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CIVILIZING KNOWLEDGE

KNOWLEDGE AND CIVILIZATION. By Barry Allen. Boulder, Colorado: Westview Press, 2004. Pp. x, 342.

The ancient world bequeaths us two contrasting images of knowledge. Plato and Aristotle offer the image of the knower as theoretical contemplator. In contemplation, we turn away from the variable and contingent concerns of everyday life toward a vision of thought communing with the changeless and eternal, with what is valuable precisely for its unworldliness and disembodiment. Their visions of disembodied thought coexist uneasily with their recognition of the demands of human life, expressed in the more worldly figures of the practically adroit *phronimos*, or the guardians who return to the Cave via fifteen years of practical political apprenticeship, to rule the city in light of their vision of the Good. Barry Allen calls attention to another, still more ancient image of knowledge, expressed in the mythical and literary figures of Prometheus, Odysseus, and Oedipus. Here, the knower is skillful, clever, and cunning, rather than visionary and relentlessly logical. Technical mastery, whether of fire, weaponry, agriculture, or navigation, and an ability to adapt one's understanding to the demands of the situation, is a counterpoint to the quasi-divine image of knowledge celebrated by the philosophers.[1] Each image also expresses its characteristic danger: for the contemplator, it is unworldliness, exemplified by Thales falling down the well while gazing at the stars, or Plato's navigator, unable to convince the passengers that his knowledge can better guide the ship than that of the ignorant but rhetorically skillful politician. The corollary danger, or perhaps merely tragic condition, highlighted by the Promethean conception is the hubris of unbounded cleverness and inventiveness.

Allen would likely sympathize with Ian Hacking's remarks upon the subsequent reputations of these two conceptions of knowing:

> We all know a little about Greek geometry and the teachings of the philosophers. Who knows anything about Greek metallurgy? Yet perhaps the gods speak to us in their own way. Of all the buildings that once graced the Athenian Agora, only one stands as it always was, untouched by time or reconstruction. That is the temple of the metallurgists. The Academy fell down long ago. It has been rebuilt—partly by money earned in the steel mills of Pittsburgh.[2]

1. Although we should not forget that Plato's dialogues repeatedly present the carpenter, the physician, and the shoemaker as the unquestioned models of knowers, whose achievement is to be emulated and transferred to the philosophical realm.

2. Ian Hacking, *Representing and Intervening: Introductory Topics in the Philosophy of Natural Science* (Cambridge, Eng.: Cambridge University Press, 1983), 150.

Allen takes the subsequent philosophical tradition to task for having given almost exclusive emphasis to the image of knowledge as the recognition and contemplation of truths, to the neglect of the skillful understanding embedded and displayed in artifacts. Our society owes its way of life to the descendants of Prometheus and the metallurgists, but our philosophers remain enamored of theoretical knowledge, above all, knowledge expressed in language. Various currents in twentieth-century thought have bemoaned the narrowly epistemological focus of the dominant philosophical tradition, but Allen sharply distinguishes his concerns from those of Heidegger, the later Wittgenstein, Foucault, Rorty, and even Dewey (not to mention the likes of Derrida or Lyotard, since Allen does not mention them either). In rejecting epistemologists' questions, these critics turn all the more insistently toward a concern with linguistic articulation. Allen thinks the epistemologists have been asking the right questions, but looking in the wrong direction to answer them. Unlike Rorty and many of those influenced by him, Allen believes there is a legitimate and reasonably unified sense of "knowledge" that ought to be a primary focus of philosophical reflection. Knowledge in his sense has nothing to do with truth, or with belief and its reasoned justification, however, but instead with superlative artifactual performance. In the designing and crafting of artifacts that hold up under the various demands placed upon them, we have a model of knowledge as more fundamentally "reliable" than anything conceived by contemporary philosophy.[3]

The emergence of modern empirical science might seem a model for unifying these two conceptions of knowledge. To be sure, there is a long tradition in philosophy and intellectual history of conceiving science in a narrowly intellectualist form that highlights its linguistic and mathematical products. Yet the thrust of contemporary historiography and even some philosophy of science runs in the opposite direction. It is commonplace now to recognize the role of late medieval technological achievements as integral to the new sciences; to recognize the mathematics being applied to nature in the seventeenth century as a practical, "applied" discipline usurping the traditional role accorded to natural philosophy; to understand the widespread dissemination of a Newtonian mechanical culture in eighteenth-century Britain as integral to the Industrial Revolution;[4] and to emphasize the "second scientific revolution" in which the Baconian sciences of heat, light, electricity, magnetism, geology, medicine, and biology were brought into the new natural philosophy through extensive technical accomplishments in experimentation, instrumentation, and metrology. Not only is science once again centrally conceived as *experimental* science, but even its more theoretically sophisticated achievements are now conceived as traditions of cultivated practical skills.[5] The

3. The "reliabilists" among contemporary epistemologists highlight Allen's point, in their emphasis upon sentences or propositions as the locus of reliable knowledge. Allen thinks that bridges and buildings are rather more perspicuous exemplars of reliability.

