The Media-Anthropological Turn of Cultural Techniques

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> Cultural techniques—such as writing, reading, painting, counting, making music—are always older than the concepts that are generated from them. People were writing long before there was any concept of writing or of the alphabet; millennia passed before pictures and statues gave rise to the concept of the image; and still today, people can sing or make music without knowing anything about scales or musical notation systems. Counting, too, is older than the notion of number.[1]

Ubiquitous in contemporary German media theory, the concept of *Kulturtechniken* (cultural techniques) promises, as in Thomas Macho's dictum, to reach back before the reification of apparatuses and nouns in order to access the verbs and operations from which these nouns and artifacts first emerged: writing, painting, counting, making music, and many others.

This basic idea is perhaps the only common denominator in current discussions of cultural techniques, and it is usually applied with a privileged reference to media. One representative outline reads:

> To summarize the contours of a "culture-technical perspective": cultural techniques are (1) operational procedures for dealing with things and symbols, which (2) are based on the dissociation of an implicit "knowing how" from an explicit "knowing that," and thus (3) should be understood as corporeally habitualized and routinized skills that become effective in everyday, fluid practices, while (4) also forming the aesthetic, material-technical basis for scientific innovations and novel theoretical objects. The (5) media innovations associated with the transformation of cultural techniques are situated in a reciprocal relationship between text, image, sound, and number, that (6) opens up new domains of perception, communication, and cognition.[2]

Put differently, but no less practice oriented:

> The methodological approach in the field of cultural techniques can be characterized by its emphasis on the dimension of practice in media-historical analysis: media become intelligible as

> cultural techniques through the reconstruction of the practices in which they are embedded, configured, or from which they are constitutively generated. These practices range from ritual acts and religious ceremonies to the methods for producing and representing 'objective' scientific data, from pedagogical methods to political, administrative, anthropological, and biological "form(ul)ations of the human."[3]

This emphasis on the dimension of practice and its mediatization, however, inevitably leads—by retracing the steps of the corresponding institutional and ritual activities—into the deeper complexities of the concept of "cultural techniques." Without a doubt, the concept encompasses both the oldest and the newest media, as well as all other "semiotic practices" that have not always been referred to as "media." Yet it also comprises a broader array of practices: "The concept of cultural techniques cannot, however, be limited to the techniques of utilizing images, writing, and numbers. It equally includes the uses cultures make of the body ('body techniques'), such as rites, customs, and habits, as well as systems of training and discipline, the use or tabooing of drugs, and practices of hygiene and disease control."[4] Yet what appears to be a mere expansion of the concept—the inclusion of body techniques—is, historically speaking, actually a return to its origins. The German concept of "cultural techniques" repeatedly invokes the founding document of Marcel Mauss, whose consequential extension of material techniques to include "body techniques" was accompanied by a redefinition of the very concept of technique.[5] "Body techniques," therefore, stand at the beginning of the entire undertaking and, at the same time, mark the current limits of its discussion. This supposed expansion of the concept of cultural techniques leads to a whole series of complications in its theoretical articulation that remain unresolved to this day.

At stake is the choice of concepts—and the increasing risk of arbitrariness of their employment. Which *concept of media* should one adopt, once body techniques are subsumed under cultural techniques (or conversely, when cultural techniques are co-constituted by body techniques, as Mauss himself suggests)? Must the media concept then be transformed in such a way that it enfolds the (always only provisional) morphology of the whole field, and does it not then coincide with a new *total concept of "techniques"*? Or, conversely, should one again limit "cultural techniques" to the *media techniques* already familiar to us, either by invoking the dominance of the major media (writing, image, number), or by pursuing an exploratory approach that gradually incorporates all additional media over time, leading to the provisional acceptance of an open-ended list?

One form of delimitation or another will be unavoidable, as soon as we aim to more precisely define the relationship between the field

of cultural techniques and the concept of media. I would like to briefly invoke two existing proposals in this regard, before outlining my own position.

(1) Christian Kassung has provided me with a preliminary attempt at clarification (formulated in collaboration with Thomas Macho):

> The concept of cultural techniques by no means refers to all techniques that are practiced within a culture. But how does one distinguish those techniques that enable a culture to develop concepts of itself—in other words, cultural techniques in a narrower sense—from techniques like agriculture, nutrition, stockpiling, economy, or sports? Cultural techniques differentiate themselves from all other techniques through their potential for self-reference. This pragmatics of recursivity is made possible by two further characteristics of cultural techniques: they perform symbolic work, and, in order to do so, they always require a medium, whether an object/apparatus or a person. From a systematic point of view, then, cultural techniques are always also techniques of the self.[6]

Kassung and Macho's characterization has one great advantage: It emphasizes the "recursivity" involved in the execution of cultural techniques. And indeed, this emphasis can help us to understand more precisely what was postulated in the characterizations cited above: the (historical and/or practical) *priority* of practical reasoning over conceptual consistency, of the knowledge of skills over the fully conceptualized operation, of the verb over the noun. In other words: a presupposed and/or deepened *divergence* between "knowing-how" and "knowing-that." Recursivity—understood in keeping with its original (Fregean) definition as the possibility of performing the same operation on the results of an operation—requires neither conceptual nor an entirely comprehended activity. It simply requires orientation toward the relevant affordances of operative cycles, whether in counting (e.g., in adding the same number), writing (e.g., in writing a transcription), painting (e.g., in copying an outline), making music (e.g., in the training of scales), or dancing (or indeed in scraping, scratching, shoveling, and sawing). "Recursivity" and its repetitive "self-reference" thus appear to be well-chosen criteria for defining the technical aspect of many cultural techniques in their symbolic, material, and also ritual dimensions.

Even so, no cultural historian will succeed in excluding other techniques—such as "agriculture, nutrition, stockpiling, economy, or sports"—from a narrower definition of reflexive "cultural techniques" by applying the proposed criteria of recursivity, self-reference, and symbolic work. To how many fallacies would this division lead, when confronted with the granaries of the Dogon people, the ancient

and modern Olympic Games, the hunting traditions of Indigenous Australians or of European hunters, the culinary triangle, gift exchange, or the very etymology of "cultura"?[7] Recursivity, self-reference, and symbolic work abound in the techniques just mentioned, and not merely in the ritual or communicative "media" of these activities, but also in their most routinized and mindless operations, the very ones one might be tempted to cite as counterexamples, manifesting a lack of intellectual ambition. Any such attempt at categorical distinction runs into insoluble difficulties when tested against concrete examples.

