers, carpenters (etc.), but which nonetheless do not align them with such laboratory sciences as physics, biology, and chemistry. Woodward's focus is the emergence of psychology as a science – the processes by which it graduated from a philosophico-medical study to a specifically scientific study of the human mind-brain. In order to establish itself as a scientific study, psychology had to adopt the disinterested position typical of scientific disciplines. What was required for professionalisation and subsequent scientisation was not necessarily a linear development from the existing folk-psychologies.

This legacy of this evolution over the past one hundred and fifty years (or so) is a series of speciation points as professional psychology shears itself away from folk psychology, and develops in its place a professionalized version of practical psychological advice. Psychiatry emerges as a distinct (medical, not academic) field – the application of psychological knowledge for the treatment of mental illness, by analogy with the doctor's application of physiological knowledge for the treatment of somatic illness. But psychiatry, as medicine, does not need to possess explicit factual knowledge in order to progress: it is sufficient that the work of psychiatrists (like the work of doctors) is efficacious in the treatment of ailments.[9] So psychiatry is not simply applied psychology, it is also whatever does the job of alleviating mental distress. As such, the

[9] The experimental field of medicine is successful cures – this is really the only criterion which matters, for it is manifest proof of the efficacy of medical knowledge. As such, its *scientific* status, whilst recognised and acknowledged, is probably (in terms of what attracts the respect for medicine that people have) secondary to its utility. The same is surely true for engineering and agriculture, both of which are measured by different standards than the sciences which (theoretically) underpin them, namely, physics and biology. Physicists and biologists garner an entirely epistemological respect. During the nineteenth and early twentieth century, psychologists lacked the direct proof of efficacy enjoyed by medicine, although the materialist recognition that "mental illness" might have a somatic aetiology is the theoretical foundation of the link between psychiatry and psychology.

requirement that it be a strict science is less sharp, and the role (and practical toolkit) of the psychiatrist bears no necessary relation to the findings of (scientific) psychology. The scientisation of psychology, then, proceeds with or without the scientisation of psychiatry.[10]

At any point along this history, what is understood by (and what is meant by) "psychology" is in flux. These various versions of psychology are not successive, one replacing the other, but multiple, one beside the other. Psychiatry branches out from psychology, but both persist, and whilst practitioners of either psychiatry or psychology know the difference between each other, the public may not.[11] To popularise psychology at the point when it was not clearly distinguished from psychiatry will produce a very different text, selecting different facts and presenting them in a manner suitable for addressing different issues and answering different questions. How a doctor communicates medical information to a patient will be different from how a scientist communicates similar information. How a salesman describes a technology will be different from how an engineer does. The appearance of a "popular psychology" occurs during the period when these descriptive vocabularies overlap.

The emergence of psychology as a professional discipline occurs when the technical complexity of psychology is such that the community of persons able to comprehend pronouncements from psychology is gradually restricted to the set of persons identified as professional

[10] Hence Freud is rejected from the canon of academic psychology quite early (eg, Joseph Jastrow in 1935 says, "Freud has ignored the academic psychologists and they have returned the compliment. They find his premises so unsupported by any naturalistic foundations, his conclusions so vitiated by false logic, that most of them reject his structure completely" [Jastrow 1935, 266]. Nonetheless, Freudian psychoanalysis remained a tool of the practicing psychiatrist. Like the doctor, the psychiatrist is pragmatic: use matters more than truth, and if it emerges that some practical benefit can be wrought from an understanding of the human mind-brain, then so be it, but therapeutic application is by no means the chief aim of psychology.

[11] One commentator notes that "[i]t is entirely possible that 1930s editors did not know the difference between a psychologist and a psychiatrist" (Burnham 1987, 99); although it seems a safe wager that even today most people would have an only vague idea.

psychologists: for the process of professionalisation and eventual scientisation also marks a shift in the nature of the popularised material issued by psychologists, so a secondary effect of Woodward's distinction between professionalisation and scientisation (mentioned above) is to help to identify the point at which popularisation becomes more than abbreviation – that is, the point at which the professional language of the discipline's practitioners becomes (largely) incomprehensible to non-specialists coincides with the point at which that discipline has become scientific. The emergence of experimental psychology in the 1890s, replacing the old "sciences of the mind"[12] and providing a platform from which to reject or accept existing theories of mind such as phrenology or mesmerism, marked the inauguration of a new academic discipline and therefore a subject-matter requiring (and capable of receiving) popularisation. At this point, the popularisation serves a secondary function: not just the dissemination of ideas, but also the translation of those ideas into a form that the (non-specialist) public can understand. So the popularisation of psychology was delayed (relative to the popularisation of theoretical biology, for example) not because psychologists were unwilling to popularise, but simply because there was very little to announce that was not already known by the intelligent reading public.

It is at this point that John Burnham's contribution to this story begins. Burnham points out that "for much of the nineteenth century it was not possible to popularize psychology. What psychology there was,

[12] E. W. Scripture's expositions of the emerging discipline in *Thinking, Feeling, Doing* (Scripture 1895), a successful popularisation, and his subsequent technical work, *The New Psychology* (Scripture 1897), show that experimental psychology was becoming distinct from philosophy of mind at the end of the nineteenth century. Lorraine Daston charts the philosophical positions underpinning this shift in "The Theory of Will versus the Science of Mind" (Daston 1982).

was common property among educated people" (Burnham 1987, 85).[13] In other words, until relatively recently, there was nothing sufficiently distinctive about psychology that would warrant its diffusion, nor anything so specialised that would demand translation: "Only beginning in the 1880s did a specialized experimental psychology begin to appear that was not already in the possession of the literate public, and therefore only then was there a psychology that could be popularized" (Burnham 1987, 85). However, the emergence of the professional and distinct disciplines of psychology and psychiatry alongside the popular dissemination of each (both together and separately) has resulted in a confused definition of what counts as "popular psychology." Because what "psychology" referred to included much of what is now psychiatry, "popular psychology" covers not only the popularisation of the science of psychology, but also the popularisation of psychiatry, therapy, self-help, and so-called success literature. The imprecision of the vocabulary is such that any version might be labelled as "popular psychology," an ambiguity which conceals important differences between the aims and effects of each mode. For this reason, it makes sense to distinguish between the various senses. What follows is a basic typology of popular psychologies, so as to clarify these senses.

A basic typology of popular psychologies

1. naïve / homespun / folk psychology

The "homespun wisdom" of the folk psychologist is of little concern here, but is mentioned as it forms the background against which the other two categories define themselves. Folk psychology refers

[13] He goes on to add that "Technical psychology would at most have been a subfield within philosophy. It was not until specialized, distinctive, scientific psychology came along at the end of the century that psychology could be translated, condensed, and simplified for lay people." (Burnham 1987, 85)

to the theory of mind that people have prior to serious investigation. It is untutored knowledge which defines itself in opposition to academic book-learning and to laboratory experiment, but which has shown itself through experience to be effective advice. The product of acquired folk knowledge is practical wisdom. The theoretical element is minimal, and implicit. Instead, folk psychology is entirely about the dispensation of useful advice, it is entirely pragmatic. It has no need for theories which have no application (e.g., the "problem" of consciousness is no such thing).[14] There is consensus in folk psychology, but the knowledge is person-centred (embodied) rather than externally codified in books (disembodied). Also, it is matriarchal and maternal – a valence fleshed out in the figure of the "Agony Aunt" who offers folk wisdom to readers in newspapers and magazines. Folk psychology marks out a continuum from grandmotherly advice at one end to quasi-professional advice at the other. Characteristically, even when a psychological theory underlies the folk wisdom, it will not be explicitly invoked. Official qualifications are concealed, and advice is offered horizontally (that is, as between persons of equal status and learning). Where the dispensers of such advice begin to display official titles, the material qualifies as therapeutic psychology.

[14] Some of the tenets of a folk psychology rely on metaphorical devices which have also appeared in various incarnations of technical psychology: the hydraulic theory, for example, which views "pressure" as "building up" unless you "let it out." Such theories attribute to psychological phenomena the properties of decomposing organic matter. As if the "accumulation" of "bad" thoughts was strongly analogous to the accumulation of necrotic tissue and equally likely to lead to more generalised poisoning unless the toxins are removed. As if "talking about it" was in some sense a (physical) "release." Whilst we recognise the inaccuracy of such language, nonetheless, therapy is predicated on just such a claim to this day.