4. Margaret Jacob, *Scientific Culture in the Making of the Industrial West* (Oxford: Oxford University Press, 1997).

5. Peter Galison, *Image and Logic: The Material Culture of Microphysics* (Chicago: University of Chicago Press, 1997); "Feynman's War: Modeling Weapons, Modeling Nature," *Studies in the History and Philosophy of Modern Physics* 29, ser. B (1998), 391-434; *Einstein's Clocks, Poincaré's Maps: Empires of Time* (New York: W. W. Norton, 2003); Andrew Warwick, *Masters of Theory: Cambridge and the Rise of Mathematical Physics* (Chicago: University of Chicago Press, 2003).

convergence of theoretical science and "superlative artifactual performance" may seem to culminate in the physics of Los Alamos, the Radiation Laboratory, and postwar accelerators; the mathematics and electrical engineering of computers; and the role of recombinant DNA, hybridomas, and PCR that makes biological science often continuous with biotechnology. While philosophical epistemology has admittedly not been much affected by these developments, the best scholarly work on the sciences recognizes the articulation of truths as more dependent upon skilled artifactual performance than the reverse.

Allen's argument goes in a different direction. His core examples of superlative artifactual performance come from architecture, structural engineering, industrial design, agriculture, and the arts. He emphasizes the multiple, densely intertwined artifacts that mark the emergence first of human cultures, and more importantly, the subsequent emergence of urban civilizations. The kinds of knowledge that become central on his view were already substantially in place before the canonical emergence of modern empirical science, and indeed, were the indispensable precondition for the more rarefied artifactual achievements of both experimental and discursive/symbolic understanding in science. Consequently, Allen's book celebrates and seeks to understand the achievement of knowledge as a central and characteristic feature of human life, and yet does so with remarkably little discussion of the practices or achievements of the empirical sciences. Indeed, his most extensive discussions of the sciences align them not with the achievement of knowledge, but with the attempt to discipline and control the achievement of knowledge, and sometimes destroy it, in ways that Allen decries.

Allen's book weaves its way back and forth between criticism of the dominant philosophical tradition for its narrow focus upon propositions and discursive practice, and constructive efforts to work out an alternative model of philosophical reflection upon knowledge. He directs his critical attention primarily toward what he regards as insufficiently radical challenges to the dominant epistemological tradition. Thus, the greater part of his opening chapter on "What Epistemology Was" discusses critics of epistemology, notably Hegel, the positivist tradition, the sociology of knowledge, feminist epistemology, Heidegger, and Dewey. Three subsequent chapters (out of only eight in the entire book) are devoted successively to Allen's assessment of Nietzsche, Foucault, and Rorty as critics of epistemological philosophy whose criticisms do not surpass the tradition's misplaced emphasis upon discourse.

There is much of interest in these critical chapters, and a few points where I would disagree. For example, where Allen takes as constant throughout Heidegger's career his early identification of science with a quite traditional notion of disengaged theoretical contemplation, I think his view on this score underwent a dramatic change in the 1930s, in ways that resonate with some of Allen's own critical concerns later in the book. Allen's treatment of Foucault as "stuck in the order of discourse" seems to me to overemphasize his earlier archeological work. Allen does give thoughtful consideration to Foucault's work on power/knowledge, but reads it very much in light of the earlier work, and does

not consider his final work on ethics. I share Allen's criticisms of Rorty's conception of "conversation" and his reductive discussions of technological competence in terms of the differential usefulness of some vocabularies for prediction and control, although we locate the source of the problem differently. Allen emphasizes Rorty's residual conception of knowledge in terms of the justification of beliefs, whereas I emphasize his sharp separation of the causal and normative, and his thin conception of "social" life as disconnected from artifacts and skills.[6] Yet to focus upon either Allen's critical response to these widely discussed philosophical figures, or my own occasional criticisms of that response, would be to miss the primary import of the book. There are many learned commentaries on these philosophers, but few serious efforts to redirect philosophical inquiry substantially. Hence, I shall devote the bulk of my review to Allen's proposed alternative to the epistemological tradition.

I nevertheless begin with one important point of continuity between Allen's criticism of traditional epistemology, and his subsequent effort to redirect critical reflection upon knowledge. Allen's primary criticism of the epistemological tradition targets its commitment to what he calls "onto-logic," which "grounds the *logical* possibility of true discourse in the *ontic* possibility of the entity whose being (existence and identity) makes the discourse true" (27). Allen thinks that epistemologists' complacent acceptance of a world of objects and properties already "there" awaiting their correct representation seriously misleads us:

> The ontological possibility of *being the same or different* depends upon the possibility of *being comparable*. What is a *possibility of comparison*? Is it *possible* to compare things that are never actually compared? This much seems clear: There are no possibilities of comparison apart from actual human practice. Before two uncompared things *could be* compared, making the comparison must be an actual human practice. This *could be* implies *is*, contingent actuality, which in turn implies that sameness, identity, and self-identity are artifacts of contingent performance. That is what onto-logic overlooks. (27-28)

Allen intends no species of metaphysical idealism by this claim. What constitutes the possibility of identity and difference on his account is the historically contingent emergence of a human form of life. This event is biological, "the work of organism and ecology, not of *Geist* or transcendental ego" (30).[7] Although Allen does not put it in these terms, the key point is that normativity only emerges within practices of holding performances and their constituents accountable as correct or incorrect. Once those practices are in place, and getting things right or wrong matters within those practices, then it is not up to us what is what or how things are. That things are in some "way" at all, however, such that responses to them can be appropriate or inappropriate, correct or incorrect, does indeed depend upon us or the existence of beings relevantly like us. The point is

6. Joseph Rouse, "From Realism or Antirealism to Science as Solidarity," in *Richard Rorty*, ed. D. Hiley and C. Guignon (Cambridge, Eng.: Cambridge University Press, 2003), 81-104, develops my explicit criticism of Rorty on this score, while the larger context of this criticism is worked out in Joseph Rouse, *How Scientific Practices Matter: Reclaiming Philosophical Naturalism* (Chicago: University of Chicago Press, 2002).