(2) Bernhard Siegert's précis *Was sind Kulturtechniken?* (What Are Cultural Techniques?) contains no such reduction and instead makes do with a double concept of media. For a start, it presupposes the conventional notion of media and expands it for the purposes of media research:

> These include, on the one hand, the classical cultural techniques of mastering writing, images, and numbers; on the other hand, however, they also include more specific cultural techniques, which may be classified into three general types: (1) ordering and representational systems such as diagrams, grids, catalogs, maps, etc.; (2) operative techniques, such as the graphic operations in art or the metrological procedures in analog and digital data processing within the natural and human sciences; (3) topographical, architectonic, and medial dispositifs of the political."[8]

However, as soon as "body techniques" and all the "rites, customs, and habitual acts"—as already quoted—are taken into account, another concept of "media in the broadest sense" comes into play: a concept of medium that can, without much distortion, can be identified with Michel Serres's "parasite."[9]

> Every culture begins with the introduction of distinctions: inside/outside, sacred/profane, speech/speechlessness, signal/noise. Their world-constituting power is the reason why we experience the culture in which we live as reality and, all too often, as the "natural" order of things. Yet these distinctions are processed by media in the broadest sense of the word (doors, for example, process the inside/outside distinction), which for this reason cannot be assigned to either side of the distinction but instead always occupy the position of a third. These media are eminent cultural techniques.[10]

To be clear: I find this double concept of media and its final identification with cultural techniques to be a compelling formulation, and I count myself among its adherents. All of "these media are

eminent cultural techniques."[11] At the very least, this formulation directly confronts a problem that—it seems to me—is exorcized in other versions of the relationship between "cultural techniques" and "media": namely, that the concept of cultural techniques will interrogate the very definitions of "culture," "medium," and (as already in Mauss) "technique." There is no historical or phenomenological boundary work that could forestall the collective renegotiation of these three terms in light of "cultural techniques." Moreover, there is no criterion that would allow one to either enumerate exclusively "medial" techniques—whether as "media" per se or as privileged techniques of symbol-processing—within the realm of human techniques, or to exclude them from a realm of similar or different techniques.

Left to its own devices, the concept of "cultural techniques" is therefore redundant. *All techniques are cultural techniques*. Techniques are culturally contingent; they are culturally (not genetically) transmitted; they are products of *education and invention*.[12] Their transmission takes place through learning and teaching, that is, through symbol processing and through practice, both uncomprehended and comprehended. Techniques are culturally acquired techniques, and they are mediated by cultural techniques. It therefore makes no sense to expect a special explanation for cultural techniques; what is required instead is a general *theory of technique* (*Techniktheorie*), as Mauss started to outline when establishing his concept of "body techniques." And Mauss managed this only by recapitulating and modernizing the ancient notion of "techné" and by recategorizing body techniques—and indeed all techniques—from the unity of the ancient concept.[13] In brief: techniques, "téchnai," are useful practices of all kinds that are learnable and teachable through instruction, imitation, and training—practices in which one knows what one is doing and applies this knowledge in doing what has been taught, without needing or being able to justify or explain them outside of their utility. This holds regardless of whether these techniques are material, verbal, medial, or ritual in nature.

Nonetheless, one would not want to do without the knowledge gains sparked by recent German-language discussion around "cultural techniques" and their media. I will continue to use the term—not out of politeness, but because the term was aptly coined to highlight the cultural contingency of the techniques in question and to refer back to the Maussian genealogy of the theory of technique. The question therefore remains: what theory would be capable of more precisely describing the relationship between cultures, media, and techniques—three concepts which, as Bernhard Siegert unequivocally states, are simultaneously brought into question by the concept of *cultural techniques*? It is my belief that only a *media-anthropological turn* of the relevant theories—a turn that confronts

the paradigms of ethnological and cross-cultural theory, rather than ignoring their insights—can succeed in this regard. Likewise, only a historiography that takes seriously the challenges posed by more recent scholarship in universal history will be adequate, rather than one that continues to cling to an increasingly illusory Eurocentrism. "Cultural techniques" should be made accessible to a media-anthropological and ethnological explanation, and they should likewise find their place within the contemporary development of universal history. These two challenges have so far been taken up only timidly in the German discussion, and they demand a renewed reception in international scholarship in the fields of technique theory (including but not limited to science and technology studies, actor-network theory, and especially their French genealogy), universal history (following Fernand Braudel and William H. McNeill), and cultural and social anthropology (in the tradition of Marcel Mauss and Claude Lévi-Strauss).[14]

In the following, I will present six heuristic principles from which a media-anthropological theory in harmony with a universal history of cultural techniques may emerge. Two of these principles have their roots in French *technique theory* and anthropology of techniques; two principles are taken from *ethnological* theories and serve as a corrective to ethnocentric biases in the treatment of media; and two are of a *historiographical* nature, corresponding to practices in more recent universal history. The first of these principles (already addressed at some length above) has in the meantime become firmly established within the German discussion of media and techniques; I include it here nonetheless, because it has undergone other, at times more radical applications outside of the German-speaking world. The heuristic principles can be summarized as:

1. The priority of operational chains
2. The priority of recursive over simple operations
3. The cyclical approach to the technical transitions of signs, persons, and artifacts
4. The equal status of artificial worlds
5. The asymmetry of universal and accumulative history
6. The historical explanation of discontinuity from continuity

Clarifying these principles requires engaging with a wide range of different research literatures, which on closer inspection converge in only a few international alliances and in French intellectual genealogies. My presentation is by no means intended to deal with these principles exhaustively, but on the contrary to reduce them to their respective *commonplace*, in order to formulate new and still open questions surrounding the concept of cultural techniques.