2. therapeutic “pop-” psychology (self-help)

The category of therapeutic literature is very broad, and most of what is usually referred to as “popular psychology” would be included here. Curiously, very few of the authors are psychologists, but a considerable number are (or were) psychiatrists. What passes for “popular psychology” could usually be better characterised as popular psychiatry. There is a broad spectrum of material here, from naïve psychology up to professional psychiatry. Some of what is often called spiritual literature would also be covered under this heading where the psychiatric blurs into the religio-philosophical (Buddhism, Taoism, and so on). Some fictionalised material might also be included (for example, *The Celestine Prophecy* [1994] and its sequels). The overwhelming majority of this category, however, is occupied by “self-help” or “success” literature – books which offer advice for living based upon (and usually supported by) psychiatric practice, but designed to be performed by the reader within their own life, without the need for professional counselling. Although they might seem to risk leaving their authors redundant (assuming, that is, they still function as practising psychiatrists and therapists), these books instead seem to sustain respect for the profession they represent – trading upon and reinforcing the category of psychological or psychiatric expertise. This is bolstered by academic qualifications, which – even if inappropriate – are prominently displayed, further legitimising the advice. Examples[15] include: Milton R. Cudney, Ph.D, and Robert E. Hardy, Ph.D (1991) *Self-Defeating Behaviors: Free Yourself from the Habits, Compulsions, Feelings, and Attitudes That Hold You Back*; Penelope Russinoff Ph.D’s (1988) *When Am I Going to Be Happy? : How to Break the Emotional Bad*

[15] Selected at random from Amazon.com, searching by “self-help.”

Habits That Make You Miserable; or Dr Arthur Freeman's (1992) *10 Dumbest Mistakes Smart People Make and How To Avoid Them : Simple and Sure Techniques for Gaining Greater Control of Your Life*. In addition to the academic titles, the book titles here are quite typical – the emphasis is on reader participation. The direct address will be employed and readers are encouraged to perform thought experiments and exercises. This is instructional literature. The canonical self-help book is Dale Carnegie's *How To Win Friends and Influence People* ([1936] 1982) a phrase which – like Dupont's "Better Living Through Chemistry" – has come to achieve aphoristic status. The nineteenth- and early-twentieth-century predecessor to self-help was what is sometimes called "mental hygiene" – this being the maintenance of mental health through psychology. Although there are stylistic changes, the modern self-help publications can be seen as the descendants of the earlier mental hygiene texts.

3. popularisation of (scientific) psychology

The popularisation of the science of psychology is intended to be educative and edifying, setting itself against the therapeutic material offered as "popular psychology" and preferring to align itself with Dawkins's popularisations of evolutionary theory or Hawking's popularisation of cosmology. In other words, the popularisation of psychology is a token of popular science writing, not a token of popular psychology (hence the awkward terminological overlap). Popularisations of psychology will discuss more theoretical material, condensing and simplifying academic psychology. Of course, this will involve many of the same subject headings as can be found within the therapeutic literature, including memory, sexuality, violence, stress, and so on, but in terms of

theories about how the brain responds to certain stimuli. Additionally, there will be much on topics which are rarely touched upon by therapeutic or folk psychology: vision, consciousness, the physical structure of the brain, the evolution of cognition, and so on. The participatory element is minimal or absent altogether, and there is little in the way of explicit practical advice on how to apply the lessons of psychology to life. Information is dispensed top-down, which is to say, the writer is an expert (or has access to expertise) that qualifies them to pronounce authoritatively as representatives of the science they are describing. That being said, unlike the prominently displayed academic and professional qualifications appended to author's names in the self-help books, in the popularisation of the science of psychology, titles are rarely if ever employed.

In keeping with vernacular designation, I will refer to the first of these categories as "folk psychology," the second as "popular psychology," and the third as "popularisations of psychology." A typology like this does not purport to identify absolute and immutable categories (it describes the situation as it stands – these categories would not be so recognisable in 1900 as they were in 2000). Instead, it is intended to underscore the differences between the various activities and practices included by the extension of "popular psychology," and in recognising this, to acknowledge that what is a useful or appropriate in the content and style of a text will be dependant upon the broader intentions of its author. That said, this pattern of division is repeated to some degree elsewhere. For example, what is called "popular astronomy" refers not to popularisations of the science of cosmology (eg, *Afterglow of Creation* by Marcus Chown [1996]), but rather to amateur star-gazing – advice on where and when particular celestial phenomena will be visible, and what

type of equipment you will need to see them (eg, *The Backyard Astronomer's Guide* by Terence Dickinson and Alan Dyer [2002]). At the non-academic (that is, folksy) end, astrology offers a version of the universe into which humans more snugly fit, re-personalising cosmology against the Copernican tradition of decentring. As with psychology, it is possible to separate out the theoretical-educative from the utilitarian-instructional material, and from both of these, the superstitious-folk belief, where little or no trace of the science can be found. Common to these typologies is a continuum of epistemic value, ranging from professional, impersonal, academic material across to personal, spiritual, non-academic theories (astrology, folk wisdom). Separate from either is the participatory element: the self-help book, the amateur astronomy book, the field guide to British birds.

Stephen Hilgartner (1990) argues that keeping the amateur and the professional domains (conspicuously) separate is actually one way of creating and sustaining respect for the scientists whose work is being popularised. In criticising the so-called dominant view of popularisation,[16] Hilgartner sees a separation between expert and popular chosen less for its descriptive accuracy than for its strategic value for science. By enforcing a strict (but actually unmarked) division between popular science and science proper, those with an interest in maintaining the power of science can do so by exploiting the prestige added to science by popularisation – proper science is inaccessible to non-scientists, which (as Hilgartner puts it) "buttresses the epistemic authority of scientists against challenges by outsiders" (Hilgartner 1990, 530). So the less the reader feels able to participate, the more intelligent the scientist seems.

[16] The so-called dominant view is "the idealized notion of pure, genuine scientific knowledge against which popularized knowledge is contrasted" (Hilgartner 1990, 519). It is not entirely clear this really was the dominant view (even in 1990), but it does provide a stable target for criticism.

Loosely, this correlates with the familiar SSK argument that “distance lends enchantment” (e.g., Collins 1992, 145).

Whilst it is worth being aware of how the professional scientist can choose to selectively remind an audience of his or her status in order to secure privileges, it ought to be clear that stories about the difficulty of science are not simply a public relations exercise designed to make scientists appear more clever than they really are: science, like most all professions, is also very difficult and achieving a good level of comprehension requires a commensurate amount of study. The popular-professional boundary, however fuzzy, records a substantive difference in content: Edward Witten’s technical papers on string theory are inaccessible to non-physicists (e.g., Witten 2004). This is neither a ruse nor a rhetorical trick. The very act of popularisation itself exists as a response to just this sort of technical complexity. In light of this, it is worth noting that certainly the third category mentioned above, and some of the second, are historically new, inasmuch as the existence of a psychology that required popular translation did not really exist until the early twentieth century.

The type of popularisation Burnham is principally concerned with is this third category, and the decline in quality he detects in the popularisation of psychology involves slippage into the former category, along with the evaporation of any theoretical framework within which the material might be usefully presented. The story is one Burnham repeats for each of the fields of science and health popularisation he encounters – initial popularisations are involved and intelligent (he cites E. W. Scripture’s 1895 *Thinking, Feeling, Doing* as especially commendable [Burnham 1987, 89][17]), but the general quality of such material gradually decays:

[17] Although *Thinking, Feeling, Doing* sold 20,000 copies during its first five weeks of publication (Burnham 1987, 89), it is not clear that Scripture’s fellow professionals were

> By mid-century, the very nature of publicizing psychology had changed significantly. … [L]ong, systematic articles in essentially high-culture magazines … almost disappeared. Instead the style of journalism predominated… and it was in this context that the results rather than the process of doing psychology were emphasized. Moreover, these results were presented in short, interesting snippets unrelated to one another but widely distributed. (Burnham 1987, 105)

His complaint continues: "Thoughtful pieces, however, were more and more restricted to profess//sional or very highbrow outlets. Even the semiofficial popularizations of Science Service at no time confronted basic problems at length" (105-106). The result of this was the "fragmenting of popularizations so that each result … was not connected to psychology as a whole" (109). Ultimately, as for health and the natural sciences, popularisation consisted of nothing more than facts, such that "[b]y the 1960s and 1970s, the large volume of popularized psychology … embraced no great themes" (115). By the mid-1980s, all that remained was "the bits-and-pieces strategy of presenting science" (Burnham 1987, 234).

