



Academic Carelessness, Bootstrapping, and the Cybernetic Investigator

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Abstract

The following discussion is concerned with certain forms of poor practice in academic publishing that give rise to “academic urban legends.” It suggests that rather than simply consider phenomena such as poor citation practices and circular reporting as mistakes, misunderstandings, and evidence of lack of rigor, we might also read them as evidence of a particular kind of creativity—for which misunderstandings, assumptions, and failures of diligence are mechanisms by which potentially influential ideas manifest. Reflecting particularly on a critique of the debate surrounding pharmaceutical cognitive enhancement and its use by university staff and students, the following will argue that investigators within the disciplines concerned with the effects or development of these technologies are themselves implicated as potential subjects. Alongside reflections from science fiction studies that offer insights into the experiential dimension of reading and misreading, this paper offers some insights regarding how we might think of mistakes and misunderstandings as a form of bootstrapping and a source of creativity in scientific and technological development.

Keywords: academic carelessness; bootstrapping; cognitive innovation; creativity; looping effects.

Academic Urban Legends

In his paper “Academic Urban Legends,” Ole Bjørn Rekdal (2014a) reconstructed the birth of the widely held but misplaced belief that “spinach is an excellent source of iron” (p. 639). Ironically, through the poor citation practices of those who commented on it, the story about spinach, often used as an example of academic carelessness, became attached to another academic urban legend, which blamed the mistake

regarding spinach's dietary attributes on the misprinting of a measurement of iron content with a misplaced decimal point. Tracing back through the nested citations that gave rise to this second story, Rekdal (2014a) showed that it too, is ungrounded. Many of the authors who mistakenly used the example of spinach in this way never went back to consult the original source, with the result that a claim that was itself unsubstantiated was also consistently reported inaccurately. A damning pattern of citation errors in work that was intended to debunk myths in science and medicine but instead perpetuated them was the result.

Citation plagiarism—in which a secondary citation is presented as a primary one without consulting the original source—was the main culprit in Rekdal's analysis (2014, p. 639). As he pointed out, for academic writers who want to reuse an idea or phrasing, the temptation is to make use of references reported in other texts in this way. If the preceding author has reported the content of the source with honesty and accuracy, this kind of omission is undetectable. Unreliable sources, or citations that misrepresent or solidify tentative or faulty evidence, contribute however to the generation of academic urban legends.

Despite the moral and practical implications of having the wrong facts before us, in the case of academic writing, evidence is selected in order to build an argument and move forward the discussion. Whether careless, lazy, or outright dishonest, the examples that Rekdal examined in his work are troubling, both given the effects of a misapprehension with the scale and influence of the myth about spinach, and how apparently endemic this type of inaccuracy appears to be (Rekdal, 2014a; 2014b). However, as the following discussion will suggest, apart from as failure, the academic urban legend can also be read in another way—as evidence of a particular kind of creativity—for which misunderstandings, assumptions, and failures of diligence are mechanisms by which potentially influential ideas manifest.

The Self-Referential Debate about Neuro-Enhancement Technologies

Debates about neuro-enhancement technologies are another discourse that have garnered criticism. An example is Hazem Zohny's (2015) analysis of the discussion of "pharmaceutical cognitive enhancement" (PCE); PCE is the off-prescription use of drugs such as Adderall and Ritalin for performance enhancement that has been allegedly on the rise in workplaces, schools, and universities (the discussion centers around the United States). Zohny argued that while recently the subject of intense discussion, the nature, novelty, and prevalence of PCE has been consistently overstated. In addition to a number of conceptual problems, technologies indicated by the novel terms "cognitive- and neuro-enhancement" (p. 264) are neither conceptually

nor technologically new;¹ the concept of neuro-enhancement itself is a misnomer. Zohny argued that there is good evidence that drugs associated with cognitive enhancement only generate *experiences* of enhanced cognitive function—improving mood and feeling, but not actual performance. Cognition—when separated from mood and attention—is a problematic category (pp. 263–264).