1. The Priority of Operational Chains

The axiom that so far has remained implicit or unexplained in the German discussion of cultural techniques has already been tested and radicalized within the French school of an anthropology of techniques in the tradition of Marcel Mauss: a heuristic, historical, and practical "priority of operational chains" over the variables configured by them—and indeed over *all* variables involved, whether these be artifacts, persons, and signs, or technical objects, their practices and forms of knowledge. "Tools exist only as part of the operational cycle. They provide evidence of the cycle because they generally carry significant traces of it, but no more so than a skeleton of a horse does of the swift herbivore to which it once belonged."[15] "The tool is adapted to the gesture and not vice versa."[16] For technical and material artifacts, this understanding was won after a long struggle—against the evidence of a transmission of tools as prime movers, against the resulting tendency toward a mostly chronological tool determinism, and against the modern bias of a dichotomy of science and technique. Last but not least, it had to struggle against the terminological privileging of "technology" itself, whose break with the older technical world (ruled by *téchne)* has been fundamentally questioned by French technique theory since Marcel Mauss (including the works of André Haudricourt, François Sigaut, Bruno Latour, and Pierre Lemonnier).[17]

In the case of *media*, it appears easier—compared to nonmedia—to trace the priority of operational chains, since media ultimately only become media through their operative use. Since the Second World War, this operational understanding of media was condensed into a standard term that mediates between mass-medial organization and technological research: "communication." Even so, one can argue that the "priority of (medial) operational chains" over the fixation of their artifacts, organizational forms, and sign types has been most elegantly exemplified in three areas of scholarly inquiry:

1. In the history of media inventions, insofar as this field traces more precisely which operations have come together historically and how, in order to then possibly be coordinated and made replicable in a "black box";
2. in the analysis of "malfunctions and accidents," through which such a "black box" must be reopened and all the variables involved in a given medium coordinated again along the desired operational chain;
3. and in many cases, precisely where a concept of media (or the word "medium") is *missing*, and a respective organizational, categorial, or technical task is the focus of consideration, for example, in Bruno Latour's meticulous tracing of the organization of scientific reference formation and its medial "chain of translation."[18]

The hope remains that a consistent application of the principle of the "priority of operational chains" might further revise established views of the entities involved, such that this priority will no longer be seen merely as precondition, but just as much *as a result* of technical and medial operations. In a series of essays, Bruno Latour has treated the medial conditions underlying categories such as "reference," "substance," and "magnitude" (of a standard measurement) as the results of corresponding operational chains, and in doing so, has systematically described the medial "chain of translation" through which a scientific or mass-medial reference, a substance, or a standard can first be created and circulate.[19] The usual classification of media would have been of little help to him in this endeavor; and so, Latour's approach—as indeed the entirety of recent work in the history of science and organizational ethnography—raises the question of whether the categorization of discrete media should not be dropped altogether for many future considerations, in order to reconstruct and reclassify them through the comparative study of much smaller-scale medial "chains of translation," or—to employ the vocabulary of science and technology studies—as infrastructures of instruments of inscriptions.

2. The Priority of Recursive over Simple Operations

If one strives for a unified treatment of media-anthropological questions alongside a universal history of cultural techniques, one quickly comes across the fact that there has already been a consistent implementation of this unity, whose model has entered the humanities (*Kulturwissenschaften*) in a variety of ways: André Leroi-Gourhan's *Gesture and Speech*.[20] And Leroi-Gourhan is undoubtedly the historian and theorist to whom any recent account of a priority of operational chains must refer, since his *Gesture and Speech* not only contains this priority in technical-anthropological terms, but also unfolds it as an axiom of practices within a universal-historical perspective. Can Leroi-Gourhan's approach still serve as a model today? The devil lies less in the details—for it is always possible and often profoundly rewarding to learn from Leroi-Gourhan's detailed observations—than in the overarching conceptual framework. In point of fact, Leroi-Gourhan applies one single explanatory principle; he outlines a single cumulative history of inventions; and he maps out a unified history of media. But all three of these axes of unity have since proven brittle. Leroi-Gourhan's media history reduces media history to the progressive development of storage techniques. This unified, cumulative history is guaranteed by a cumulative intensification of the principle of "exteriorization."[21] Leroi-Gourhan's historiography is indeed the first consistent and coherent implementation of a "priority of operational chains," but at a significant cost; this

priority is deployed only as a means to an end—namely, to further Ernst Kapp's philosophy of "organ projection," translated into Leroi-Gourhan's theory of the evolution of "exteriorization."[22]

Equating a cumulative history of invention with a progressive "exteriorization" proves, in the study of concrete sociotechnical organizations and their histories of innovation, to be naive and, on the whole, misleading. This holds equally for the history of tools, of domestication, and of media. "Exteriorization" occurs—if it occurs at all—reciprocally and thereby recursively. Leroi-Gourhan's history of exteriorization narrates, step by step: (1) how "organs" are exteriorized in tools, (2) how the "gesture of use" migrates as a gesture into the tool itself, (3) how "motor" functions are incorporated into the tool, (4) how the "memory" (the "storage") of gestures is transferred to the machines, and (5) how even the "programming" of technical processes can be automated.[23] These five steps, with their many different technical inventions, remain insightful; the development of such "steps" of humanity is guided less by any linear historical sequence of operations, than by attention to a selected series of artifacts—namely, manual tools, machines (such as mills), automata, looms, computers. When examined through the operational chains passed down by these artifacts, it is easy to demonstrate that each apparent exteriorization gave rise to a *reciprocal* exteriorization and thus to a new interdependence between artifacts and technicians. This entanglement compelled the latter to reorganize themselves and their activities as "tool of the tool," "gesture of the gesture," "motor of the motor," "memory of the memory," and "programming of the programming," and to train other persons and organizations for this recursivity, and to reconfigure the division of labor accordingly. The "exteriorizations" postulated by Ernst Kapp and Leroi-Gourhan never took place, even if this idea no doubt mirrors all too well the rhetoric of technologicical promises prevalent in the nineteenth and twentieth centuries, as well as the wishful projections of early *artificial intelligence* (contemporaneous with the publication of Leroi-Gourhan's book).