7. Leave aside my quibble that for Hegel, *Geist* is arguably the work of organism and ecology. As Allen would agree, of course, they are only *recognizable* as organism and ecology through their emergence as *Geist*.

not that the world before we existed was indeterminate, rather that its determinacy (along with the sequential temporal relations of before and after) is constituted *retroactively* by the contingent emergence of practices and norms within a distinctively human way of life.[8] The moral that Allen draws from this line of criticism is that the world to which truth claims must supposedly conform in order to constitute knowledge is itself *artifactual*, the outcome of a continuously evolving process of "niche construction" through which human beings make ourselves and our environment.

I want to consider four aspects of Allen's constructive program. I begin with his conception of evolution and its central role in characterizing his conception of knowledge. This is the part of the book about which I am most unequivocally positive. I believe Allen is fundamentally correct in his criticisms of the most widely promoted philosophical versions of an evolutionary naturalist conception of knowledge and understanding, and in the broad outlines of his alternative conception of evolution and naturalism. I then discuss his conception of knowledge as superlative artifactual performance, and its integral involvement with human culture and civilization. Allen draws upon this conception to raise a series of critical concerns about knowledge and civilization in our times, and these concerns constitute my third topic. Finally, I take note of several themes that Allen would need to address for his revised conception of knowledge to be fully convincing. These include the place of empirical science within his conception, but also the reconception of language and discourse as artifactual, and the relation of the state as a human "artifact" to the artifactual web that he takes to constitute urban civilization.

In the first half or more of the twentieth century, most philosophers regarded epistemology as an *a priori* discipline that articulated the rational or transcendental grounds for epistemic norms. The latter part of the century has seen a marked shift toward a "naturalistic" conception, in which knowledge is itself simply one component of the world open to broadly scientific (or at least empirical) study. Philosophical reflection is then firmly situated within an empirical horizon. While history, sociology, and anthropology have been loci for naturalistic studies of knowledge, and for some philosophers physics remains the ultimate arbiter of "nature," evolutionary biology has increasingly been favored as the appropriate context in which to understand the articulation and achievement of human knowledge. Allen agrees that knowledge must be understood in terms of human evolution, but he quite substantially reconceives its place within human evolutionary history.

The predominant evolutionary conceptions of knowledge as a natural phenomenon are adaptationist and cognitivist. The basic idea common to most such accounts of knowledge is that the representational structures of the human mind and languages are evolved, and selected for their contribution to human reproductive success.[9] Typically, both the representational content of human thought

8. Readers familiar with Hegel and Heidegger will recognize the extent to which Allen's project is responsive to their central metaphysical concerns.

9. Prominent discussions of evolutionary conceptions of knowledge or mind include Philip Kitcher, "The Naturalists Return," *Philosophical Review* 101 (1992), 53-114; David Papineau, *Philosophical Naturalism* (Oxford: Blackwell, 1994); Alexander Rosenberg, *Darwinism in Philos-*

and utterance, and the epistemic reliability of our methods of inquiry and judgments, are thought to derive ultimately from the selective advantage conferred by cognitive structures and norms with that character. Allen is doubly critical of such conceptions. He rejects strongly adaptationist accounts of the causes of evolution generally, emphasizing roles for drift, non-adaptive "spandrels," and cladogenetic rather than anagenetic patterns of speciation.[10] Moreover, he regards migration and niche construction as more basic responses to changing environments than is adaptation. More important for his argument, however, Allen claims that the distinctive patterns of human evolution strongly suggest that language, artifactual culture, and expanded cognitive capacities arose within the human lineage much later than the period in which *Homo sapiens* consolidated its evolutionary success. The distinctive capacities that enable the achievement of knowledge are spandrels, extant but non-adaptive capacities co-opted for roles quite distinct from what initially established them within the human population. The distinctively human trait that was presumably selectively crucial was neotonous encephalization. Modern humans have a longer period of infant dependence, during which neural connections and bodily capacities are articulated primarily by our own activities and interactions with our surroundings rather than by heritable patterns of development.