In an age where attention spans had been clipped by "television's relentless promotion of so-called entertainment" (Burnham 1987, 235), Burnham contends that the qualitative decline in the popularisation of science would continue inexorably. The tone at the end of his book is elegiac: though there "were still a few" science popularisers willing to provide readers with detailed expositions and theoretical orientation (towards "truth," away from "mysticism, irrationalism" [Burnham 1987, 261]), "these surviving men and women of science were swamped" (261) by "narrow technicians without a calling" (262). Burnham closes with the

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so impressed: a contemporary reviewer is disparaging of Scripture's inability to clarify his terms, concluding: "Let us devoutly hope that Dr. Scripture will never write a dictionary" (Washburn 660).

melodramatic contention that “science probably did not exist any longer on the popular level. Superstition did” (262).

That he chooses to cast this projection in the past tense is significant, indicating that he thinks a return to the “old values” is improbable. The man of science was a nineteenth century phenomenon, an impossible anachronism in the hyper-specialised late twentieth century. But only a few years after the publication of *How Superstition Won* (1987), Burnham’s pessimism seems misplaced. The popularisation of the natural sciences, and especially the popularisation of the science of psychology, seems to have undergone exactly the type of renaissance Burnham thought prohibitively unlikely.

A careful reading of one recent and successful popularisation of psychology, Steven Pinker’s *How The Mind Works* (1997), reveals that (supervenient) theoretical orientation is a distinctive characteristic of the modern popularisation of psychology. An analysis of the ways in which Pinker interpolates facts and theories (in comparison with earlier versions of popularised psychology) reveals an awareness of the various levels of popularisation, and an advanced ability to switch between levels of technicality and maintain a consistent position with respect to the theory upon which the facts are predicated.

PART II

Steven Pinker’s Popularisation of (Evolutionary) Psychology

A successful academic, Pinker found popular acclaim with the publication, in 1995, of *The Language Instinct*, a lengthy exposition of the consequences of Chomsky’s theory of Universal Grammar. *The Language Instinct* was almost universally praised for its humour and expository clarity. Pinker’s success with *The Language Instinct* led to a

further publishing deal for a book that explored the wider consequences of the neuroscientific and evolutionary perspective from which *The Language Instinct* had been written. Introducing *How The Mind Works*, Pinker makes it clear that this is to be thought of not as a new direction (that is, from the narrow field of linguistics to the much more inclusive subject matter of psychology), but simply as a continuation of the previous work: "There is no chapter on language. My previous book *The Language Instinct* covers the topic in a complementary way" (Pinker 1997, *x*).[18] As far as Pinker is concerned, the argument of *How The Mind Works* is a conclusion that follows naturally from *The Language Instinct*: those who agreed with the first book (and most reviewers seemed to) would logically agree with the second.

Unfortunately, this was not to be the case. *How The Mind Works* met with much harsher criticism than Pinker's previous book. *The Language Instinct* was relatively modest in scope, but *How The Mind Works* was much more ambitious. *How The Mind Works* was widely perceived as reductionist and simplistic, despite employing the same philosophical and scientific foundations as *The Language Instinct*. Most of the reviewers found fault with specifics. Typical is John Dupré (reviewing the book for *Philosophy of Science*) who, after first praising Pinker's expertise in linguistics, describes *How The Mind Works* as "going rather beyond these disciplinary specializations" (Dupré 1999, 489), and finds Pinker writing on subjects in which he is insufficiently expert: "In some cases, Pinker evidently understands, and explains, the science well; in other cases, even apart from the embarrassing ventures into aesthetics and philosophy in the final chapter, it's not obvious he knows what he is

[18] As Pinker explains in his online biographical sketch: "*The Language Instinct* was an introduction to all aspects of language, held together by the idea that language is a biological adaptation. This was followed in 1997 by *How the Mind Works*, which offered a similar synthesis of the rest of the mind, from vision and reasoning to the emotions, humor, and art."
(from: *http://pinker.wjh.harvard.edu/about/longbio.html* [January 2006])

talking about" (Dupré 1999, 489). He concludes that "The end result does not begin to justify the book's ambitious title" (Dupré 1999, 493). Literary reviewers enjoyed the sections on brain functioning, but found the value-free account of art and literature weak (one critic said Pinker had "the literary taste and judgement … of an undergraduate"[19]).Meanwhile, behavioural scientists admired the manner in which Pinker explained how the "Magic-Eye" stereogram images worked, but criticised his account of human kin relations for being excessively general.[20]

Anticipating criticism for being too inclusive (and consequently too general), Pinker inserts a disclaimer on the first pages:

> Any book called *How The Mind Works* had better begin on a note of humility, and I will begin with two.
>
> First, we don't understand how the mind works – not nearly as well as we understand how the body works, and certainly not well enough to design utopia or to cure unhappiness. Then why the audacious title? The linguist Noam Chomsky once suggested that our ignorance can be divided into *problems* and *mysteries*. When we face a problem, we may not know its solution, but we have insight, increasing knowledge, and an inkling of what we are looking for. When we face a mystery, however, we can only stare in wonder and bewilderment, not knowing what an explanation would even look like. I wrote this book because dozens of mysteries of the mind, from mental images to romantic love, have recently been upgraded to problems (though there still some mysteries, too!). Every idea in the book may turn out to be wrong, but that would be progress, because our old ideas were too vapid to be wrong. (Pinker 1997, *ix*)

What Pinker is offering the reader here is presented as a provisional answer, couched in terms of what we don't know rather than what we do.

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[19] The complaint runs: "His literary taste and judgement seem those of an undergraduate who is extraordinarily bright but who is much more sensitive to computers than to poems, plays, or novels" (Carroll 1998, 479).

[20] Richard Dawkins is admiring of Pinker's explanation of stereoscopy, referring readers to *How The Mind Works* and adding: "I won't even try to better his explanation" (Dawkins 1998, 278).

The emphasis is on degrees of ignorance – but he's not claiming that everyone is equally wrong. So for everything "we may not know" we still have "increasing knowledge." It's not altogether clear which groups the inclusive pronoun cover. The "we" who admit at the outset that they don't understand how the mind works are Pinker and his professional colleagues. The "we" who stare at mysteries in "wonder and bewilderment" is all of us, professionals and lay-readers alike. And the we who hold the "old ideas" are everyone except the professionals who concur with Pinker. By "our old ideas" he means folk psychology and what Burnham would call superstition, and it is this residual belief structure that the book aims to update.

It must be stressed that what Pinker wants to do in *How The Mind Works* is replace the various theories of mind (in both the public domain and within academic psychology) with one coherent theory of mind. What he wants to achieve is a wholesale replacement of the existing heterogeneous belief systems with a monistic and scientifically credible system, namely, that of evolutionary psychology. To this end, along with being a complementary volume to *The Language Instinct*, *How The Mind Works* is also a complementary volume to E. O. Wilson's *Consilience* (published a year later in 1998), to Matt Ridley's *Origin of Virtue* (1998), to Helena Cronin's *The Peacock and the Ant* (1993), and (in a less populist, though by no means inaccessible form) to the work of the evolutionary psychologists Leda Cosmides and John Tooby, notably their 1992 collection, *The Adapted Mind*. Pinker acknowledges his debt to Tooby and Cosmides at the start of *How The Mind Works*,[21] and would later contribute a positive review of Wilson's *Consilience*.[22] *How The Mind*

[21] "I have intellectual debts to many … but most of all to John Tooby and Leda Cosmides" (Pinker 1997, *x*). See also Pinker [1994] 1995, *x*; and the dedication in *The Blank Slate*, which is to "Don[ald Symons], Judy[Judith Rich Harris], Leda [Comsides] and John [Tooby]" (Pinker 2002).
[22] See: *http://slate.msn.com/id/3057/* (at January 2006).

Works relies heavily on references from fellow evolutionary psychologists. This type of mutual consistency is one of the tenets of evolutionary psychology, it is the same one-size-fits-all approach that Wilson had employed in *Consilience* (his attempt to unify the disciplines). It is also the hallmark of the inclusive (or reductionist) attitude of Tooby and Cosmides, who call it “conceptual integration” (in Barkow, Cosmides, and Tooby 1992, 4) and maintain that by following this program the humanities and social sciences will enjoy the type of theoretical consistency across scales typical of the natural sciences. The downside to conceptual integration is that disciplines further up the hierarchy arbitrate what the lower disciplines can legitimately say. What this means in practice is that proposing “a psychological concept that is incompatible with evolutionary biology is as problematic as proposing a chemical reaction that violates the laws of physics” (in Barkow, Cosmides, and Tooby 1992, 4). In other words, for a psychological claim to be valid, it must be checked not just against physical possibility, but also against adaptive plausibility. In their essay “The Psychological Foundations of Culture” (in Barkow, Cosmides, and Tooby 1992, 19-136), Tooby and Cosmides lay out something of a manifesto for evolutionary psychology. Their title should make clear how such thinkers conceive of culture as a product of human psychology (and not the other way around). In turn, they believe that psychology is inextricable from evolutionary history.

