Contagious Ideas: On evolution, culture, archaeology and Cultural Virus Theory.

Ben Sandford Cullen 1993-2000
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Reviewed by Jennie Hawcroft

This book is a collection of the writings of the late Ben Cullen, formed from sections of his PhD and assorted published papers, which have been put together to make a single, flowing whole. The book commences with a critique of the various published theories one might think already covered the ground claimed by Cullen’s Cultural Virus Theory (CVT). This critique is followed by an account of CVT, Cullen’s own invention, and a justification of why CVT alone is useful in describing culture in a neoDarwinian way. Finally a series of three case studies are presented to demonstrate and assert the CVT position. The subject matter is an advanced metatheory, a theory about theories, concerning the nature/nurture controversy, the correct employment of neoDarwinian laws, cultural transmission, how culture works, how genes work, and various related theories, anecdotes, examples and asides.

The volume sparks the reader’s interest from the beginning, with the first chapter proposing a number of interesting ideas. Like all the best ideas, they appear very simple and obvious once they have been stated, but yet you never thought of them before you read Cullen’s writing. A good example is the point made on the very first page, that the biological fields of study consider change to be the result of Darwinian selection (selection of the most suitable form from a spontaneously-generated variable range) whereas the cultural fields of enquiry implicitly assume that change occurs through Lamarckian evolution (where need itself causes a suitable mutation to spontaneously appear - i.e., necessity is the mother of invention). Cullen takes the example of a tiger’s stripes. To a biologist, tigers in the past had many variable patterns. Modern tigers are striped because those individuals with stripes survived best. Stripes happened to aid disguise and survival better than other patterns. A cultural scholar of the humanities or arts might prefer a model where tigers originally had no patterns on their fur, but developed a pattern - that of stripes - because they lived in a context where
stripes would be useful in their survival. Stripes or proto-stripes (but no other pattern) sprang into being because they would be helpful.

The latter model seems ludicrous, but perhaps that’s because it demonstrates the cultural scholar’s point of view using an example from zoology. It makes more sense when applied to cultural explanations - the wheel was invented because traction transport was needed, Stonehenge was built because a large impressive monument to power and/or the gods was needed, etc. Cullen’s point is that this is how so-called cultural evolution is understood in archaeology, but this is Lamarckian, not Darwinian, modelling. This dichotomy in the way cultural evolution and biological evolution are theorised by their respective practitioners means that what is termed “cultural evolution” has actually little to do with the process of biological evolution as Darwin or subsequent neoDarwinians have described it. (Cullen also includes a very interesting deconstruction of Darwinism, neoDarwinism and the conflicts between the two in Chapter 2).

From this trailblazing beginning, the volume then delves into a multi-chapter analysis of other theories which have proposed explanations for cultural change based on an evolutionary framework, in all cases (cultural evolutionism, cultural sociobiology, cultural selectionism) he deconstructs the theoretical bases of these schools of thought to show that none does quite what it says on the tin. These analyses include a brief synopsis of each school’s position and theoretical rules, but these are very brief, require that the reader has read much of the cited literature, and certainly are not thorough enough for the book to be used as a short-cut theory primer in this area. The explorations of these three existing schools of thought I found, I must admit, rather dull, and it took me a lot longer to get through the chapters devoted to them than the other chapters concerning Cullen’s own thoughts. A student of cultural evolutionism, cultural sociobiology or cultural selectionism would perhaps find these sections far more stimulating, pertaining as they do to the history, development, strengths and weaknesses of these theories. Cullen points out inconsistencies in these arguments which render them less effective than they might initially appear. Whilst the argument in this section is sharp, where I was sufficiently familiar with the material referred to some criticism was possible. For example, he presents sociobiology as juxtaposing Darwinian with Lamarckian models, having Lamarckian descent for cultural heritability outside the Darwinian genome model. He quotes Boyd and Richerson (1985) in support of this - but the overriding purpose of that text is to show that cultural and genetic materials eventually become inter-reliant, can only work in reciprocal terms, and cannot be separated (although Boyd
and Richerson are explicitly placed in the cultural selectionist, rather than sociobiological, category).

After this critique of some major themes in cultural evolutionary theory, the volume shifts towards an explanation of CVT itself. I felt that a short outline of what CVT would eventually turn out to be would have been useful either at the beginning of this section or at the beginning of the whole book. The bones of what CVT is are not exposed until relatively late on, after the reader has sat through many pages of its defence without yet having clear definition of it. Of course, the editors who combined Cullen’s writings to produce this volume may have felt that to write such a synopsis would have been overly intrusive.

