Mobile Media and the Palaeolithic

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![](images/mousterian_tools.jpg)
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Technology and Technique in the Mousterian Debate

Illustrated here are two groups of stone tools manufactured by a Neanderthal culture known as the Mousterian, estimated to be anywhere between thirty and three-hundred thousand years old. The group of tools on the left includes heart-shaped handaxes, knife edges with smoothed hand holds, a number of small borers made of flint, and ridge-faced scrapers described as "denticulate" for their tooth-like structure. On the right, we have a greater number of side-scrapers with a single working edge, a more uniform style of retouching that resembles overlapping fish scales, and a painstakingly formed blade usually associated with the later industries of anatomically modern humans. These tools, all of which were excavated in the 1950s from the same site in the southwest of France, occasioned one of the most famous debates over the study of cultural transmission through the archaeological record. At a time before the development and influence of chronometric techniques like radiocarbon dating that would allow later paleoarchaeologists to definitively order these artifacts in time and space, the Mousterian debate centered on the question of how we can extrapolate history from the formal properties of a technical object.

For Francois Bordes, formal differences in "lithic," or stone, artifacts are evidence of distinct cultures that held shared traits. In classifying groups of tools with shared morphological characteristics (the above representing only two of the four groups in his taxonomy), archaeologists could identify unique populations that existed at different moments in time. Thus, in this "phylogenic interpretation" of artifacts, technology provides evidence of the cognitive evolution of hominid species[1] Bordes's approach was revolutionary, as it was one of the first that rejected teleological models of evolution moving from the simple to the complex. His taxonomy of the Mousterian industry showed that there was no definitive "progress" from one group of tools – and thus cultural groups – to the other, with some complex artifacts preceding cultures that manufactured simpler stone tools. At the same time, Bordes's direct mapping of technological evolution onto biological evolution unseated the importance of anatomically modern humans and their emergence in the archaeological record by showing the great diversity and complexity of Neanderthal cultures, a species whose cognitive capacities were previously thought to be relatively elementary.

For the younger American archaeologist Lewis Binford, Bordes's phylogenic approach took far too many liberties in extrapolating definitive cultural characteristics from the morphology of artifacts. Instead, Binford encouraged a far more pragmatic approach, one focused on the functions that each of these tools might have served. Binford's interpretation was based on a processual understanding of culture: an unfolding negotiation of groups, artifacts, and environments rather than a static set of shared traits.[2] Defining culture as an "extrasomatic means of adaptation for the human organism," Binford is here not far from Bernard Stiegler's increasingly influential theorization of technics as "a process of exteriorization, [...] the pursuit of life by means other than life."[3] Binford's "functional interpretation" saw tools as adaptive markers that existed in complex relationships with new environmental demands and changes in social organization. Denticulate tools used for butchering animal carcasses or side scrapers for shredding plant materials might take on a different form when a population encountered a new species moving into their region. Similarly, if that group experienced an environmental change or migrated to a different terrain, they may have to fashion their tools out

[1] Bordes (1961)
[2] Binford (1962)
[3] Stiegler (1998), p. 17

of very different raw materials. Thus in Binford's functional interpretation, the types of histories one can infer from the paleoarchaeological record are manifold.

The Mousterian debate reveals the complexity of how we narrate the many lives of technology: the tasks to which our tools are put, the expanded ranges of action and forms of expression they enable, the cohesion and succession of sociocultural traditions, and how we resurrect such forms of subject-object interaction from history. Bordes provided a model by which we can begin to think about successive paradigms of techn-ology in its most literal sense– as a thinking on and through tools–while Binford's approach encouraged a historicist acknowledgement that everything we know about the past of tool use is based on extrapolation, especially when it comes to prehistory. Of course, these questions of interpretivism have since been simplified by chronometric techniques that lend greater accuracy to the dating of objects. Bordes and Binford wrote just before the development and influence of radiocarbon dating, which allowed later archaeologists to definitively date the sequence in which these tools were developed. Unless researchers like Bordes and Binford extracted palaeolithic tools from neatly stratified layers in the sediment, thus lending some sort of temporal order (which was exceedingly rare), they strung artifacts together in a historical sequence by extrapolating out from form.