Since Allen's central claim is that knowledge is characteristically expressed in artifactual performance, the emergence of artifactual culture within the human lineage is especially crucial to his argument. He is dismissive of recent claims to the effect that chimpanzees or other non-human primates are tool-users. Such claims are dependent upon what he takes to be a simplistic and reductive conception of tools and their cultural significance:

> Tool-use has a wider temporal and social reference than can be comprehended on the model of an individual animal seizing an opportunity to feed. Tools are used by creatures which, if not actually working together, are doing what they do in reply to, or expectation of, the actions of others, in an indefinitely extended web. It is not an external object and an internal need that inspires the tool, but the understanding that when you do one thing, somebody else does another that is integral to the success of both actions. Each action complements the other in an economy of reciprocal exchange mediated by tools and other artifacts. (205)

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ophy, Social Science and Policy (Cambridge, Eng.: Cambridge University Press, 2000); Ruth Millikan, *Language, Thought, and Other Biological Categories: New Foundations for Realism* (Cambridge, Mass.: MIT Press, 1984); Daniel Dennett, *Darwin's Dangerous Idea* (New York: Simon and Schuster, 1995); Steven Pinker, *How the Mind Works* (New York: W. W. Norton, 1997); Henry Plotkin, *Darwin Machines and the Nature of Knowledge* (Harmondsworth, Eng.: Penguin, 1994); and *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, ed. Jerome Barkow, Leda Cosmides, and John Tooby (Oxford: Oxford University Press). In some cases (notably Plotkin), the concept of knowledge is generalized to refer to any adaptive behavior that is differentially responsive to features of an organism's environment. In others, evolutionary naturalized epistemology addresses the adaptive significance of human mental representation and cognition specifically. Allen criticizes both approaches.

10. The dominant conception of speciation since the neo-Darwinian synthesis at mid-century has been anagenetic, the outcome of gradual changes accumulating within a lineage. Cladogenetic speciation involves branching within initially isolated populations, and the frequent extinction of branches, rather than the sequential succession of species within a single branch.

Explorations of tool-use in other primates are often motivated by awareness of the extent of genetic continuity between humans and non-human apes, but Allen rightly thinks the latter claim is misleading, in three respects. First, it is now widely recognized that gene sequences are resources for more complex developmental patterns, and small differences in the timing, context, and combinatorial patterns of gene expression can lead to fundamental differences in the organism. In that context, percentage overlap in DNA sequences is crucial for understanding evolutionary descent, but virtually meaningless for understanding function and behavior. Second, "tools" play a fundamentally different role in the behavioral ecology of human and other primate species:

> "The phyletic event of real biological significance is the emergence of Homo rather than the divergence of the [hominid] lineage from that of chimpanzees."[11] Strip [Homo sapiens] of tools, artifacts, material culture, and the result is not a naked ape thrown back upon its animal nature. It is an ecologically nonviable entity rapidly heading for extinction. A sheltering fabric of artifacts is an existential presupposition of H. sapiens, as much as fresh water. (320, 207)

We are, in my preferred terms, prosthetically embodied beings, for whom Allen's dense artifactual web is an indispensable component of our embodied way of life. Finally, but perhaps most crucial for Allen's overall argument, even the evolutionary success of *Homo sapiens* was secured prior to the development of its own distinctive artifactual culture:

> The emergence and consolidation of modern sapiens as a biological species does not correlate anywhere with the appearance of artifactual culture beyond the level of Neanderthal or even erectus. We have to wait 50,000 or 60,000 years for the first (and it is explosive) appearance of new artifactual forms, announcing the first modern human culture of knowledge. . . . The capacity for knowledge had little or nothing to do with the biological evolution of modern humans. (203)

This last claim ironically depends upon a narrowly reductive conception of human "biology" that does not sit well with Allen's general line of argument. A more appropriate conclusion would be that the capacity for knowledge in Allen's sense was not integral to the *genetic* evolution of modern humans, but is the dominant feature of our subsequent *biological* history, through which our neural, behavioral, and ecological development has been radically transformed by our own self-reinforcing activities of niche construction.[12]

I now turn to Allen's central proposal to take the emergence of a dense artifactual web as the primary locus for philosophical reflection upon "knowledge." He intends the concept of "artifact" to be read inclusively. Artifacts include struc-

11. Jay Kelley, "Life-History Evolution in Miocene and Extant Apes," in *Human Evolution Through Developmental Change*, ed. N. Minugh-Purvis and K. McNamara (Baltimore: Johns Hopkins University Press, 2002), 241-242. In Allen's text, this sentence appears in an endnote inserted at this point. I have interpellated the quotation into the main text.

12. For further discussion of the biological significance of niche construction, see Keith Laland, John Odling-Smee, and Marcus Feldman, "Niche Construction, Ecological Inheritance, and Cycles of Contingency in Evolution," in *Cycles of Contingency: Developmental Systems and Evolution*, ed. S. Oyama, P. Griffiths, and R. Gray (Cambridge, Mass.: MIT Press, 2001), 117-126, and Richard Lewontin, *The Triple Helix: Gene, Organism and Environment* (Cambridge, Mass.: Harvard University Press, 2000), chapter 2.

tures (houses and bridges); tools (forks, shoes, aircraft); practices (language, bureaucracy, alchemy); and unintended consequences (pollution, erosion, extinction, urban sprawl). When one considers the effects of agriculture on soil conditions, fossil-fuel burning on the atmosphere and oceans, and myriad human activities on other biological populations, there may be no significant human encounters with anything non-artifactual (the lack of a contrast-class does not disturb Allen, presumably because the diminution of the pseudo-contrast-class of pristine nature is a substantive recognition of the extent of human involvement rather than a merely verbal redefinition of "artifact"). Yet there remains an important contrast in a different way, not in the extension of "artifact," but in its sense: the extensive reconstructive interactions of other species with their environs do not create artifacts, because in Allen's use, the term requires complex patterns of *performative* interdependence which are qualitatively different from the ways in which other organisms "make" their own environment.