It is important to set *How The Mind Works* in the wider context of these works. Together, they constitute a claim on the popular imagination – they form a mutually reinforcing belief system. Pinker is consonant with E. O. Wilson, Wilson is consonant with Richard Dawkins (1998), Dawkins is consonant with Matt Ridley. Open almost any page of *How The Mind Works*, and there will be some word of support for the evolutionary psychological position being pushed:

> The ultimate goal that the mind was designed to attain is maximising the number of copies of the genes that created it. (Pinker 1997, 43)

> …our understanding of how the mind works will be woefully incomplete or downright wrong unless it meshes with our understanding of how the mind evolved. (Pinker 1997, 174)

> In evolutionary terms, a man who has a short-term liaison is betting that his illegitimate child will survive on its own or is counting on a cuckolded husband to bring it up as his own. (Pinker 1997, 476)

As far as Pinker is concerned, the equality of mankind is a natural (and scientifically verifiable) consequence of the equality of human minds. The human mind, as Tooby and Cosmides put it, is always and everywhere the same. Repeatedly, Pinker makes reference to the universality of his conclusions – the following quotations issue from a single page: "people in all societies… . And people everywhere… . We will soon see that all people… . We are all… . Thanks to these inborn talents, we…" (Pinker 1997, 301). Tacking away from a direct explanation of mental function, he even includes a chapter on human evolution ("Revenge of the Nerds" in Pinker 1997, 149-210), which concludes by saying: "nothing in culture makes sense except in the light of psychology. Evolution created psychology, and that is how it explains culture. The most important relic of early humans is the modern mind" (Pinker 1997, 210). The formulation here is exactly as prescribed by Tooby and Cosmides' essay, "The Psychological Foundations of Culture." Throughout the book, and especially towards the end, the term "adapted mind" is used interchangeably with "mind." There is little evidence of a psychological vocabulary distinct from the vocabulary of evolutionary development because (as far as Pinker is concerned) there is no way of talking about the mind that is not also talk about evolution. What the reader comes to

realise is that what promotes itself as a book about general psychology is actually a book about evolutionary psychology.

It is in this sense that Pinker's *How The Mind Works* stands as a case against Burnham's pessimistic view of the popularisation of psychology. Again, as mentioned before, the intention here is not to suggest that Burnham was wrong when he wrote *How Superstition Won*, rather that the popularisation of psychology (and perhaps the popularisation of science more generally) has undergone a marked development since the time he was writing. Pinker's style of presentation is a relatively new phenomena, and one which Burnham would presumably welcome. The popularisation of psychology was not always so successful in presenting a unified picture of the discipline – nor did it always have such a clear candidate for a theory capable of performing such a unification.

A tidy comparison presents itself here with another version of *How The Mind Works* – this one published some sixty years earlier, in 1933, and compiled by the then-comparably famous (and now somewhat more notorious)[23] psychologist, Cyril Burt. A sample of two is obviously too narrow a data set to allow for definitive conclusions, but this comparison should be sufficient to give a sense of the ways in which the popularisation of psychology has developed in contrast to Burnham's

[23] Burt's notoriety is an unfortunate but ultimately irrelevant issue here. The charges brought against him after his death – that he fabricated experimental evidence in studies of the correlation of intelligence in sets of identical twins – relate to events that occurred much later than the composition and publication of his version of *How The Mind Works* (1933)(which in case makes no mention of twin studies) and have recently been re-examined in light of the production of very similar but indisputably legitimate results obtained by David Lykken's team at Minnesota, and Pinker's own team in Harvard. That Pinker and Burt share this research interest and theoretical position on the inheritance of mental characteristics is interesting, especially as Pinker makes no mention whatsoever of Burt in any of his several books, even those (*How The Mind Works*, *The Blank Slate*) whose content bears directly upon twin studies. There is scope here to examine the treatment of soiled reputations and scandals by popular writers looking to assure an increasingly sceptical public that science is legitimate – however, it is not something that falls within the scope of this paper. (For discussion of Burt's reputation, see N. J. Mackintosh [1995] *Cyril Burt: Fraud or Framed?*)

pessimistic view of its inevitable decline; cleaving away from what is now popular psychology and moving to a position where (again, albeit controversially) it is able to claim theoretical harmony with the wider field of the natural sciences.

A Short Comparison: Burt and Pinker

At the time *How The Mind Works* (1933) was published, Cyril Burt was Chair of Psychology at University College, London, a position he would hold until his retirement in 1950. This was a highly esteemed post (Robert Joynson describes it as “effectively the top job in British psychology” [Joynson 1989, 11]), and in addition to this professional achievement, Burt’s public standing was such that he was knighted in 1946 (one year, incidentally, after the second edition of *How The Mind Works* [(1933) 1945] was produced). There can be little doubt that at the time Burt put the book together, and for some time afterwards, he was a prominent figure in (at least British) psychology. Similarly, Pinker’s own *How The Mind Works* (1997) was written when he was Professor of Brain and Cognitive Sciences and the director of the McDonnell-Pew Center for Cognitive Neuroscience at MIT (1994-1999). Both men are high status psychologists writing books explaining the state of their art for a general readership.

Owing to press coverage and it’s comparatively recent publication, Pinker’s book is (relatively) well known to modern audiences (see Cassidy 2005). It appears that Burt’s *How The Mind Works* ([1933] 1945), enjoyed similar popular success: it was republished in a second edition after the war (1945), and ran through several impressions (until at least

1948).[24] But although Burt's book was described as "stimulating" in one very brief review (Groves 1934, 311), it seems that, like the reaction to Pinker's book, the academic community were more sceptical. In a review disparaging of several other popular works, L. L. Bernard, writing in *The American Journal of Sociology* (1938), ranked Burt's book low: "Even less useful [than the other books reviewed here] is *How The Mind Works*. I am convinced that minds do not work in the manner described in this recent addition to the mythology of dominant instincts" (Bernard 1938, 659).

As if to emphasise the fractured nature of the discipline it represented, Burt's *How The Mind Works* ([1933] 1945) was actually a multi-authored composite, adapted from a series of talks given for the BBC by himself and by fellow psychologists Ernest Jones, Emmanuel Miller, and William Moodie. It is unclear if this is a selection Burt has made, or one thrust upon him by the BBC, for the authors have such different approaches to psychology that it becomes difficult to define where the boundaries of psychological work should be drawn. It is also worth noting that of the four contributors, only Burt would be considered a psychologist today – Jones was a psychoanalyst, and both Moodie and Miller were psychiatrists. By the time Pinker is writing, the distinction between therapeutic and scientific psychology is sufficiently sharp that most readers will not be expecting his version of *How The Mind Works* (1997) to include instructional material.[25] Burt, on the other hand, was writing at a time when the distinction between psychology and psychiatry was less clear.

[24] Published first as BBC pamphlet, subtitled "A Series of Talks Broadcast on Tuesdays, From 27th September to 13th December, 1932." Subsequently by Allen and Unwin, London in 1933, 1945, 1948.

[25] Although that said, a magazine was launched in the UK in October 2005 called *Psychologies* [as opposed to "Psychiatries"], offering a combination of interactive questionnaires and psychological explanation for the results – all of which blurs the distinction some more.

Burt and the Scientisation of Psychology

In the early 1930s, it was not clear to the public if psychology was a medical or an academic discipline, nor was it clear to what extent psychology was identifiable with philosophy of mind and introspection. One of Burt's tasks was to clarify these positions, and to insist on the importance and autonomy of psychological research. In editorial terms, here was where Burt was able to influence the reader's sense of where psychology was going. Between the Freudian-therapeutic and empirical-neurological directions, his preferences seem quite clear, as can be seen in the following passage:

> Modern civilisation is based on science; and it is our belief, if that civilisation is to continue, scientific thinking must be applied to man as well as to inanimate nature. The methods that have revolutionised agriculture, industry, medicine, and war, must be adopted for the study of ourselves – of the individual, the family, the nation, and the race. Already psychology is beginning to affect us at many different points. Its discoveries are being employed by teachers, doctors, and men of business, in their own particular fields. Educational psychology has improved the means by which we train the child // at school; vocational psychology will soon be deciding his future occupation and career; industrial psychology is introducing more efficient methods into factories, workshops and mines; medical psychology is diagnosing, and finding how to cure, the most terrible afflictions of all – those of the mentally diseased. And the plain man at last has started to inquire, what is this novel, self-styled science of which he is hearing so much? Is it quackery? Is it a fad? Or is it just sheer common sense? (Burt [1933]1945, 7-8)

This is only prefatory material, of course, so Burt moves quickly over these points, without dwelling on any specifics, but nonetheless leaving us with the sense that psychology is doing great things. When we look again, we realise that these claims are carefully limited and conditional on the tense of the verb. Psychology and its practitioners "are being employed," "has improved," "will soon be," "is introducing," "is diagnosing,

and finding how to cure." Psychology is dynamic and progressive, but its actual achievements are apparently slight. The notably sluggish part amid this swift progress is Plain Man, who only now "at last has started to inquire." But despite this tardiness, Plain Man is presumably a forward-looking character, for he is expected to be impressed by the study's potential. The emphasis is all on the future value of psychology.