The concept of a step by humankind toward the "exteriorization of motor functions" shows itself to be naive (to say the least) if one knows the history of slavery after the introduction of the treadmill.[24] And the idea of an increasing *exteriorization of memory* through storage media as well, as soon as one even considers the history of various forms of socialization to writing and reading.[25] Every exteriorization has taken place in a recursive form, producing boomerang effects and new forms of coupling and specialization. The "domestication" of animals and humans also takes place in locations of recpirocal interaction, since it forces the domesticators to supplement the characteristics lost in the process of domestication, that is,

to reorganize parts of the (now "exteriorized") behavior of the formerly wild animals in order to resocialize them to human contexts.[26] The same applies to technical inventions, to processes of domestication in general, and to the history of media: every exteriorization affects the exteriorizer and unleashes a widely ramified series of contingent interrelations and incorporations—between humans, animals, artifacts, and media. *Exteriorization occurs recursively or not at all*; and its consequences cannot be understood as part of any linear history of evolutionary stages—not even, or especially not, in the apparent evidence of cumulative steps of technical invention.[27]

Leroi-Gourhan's conflation of an all-encompassing technical accumulation with a growing "exteriorization" thus leads us astray, both in general and as applied historically to concrete forms of sociotechnical organization. This means that any reconstruction of these developments requires an alternative explanatory principle, an antidote. The "priority of operational chains" can serve this role, since it includes the consequences (already in the very concept) that operations are linked to one another—that is, that operations are applied to (the results and initiating steps of) operations. The concept of the "operational chain" therefore already contains the possibility of a recursive iteration: namely, that (and insofar as) "the same operation is applied to the results of the operation," which is indeed the wording of a definition of the "recursivity of operations." The boomerang effects of domestication, the memory training of storage media specialists, the reciprocal "motorization" of mills, machines, animals, and slaves, the political history of the bellwether, the diversity of the mask as a medium: all of these phenomena become more intelligible once one accepts the "priority of operational chains" over all the variables involved, and therefore also takes into account that the "same operation is applied to the results of the operation"—and in different ways to all of the relevant resulting variables.

We can conclude that a methodological "priority of operational chains" (i.e., of the linkage of multiple operations to one another) requires a "priority of the recursive over the (methodologically isolated) simple operation." And the multiple historical corrections of a one-sided "history of exteriorization" by André Haudricourt, François Sigaut, Bruno Latour, among others demonstrate that this priority must be accounted for in every single "step toward exteriorization."[28] This insight accounts even for the technical steps invoked (but insufficiently developed) by Leroi-Gourhan's universal history: the instrumentalization of the tool, the transposition of operating gestures into exteriorized gestures, the motorization of the motors, the mnemonic techniques for artificial memory storage, and of the programming of programmers and users.

This line of thought points us toward another fundamental aspect of techniques that encompasses artifacts, humans, animals, and media alike. *Instrumentality* seems at first glance like a straightforward matter of specific means-end relations. It may seem that when operations and artifacts instrumentally employed toward specific purposes become available to other instrumentalities, that this is a different, secondary purpose, which rests on a preexisting means-end relation: a repurposing or an alienation from the (originally intended) purpose (*Zweckentfremdung*). In reality, however, technical (and medial) repurposing precedes any intended purpose, since the "priority of recursivity" also holds in the domain of instrumentality.[29] "Repurposing" is simply the application of the means-end relation to itself, to its own means-end relation. Repurposing is prior to any given purpose.

Put in a formula: ([(means 1/for end 1) (as) means 2]/for end 2)

This relation—and the struggle to redefine ends and means, the "reciprocal abuse" described by Michel Serres in *The Parasite*—is the default case in all technical and organizational invention, transfer, and adaptation, as well as in all technical and organizational power struggles, compromises, and negotiations.[30] In every rigorous historical examination, the "primacy of recursive instrumentality," the principle of "misuse before use," repurposing before purpose, becomes evident. The principle of repurposing holds as well for the embedding of the history of invention and the implementation of techniques within economic, military, political, and ideological organizations of power. As Michael Mann's recent theory of power has rightly emphasized with enviable clarity, these organizations necessarily exist in a relation of mutual misappropriation through their organizational forms and operational chains—regardless of whether they complement or obstruct one another in pursuit of their respective goals.[31]

More than a century ago, Wilhelm Wundt had already given a name to this "priority of repurposing" with his striking concept of the "heterogony of ends." This concept remains indispensable both at the macrolevel of large-scale (military, economic, political, and ideological) organizations and their sociotechnical purposes and allocation of means, and at the microlevel of the history of invention and of the users of new technical "means"—that is, new operational chains.

3. The Cyclical Approach to Signs, Persons, and Artifacts

Bruno Latour has drawn attention to a threefold division that has increasingly underpinned European knowledge production since the seventeenth century: our sciences are divided into natural and engineering sciences, social sciences, and humanities. While there

are slight differences depending on language and region, all of these translations retain an analogous threefold division.[32] Accordingly, Latour has assigned a threefold set of operations to this internal classification of academic disciplines, which, since the seventeenth century, has been able to find ever-wider foundation and application: making it a matter of nature, of society or of discourse, or to "naturalize," "sociologicize," and "discoursify" a given realm of experience or an item to be analyzed.[33] This threefold division of reality concerns the most important "cosmological" classification of modernity and our epistemic order—"cosmological" specifically as defined by Durkheim and Mauss.[34] That is, a categorization in which the classification of an indigenous (scientific and everyday) social order and the classification of its (human and nonhuman) environment are mediated through the same operations and attributes. Put differently, it is a "primitive classification" in the sense of Durkheim and Mauss, and the basis of our scientifically founded and, in most respects, presumably entirely unfounded "ethnocentrism."

As far as techniques and cultural techniques are concerned, their investigation involves an analogous threefold division. Our modern ways of focusing distinguish between "material techniques," "media," and "social relations" and their respective techniques: the techniques of making and using signs (through media and their operational chains), artifacts (through tools and their operational chains), and people (through social processes that are only rarely called "techniques," and more often "rituals," "rites of passage," and processes of socialization) (see figure 1). It is evident that our divisions of the *world* and its phenomena, of *techniques* and their operational chains, and of *scientific disciplines* and their objectives remain coordinated through a series of analogous acts of classifications. And one of the most effective means in this calibration is the threefold "focusing" diagnosed by Latour, of *making natural*, *making social*, and *making discursive*: to treat and consider *material production* as if "things were made from things" (artifacts from artifacts, and artifacts from nature as the last resort); to regard persons (individuals and social organizations) as if "social relations were made from social relations" (and from society as the last resort); and to view *signs* (*or media*) as if "signs were made from signs" (and from the differences of signs as the last resort). The consideration of the processing and production of material artifacts from and by artifacts, of persons from and by persons, and of signs being made from and by signs also always stands at the center of corresponding academic socializations; they are long-practiced "focusings"—and assist the constitution of cultural techniques—of scientific procedures, but also of everyday categorization.