But to say that radiocarbon dating effectively solves the Mousterian debate by allowing the paleoarchaeologist to declare that, in fact, this side-scraper is exactly 43,000 years old, is to overlook the material vicissitudes of extracting a technical object from the sediment and abstracting it from all of its Heideggerian involvement-relationships. Herein lies the importance of understanding the technical object not just as a tool, but as a complex of traces revealing the preferences, routines, and styles that form the basis of individual and social behavior. In extracting and abstracting these artifacts, we experience what German media theorist Wolfgang Ernst describes as "the hard-edged resistance of material objects that undo historical distance simply by being present." No matter how finely tuned the scientific instrument, the accuracy of archaeological evidence is always inflected by "the human eye, confronted with an irritating material presence of the past, which by definition should be absent, [a situation that] immediately confounds evidence with magic."[4]

[4]Ernst (2011), p. 249

Magic, when it is spoken of in relation to technology, usually implies a kind of awe in the face of inscrutable complexity. According to Arthur C. Clarke's so-called third law, "any sufficiently advanced technology is indistinguishable from magic."[5] But it is important for us to remember that there is a very different form of magic about tools as simple as the denticulate side-scraper, one that has everything to do with legibility. These artifacts compel speculation on the irremediable texture of habits and techniques that have long since been forgotten or absorbed into other forms of technical expertise. Despite their alien appearance and their improbable survival from a world so different from our own, these tools (like any other) almost seem to reach out and grasp us, whispering of how they are to be used. This is what we might call technology's ontological magic: how we come to understand what a tool is and what it's good for.

While the Mousterian debate reveals what's at stake when thinking about technology, I want to suggest that it also dramatizes what it is to think through technology. There is something of this paleoarchaeological magic evoked every single time we pick up a tool. A delimited set of affordances branches off from the contours of the individual tool (e.g. torque, storage, amplification), but it is never enough to simply begin and end here. This purposive model must always unfold into a range of preferences, routines, traditions, and styles. Thus, the dialectic at the core of the still unresolved Mousterian debate – between cultural tradition or functional adaptation, technology or technique – is played out in the ways we think through a problem using the potential grammar of material solutions, whenever we decide to push or pull, attempt to decipher a manual, or prepare to teach a new method.

The "operational sequence" of any technical interaction, as the French archaeologist Andre Leroi-Gourhan calls it, consists in an assemblage of material and non-material components:

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# gourhan quote
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"Techniques involve both gestures and tools, sequentially organized by means of a 'syntax' that imparts both fixity and flexibility to the series of operations involved. This operating syntax is suggested by the memory and comes into being as a product of the brain and the physical environment."[6] In this

[5] Clarke (1962), p. 36

[6] Leroi-Gourhan (1993), p. 114

sense, the precise contours of technical interaction have the potential to be wholly unique every time, with each instantiation of a particular technology or technique being subject to an alchemical mixture of cultural determinants and individual predispositions. The tool cannot simply be reduced to the culture from which it emerged, nor can it be understood solely through the logic of functionality. Between the technology and the technique, there is a unique "syntax" negotiated by each of us, drawing upon the capacity to read the range of practical use off the shape of a tool, to imagine a series of possible or desirable outcomes, and to make those intangibles material.

But if we continue in this vein, following Heidegger's insight that "the essence of technology is by no means anything technological," what then should constitute our object of study?[7] Does a Levallois handaxe crafted from a previously prepared stone core constitute a technology or a technique? What about a telegraph key designed to be grasped in the palm, its sounder struck with the thumb? Or a touchscreen that allows a pinching gesture to be translated into a change in the size of a digital image? The relationship between a tool and its affordances has been tackled from a number of angles. But very few studies have been willing to take up the imaginary or speculative dimensions necessary to any instance of technical interaction. Everyone picks up a tool in the subjunctive mood: what does this make possible that wasn't before? How hard do I have to swing it? How can I apply this to my concerns? Even, why doesn't it work? Prehistoric stone tools, dead media, and shiny new devices feel like magic because they exceed the contextual frameworks within which we would normally use them while at the same time providing a material trace of what the contours of that use might look like.

The paleoarchaeological idea that changes in technology can help us to register evolutionary shifts in the cognitive capacities of hominids is one that has begun to enter popular consciousness, thanks to contemporary conversations on digital media. Gadgets like smartphones, tablets, and GPS receivers, say the pundits, are fundamentally altering the ways we read, communicate, and even think.