In similarity with Rekdal’s discussion of citation plagiarism, Zohny pointed out that the discourse around PCE shows evidence of “circular reporting, whereby the media references academic papers and academic papers reference the media” (p. 265). In this back and forth between the academic literature and the media—which regularly reports on PCE and other forms of cognitive enhancement such as “nootropics”—the two interrogate the quality of citations that has led to the perception that PCE is effective and widespread in use.

While PCE may be partly fiction, the debate around it remains productive in a number of ways. For commentators, particularly in disciplines such as neuroethics, the growth of the PCE legend has offered an argument for the important role of discussions about the politics of enhancement; attending to legality and decriminalization, workplace pressure, education, and neoliberalism. (Sampson, 2016; Wiegel, Sattler, Göritz, & Diewald, 2016). The dialogue, for better or worse, is one that moves between academic disciplines and the popular press where commentators attempt to open, and perhaps feed, the debate. Petrounin’s (2014) article “European Students’ Use of ‘Smart Drugs’ Is Said to Rise” in *The New York Times* cites an interview with an academic who despite having “no longitudinal data,” has the “impression from discussions with students over the last years that consumption has likely increased” (Savulescu, 2015). Despite the thin evidence, the exciting and troubling prospect of widespread PNE becomes a hook, or perhaps a wedge, a way to access and evidence other, more occult and harder to articulate problems around self-determination, emerging technology, and the nature of knowledge-work. Another feature of this debate is the way in which the regularity with which PCE and similar technologies are mentioned popularizes and spreads the idea that they are necessary and acceptable. Inaccurate and overblown it may be, but the idea of neuro-enhancement is an idea with substantial weight, and as a technological imaginary (Punt, 2000) encapsulates a popular model for a technology that holds sufficient weight to pick up its own momentum.²

¹ Adderall, for example, is a mixture of amphetamines. Although at this juncture Tom Wolfe would probably point out that the widespread practices of prescribing amphetamines to children may be new, despite the fact that he first came across their use in the 1960s (Wolfe, 1997). For a history of the relationship of drug to network technologies, see Power (2013).

² Atkinson’s *Delete: A Design History of Computer Vapourware* (2013) offers complimentary examples of how the computing industry has produced “vapourware” products that are in some cases never intended to reach production, but instead provide the public with misconceptions about technological capabilities or near-to-market products.

Cognitive Innovation, Looping Effects, and Bootstrapping

Central to the integrative definition of “cognitive innovation” proposed by CogNovo PIs has been the idea that it is a process by which an individual, or a society, engages in “constructing and adapting the self” (Gummerum & Denham, 2014, p. 586). Taking this as a model of cognitive “bootstrapping” they refer to a recursive “creativity function,” the results of which are creative products that may be seen as the results of individual self-adjustment and self-reflexive perception (Denham & Punt, 2017, p. 184). With its focus on recursive processes, this definition of cognitive innovation can be seen to refer to the cybernetic potential of the mind at work on itself, both at a neural and—through representation—cultural level.

While individual cognitive innovation is self-reflexive, if not self-aware, on a cultural level it might be argued that the cognitive sciences and discourses that surround them are a source of novel ideas about the mind and self that might be incorporated into working models of exploration. The idea that the language, models, and discourses of the human sciences influence the way in which people understand themselves is a mainstay of academic work that seeks to approach them from historical and cultural perspectives. Projects of categorization, diagnostic and managerial in the human and social sciences influence how people think about themselves and one another, with the curious effect that they become “looping kinds” (Hacking, 1995, pp. 352–355).

Michael Pettit has pointed out that “few have greater confidence in psychology’s ability to mold subjectivity than its critics” (2014, p. 146): the principle of looping kinds is so rarely questioned that it has become a truism. He argues that current work to historicize psychology tends all too easily to anticipate a one-directional flow of influence between the sciences and the subject and makes a number of suggestions about what is missing from accounts of “the loop.” Building on an awareness that “subjectivity is neither something authentic and interior that psychology documents nor is it something imposed from outside” (p. 155), approaches might incorporate models of cognition and affect; or models of culture. These recognize the agency of audiences and their role in interpreting and making use of the way in which they are represented; “the social life of psychological science is simultaneously a set of stories about the subject’s augmentation, exploitation, cooptation, appropriation, defiance, incredulity, and boredom” (p. 155).