Burt was trying to convince his audience that a scientific psychology was both possible and desirable. He makes us aware that he knows we have our doubts ("Is it quackery?" wonders Plain Man), but wants to persuade us that psychology is important. This was done (in part) by establishing psychology's claim to be a global study. Education, medicine, business – all would be (or are even in the process of being) affected by psychological insights. In short, whatever people do they do with their minds, and as psychology is that discipline which studies minds, psychology will therefore be indispensable for the modern age – which is, we are reminded, a scientific age. This is briskly established by way of an appealingly neat argument to the effect that the advance of modern civilisation can be measured by technological sophistication, and that technological sophistication, in turn, is a product of scientific thinking, therefore, scientific thinking is the driving force behind the advancement of modern civilisation. Having established that psychology is almost universally applicable to the modern age and that modernity is "based on science," the next step was to stress the scientific character of the study.

In part, this had been facilitated already with the introduction of Plain Man, creating a division between public and professional and making room for a category of psychological expertise above and beyond what we already, intuitively or through experience, knew of the mind (recall that one of Plain Man's concerns is that psychology may be no more than "sheer common sense"). Psychologists would soon be the expert-scientists of the human mind – and as if to reinforce the

importance of this enterprise, Burt went on to claim that “The proper study – indeed the inevitable study – of mankind is man” (Burt [1933] 1945, 8). To further disarm charges that psychology was no more than common sense, Burt relied on analogies with the physical sciences: “Common sense alone will no more enable us to fathom the mysteries of the human consciousness than it has helped us to solve the problems of the atom or the star” (Burt [1933] 1945, 8). The ostensive purpose was simply to show how inexpert intuition is too blunt a tool to perform all tasks, but the analogy is deliberately bundled up with and reinforces connections to the sciences: intuition and common sense obviously couldn’t help the physical sciences, and they cannot much help psychology, either, for it was as much a science as physics.

Further emphasising the scientific character of psychological research (and bringing Plain Man up to date), Burt stressed that psychology had “changed from a branch of philosophy into a branch of experimental science” (Burt [1933] 1945, 8), with laboratories containing “the most up-to-date apparatus,” “materials and equipment for technical research,” much of which, apparently, “he has borrowed” from physics and from chemistry. In addition, there were the “latest hypotheses” from biology, and the “most rigorous devices for checking the truth of his data” – these last being somewhat unlikely borrowings from mathematics (Burt [1933] 1945, 9; the “devices” in question were presumably statistical tools, rather than physical ones). The superlative character of these (only vaguely described) research tools was important, as were their origins in the hard sciences: if psychology was able to employ the same tools as the hard sciences, then surely psychology was the same *type* of study.

But Burt’s efforts to make the discipline appear rigidly scientific were undercut by the material contributed by the other authors. Because Miller, Moodie, and Jones were practising psychiatrists, their material tended towards the instructional. In terms of the tone and purpose of

Burt's book, this produces some confusion between the descriptive and the didactic. Those sections which are explicitly instructional (offering practical advice to the readership on such matters as raising a child) frequently rely on dispensing practical advice supported not by experimental data but by normative claims and anecdotal evidence. This is typical of psychiatry (as a discipline steered by pragmatism: by utility rather than epistemology), but jars with Burt's claims for consistency with the natural sciences, where normative claims are anathema. The material in Emanuel Miller's sections on "Problems in the Development of the Child" demonstrate this:

> For example, a child who is taught in an unemotional manner to eat in a clean way and at regular intervals, will not be the child with food fads. But if the child is made to take his meals in the midst of his play, when he is enjoying the pleasures of spontaneous activity, he will be inclined to have dyspeptic ill health… …errors of this kind lead to false associations in the simple but direct mind of the child, which will create faulty attitudes in later life. (Miller in Burt [1933] 1945, 121-122)

Miller concludes that "the mother is herself to blame. … A great deal of re-education will be necessary to correct these initial mistakes" (Miller in Burt [1933] 1945, 122-123).

Burt and Pinker: The Assimilation of Folk Psychology

It is precisely this type of instructional discourse that Pinker's generation of psychologists see themselves in opposition to. At first blush, it might seem that Pinker's views on parenting are equally didactic:

> A parent should transfer investment from an older child to a younger one when the benefit to the younger exceeds the cost to the older. The reckoning is based on the fact that two children are

> equally related to the parent. But these calculations are from the parent's point of view; the first child sees it differently. … The tension is called parent-offspring conflict. (Pinker 1997, 441)

It is apparent that "should" here plays a very different role than it did in Burt's book: the normative force is not social, but statistical. The normative element present in much of the writing from Burt's *How The Mind Works* ([1933] 1945) is (almost) entirely absent from Pinker's. He later underlines that normative terms are being used in a very limited sense:

> When I use terms like "should," "best," and "optimal," they will be a shorthand for the strategies that would have led to reproductive success in that world [i.e., the Pleistocene savannah]. I will not be referring to what is morally right, attainable in the modern world, or conducive to happiness, which are different matters altogether. (Pinker 1997, 468-69)

Regarding disagreements about parental investment, Pinker stresses his disinterested position: "I mention these debates not to take a side but to call attention to the long reach of the parent-offspring conflict" (Pinker 1997, 451). Such an attitude plays an additional role: note that "child" is often "offspring," further naturalising the issue and eliding the socio-cultural content of the subject. Pinker's naturalistic approach is offered as a release from the type of evaluative, didactic rhetoric favoured by Miller: "The evolution-free discourse that has prevailed for decades has treated childrearing as a technological problem of determining which practices grow the best children" (Pinker 1997, 451).

Pinker is well aware that acceptance of the (new) evolutionary view will be contingent on the rejection of long-held traditional folk beliefs about parenting. For those who suspect this issue is a social not scientific one, Pinker tries to offer a wider definition of what types of questions scientists (including psychologists) can and should ask: "The idea that parents

shape their children is so ingrained that most people don't realize it is a testable hypothesis and not a self-evident truth" (Pinker 1997, 448). He goes on to show that this hypothesis has been tested, and found wanting (if not quite falsified): "Judith Harris has amassed evidence that children everywhere are socialized by their peer group, not by their parents" (Pinker 1997, 449). Note that this is an empirical claim ("amassed evidence") supported with reference to a named researcher (additional scholarly apparatus is included at the end of the book). This line between convention – the folk wisdom – and empirical scientific fact is one that Pinker treads carefully. In this case, it is clear that he wants to privilege the claims of researchers sympathetic to the evolutionary view – but he is by no means dismissive of folk wisdom.

Pinker and Burt's respective discussions of art (Burt [1933] 1945, 267-310; Pinker 1997, 521-565) are illustrative of how each treats of the relation between folk wisdom and scientific psychology, and merit some closer analysis. For a start, the range of reference is very different. Burt's examples were almost exclusively high-culture: Rubens, Turner (Burt [1933] 1945, 273), Robert Louis Stephenson (274), George Eliot (275), Botticelli, Bach, Shakespeare (279). Pinker's references are far more catholic – television shows alongside comic books, pop songs alongside literary references.[26] Oddly, this is something Pinker has received criticism for (for example, literary critic Joseph Carroll complains that "there is little evidence that [Pinker's] familiarity with most of the works he quotes extends very far beyond the quotations" [Carroll 1998, 479]), but Pinker's reasons for using such a broad range of references has little to do with proving to his readership how much he has read. To criticise the depth of Pinker's engagement with the material is to miss the point.

[26] Woody Allen (Pinker 1997, 542), National Lampoon's movies (*Animal House* [548]), pop songs (Bob Dylan and Lou Reed [535]), and, sprinkled among them, some quotations from canonical literature (Shakespeare [528], Dryden [539], Joyce [541], and Kafka [541]).

These references are not simply about making the text more “amusing” or more “populist.” Instead, they serve an important function incorporating (and retaining) the wisdom of folk psychology within the knowledge of scientific psychology. Rather than set tradition against science, Pinker carefully selects material sympathetic to a scientific explanation. These non-scientific elements – an apposite quote from Woody Allen, for example – are used to prepare the ground for an explanation of the same phenomenon derived from evolutionary biology (e.g., Pinker 1997, 467). Pinker’s use of jokes, aphorisms, and quotes also enables him to appease those readers who may feel slighted at the substitution of folk psychology for scientific psychology.