This shift has ramifications for **logic** ("Over the past few years I've had an uncomfortable sense that someone, or something, has been tinkering with my

[7] Heidegger (1977), 4.

brain, remapping the neural circuitry, reprogramming the memory. My mind isn't going–so far as I can tell–but it's changing. I'm not thinking the way I used to think"), **memory** ("...it is an attribute of the Internet to activate in me, and maybe in all its users, a persistent sense of deferred expectancy, as if that thing that I might be looking for, that I couldn't name but would know if I saw, were at every moment a finger tap away"), and even spatial reasoning (a recent editorial in The New York Times by the cognitive scientist Julia Frankenstein reports that the nature of spatial interactions – whether mediated through verbal directions, a map, or GPS technologies – physically alter brain structures). "I **miss my pre-internet** brain," reads one piece of installation art by Douglas Coupland that has since gone viral as an Internet meme.

Further, several different approaches to questions of how technology evolves are now beginning to take off in media theory. After decades of denigrating the metanarratives of (among others) Marshall McLuhan, Lewis Mumford, and Vilem Flusser – theorists who sought to construct a deep history of technological paradigm shifts, each of which culminated in projected futures of what they called (respectively) the global village, neotechnic phase, or telematic society – models of evolutionary epistemology have begun to creep back into theories of media and technology. Excavational metaphors abound in digital media studies: media archaeology, data mining, the "forensic imagination," and "visualizing the nineteenth century literary genome." Man the Toolmaker, a notion prevalent among paleoarchaeologists in the mid-twentieth century that connected the emergence of the human with the beginnings of tool use, has taken on a new significance in the age of digital media and mobile computing.

As a means of assessing the changes wrought by new technologies, it has led to a resurgence in the concept of technogenesis among media theorists: the idea that hominids have co-evolved with tools in a highly complex feedback loop between the biological and the technical. For proponents of the theory of technogenesis, "it is impossible to define the human as either a biological entity (a body or species) or a philosophical state (a soul, mind, or consciousness), because our 'nature' is constituted by a relation to technological prostheses."[8] As David Wills writes, "there is technology as soon as there are limbs, as soon as there is any articulation at all. As soon as there is articulation, the human

[8]Bradley (2006), 78

has rounded the technological bend, the technological turn has occurred, and there is no more simple human. Which, for all intents and purposes, means that there was never any simple human."[9]

While many proponents of technogenesis write on the scale of tens of millennia, others espouse the theory as a way to speak to the specificities of the digital. Some media theorists take the evolutionary model quite literally, as does Katherine Hayles when she writes of "the changes in human attitudes, assumptions, and cognitive modes associated with digital media." But if the digital revolution not only recapitulates the evolution of technology but intensifies it, as Hayles would have it, the question becomes: is it possible for an individual to actually feel the pressure of evolutionary change? Can what previously occupied vast swaths of evolutionary time now be condensed into the life of an individual organism, or even further, a particular moment of technological interaction?

On one level, the answer is: certainly not. No one fully understands the mechanism behind the evolutionary divergence of modern humans from species who didn't use tools, and any attempts to understand what the next great evolutionary leap may be (or has been) – such as Leroi-Gourhan's amazing speculations in 1962 on the rise of automation and "audiovisual media" – are speculative at best. Moreover, many media theorists writing on the idea of technogenesis in relation to contemporary media technologies employ ideas that are highly contentious and even completely outmoded among paleoarchaeologists today. For instance, many proceed from the starting point that it was the emergence of bipedalism that first allowed tool usage, citing a line of Darwin's speculating that walking upright freed the hands to manipulate objects and carry food over long distances. This idea is not only problematic because it is now generally accepted that our hominid ancestors were bipedal millions of years before they began making tools, but because tools have been observed in use with a wide variety of non-bipedal animal species, including chimpanzees, who have been shown by primatologist Andrew Whiten to possess "the capacity for cultural transmission." That is, "experimentally introduced technologies will spread within different ape communities," and individual chimpanzees show "a capacity to acquire local variants of the technique." Research on the "cultures" of animal tool use significantly complicate claims that technology marks the distinctive specificity

[9]Wills (2008), 5-6.

of the human.