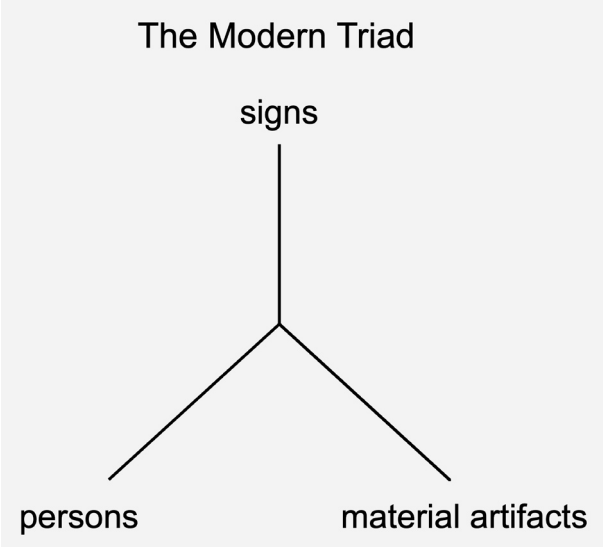
Figure 1. The Modern Triad

As soon as we take a step back, live in a different culture, or think historically, and as soon as we take Wundt's "heterogony of ends" even a little bit seriously, we quickly realize that these strict "focusings" essentially produce fictions. Not a single technique operates on only one of these three variables (artifacts, persons, signs); every technique and cultural technique always operates with the aid of, but also through the transformation of, all three of these variables at once: all of them are simultaneously semiotic, material, and ritual processes.

One could preserve this threefold division by showing that although in every technical process and every technical refinement all three variables are involved and affected, at least the "focusing" of the techniques themselves remains stable, that is, the "objective" of the respective operational chains (see figure 2: The Three Techniques). True, all three variables would then be constantly transformed by the same technical procedures, but at least the result of the operations would remain distinctly focused: at one point, signs would be produced (and we would be dealing with "media"), at another, material artifacts (and we would be dealing with material techniques), and in other cases, persons would be transformed (and these processes should then be termed "socialization" and "rituals" and no longer necessarily "techniques").

Figure 2. The Three Techniques

It is undoubtedly fruitful to make use of the threefold division in this way and thus to refocus the corpus of techniques—but one should not overestimate its consistency. Wundt's "heterogony of ends" prevents any strict implementation and not just for cultures that could not or did not want to recognize such a threefold division, but also for our own cultures and their aspirations, which must repeatedly submit to their respective "heterogony of ends" and thus—against the grain of their own classifications—continually misappropriate and repurpose the artificiality of their material techniques, sign techniques, and ritual techniques. *Persons, artifacts, and signs are formed through operational chains that involve and transform persons, artifacts, and signs alike*. Media, material techniques, and rituals cannot be distinctly separated—neither by their "means," nor by their "focusing," neither in foreign nor in indigenous societies and cultures—which makes it all the more interesting, from an anthropological perspective, to examine the forms

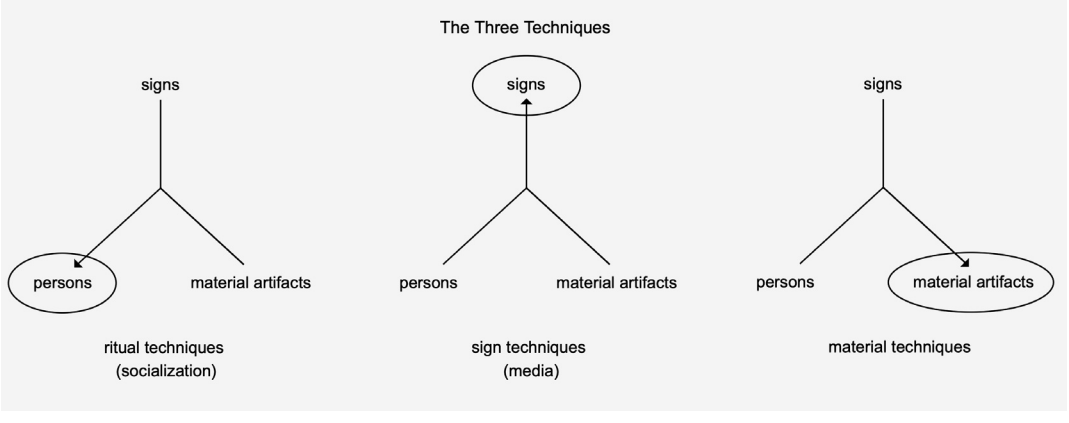


that belief in these disjunctions takes.[35]

For a universal-historical and media-anthropological study, then, there is no alternative but to pose the question of threefold "focusing" anew, and at least to develop a provisional heuristic—one that puts the conventional classifications up for renegotiation and thereby also continually re-sorts the existing corpus of research. One cannot ignore one's own "ethnocentrism"—and in this case, it is a matter of the irrevocable ethnocentrism of our own division of scholarship—but one can only address it through a "critical ethnocentrism." This will be illustrated using an example that is as simple as possible—and at the same time maximally complex.

The procurement of food through hunting is a material affair; the artifacts used in this process are instrumentally directed toward the procurement of food (capturing, killing, and butchering). So far, so uncontroversial—the fallacy begins at the point where all the tools of hunting (e.g., weapons and traps) are classified as material techniques and thereby excluded from a history of symbolic cultural techniques, that is, of "media." Media history too, to say nothing of media theory, would suffer from such an exclusion, for how are we then to arrive at an adequate universal-historical understanding of the development of media, for example, through modern military simulations of atomic warfare, computerized networks, ancient ballistics, and Chinese and baroque fireworks?[36] There are just too many transitions between signs, artifacts, and persons in any technique and in any culture. Marcel Mauss cites the following hunting technique of the Indigenous Australians in his sketch of "body techniques":

> a ritual formula both for hunting and for running. As you will know, the Australian manages to outrun kangaroos, emus, and wild dogs. He manages to catch the possum at the top of its tree, even though the animal puts up a remarkable resistance. One of these running rituals, observed a hundred years ago, is that of the hunt for the dingo or wild dog among the tribes near Adelaide. The hunter constantly shouts the following formula:
>
> > Strike him with the tuft of eagle feathers (used in initiation, etc.)
> > Strike him with the girdle
> > Strike him with the string round the head
> > Strike him with the blood of circumcision



Strike him with the blood of the arm
Strike him with menstrual blood
Send him to sleep, etc.