There’s an interesting interlacing of folk psychology and scientific psychology at work here. As a piece of folk wisdom, an anecdote or a popular aphorism is recognised as containing something essentially true. Pinker’s intention is to explain that (and how) this “folk truth” is grounded in a scientific truth. This process converts folk psychology to scientific psychology without erasing or wholly invalidating the folk belief. Instead, his scientific explanation simply slips a new foundation underneath the existing belief. It’s true not because people have always believed it, but because of some (evolved) biological-chemical-physical reason. Argument from experience or tradition is rationalised and naturalised as argument from material cause. Scientific psychology is allowed to supervene upon folk psychology, whilst those parts of folk psychology amenable to scientific explanations are conserved, not as evidence of folk wisdom, but as folk support for scientific belief. In a sense, the positive use of aphorism enables him to persuade the reader that what is being introduced here is not a novel conclusion, but simply a novel justification.

A good example of this is how Pinker argues from the relative size and characteristics of the sperm and ovum to the propensity of men to

seek multiple sexual partners (Pinker 1997, 461-471).[27] So, from a discussion of the physical differences between male and female gametes (Pinker 1997, 463), comes the physical consequence that "a single male can fertilize many females" and "the reproductive success of males depends on how many females they mate with" (464). The ethological consequences of this are then demonstrated with a discussion of natural conditions: "male mammals compete for opportunities to have sex with female mammals" (465). This is shown to be the case with reference to "typical mammals" (464); first to elephant seals, then gibbons, gorillas, chimpanzees, and finally with the bonobo (man's closest genetic relative) (465). The gradient is deliberate, for eventually, Pinker moves to include humans within the same sweep, carefully balancing emphasis between similarity and difference:

> The human mating system is not like any other animal's. But that does not mean it escapes the laws governing mating systems, which have been documented in hundreds of species. Any gene predisposing a male to be cuckolded, or a female to receive less paternal help than her neighbors, would quickly be tossed from the gene pool. (467)

Note how the second sentence effectively negates the first. So although it might first appear that Pinker is allowing for human distinctiveness, closer reading reveals that whatever it is that makes the human mating system unlike "any other animal's" (and this is kept deliberately vague so as to allow for whatever uniqueness the reader wants to insert), it is in the end less significant than the commonalities the system has with the mating systems of the "typical mammal."

Finally, three illustrations are given – the first from Clark and Hatfield's experiment on attractiveness (where passers-by are asked by

[27] Burt and Pinker's discussions of human sexuality occur at Burt [1933] 1945, 181-197; and Pinker 1997, 460-498.

an attractive stranger if they want to go to bed with them: majority of men say yes, majority of women say no, see Clark and Hatfield 1989; Pinker 1997, 595), the second is a humorous anecdote about Calvin Coolidge asking how many sexual partners a rooster had in a day, the third a reference to an Isaac Bashevis Singer story. The Clark and Hatfield is a legitimate piece of experimental psychology, the Coolidge story is pop-culture, and the Singer story is high culture. All confirm the prediction from cell biology and evolutionary theory. The overall structure moves from light-hearted jokes from G. K. Chesterton, through cell biology, to zoology, to human ethology, to psychology, and finally, returns to light-hearted jokes. Stated baldly, the passage achieves a claim to the effect that microphysical differences between cells cause variance in gender-behaviour at the (macrophysical) organismic level. But the transition is so smooth and efficient that the reader may not realise that they have been at each stage carefully aligned with the evolutionary psychological point of view.[28]

Again, to stress the development of both psychology as a discipline and the act of popularisation, Pinker's work here can be fruitfully compared to Burt's. Like Pinker, Burt had initially situated the human within the wider context of biology ("Almost the entire animal kingdom, and a large part of the world of plants, is divided into two halves – male and female" [Burt (1933) 1945, 181]) and subsequently made a cursory nod to evolutionary theory,[29] but this was not substantive, and was not

[28] It might seem that this implies an unlikely degree of rhetorical dexterity, but elsewhere, Pinker shows that he is alert to exactly this type of manipulation. For example, he quotes a line from Ronald Reagan "I notice everyone in favour of abortion has already been born" (Pinker 1997, 549) to later illustrate how "getting" the joke requires tacitly agreeing that "there are two kinds of individuals, the born and the unborn. Those are the terms in which abortion opponents want the issue to be framed, and anyone who understands the quip has implicitly acknowledged that the framing is possible" (Pinker 1997, 552).

[29] "…nature is always experimenting; and the struggle for existence kills off the ill-adapted, while the fittest alone survive and hand down to posterity their improved endowment." (Burt [1933] 1945, 182)

brought to bear upon his later claims. The function of such arguments (as it would be in Pinker) was to facilitate a claim that the knowledge science already has of the animal kingdom was transferable to the study of humans. Burt moved from here to discuss how these local differences resulted in the gross anatomical differences between male and female, and then presented several theories about how these changes had emerged. (References were to J. S. Mill, Darwin, Lombroso, Herbert Spencer, and finally two academics, Geddes and Thomson, whose theory of the evolution of the sexes had been published in 1889. As was customary – certainly for popular works and even for academic material – no scholarly apparatus was provided for the reader to check these sources.) Unlike Pinker, however, these claims for cross-species similarity went no further than the physiological, and no attempt was made to link, in a substantive manner, biology and psychology.

This is certainly not intended as a criticism. Apart from a hopelessly general claim for “materialism” or the first wave of behaviourism, there really was no unifying theory for Burt to employ. Inadvertently (but not insignificantly) mirroring the state of the discipline, Burt’s material appears somewhat fragmentary and disjointed; there are occasional contradictions between the authors, and a confusion between didactic material and descriptive material. This latter (between the normative and the naturalistic) is of especial importance. The clear demarcation Pinker makes between (a) the findings of experimental psychology and (b) the best way to raise your child, was not so clear for Burt and his colleagues (and their audience). One consequence of this is that the distinction between scientific research and folk wisdom is much less clear – a confusion which is exacerbated (to the modern eye in particular) by the reliance on anecdotal material and personal experience.

Whilst Pinker’s book may appear to elide the same boundary with its blend of authoritative claims and humorous illustrations, careful

examination reveals that the anecdotal material here has a very different role than in Burt's book. For Pinker, the humorous-anecdotal material is not in itself evidential, but instead is intended to point up the similarities between existing folk wisdom and evolutionary psychology (as the theory with which it will be supplanted; where consonance demonstrates the descriptive power of evolutionary psychology). Loosely, the anecdotal data correlates with folk belief, and the scientific data correlates with a theoretical claim supporting and supported by a familiar "everyday" experience – each offering mutual support for the other. As Pinker's writing shifts between anecdotal data and scientific data it becomes apparent that every reference is made to work in favour of promoting evolutionary psychology: the facts are all in service of the central theory.

Of course, the manifest success of Burt's book suggests that the absence of references to specific experiments didn't harm the book's popularity, and if today's reader is surprised by Burt's use of anecdotal material, then it is surely also true that Burt's audience would have been equally surprised by Pinker's provision of quite so much scholarly apparatus: *How The Mind Works* (1997) supplies 57 pages of references, comprising 21 pages of notes followed by a 36 page, 898 item bibliography. It seems that the modern audience – perhaps accustomed to just the sort of fact-heavy popularisation Burnham thought was so destructive – expects scientific literature to provide its readership with at least the opportunity to "check the facts," even if few will actually trouble to do so. That Burt's work escapes this demand for referencing both reflects the normal practice of the day and further suggests that a 1930s readership was more trusting of the authority of the science-writer's pronouncements simply on the basis of his or her position. Recall that Burt reinforces his authority through talk of the "plain man" ([1933] 1945, 8) and the "ordinary man" ([1933] 1945, 181), sharpening the contrast with the man of science.

From here, it is tempting to claim that the abundance of anecdotal material indicates that psychologists (and scientists generally) in the 1930s relied entirely on authority for their argumentative force. But to leave it at that would be misleading. Burt takes the approach he does because partly this was (even in the 1930s) still the infancy of experimental psychology so empirical results were accordingly scare, and partly because the nature of an evidential claim was different. So it is not that scientists did not need to display evidence that they were correct, rather that the type of evidence the 1930s scientist needed to display was different. In Burt's time, and especially for practising psychiatrists Miller and Jones, these are not just "anecdotes," but medical case notes, and as such, considered sufficient as evidential claims. As case notes, the anecdotal data sits alongside the experimental result with comparable status.