And yet on another level, there is something to the idea that an encounter with a new technology causes an immediate reorientation in the ways we make sense of the world. The gadget-conscious of today frequently remark that touching the latest Apple product is like "holding the future in your hands,"

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![](images/2001monolith.gif)
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as if the iPhone were the next iteration of the *2001: A Space Odyssey* monolith: a sleek black box we couldn't possibly understand but that somehow makes us smarter the instant we touch it. In this mythical explanation of human origins that falls into the gap of Kubrick's famous match cut from the bone club thrown into the air to the spaceship gracefully floating through outer space, we are simply remade by the tool the moment what might be done with it becomes clear.

The turn I want to make here to palaeo-archaeology, is meant to emphasize that any approach to the historiography of media cannot merely devolve into a collection of forgotten curiosities and thus a better, more complete form of history. Instead, paleoarchaeology gives itself over to inference, to potentialities not readily available on the surface by extrapolating history from typology, by "defining the position of each element in relation to the other elements in the series," as Foucault puts it in one of his more materialist definitions of archaeology. Technical artifacts takes on a variety of forking paths, potential lives that branch off from the individual tool. Further, these tools are treated not merely as self-sufficient pieces of evidence, but as ideational units, imaginative products of the mind and culture that produced them. In this way, the idea behind my project is to explore not merely fictions about particular technologies, but the constitutive fictionality of technology itself – the way in which any technical interaction compels imaginative thought. Paleoarchaeology's "epistemological reverse engineering" of human tool use mirrors the very process it seeks to uncover: we hold a tool and attempt to think through the contours of what it affords.

While media studies has classically been interested in large scale materiality – broadcast networks, representational frameworks, content delivery systems, power structures, transnational flows – **several emergent approaches to what we are calling here a "new apparatus theory"** – indicate a renewed attention to materiality as a process, negotiated on the smallest

of scales. The ongoing debate in paleoarchaeology over how to interpret technical artifacts remains instructive for theorists of media. What is the unit of analysis we are are interested in: the technical artifact or the ideational unit that it symbolizes? The inner structure of that artifact or the web of practices, actors, and materials that it draws together? Hewing closely to the contours of the gadget as an object of study, I want to ask: what would a media theory of interaction look like, one in which materiality encompassed the mediation between an individual subject and object, user and tool? What can we read off the shape of the individual artifact: a distinct culture, unique in space and time, or the uses to which that tool can be put, with all that such usage entails?

While thus far media archaeology seems to privilege the history of vast social and technical apparatuses, a paleoarchaeology of media would not focus exclusively on the artifacts constituting these *epistemes* but on their techniques as well. These techniques include not only the technical work process to which a given tool is put, but the ideas behind technologies – fictions or memes of their efficacy, a subjunctive realm that for Leroi-Gourhan has every bit as much to do with operational sequences as do the tools themselves. Fictions – thus broadly understood – play a constitutive role in the emergence of new media as socially shared systems of communication and expression. A fuller understanding of these imaginative dimensions is important not only for the the tools we use every day, but for the study of historical and future technologies as well.

Bibliography

Binford, Lewis R. 1962. "Archaeology as Anthropology." *American Antiquity* 28 (2) (October): 217. doi:10.2307/278380. http://www.jstor.org/discover/10.2307/278380?uid=3739808&uid=2&uid=4&uid=3739256&sid=21101608076611.

Bordes, François. 1961. "Mousterian Cultures in France." *Science* 134 (3482) (September): 803–810.

Bradley, Louis Armand & Arthur, ed. 2006. *Technicity*. Litteraria Pragensia.

Clarke, Arthur C. 1962. "Hazards of Prophecy: The Failure of the Imagination." In *Profiles of the Future: An Enquiry into the Limits of the Possible*.

Ernst, Wolfgang. 2011. "Media Archaeography: Method and Machine Versus History and Narrative of Media." In *Media Archaeology: Approaches, Applications, and Implications*, 239–255. Berkeley: University of California Press.

Heidegger, Martin. 1977. *The Question Concerning Technology, and Other Essays*. Garland Pub.

Leroi-Gourhan, André. 1993. *Gesture and Speech*. Translated by Anna Bostock Berger. The MIT Press.

Stiegler, Bernard. 1998. *Technics and Time, 1: The Fault of Epimetheus*. Translated by Richard Beardsworth and George Collins. Stanford University Press.

Wills, David. 2008. *Dorsality: thinking Back Through Technology and Politics*. U of Minnesota Press.