Pettit’s critique, and his suggestion that we might be more “attentive to . . . the materiality of the circuits through which psychology travels” (p. 155), indicates that something might be gained from further exchange between critical history of psychology and media historical or media archaeological work that considers people not as subjects, but as audiences. While some of this work takes its objects of study to be the development of specific media forms, for the most part accounts of cognition and

affect, and the audience as actively engaged in the interpretation, reception and development of media forms and content are fundamental concerns; media, such as the academic texts and media reports discussed above, are material and cultural expressions of creativity (Punt, 2000; Pepperell & Punt, 2000). In “A View from the Bridge,” Denham and Punt (2017) elucidate this position with regards to the development of the cinema as a cognitive apparatus. They draw on Gustav Metz to argue that the cinema is a “is a technological experience in which the viewer engages with their perception in action” (p. 2).³ We might imagine that in the case of media which represents ideas from the psychological or cognitive sciences, this self-reflexivity may become even more pronounced. Indeed, Marcia Holmes, in a paper exploring the representation of brain-washing technologies in cinema, argues that these narratives, delivered by a cinematic apparatus comparable to the represented technology in the film, produce a particular and very active subject position, that of the “cybernetic spectator”—“a subject who scrutinises how media and other demands on her sensory perception can affect consciousness, and seeks to consciously participate in the mental conditioning and guide its effects” (Holmes, 2017, p. 3).

Bearing in mind this self-referential attention to the meaning and content of experience, within a narrative that stresses the plasticity and potential manipulability of the subject, we might reflect on the fact that in certain cases, as researchers, academics and educators, the subjects of the PCE discussion are broadly same community who investigate it. As Holmes’ invocation of cybernetics stresses, much as does Denham and Punt’s use of “bootstrapping” (2017, p. 184); looping effects are in themselves generative, and hence and we might speculate that academic mistakes and misunderstandings are interpretable as some form of cultural-level cognitive innovation. In this, the media in question, academic writing, offer expression as much as “scaffolding” (Clark, 2015, p. 18) for cognitive innovation as cultural creativity.

Academic Writing, Novelty and Neology

Since the late 80s and 90s the invention of novel terms signifying new technological and conceptual developments have offered a currency of bi-directional exchange between techno-scientific research, culture and science fiction (sf). Istivan Csicsery-Ronay’s (2008) in-depth analysis of the nature and affordances of “fictive neology” (pp. 13–46) in sf is instructive as to how we might begin thinking about the creative and aesthetic aspects of discourses such as the sciences and philosophy that have cultural intersections with the genre. Neologisms are generated in a variety of ways that include shifts in meaning, lengthening, shortening, and compounding terms. As he points out, it is only when certain aspects of scientific knowledge become accessible to the public through journalism and science communication initiatives that they

³ Here we see Metz’s idea doubly out of context and secondarily cited.

are ubiquitous enough to be incorporated into writing practices, as academic, journalistic, and fictional discourses intermingle. The practice of “neologogenesis,” the creation of new terms, is one that communicates the “linguistic power” (p. 14) of the new word’s users.

In *sf*, the very existence of new words in the fictional world prompts the reader to consider the events and conditions that have made them necessary. As Csicsery-Ronay suggests, drawing on Samuel Delaney’s work, in a text where many if not all of the words are familiar, we assume that the world described in the text is identical to the one we already know (p. 22). When a neologism appears in the text, we must account for what is different about that world that has led to the word coming into existence, and indeed use. The *loglo* of Neal Stephenson’s *Snow Crash* (1992, p. 7)—the unbroken lights of fast food franchises, motels and nation states that line the free-ways of US West coast—indicates a specific feature of the landscape so ubiquitous it requires its own term, but within the account, he offers a discussion of the kind of experience that engagement with novel terminology evokes, which points this discussion towards a consideration of how the academic texts discussed above are dealt with, the way they function for the readers, writers and thinkers who make use of them, and how neologisms create a certain type of reading experience.