Cultural Virus Theory turns out to be a title which is self-explanatory. Cullen’s model describes ideas or concepts (cultural structures) moving from person to person in a manner analogous to the movement of viruses. They infect one host from another. They move into a new host before the current host dies in order to persist. Real biological viruses can act in one of two ways. They can behave virulently, rapidly disabling and killing a host. Such viruses require the capacity to move to subsequent hosts quickly, otherwise the initial host will die (taking the viral organism with it) before the virus is able to move on. More passive viruses, which do not seriously disable the host, allow themselves and the host to live for longer, so that the less rapidly-spreading pathogen has time to find another host to move to. Passive viruses are more commonly transmitted vertically (from parent to child) while virulent ones are passed horizontally (around lots of unrelated people regardless of their age).

Cullen argues that cultural structures mimic this biological pattern. Taking the example of religion, where usually one’s faith follows that of one’s parents, the action of religion in this scenario can be regarded as largely harmless and long-term. The virulent strain might be those religions which are popularly known as “cult” types, which spreading rapidly and suddenly through particular age or socioeconomic groups, are not related to the religion of one’s parents or wider culture. Such “cults” frequently demand high levels of personal sacrifice, in terms of social life, economic resources, personal freedom or even life itself. Just like viruses, cultural structures have a genealogy of their own, independent from the host, and must find new minds to colonise prior to the death of the mind or minds currently sustaining them. Unlike genes, cultural structures cannot reproduce themselves but are reliant on human agency to reproduce. In the latter sections of this volume, beetles, megaliths, corpse flowers, pottery and even academia itself, all feature in convincingly drawn examples of how cultures are like viruses.
Cullen notes that Dawkin’s “meme” model is very similar to CVT, and spends some time illustrating the subtle differences and underlining the point that the two models were conceived independently and without either Dawkins or Cullen knowing about the other’s work. In meme theory, people passively receive ideas, whereas in CVT they actively manipulate and choose which cultural ideas to adopt (which again is reminiscent of Boyd and Richerson 1985, although they are not mentioned at this point).

Cullen’s model seems to have legs, it is beautifully described, is rigorously tested and is found it to stand up regardless. There are many instances in which it can be seen to be an accurate and useful analogy.

There are a few points which confused me which I will list, but as exceptions rather than the rule for this excellent book (perhaps in the hope that some kind theory-minded assemblage reader can enlighten a poor biological anthropologist). My confusion is more likely to stem from my ignorance of the subject matter in this book rather than from any real mistake in the material. An unavoidable problem with impressive cross-disciplinary analyses is that they are exceptional because most scholars do not have high-level expertise in several disciplines. For example, on page 97, Cullen states that culture is not extra-biological, it is entirely extra-genetic. I assume that here he meant that the ideas of culture and the synaptic patterns that represent culture in our heads, are entirely humanly constructed - not that the capacity to have both culture and neurons are non-biological, because clearly they are.

A brief excursion into the development of human minds caught my attention - the first delve into actual archaeology came with a reference to Homo erectus and the expansion of the brain at this point in human phylogeny. This must, Cullen argues, have been the time when hominid animals first became reliant on ideas and cultural structures, because if ideas were not important then the massive selection in favour of brain expansion would not have occurred. Moreover, this might be the first evidence for the first bad ideas. Some hominids would be capable of originating and spreading bad ideas (although this must post-date the beginnings of reliance on ideas per se). The only way to select your cultural structures, and thus avoid being infected with bad ideas, was to have greater mental capacity than the hominid with the bad idea, and so on. Cullen describes this as an “arms race”, putting the reader in mind of the Machiavellian Intelligence theory of Whiten and Byrne, and actually uses the word machiavellian on page 176, but does not reference them either here or in the bibliography, despite the fact that their major volume on the hypothesis was published in 1988.
The *H. erectus* example continues with a hypothetical tool set example in which Cullen very nicely makes the point that the species and typology are entirely independent, something non-palaeoanthropologists and palaeoanthropologists alike have had trouble with in the past. There is a charming piece of prose about imaginary *H. erectus* life (apart from the fact that Cullen credits them with the Mousterian!). Here hominids organise an occasional central gathering of groups, a place where cultural ideas such as tool types are passed on horizontally (although you would think that a central meeting would be an ideal place to replicate one’s genes as well, something Cullen chooses not to pick up on). I should also point out that here and later, it bothered me that Cullen uses the *H. erectus* example with the assumption that these hominids are as cognitively plastic, as freely agent and susceptible to the new, as modern humans are. This is something we cannot be sure about. CVT is based on the plasticity of the human central nervous system so should surely be restricted to human groups with modern CNSs.

Something else which is not clear to me is that on page 204, all mutations or inventions in human culture are asserted to be derived from existing forms. If this is the case, where did the very first ever idea come from?