In another ceremony, that of the possum hunt, the individual carries in his mouth a piece of rock crystal (*kawemukka*), a particularly magical stone, and chants a formula of the same kind, and it is with this support that he is able to dislodge the possum, that he climbs the tree and can stay hanging on to it by his belt, that he can outlast and catch and kill this difficult prey.[37]

Mauss comments: "The relations between magical procedures and hunting techniques are clear, too universal to need stressing."[38] And he puts emphasis for this example on "the confidence, the psychological *momentum* that can be linked to an action which is primarily a fact of biological resistance, obtained thanks to some words and a magical object."[39] In summary: "Technical action, physical action, magico-religious action are confused for the actor."[40]

If these remarks already appear in the founding charter of German "cultural techniques" and French anthropology of techniques—in Marcel Mauss's "Body Techniques"—what are the consequences for media anthropology and a universal theory of techniques? In the Indigenous Australian hunting techniques just cited, *verbal techniques* (of autosuggestion and magical action), *material techniques* (such as climbing with the aid of a belt) and *ritual techniques* (the autosuggestion being a kind of ritual prayer that simultaneously evokes other ritual contexts, such as circumcision and menstruation), but also *verbal*, *material*, *and ritual artifacts* (a belt and a rock crystal, the latter placed on the tongue) are all entangled and together generate a single "operational chain" that reduces the "biological" resistance of both the hunter's own body and that of the prey. The becoming-media, the material handling, and the ritual conditioning of hunter and prey are not only intertwined—it hardly makes sense to consider them apart from one another. And this is precisely what happens when the belt ends up in the archive or museum for hunting artifacts, the rock crystal in a display case for ritual or "sacred objects," and the hunting chants (and songs) in a phonogram archive or a linguistic study. In such cases, it is only our academic "focusings" that distinguish between *media* (or signs), *material production* (or in this case: material appropriation), and *social relations* and their respective techniques. The operational chains and their transitions do not agree with this division, and neither does any adequate technical representation of the artifacts in question. Signs, things, and persons remain transitional entities in any given technical procedure; and the full analysis of transitions inevitably leads to a cyclical approach.

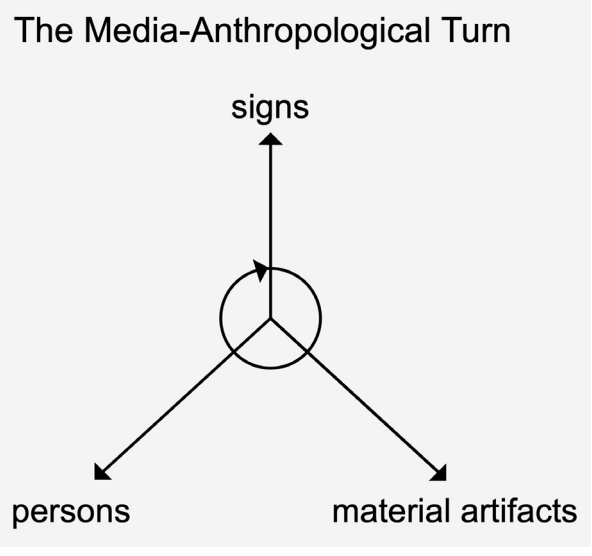
In historical, ethnological, and anthropological comparison, then, a much more difficult task present itself: a *media-anthropological turn* (see figure 3: The Media-Anthropological Turn), the *lectio difficilior* of our shared world. The triad has come full circle, and it will always come full circle. Not to seek mediatization and media in the focusing on signs and sign techniques, but instead—as practiced by Mauss—in the cyclical approach to the technical derivation of persons, things, and signs. "Media," even in the conventional sense, are to be derived from the conditions of their cyclical relations—historically, theoretically, and in relation to the present.

Figure 3. The Media-Anthropological Turn

The "body techniques" outlined by Mauss remain a valuable exercise for the study of such cyclical relations (for example, in what our society refers to as "sports," "fitness," or "wellness"). The main part of Mauss's "Body Techniques" has all too often been received merely as a list, which then evaporates into a miscellany. But in fact, Mauss proposes a unified structure for the body techniques, one oriented toward the "notion of person"[41] and its ritual constitution: (A) a classification according to "gender," "age," and "upbringing"; (B) through the biographical question of the "life cycle"; and (C) of the "daily cycle" of body techniques.[42] These two cycles, through which the learning and practice of body techniques range from the relatively inconspicuous to the most elaborate "rites of passage," interweave material, medial, and ritual techniques that one can observe in oneself every day, for instance in "body care" and its disruptions. It would hardly occur to anyone not to demand a cyclical perspective, a "media-anthropological turn," for these domains—the question remains where to expect the opportunities and obstacles for such a "media-anthropological turn" in media history.

4. The Equal Status of Artificial Worlds

The difficulties seem to lie in how we categorize the relationship between an immutable human nature and a contingent history of accumulating technical inventions. But this can only be a provisional diagnosis, and everything will depend on recognizing and undoing the deceptive nature of such a polarization. Human universality and human contingency, human "nature" and "culture" cannot be polarized or set in opposition, for the only constant of human techniques and media techniques remains the *arbitrariness* of inventions.[43]



Nevertheless, whatever particular present

we inhabit, we are inclined to project the history of accumulating technical inventions as a history of progress. The belief in an accumulating media history—and, in its extension, in an accumulating mediatization and an increasing medial artificiality of our lifeworlds—is difficult to avoid for two reasons. First, media are currently seen as a central element, if not the very core, of the growth dynamic of scientifically dominant societies; this belief, then, is bound up with a form of ethnocentrism that is not only inscribed within the academic disciplines but also formative of culture itself. Second, the aforementioned dynamic rests in fact on an intensification of accumulating inventions that since the nineteenth century has been interpreted as "technical progress" in and through media. The belief in progress is the belief in the dominance of a very particular accumulative history—and above all, in the dominance of specific forms of organization that benefit from such an accumulative history, both in terms of power and of culture, while at the same time particularizing and universally disseminating that history for their own purposes.[44]