Several distinctions are crucial to understanding Allen's conception of knowledge as superlative artifactual performance. He adamantly rejects assimilation of his divergence from the epistemological tradition to the distinction between knowing-how and knowing-that. Partly that is because he regards propositional knowledge as itself a special region of the artifactual domain; the tradition primarily goes wrong in mistaking small, unusual parts for whole. Partly he takes the very conception of knowing-that to conflate the performative capacity of knowers with the propositional expression of their knowledge. Primarily, however, Allen's objection is that know-how incorporates the many mundane, routine performances of mere users of knowledge, whereas what concerns him are the distinctive, superlative performative capacities through which knowledge is cultivated. Here, however, I suspect that Allen's objection is an analogue to some mistaken objections to the views of Donald Davidson. Davidson claims that the mass of a speaker's beliefs must be true, as a condition of possibility of identifying some beliefs as false.[13] A critic might respond that it is not the mass of mundane, garden-variety "beliefs" that is of epistemological interest, but only the articulated expressions of high-level opinion, however much they presuppose countless truisms in the background. Davidson would nevertheless point out that these controversial opinions only make sense as beliefs at all as part of the larger doxastic whole. Allen's "superlative artifactual performances" may similarly be the small tip of an iceberg of highly interdependent, mostly mundane capacities for navigating the dense artifactual web upon which they depend, and from which they stand out.

A second distinction, between culture and civilization, does important work for Allen's overall argument. Allen uses the word "culture" for any complex artifactual economy; such is almost certainly characteristic of the entire genus *Homo*, and not merely its sole surviving species. He sharply distinguishes such cultures from "civilization," the much denser artifactual economy characteristic of urban life (including its more far-flung outposts, from agricultural and other resource-suppliers to suburbs and isolated monasteries or research stations).

13. Donald Davidson, *Inquiries into Truth and Interpretation* (Oxford: Oxford University Press, 1984).

There is knowledge in pre-civilized culture, of which Allen takes as exemplary the technical and expressive mastery displayed in Cro-Magnon cave paintings, or the skillful achievements of the earliest agriculture. Nevertheless, the complex interdependence, architectural development, and vastly extended horizons of artifactual possibility opened by urban life make cities the distinctive locus of knowledge in Allen's sense:

> The Stone-Age culture of Upper-Paleolithic Europe was the world's first great culture of knowledge and was at its height some 35,000 years before the first cities and civilizations. Yet when they do arrive cities change the conditions of knowledge. Knowledge is, and is not, the same before and after the city. It is the same, because knowledge is superlative artifactual performance . . . whether practiced by prehistoric nomads or postmodern urbanists. Yet the conditions under which knowledge exists are changed with civilization. The density of artifactual mediation sharply rises and, as I shall say, knowledge tends to become technological [with a practically infinite density of artifacts interacting with other artifacts, and at the same time remodeling, with side effects and by-products, the physical and social environment in which they operate]. (88-89, with interpellation from 90)

Presumably, it is the central connection between knowledge in his sense and the character and prospects of urban civilization that makes Allen adamant about preserving both the term "knowledge" and its familiar place at the center of philosophical attention, despite a substantial shift in its locus of application.

It is clearly a normative unity that Allen seeks for the term "knowledge" despite the vast heterogeneity of artifactual performances and capacities to which he attributes it. The *superlative* performative character of the artifacts produced and deployed by knowers is what Allen thinks commends them to philosophical attention. There is nevertheless an extraordinary variety of ways in which an artifact might exemplify superlative performance. It might be especially well suited for and integrated within a larger pattern of activities, such that its place within a dense artifactual and practical web creates minimal dissonance. Yet some artifacts function well precisely in demolishing past patterns of practice, and imposing new standards and goals. Many artifacts exhibit such characteristic excellences as efficiency, speed, power, scale, or reliability (some of which may involve mutual tradeoffs). Some show a unity of form, function, and performance whose excellence is first and foremost aesthetic. Some are remarkably productive in stimulating and connecting other innovations and performances: railroads, computers, or electric motors come readily to mind, with cities themselves undoubtedly the pre-eminent case of a *productive* artifactual achievement for Allen.[14] Some excel, or fall short, in their ecological or economic sustainability, rather than just their physical or mechanical reliability. Yet one might also assess the excellence or deficiency of artifacts in the broadly moral terms of their conduciveness to a good or just way of life (theorists from Plato to Gandhi or Ivan Illich have assessed artifactual performance and capacity in such terms). The effort to identify *knowledge* in these quite diverse terms may well bring only a spurious unity to the concept and the task of a reconceived "epistemology."

14. Although he cites her only sparingly, the work of Jane Jacobs, notably her *Cities and the Wealth of Nations: Principles of Economic Life* (New York: Random House 1984), seems indispensable background to Allen's conception of cities as the characteristic locus of knowledge.