When do readers do this work of interpreting? While novel words prompt imaginative invention, but they might also be dealt with by being ignored, or at least overlooked. A feature of perceptual creativity *and* bootstrapping may be a development of the ability to overlook or ignore one’s lack of understanding or familiarity with a term. Rekdal’s (2014b) reminder that striving to use primary sources is a “basic academic principle” (p. 744) is correct, but still, secondary citation offers a space for “bootstrapping.” Likewise the “feverish linguistic atmosphere” (Csicsery-Ronay, 2008, p. 26) of genres such as cyberpunk fiction might offer cognitive training grounds for dealing with unresolvable levels of novelty and ambiguity, whether for the apparent dislocations of contemporary techno-culture, or perhaps working in transdisciplinary research environments where ambiguity is often criticized, but may have its own benefits.

Despite the conflicting variety of reasons that individuals are interested in the discussion of PCE, the ways in which the discussion has been generated, enabled and distorted can be seen as a productive cultural function of the mind’s interest in itself, the potential misunderstandings about PCE that it entails don’t mean that it is necessary to undermine the productivity of the discourse, if we consider how they reflect potentials rather than facts.⁴ Circular reporting and academic urban legends fit

⁴ This observation would also be supported by the similar discussions around direct current stimulation (DCS) technologies, which involve the application of electrical current to the head or brain, equally for therapeutic purposes/neuroscientific experimentation and (apparently) increasingly used for performance enhancement (Wexler, 2017).

alongside the creative shifting of neologism. As different features of writing practices, they offer ways for the bootstrapping processes of self-adjustment to take place within and at the fringes of research spaces. They suggest that people, including scientists—on individual and social levels—may be thought of as “cybernetic investigators,” whose failings may sometimes have their own value.

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Response to “Academic Carelessness, Bootstrapping, and the Cybernetic Investigator” by Diego S. Maranan

In this paper, Drayson argues that certain features in academic practices—such as the circulation of academic urban legends that are quoted as fact, or the gap between the discussion on and actual prevalence of pharmaceutical cognitive enhancement—can be explained through the bootstrapping aspect of Cognitive Innovation. The argument is compelling. What I would like to pick up on is a point made later in the paper about how neologisms contribute to the reimagination (or at the very least, the reinterpretation) of the perception of the self, society, and the environment. Drayson’s invocation of cybernetics in relation to cognitive innovation is timely. In particular, neology plays an important role in describing, defining, and reinscribing new views on the human condition in general (and human cognition in particular) in relationship to an evolving media and technology landscape. Neology thus plays a role in Denham’s (recursive) cognitive innovation function. Coining a new term can bring into focus or even into existence a new view of the human condition as it is inflected by the media technologies that humans create; this term in turn then generates new thoughts, values, and behaviors.

Drayson also lends weight to an argument that is hinted at in other paper in this issue, “Navigating Cognitive Innovation” (p. 45), which I co-authored. There, my co-authors and I suggested that the term “cognitive innovation” carries a semantic load that obscures the full depth and breadth of what the term might be intended to signify. In addition, we proposed that technology should be explicitly addressed in Denham’s cognitive innovation function. Drayson’s paper suggests that we need to go one step further: might it be useful to coin an altogether different and new word (much like Stephenson’s ‘loglos’ or, say, Maturana and Varela’s ‘autopoiesis’) for the process signified by cognitive innovation? Perhaps the semantic baggage of the constitutive terms of “cognition” and “innovation” prevents us from properly producing that “moment of dislocation [and] distancing” that makes neologisms so powerful?

This train of thought leads me to a final question: what are the relationships between cognitive innovation and theoretical frameworks such as *cybernetics*, *autopoiesis*, and *posthumanism*? For instance, “cognitively innovative” systems seem to be the larger class of systems that subsumes both self-observing and self-modifying systems. There are clearly links between these frameworks which could be further explored in future publications.

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