My last gripe is the point where the primary and secondary repertoires of neurons are explained (page 166). The primary repertoire is the “clean slate” of vast numbers of neurons, as yet without any synaptic pathways forged between them but with almost infinite potential for synapsing, which exists in the newly developed baby (technically, this clean slate is at its maximum *in utero* and brain cell degeneration has already begun by the time of parturition). The secondary repertoire consists of those synapses which are “awakened” (presumably, forged) by cultural stimuli and which represent the cultural structures of the world. OK so far. However, Cullen then says that synapses which have been forged but then become disused, will fade back to being primary repertoire, with the implied potential of being re-awakened at some future point.

The fact is that large portions of the primary repertoire (i.e., those unused brain cells) will have died, and synaptic pathways in the secondary repertoire, once disused, make it much more likely that the neurons involved with that synapse will also die. Brain cell death continues throughout life (although there is a marked cull in the first two years of life) and the neurones which are most likely to die are those involved with synaptic pathways which are not frequently used. This means that if the information represented by that synapse is to be used again later, it must be relearned and a new synapse between new neurons must be forged.

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This may seem like biological hair-splitting in a review of what is essentially a theory book for theoretical archaeologists. However, it is an important factor in human cognitive plasticity and the neurological consequences of cultural choices, so it seems a shame to have this small erroneous point included in the book.

It will be apparent from the above that all my gripes with this book are (a) small, specific, picky ones and (b) pertain to things in the biological arena, since that is the side of archaeology with which I am familiar. No doubt a theory-based archaeologist would find different things to take issue with, which I am not qualified to spot. However, although I can not fail to mention the little things that did bother me, I feel that they should not prevent me from saying: this is an excellent, interesting, clever, important book, which has taught me much, made me think more, and differently, and made me wish I had been able to read it years ago.

Many authors have attempted to tackle the problems involved with the culture-biology dichotomy, either as biological anthropologists foraying into cultural theory or vice versa. Not many of them have made as good a job of it as Cullen, despite the odd blip. He has bothered to engage more deeply with a wide variety of themes than I can remember seeing before. The polarisation between theoretical, cultural thinkers and science-based scholars in archaeology is as wide as it ever was (as a biological anthropologist I would never normally be asked to review a theory book, but because this one had the words “Darwin” and “evolution” prominently displayed, it was lobbed over the conceptual fence before it could burn the fingers of passing theory-heads). This allows mistakes to go unnoticed: the word “evolution” is used for cultural change in contexts where its processes bear little resemblance to either the Darwinian or neo-Darwinian meaning of the word, while palaeoanthropologists, zooarchaeologists and osteologists refer vaguely to “culture” as if it were an afterthought. Cullen has realised this and has made more effort to explain both sides to the other than is usual in such cross-disciplinary studies, despite the fact that the breakdown of this polarisation was probably not the primary aim of his writing.

Cultural Virus Theory itself is convincing as an analogy, and the examples in this book make it understandable and useful. Cullen has distinguished his model by being ruthless in his investigation of its possible shortcomings and still showing that it comes out working well. This point is underlined by his comparisons of CVT with other theories working in the same area. This is the sort of book which seems to articulate what you have always known, but could never quite get a handle on. It challenges the reader to think with scrutiny and
foresight and to go beyond long-established preconceptions. It makes a valuable addition to all the areas it pertains to, and shines bright with clarity and intellect.

Of course, it is difficult to write a review of a book which has been put together almost as an edited volume after the author of all the contents has died. There is little point suggesting useful additions which might aid the flow, since the editors make it plain that they wish to be as unintrusive as possible, and the original author probably did not intend his writing for this format of publication. It is also difficult to know whether the bits where I saw error, mentioned above, are misunderstandings on my part that Ben Cullen could have explained away, or which might have been revised in later papers by him, had he lived to see the developments in cognitive science and cognitive archaeology which have occurred since his death in 1995.

It is plain from a reading of this book that the archaeological community was deprived of a great talent by Cullen’s tragically premature death. His work is lucid, sharp, intelligent, shows a deep understanding across a diverse range of themes, it takes dazzling metatheoretical leaps, and makes a huge contribution to cultural change analogies and to the question of the culture: biology divide in archaeology. This is not an easy read - you have to pay attention, and frequently find that something you understood while reading it is too complicated to recall completely later on, and you have to go back and reread. It is, however, a challenge worth facing. I would recommend this book to anyone who wants to actually understand, explore and work on the relationship between the cultural and biological elements of human life (as opposed to staying comfortably in their pigeon-hole), and to anyone interested in the theorisation of culture change.

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