Allen explicitly endorses all but the last of these dimensions for assessing artifactual performance, and even there, in some respects his own critical discussions resonate with those of a moral critic such as Illich. He briefly takes up some proposed counter-examples, from what to make of the putatively superlative performance of destructive artifacts from machine guns to Auschwitz, to the artifactual culture of practices such as magic or alchemy. In both cases, he acknowledges some point to recognizing these as accomplishments, while arguing that the more severe limitations of both groups of examples can be clearly and strikingly displayed in contrast to an open-ended list of accomplishments such as sailing ships, writing, movable type, wheels, arches, and penicillin. His most extensive (but still brief) application of criteria for artifactual performance, however, is to several cases he regards as significant failures of knowledge. The collapse of the Tacoma Narrows Bridge due to its aerodynamic resonance with the wind, the architectural and social failures of post-World-War-II "urban renewal" (exemplified in the eventual demolition of the Pruitt-Igoe housing project in St. Louis), and the development of chemical-intensive agriculture seem to be exemplary cases for Allen. Tacoma Narrows is of course a spectacular exception to the almost-canonical reference to bridges as exemplary applications of reliable knowledge (in the more traditional sense of the term). Allen cites it not simply as a clear case in which the failure of the artifact testifies to the epistemic failings of the artificer; he emphasizes the irresponsibility of the engineering profession, which actively fought the imputation that the designers should have known better. The other two cases, however, suggest that the conjunction in Allen's title has a greater significance than he explicitly proposes. Civilizations are not merely the setting for the most extensive development of artifactual knowledge, and also the most knowledge-dependent forms of human life. In the examples of industrialized agriculture and urban renewal, I think, the assessment of artifactual performance is inseparable from the broadly political assessment of the ways of life, the civilizations if you will, to which they have been integral. If so, then Allen's book-length rejoinder to those of us who deny that "knowledge" demarcates a non-trivially unified philosophical subject matter may be somewhat disingenuous. The diverse ways in which the artifactual economy of a civilization may succeed or fail may be only nominally unified if reconceived within a philosophical "theory of knowledge."

When I turn to the normative issues that seem of most concern to Allen in the four chapters devoted to his positive reconstruction of knowledge, my concern is heightened. It is only with hesitation that I identify these issues, since Allen himself does not collectively characterize them as such, and the book is not organized to highlight them. Yet they seem to this reader what he thinks would be addressed by shifting philosophical "epistemology" from the analysis of justified true belief, or other "belief-plus" formulations, to the assessment of artifactual performance. I will mention five issues, although undoubtedly others could be culled from Allen's wide-ranging book. I leave it to readers to judge between Allen's implicit suggestion that these issues display the prospects of a revised conception of a "theory of knowledge," and my own inclination to place these

among the many diverse issues open to philosophical attention when we no longer think of "knowledge" as a theoretically unified and central topic for philosophical reflection:

1) The ecological instability always characteristic of cities, which has been heightened by the artifactual-intensity of technological civilization and its now-global extension:

> A singular destiny may therefore await present-day civilizations. There is nothing unique about collapse—every civilization eventually does. But "collapse" implies collapsing back into something, returning to a lower level of human existence. The question is whether the only thing left for civilization to collapse into is our extinction as a species on the earth. (284)

2) The conflict between knowledge and authority, which Allen understands as the impulse to subject the dynamic creativity of artifactual innovation to often-destructive discipline (urban planning, "scientific" agriculture, and the modern medicalization of health exemplify for Allen the counter-productive effort to subject the somewhat anarchic growth of cities and their artifactual culture to rational control):

> Every civilization has to cope with the desire and inspiration to freeze a good thing, to stop it from changing, mummify it, as if by force of will something can be made to last forever. The lesson knowledge teaches is the opposite, that every balance is dynamic. . . . Confronted with effective knowledge, authority either recognizes individual freedom or becomes blatantly coercive. . . . Authoritarian government resents knowledge, preferring to control or manage it, even if that means running it (and themselves) into the ground. (254)

3) The role of artifacts in sustaining or subverting a culture of epistemic excellence. Allen's evolutionary argument emphasizes the ways in which neotony allows human neurology and bodily capacities to develop in response to a specific environment, one that is now mostly shaped by an artifactual economy. In contrast to those "evolutionary epistemologists" who think human cognitive capacities were imprinted once and for all in the late Pleistocene, Allen thinks those capacities develop in ways that our genetic resources enable but do not guide. These open-ended cognitive-epistemic capacities enabled the late-developing "explosion" of densely artifactual civilizations, but such dynamic capacities have a fragility that comes from dependence upon the contingencies of their ongoing reproduction. Allen emphasizes that artifacts vary in the degree of skill required to use them, and in the extent to which they admit or encourage a difference between ordinary and excellent performance. The historical development of artifactual economies can cause some skills and performative capacities to atrophy (Allen highlights the loss of traditional agricultural knowledge as farming has been industrialized, but historians of the industrial revolution may wonder whether his worries are so different from earlier laments over the demise of craft skills in spinning and weaving). Although he does not call attention to this connection throughout the book, I think a concern for the dynamic maintenance of artifactual skill is why he is so insistent upon the difference between "superlative artifactual performance" and mere "know-how":

Knowledge is cultivated, cycling through the economy each generation, as the artifacts of past knowledge are worked over by present knowledge to become the artifacts of the future. The conservation of knowledge through the cycle is not a law of nature. Conservation requires exemplary performance, transcending the inane, banal and ordinary in the direction of elegance, innovation, fecundity, and seriously new alternatives. As a form of success, knowledge must be practiced very well merely to be conserved without loss. (273)

I nevertheless note that, however much plausibility there is to this last claim that only exemplary performance can sustain an artifactual culture over time, Allen offers no argument whatsoever for it.