In the case of body techniques, it is relatively easy for us—certainly not for everyone, but for some—to forgo a history of progress or to restrict this notion to certain subfields of modern medicine. If one examines the arbitrariness of the techniques established by Mauss—midwifery, weaning, sleep, rest, movement, walking, dancing, jumping, climbing, swimming, rubbing down, washing, soaping, care of the throat, eating, drinking, sexual intercourse—even if only established in Mauss's text itself—one will quickly abandon any attempt to structure these according to the criteria of accumulating inventions. There have undoubtedly been energetic (and centuries-long) efforts in many cultures to improve body techniques through a systematic accumulation of technical insights, as in yoga and its adaptations or in modern sports and sports medicine. Yet no universal intensification of the adapted body techniques has resulted; the contingency of such a claim would remain overwhelming. The training of body techniques does not add up to one corpus of bodily movements, skills, or knowledge. In fact, it does not add up at all. It seems, then, that body techniques represent a "cold" technical domain—in the sense of the "cold societies" projected by Lévi-Strauss.[45] And in such domains, it will be particularly easy to analyze their "mediatization," in the sense of the hunt cited by Mauss, as a cyclical transitionality of material, medial, and ritual artifice—however difficult such an analysis may be in the case of of individual "body techniques."

For "media" in the conventional sense, the cyclical approach to observation proves much more difficult—not because the individual analyses are harder to conduct (the opposite may be the case), but instead because, in the history of media since the eighteenth century (though media historiography often extends this back to the invention

of the printing press) we are confronted with a history of accumulating inventions that appears not to permit any "cold" perspective. The study of media history—an accumulative media history—seems to force a self-assessment that amounts to qualifying the societies and cultures of the present as the most artificial and mediatized that have ever existed, or as those that have become capable of the most heightened form of technical artificiality and mediality that has ever been possible. Only when this self-assessment—which in its purest form is probably found only in the works of technical utopians, advertising specialists, and cultural apocalypticians—is pushed to its extreme can we arrive at a radically opposed position—namely, the position that alone will prove fruitful for a media-anthropological turn. All societies have been equally artificial and mediatized. They are (and have been) equally artificial and equally mediatized, but they are not (and were not) bound to the same artificialities. "Artificiality"—and above all the artificiality of media worlds—is just a synonym for the arbitrariness of human inventions. If one assumes an irreversible intensification in the "artificiality" of human environments and the media that dominate them, this can only mean isolating one or more objectives of one's own "artificiality" and making them the—no less arbitrary—yardstick for all others.

Only a cyclical analysis of the technical derivation of persons, artifacts, and signs in the study of old and new media can prevent the fallacies that arise from the arbitrary standards of our own technical development. A media-anthropological turn can rely on several observational aids, especially a focusing of those techniques for whose reconstruction a history of accumulating inventions makes little sense, yet which remain indispensable for the study of media use and of media techniques: in particular *speech techniques*, *body techniques*, and *ritual techniques*. Body techniques do not accumulate, not even in the form of "exteriorizations"; the creativity of speech and languages has not accumulated (quite the contrary), again not even in the form of their "exteriorizations"; ritual techniques are not subject to any accumulative history of invention.[46]

This skepticism about whether accumulating inventions are possible in the dimensions of body techniques, linguistic virtuosity, and ritual formation can also be framed as a "problem of translation." As far as these things can be assessed at all, the operational chains of a language, a social organization, a ritual arrangement, a body technique can certainly be intensified and refined. These areas thus also admit a certain degree of accumulative improvement in the sense of incremental technical invention—defined as inventions that presuppose earlier technical inventions in the structuring of their operational chains and incorporate them into new processes. The transmissions in these areas are teachable and learnable, they are "culture," and thus

they remain open to efforts to process them by accumulation. But only up to a certain point. It seems impossible to *at will* incorporate the complexity of one language into another language, one verbal art into another verbal art, one social organization into another social organization, one ritual formation into another ritual formation, one body technique into another body technique and in this sense to "accumulate" them. The same applies to the technical media of such a language, art, organization, or corporeality.

The arbitrariness of languages, body techniques, and rituals seems to impose strict limits on their accumulative refinement and integration. The constructive principles underlying the diversity of languages, rituals, body techniques, and social organizations only partly complement one another. Beyond these areas of overlap, they come into contradiction to such a degree that, when enforced, they no longer accumulate but instead reciprocally dismantle each other—or else they "creolize," giving rise to new languages, rituals, body techniques, and social organizations, which can (and likely must) emerge from such interactions.[47]

Conclusion: In the history of media, nonaccumulative arbitrariness is not merely part of the reality under investigation. Rather, it already constitutes an indispensable standard of observation—at least, in its verbal, bodily, and ritual dimensions.[48] This standard is necessarily noncumulative but all the more contingent.[49] And as the example of the Indigenous Australian hunt demonstrates, many elementary cultural techniques have been subjected to nothing less than a systematic (archival) amputation—in this case: a reduction of hunting to a sign-free and ritual-free technique for procuring food, which it never was and never will be—in order to preempt the recognition of an anthropological *equal status of all artificial worlds*. Every more precise study of the bodily, verbal, or ritual constitution of cultural techniques and media leads us back to the dictum that all societies are (and have been) *equally artificial and mediatized*. Only adherence of this dictum will enable a concept of media that subjects the prejudices of our history of accumulative inventions to a "critical ethnocentrism."

5. The Asymmetry of Universal and Accumulative History

The conditions for writing a truly universal history of cultural techniques have undoubtedly become more favorable through the emergence of a new history of globalization and its universal-historical controversies since the 1960s.[50] And media history already occupies a secure place within these universal histories, especially in the form of the unified study of transport and media history, common since the nineteenth century.[51] Moreover, recent universal histories have steadily revised and refined the connection initially diagnosed by Harold Innis between the implementation of medial techniques of

domination and the continuity of empire building since the "axial age."[52] As far as media history is concerned, most of the reflections and findings of recent universal history may at first glance seem like business as usual—but only until one examines the details and controversies of the historical scholarship more closely.