There is an extent to which this is related to (and surely also fostered by) the patriarchal attitude taken with respect to the dispensation of child-rearing advice. The "doctorly" tone Miller (in particular) adopts is consistent with the psychiatrist's role as a medical practitioner rather than an experimental scientist. So one way to account for the lack of familiar scholarly apparatus in Burt's *How The Mind Works* is to recall that the distinction between psychology and psychiatry is less distinct – both for the public the book is aimed at and (judging by the selection of contributors) for the discipline itself. As mentioned above, respect for the medical profession (such as it is) is grounded in utility: success is measured by pragmatic standards – does it help? – rather than epistemological standards – is it true? – and accordingly, different standards hold in each case. A practising doctor does not cite the medical papers that support his diagnosis or course of treatment. A scientist, as an academic researcher, however, is usually required to do so. It is not necessary to explain why a treatment works, only to demonstrate that it

does. In this respect, there is more room within psychiatry than within psychology to appeal to the type of case-based approach more legitimate within medical practice than within scientific research. Burt and his contributors will frequently rely on just such isolated incidents as demonstrative of the truth of a wider principle. Again, Miller's section of *How The Mind Works* (1933), for example, is heavily reliant upon this technique:

> "Some time ago, I had to see a little boy who was backward in mental development. … he gnawed the edge of my desk" (Miller in Burt [1933] 1945, 111)
>
> "I have many children under my care whose family histories…" (113)

Although superficially similar to Pinker's anecdotal illustrations (for example, the "Hugh Grant incident" discussed by Pinker 1997, 475), the crucial difference is that in Burt's book, these anecdotal "facts" are apparently considered sufficient as evidential claims: which is to say, they remain unsupported by (explicit) reference to the type of experiments that would be necessary to satisfy the readership Pinker clearly has in mind when he includes thorough lists of the experimental data that supports his own anecdotal facts.

Taken together, this suggests that a sociological shift has occurred between the 1930s and the 1990s, such that this reliance on the a priori authority of professionals is no longer granted, but must be established with reference to further sources (both within the professional community, and if possible, outside of it also). Secondly, the discipline of psychology has shifted from being ambiguously medical to being unambiguously scientific. So another change that becomes apparent from this comparison is the way in which psychology presents itself to the public.

When Burt was writing, psychologists and psychiatrists were less easily distinguishable than when Pinker is writing. The period intervening these two versions of *How the Mind Works* coincides with a clarification of the differences between psychology and psychiatry.

Psychological "Facts"

From the comparison between Pinker's and Burt's versions of *How The Mind Works*, the development in the popularisation of psychology shows some distinct trends that extend beyond Burnham's account. Against Burnham's expectations, the popularisation in the late 1990s looks a good deal more "scientific" than it did in the 1930s (or, for that matter, in the 1940s, with the second edition of Burt's *How The Mind Works*). Prominent is the clear distinction in Pinker's work between the naturalistic and the normative, which is not clear in Burt's book. This seems to occur because (in the terms outlined above) the distinction between "popular psychology" and "popularisation of psychology" is not well established when Burt is writing. As should be clear, especially from the material Miller contributes about the child and the family, the boundary between psychology-as-science and psychology-as-self-help is blurred through much of the material. It doesn't help that when Burt is compiling the book, the discipline sits uncomfortably between opposing models of psychological motivation. *How The Mind Works* ([1933] 1945) endorses both Freudian psychoanalysis (though Burt himself does not – these pieces being written by Ernest Jones[30]) with its reliance on narrative explanations, alongside the more empiricist-materialist position that would later come to dominate the field. Burt's readership meets

[30] Sometimes Jones's popularisation of Freud seems to have been tactfully modified, as with his description of Oedipal hunger: "no one, for example, unless he is mad is aware of a desire to eat his mother, and yet this is a common and powerful idea in the unconscious." (Ernest Jones in Burt [1933] 1945, 71-72)

psychology at a point when it has accepted hypnotism but rejected phrenology (Burt [1933] 1945, 329-330).[31] By the time Pinker is writing, normative claims are anathema to what is expected of science, and he is careful to distinguish between what is biologically normal and what is right. Pinker's book is not without appeals to narrative explanation, of course, but his is a very different sort of narrative: not just minor vignettes which illustrate a point, but above these, a grand narrative, one which unifies the material under a coherent framework. It is in this respect that Pinker's work differs most strikingly from Burt's and also deviates from Burnham's prediction for the future of the science popularisation.

Neither Pinker nor Burt are guilty of massing unrelated facts, but it is worth noting that a principal reason why the dissolution of science popularisation to "impotent snippets" that Burnham sees occurring later in the history of popularisations of psychology doesn't happen in Burt's work is because it cannot happen: the discipline's relative infancy means there simply aren't enough isolated, granular facts available. So the descent into the listing of isolated facts can be seen, to some extent, as an indicator of the maturity of the science being popularised.

By the time Pinker is writing, there are sufficient facts to allow for a listing approach, but rather than displaying a disparate series of unrelated facts, as Burnham might have predicted, Pinker's *How The Mind Works* succeeds instead in the communication of an unifying theoretical framework, within which the facts are localised. Pinker is not so interested in telling us facts about the mind as he is in selling us a worldview. His use of factual information is subservient to this – he draws data from a wide range of fields always to effect the same end: namely, the promotion of the EP agenda. Pinker's treatment of folk wisdom through carefully

[31] Although, that said, a fondness for anthropometric data remains – Burt tells us that "investigators… going into.. mental hospitals… measuring the length and thickness of inmates' bodies" have detected a connection "between the physical and the temperamental types." (Burt [1933] 1945, 24)

chosen anecdotal data is deliberately assimilative, aiming to incorporate as much of the existing folk psychology and customary belief as he can within the new evolutionary perspective, minimising the clash between the scientific and the traditional whilst always privileging the scientific. Because his audience already has a degree of experiential/occupational knowledge about the subject matter, Pinker's book doesn't strive for radical novelty, as (for example) Hawking does when he is writing about black holes and warped space-time. Instead, Pinker exploits the similarity of his conclusions to those already found in folk psychology (or rather, he isolates and emphasises those parts of folk psychology which are consistent with EP and disregards by omission those parts which are not). This careful blending of folksy-anecdotal material and empirical scientific claims marks a level of rhetorical sophistication absent in Burt's book – demonstrating a growth in the scope and sophistication of technique characteristic of a something approaching a professional vocabulary of science popularisation.

Conclusion: A Tentative Aetiology

The early 1980s were the scene of an apparent boom in popular science writing. But when *How Superstition Won* (1987) was published, some commentators appeared to question whether the "boom" in popular science had occurred at all, for it seemed clear that whatever impetus the popularisation of science (inclusive of psychology) may have enjoyed in the early 1980s had, by the mid-to-late 1980s, largely run out of energy.[32]

[32] Bruce Lewenstein (1987) asked: "Was There Really a Popular Science 'Boom'?" He concludes that "The science boom was real. It's death, however, was only partially real." (39) It's notable that Lewenstein excludes from his survey of the rise and fall of science writing in the 1980s writers whose work deals with "science in general" – among whom he includes Stephen Jay Gould, Lewis Thomas, and Carl Sagan (39; n.1). All of whom are notable for the strong theoretical frameworks around which their books and articles are written.

It is within this last (apparent) slump that Burnham was writing, but in the years since then (1987), the volume and popularity of popular science writing has expanded markedly, and the character of popular science writing has undergone a shift in both content and quality. It seems fair to assume that he first of these is a consequence of the second. No comprehensive explanation exists for this change, but the success of a few books – most notably Stephen Hawking's *Brief History of Time* (1987) – seem to have triggered a new interest in the field. Apparently, the real popular science boom was yet to come.

Science writers such as Richard Dawkins, Stephen Jay Gould, Stephen Hawking, Steven Weinberg, Paul Davies, John Gribbin, and Matt Ridley all published books which seemed to answer Burnham's complaint that science popularisation was no more than a collection of impotent snippets of fact. The new popular books possessed a more pronounced theoretical dimension. Some, such as Gould's *Wonderful Life* (1990), or Jared Diamond's *The Rise and Fall of the Third Chimpanzee* (1991) and *Guns, Germs, and Steel* (1996), blended an historical approach with the popularisation of scientific material to produce a grand narrative of human history, variously emphasizing contingency or greed as the defining character of nature. By the late 1990s, a book like Pinker's *How The Mind Works* was a typical popularisation. Rather than producing a fragmentary list of isolated facts, the popular science book had become more like a theoretically coherent treatise, where the promotion of a scientific worldview was given greater emphasis than the dissemination of scientific facts. Some books were more like philosophical treatments of science than popularisations in the educative mould (Richard Dawkins's *Unweaving the Rainbow* [1998], for example). The centrality of the scientific "attitude"[33] and, in some cases, the explicit denouncement of

[33] For example, Weinberg (1992), 258-259.

non-scientific irrationalism (esp. from Dawkins), seem exactly what Burnham had in mind when he spoke of the "religion of science."