4) The importance of truthfulness and epistemic responsibility, rather than truth, as cognitive and epistemic virtues. Allen's explicit hostility to engineers' collective refusal to acknowledge Tacoma Narrows as a professional failure, to archeological scholars' initial dismissive response to an amateur's discovery of the Altamira cave paintings, or to Albert Speer's contortions in repudiating awareness of and responsibility for the mass murder of European Jews is rooted in his insistence upon understanding truthfulness as a performative, moral good, rather than as derivative from a feature of its propositional expression:

What is vicious about truthlessness is not that a statement fails to hold up, but that someone aggressively advances it as true and known, successfully invoking an authority before which others are expected to retreat. It takes this abuse, not insincerity or refutability alone, to make a person, and not just a claim, morally truthless. (79)

5) A fundamentally aesthetic appreciation (and disgust) at the achievements and failings of artifactual performance. Allen repeatedly emphasizes the aesthetic and "preferential" dimension of epistemic normativity. In some respects, such aesthetic response governs our assessment of the performance and appearance of artifacts, although he clearly thinks this responsiveness is also cultivated by human development within an artifactual economy. He invokes such aesthetic preferences as integral to the shift from nomadic to settled, agricultural cultures, to the acquired human predilection for cities and urban civilization, but also to our patterns of conceptual articulation (for example, he attributes to an aesthetic preference, rather than either a defensible reason or a merely contingently ingrained habit, our practice of inductively projecting "green" rather than Goodman's contrived "grue," defined as "green if first observed before time *t*, otherwise blue").[15] In the end, his core normative conception of "superlative artifactual performance" may be fundamentally aesthetic:

Art and knowledge alike are rooted in aisthesis: prelogical preferences, prelinguistic sensitivity to felt differences; an aesthetic comprehension of performative possibilities conditioned by the ontogenetic interaction of neurology and artifactual ecology. . . . It is generally true of any problem that those who feel it and need what knowledge does are able to recognize its accomplishment when they see it. I do not need to be able to say in advance and in interesting detail what makes a superior bridge or ship to appreciate that a given work is or is not one. (69)

15. Goodman first introduced "grue" and his "new riddle of induction" in Nelson Goodman, *Fact, Fiction and Forecast* (Cambridge, Mass.: Harvard University Press, 1954). Allen discusses the aesthetic choice between grue and green on 68-69.

Allen has interesting and provocative things to say about all of these issues, well worth serious consideration. Yet their diversity of topic and argumentative basis does not merely highlight my philosophical worry that Allen-style epistemology would conceal an extraordinary range of normative concerns and subject matters under a merely-nominal heading of reflection upon "knowledge." This topical diversity contributes to what I find the most troubling feature of the book, namely Allen's apparent unwillingness to undertake a sufficiently sustained philosophical discussion of some of his core claims. The ironic result is that this book, which celebrates knowledge as superlative artifactual performance while subsuming more narrowly intellectual achievements within the domain of artifacts, is not itself a superlative exemplar of the book as a genre of artifact.

Philosophers typically write books in order to permit more sustained articulation and defense of complex ideas, or to show how apparently diverse themes are mutually illuminating or reinforcing when considered together. Allen's book clearly aspires to the latter purpose of displaying unanticipated connections, but he writes a bit too restlessly. I had initially read chapter 2 as a useful first introduction to the themes of part III, where he would then develop a more sustained constructive account of knowledge as "superlative artifactual performance" and show the advantages of thinking in these terms. Yet most of the issues raised in chapter 2 received no further development at all. Thus, his entire discussion of the multiple dimensions of assessment of "superlative artifactual performance," their unity or disunity, and their predominantly aesthetic deployment (68-74), was no longer than, for example, his digression on a "Himmlerian politics of sex" in the chapter on Foucault (131-137). Indeed, the entirety of part II (the chapters on Nietzsche, Foucault, and Rorty) was itself largely a digression. It is not clear to me why greatly-truncated versions of these chapters did not belong alongside the briefer treatments of Heidegger or Dewey in chapter 1, thereby allowing for a more sustained and continuous development of the central themes of the book concerning the place of artifacts and their associated human skills and capacities in evolution, civilization, and the human prospect.

Had Allen chosen to undertake a more sustained philosophical treatment of his central themes, surely it would have included further explication and illustration of "superlative artifactual performance," and the virtue of unifying his diverse concerns under the heading of "knowledge" as a topic for philosophical reflection. But there are also three topics whose treatment I regard as central to sustaining his proposed revision of philosophical reflection upon knowledge, but which receive no serious development in Allen's book. More substantial discussion of the place of language, science, and politics within his account would have greatly enhanced his articulation and defense of his conception of knowledge.