It is tempting to see these last developments as a consequence of the so-called "science wars." It might be plausibly argued that the return to global theories is not a direct reflection of the unity of scientists and scientific thought, but a direct response by scientists to perceived or actual attacks on the foundations of scientific thought. That is, claims for the unity of the sciences are a political response to a perceived threat from precisely that (first) generation of non-scientific thinkers most eager to accede to what Burnham sees as the gradual erosion of scientific authority through fragmentary and disunified popularisations. If the superstitious won out over the scientific in the public's eyes (and in the eyes of academics outside the sciences), then the melee that erupted in the years immediately following Burnham's book seems to lend some credibility to his conclusion that (both epistemological and sociological) respect for science was being eroded by low-quality popularisations. Gross and Levitt's *Higher Superstition* (1997), the Sokal Hoax (1996), the replies and responses by (most notably) Andrew Pickering and Andrew Ross, and the counter response by Sokal and Bricmont (*Intellectual Impostures* [1998]) or Steven Weinberg that followed, closely preceded the arrival of this new type of popular science. Of these, E. O. Wilson's *Consilience* (1998) deserves especial attention for its explicit claims for the theoretical consistency of the sciences, its denunciation of the humanities, and its calls for methodological monism across the disciplinary spectrum: "Philosophy," he writes, "the contemplation of the unknown, is a shrinking dominion. We have the common goal of turning as much philosophy as possible into science" (Wilson 1998, 10). It is surely too strong to claim that the motive for the science wars (that is, a perceived lack of respect for the sciences by non-scientific academics) was rooted in the decline in popularisations that Burnham's account

records. It does, however, seem plausible to suggest that the rise of the theoretically-oriented popularisation, displaying at least the edifice of a unified scientific community, has occurred in response.

Works Cited

Barkow, Jerome H., Leda Cosmides and John Tooby, eds. 1992. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York: Oxford University Press.

Bernard L. L. 1938. Review of *Why We Feel That Way*; *Fear*; *How The Mind Works*; *Human Nature: A Guide To Its Understanding*. *The American Journal of Sociology* 43.4: 659

Bucchi, Massimiano. 1998. *Science and the Media: Alternative Routes in Scientific Communication*, Routledge Studies in Science, Technology and Society. New York: Routledge.

Burnham, John. 1987. *How Superstition Won and Science Lost: Popularizing Science and Health in the U.S.* New Brunswick, NJ: Rutgers University Press.

Burt, Cyril, with Ernest Jones, Emanuel Miller, and William Moodie. [1933] 1945. *How The Mind Works*. Second Edition. Ed. Burt. London: Allen and Unwin.

Carnegie, Dale. [1936] 1982. *How To Win Friends and Influence People*. New York: Pocket Books/Simon and Schuster.

Carroll, Joseph. 1998 “Steven Pinker’s Cheesecake For The Mind.” *Philosophy and Literature* 22: 478-85.

Cassidy, Angela. 2005 “Popular Evolutionary Psychology in the UK: An unusual case of science in the media?” *Public Understanding of Science* 14: 115-141.

Chown, Marcus. 1996. *Afterglow of Creation* (Sausalito, CA: University Science Books).

Clark, R. D., and E. Hatfield. 1989 “Gender Differences in Receptivity to Sexual Offers.” *Journal of Psychology and Human Sexuality* 2: 39-55.

Collins, H. M. 1992. *Changing Order: Replication and Induction in Scientific Practice*. Second edition. Chicago: Chicago University Press.

Cronin, Helena. 1993. *The Peacock and the Ant: Altruism and Sexual Selection from Darwin to Today*. Cambridge: Cambridge University Press.

Cudney, Milton R. and Robert E. Hardy. 1991. *Self-Defeating Behaviors: Free Yourself from the Habits, Compulsions, Feelings, and Attitudes That Hold You Back*. New York: Harper Collins.

Daston, Lorraine J. 1982 "The Theory of Will versus The Science of Mind," in Woodward and Ash 1982: 88-115.

Dawkins, Richard. 1998. *Unweaving the Rainbow: Science, Delusion, and the Appetite for Wonder*. Harmondsworth: Penguin.

Dickinson, Terence and Alan Dyer (2002) *The Backyard Astronomer's Guide* (Buffalo, NY: Firefly).

Dupré, John. 1999. Review of *How the Mind Works*. *Philosophy of Science* 66.3: 489-93.

Hilgartner, Stephen. 1990 "The Dominant View of Popularization: Conceptual Problems, Political Uses." *Social Studies of Science* 20: 519-39

Lewenstein, Bruce. 2001 "Expertise in the Media." *Social Studies of Science* 31.3: 441-44.

Feynman, Richard [1959] 1990. *The Character of Physical Law* Cambridge, MA: MIT Press.

Fish, Stanley. 1995. *Professional Correctness: Literary Studies and Political Change*. Oxford: Clarendon.

Freeman, Arthur and Rose DeWolf. 1992. *10 Dumbest Mistakes Smart People Make and How To Avoid Them : Simple and Sure Techniques for Gaining Greater Control of Your Life*. New York: Harper Collins.

Freud, Sigmund. [1917] 1955 “A Difficulty in The Path of Psychoanalysis” from volume 17 of *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, translator and general editor James Strachey. London: Hogarth: 137-144.

Gieryn, Thomas. 1987 “Science and Coca Cola.” *Science and Technology Studies* 5.1: 12-21.

Gray, John. 1992. *Men Are From Mars, Women Are From Venus A Practical Guide for Improving Communication and Getting What You Want in Your Relationships*. New York: Harper-Collins.

Groves, Ernest. 1934 “Mental Hygiene.” *Social Forces* 13.2: 310-311.

Guthrie, Edwin R. 1946 “Psychological Facts and Psychological Theory.” *Psychological Bulletin* 43: 1-20

Holland, J. G. 1865 “The Popular Lecture” *Atlantic Monthly* 15: 362-371.

Huxley, Aldous. 1959. *Brave New World Revisted*. London: Chatto and Windus.

Jastrow, Joseph. 1935 “Has Psychology Failed?” *American Scholar* 4.3: 261-269.

Joynson, R. B. 1989 *The Burt Affair*. New York: Routledge.

Lewenstein, Bruce. 1987 “Was There Really a Popular Science ‘Boom’?” *Science, Technology, and Human Values* 12.2: 29-41.

Mackintosh N. J., ed. 1995. *Cyril Burt: Fraud or Framed?* New York: Oxford University Press.

Miller, Geoffrey. 2000. *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*. London: Heinemann.

Pinker, Steven. [1994] 1995. *The Language Instinct: The New Science of Language and Mind*. Harmondsworth: Penguin.

– – –. 1997. *How The Mind Works*. Harmondsworth: Penguin.

– – –. 2002. *The Blank Slate: The Modern Denial of Human Nature*. Harmondsworth: Penguin.

Redfield, James. 1994. *The Celestine Prophecy*. New York: Bantam.

Russinoff, Penelope. 1988. *When Am I Going to Be Happy? : How to Break the Emotional Bad Habits That Make You Miserable*. New York: Bantam.

Ridley, Matt. 1997. *Origin of Virtue*. Harmondsworth: Penguin.

Scripture, E. W. 1895. *Thinking, Feeling, Doing*. Meadville, PA: Chautauqua Century Press.

– – –. 1897. *The New Psychology*. London: Walter Scott.

Washburn, Margaret. 1895. Review of *Thinking, Feeling, Doing*, by E. W. Scripture. *The Philosophical Review* 4.6: 659-661.

Weinberg, Steven. 1992. *Dreams of a Final Theory*. New York: Pantheon.

Wilson, Edward O. 1998. *Consilience: The Unity of Knowledge*. London: Little, Brown.

Witten, Edward. 2004 “Parity Invariance for Strings in Twistor Space” *Advances in Theoretical Mathematical Physics* 8(5):779-796. Online (February 2006) at *http://www.intlpress.com/ATMP/archive/2004/ATMP-8-5-779-796.pdf*

Woodward, William R. and Mitchell G. Ash, eds. 1982. *The Problematic Science: Psychology in Nineteenth-Century Thought*. New York: Praeger.

Woodward, William R. 1982 “Stretching the Limits of Psychology’s History” in Woodward and Ash 1982: 1-14.

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