One of the most convincing arguments for Allen's claim that superlative artifactual performance ought to replace "belief-plus" and other discursive conceptions of knowledge would be to show that there are serious advantages to situating linguistic practices within a conception of knowledge that gives priority to artifactual performance. Allen at several points makes the claim that languages, and human performances within language, are artifacts. He also recognizes, but

does not further discuss, that "language was a prerequisite for [artifactual knowledge] through the enhancement language brings to the economy of socially complementary action" (202). He does discuss the evolution of language at somewhat greater length, but mostly in order to defend the claim that language emerges as a non-adaptive spandrel, in opposition to those evolutionary naturalized epistemologists who insist upon the adaptive significance of language and cognition as the source and ground of our epistemic capacities. He could have substantially developed and strengthened his view, however, had he emphasized conceiving language as part of the *material* culture of artifacts. The ways that writing, printing, and now computing have reshaped the role of language within human cognition highlights the fact that language is not merely a disembodied space of propositional representation, but a material practice that is integral to human beings' developmental environment.[16] Even spoken language is a pervasive feature of the artifactual niche that mediates human life. Allen's discussion of the evolution of language plausibly speculates that human proto-language emerges as part of ritual practice, but surely melody, rhyme, and other performative elements heighten the integration of language and its cognitive function within predominantly oral cultures as spaces of human activity. Ironically, by neglecting the discursive dimension of human life, except in his critical discussions of those epistemologists who confine "knowledge" within a disembodied linguistic realm, Allen reinforces familiar separations of practice from theory, and discourse from material interaction with our surroundings.

Allen's contrast between traditional epistemology and his preferred conception of knowledge is seriously incomplete in a different way through his nearly complete neglect of empirical science. Science provides the exemplary cases of knowing for all but the most eviscerated of contemporary epistemologies. A philosophy of science that takes seriously the larger context of scientific practice could well be an ally in Allen's objections to theories of knowledge that altogether neglect the artifactual mediation of human understanding. As I have already mentioned, recent scholarship on the sciences belies the epistemological tradition's narrow conception of what scientific knowledge amounts to. On the other hand, Allen's discussion of how civilization becomes technological would be enriched and possibly challenged by more extensive discussion of the role of the sciences in the extension and intensification of a global technological civilization. At some points, Allen seems to regard science more as a social structure of authority that seeks to discipline and control the development of artifactual knowledge than as itself an integral part of a complex artifactual economy. Yet surely his insistence upon the *technological* character of modern civilization must recognize a more constructive role for the sciences within its dense web of artifactual interdependence. Sorting out the place of the modern sciences in his

16. On the role of writing, see Jack Goody, *The Domestication of the Savage Mind* (Cambridge, Eng.: Cambridge University Press, 1977) and *The Logic of Writing and the Organization of Society* (Cambridge, Eng.: Cambridge University Press, 1986). On printing, see Adrian Johns, *The Nature of the Book: Print and Knowledge in the Making* (Chicago: University of Chicago Press, 1998) and Elizabeth Eisenstein, *The Printing Press as an Agent of Change* (Cambridge, Eng.: Cambridge University Press, 1979).

overall conception of knowledge, civilization, and the challenges confronting both would thus have greatly clarified and strengthened Allen's treatment. Moreover, until the place of the sciences in his account has been more adequately developed, Allen's preferred conception of "knowledge" will seem to many readers more like changing the subject of epistemology, rather than expanding and enhancing the treatment of that subject.

The place of politics within Allen's account of knowledge and civilization is a final topic whose further elaboration is needed to understand just what his view amounts to. Hobbes famously conceived the state as the most distinctive and crucial human artifact: "For by art is created that great LEVIATHAN called a COMMONWEALTH, or STATE (in Latin CIVITAS), which is but an artificial man, though of greater stature and strength than the natural." In the absence of this preeminent human artifact, Hobbes famously argued, "there is no place for industry, because the fruit thereof is uncertain, and consequently, no culture of the earth, no navigation, nor use of the commodities that may be imported by sea, no commodious building, no instruments of moving and removing such things as require much force. . . ."[17] The conception of political communities as artifacts nevertheless extends back at least to Plato, who in Book X of the *Republic* located Socrates' and Glaucon's imaginative construction of the *kallipolis* at the level of knowledge achieved by the carpenter who makes a bed, as opposed to those who know its Form, and those who merely use it or depict it. For Allen, by contrast, it is urban civilization itself rather than its political organization that is preeminent; political authority seems to be derivative from and to some extent destructive rather than enabling of artifactual knowledge. Given the themes that become central to his argument in the final two chapters, at least some attention to this question seems called for. To what extent is the political governance and guidance of artifactually dense civilizations integral to his proposed renewal of philosophical reflection upon knowledge as "civilized?" The import of this question is heightened if we conceive of politics as opening a space for collective reflection upon who we are, what we aspire to, and what is at stake in our practices. Asking how we can collectively reconcile and realize our aspirations as participants in a densely artifactually mediated way of life would seem to connect politics and discursive understanding within what his final chapter calls "the ultimate context" for understanding knowledge as superlative artifactual performance.

Despite my concerns, this is an engaging and provocative book. Allen is more successful in generating new ways of thinking about seemingly well-worn topics than he is in working them out more carefully and thoroughly, but he has provided more than enough challenging insights to make the book worthy of reading and reflection.

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17. Thomas Hobbes, *Leviathan* (Indianapolis: Hackett Publishing, 1994), 3, 76.