Most conventional media histories whose arguments span several millennia work with the evolutionist notions of "steps" and "stages," which are separated by breaks and may become connected by a continuous intensification of the same principles. From the space of "interaction," to the space of "communication" via storage media, to the development of "telecommunications," and finally to the space of computation and of computable communication machines—all of these spaces are understood as spaces that displace, destroy, and above all dominate their precursor model, in a linear sequence succession.[53] A universal history of cultural techniques and their media can certainly trace this idealized sequence as a possible genealogy of accumulative inventions—one that speaks volumes about our contemporary ideas of governance and domination, but far less about the historical and everyday organization of power. However, such a history must also recognize the irrelevance of this evolutionist model—or of the "time lapse" and "zoom" effect of such a "panoramic" history—for nearly all of the times and spaces it claims to traverse.[54]

Using the example of the space of the Mediterranean across two millennia, I will briefly illustrate this dictum. Especially when assessing the current surge of globalization and its historical and contemporary localizations, recent globalization history requires the consideration and assessment of at least five spaces and their interconnections:[55]

1. The first worldwide settlement of the planet by humans (from Africa to the settlement of the Americas)
2. The Americas, the Pacific, sub-Saharan Africa, and the Eurasian landmass as variants of an ecumene; with long migratory movements of persons, artifacts, and signs (often, though not exclusively, in an east-to-west direction, extending to the marginal "catchment basin" of Europe)
3. The Mediterranean region including the Levant and North Africa (as a subsection of the space in 2), also in comparison with other cases of large-scale maritime networks (especially the Indian Ocean)[56]
4. The shift from a Mediterranean to an Atlantic "world system," as diagnosed by Braudel
5. The first major "surge in globalization" in the nineteenth century (up to World War I) and its various upheavals of the spaces in 3, 2, and 1

It makes sense to write the world history of these five spaces as a story of a single, continually increasing interaction and interdependence, and to assign media and transport history a leading role in this intensification of interrelations. This is exactly what William H. McNeill, a doyen of modern universal history, has done in a recent synthetic work, and it is likely that this concept will become established as a recognizable genre within (single-volume) histories of globalization.[57] But the most striking thing when reading McNeill's history of increasing interconnection—especially in contrast to his world-historical works on plagues, body techniques, and forms of military organization—is its peculiar sterility.[58] The book adds nothing new to the literature it surveys and, unlike all McNeill's other books, leaves the history of regional spaces largely untouched. On closer inspection, this attempt to narrate a single "intensification of interrelation" across all millennia and localities, even into recent times, raises serious doubt whether "intensified interrelation" was in fact a decisive factor in the historical actions of the social and technical organizations under consideration. This doubt only grows stronger when one turns to a much more illuminating countermodel—namely, the Mediterranean research of Horden and Purcell, a recent universal history developed as a commentary to Fernand Braudel's subtle depiction of the Mediterranean region (and its tripartite division into "*longue durée*," "conjunctures," and "history of events").[59]

Without question, the basis for all later globalization movements—for the shift from the Mediterranean to the Atlantic system and everything that was made possible by that shift—lies in the Mediterranean region itself: a Greek, Roman, Near Eastern, North African, and triply monotheistic space. But between 500 BCE and 1500 CE, one finds in this region no fundamental basis for an evolutionist or even a merely statistically demonstrable history of steadily intensified interconnection. It is much rather a space of perpetual fluctuations and various booms and busts, a space in which the decisive factors of economic, political, and technological action lie in the region's population scarcity, and in the microecological intensification and exhaustion of small regions—regions interconnected only by the great medium of the Mediterranean, which ensured a continuous redistribution of surplus and scarce goods and people. Across these two millennia, the Mediterranean did indeed facilitate—despite many political interruptions—a maximal, and perhaps even globally unique, exhaustion and regeneration of the unfavorable ecological conditions of its catchment areas.[60] But this did not occur because of a historically traceable, steady intensification of interconnections, and certainly not through the intensification of an accumulative history of inventions in the sphere of production or media techniques.[61] To focus on such an accumulation—or a single series of such accumulations—as

the primary motivating factor for historical developments or ruptures within the Mediterranean region between 500 BCE and 1500 CE is, according to Horden and Purcell, fundamentally misleading.

This radical and realistic diagnosis of the Mediterranean's ecologically and demographically determined technological "coldness" also leads to far-reaching—and highly speculative—reflections on the shift from the Mediterranean to the Atlantic system, as diagnosed by Braudel. The technological leap that followed this transition, and that stood in clear correlation to the advent of the printing press, was not based on any new (i.e., discontinuous) "ingenuity." On the contrary, it likely required indispensable demographic and ecological preconditions. The transition from a system that could never effectively cope with its population shortage, and therefore could never effectively recombine its accumulating inventions into a surge in technology, to a system that through military, political, economic, and ideological means brought together many more people across three continents (often by force) also made space for the experimental social organization of a technical accumulation of inventions (and, much later, for the reciprocal substitutability of automated and manual activities).[62] In short, it furnished the conditions for a global space of organizing invention. But this development occurred only gradually, and with clear regional variations that strongly correlate with the shift from the Mediterranean to the Atlantic system. The technical inventions after that transition were not "more accumulative" than before, nor was there any new ingenuity that could properly be called more "scientific" than its predecessors (especially when compared with China, this is demonstrably untrue well into the eighteenth century). The difference lay in ecological and demographic conditions of sociotechnical organization, which could only be perceived as at once "universalized" and "Europeanized" conditions thanks to their already globalized reorganization.[63]

However, this history of globalization may end up being written in the coming years, one of its premises will remain that the essential basis for evaluating a history of accumulating inventions and the intensification of interconnections and inventions must be found precisely in those times and spaces in which such an accumulation could not, or could hardly, have played any role. Horden and Purcell have reopened the question that was once posed with didactic emphasis in Lévi-Strauss's distinction between "cold" and "hot" societies, and they have repositioned this question at the geographical center of the emergence of our technical "history of progress." An "accumulative history" of cultural techniques and their media cannot explain historical change; it requires the counterweight of a noncumulative history, a history of regional "fluctuations" (in Horden and Purcell's sense) and collapsing "conjunctures" (in Braudel's sense). In addition,

as noted earlier, it requires a history of cultural techniques that takes into account the nonintensifiability of verbal, ritual, and body technization.

Only through the counterweight of such a "noncumulative history" can a realistic history of globalization (with its five interconnected spaces) and a more realistic history of cultural techniques and their media become possible. To conceive of such a history is a difficult and as yet unrealized task, which cannot be anticipated or substituted by the usual evolutionist histories of media.[64]

6. The Historical Explanation of Discontinuity from Continuity

The result is ultimately—like the other heuristic postulates proposed here—a commonplace. A universal-historical approach can integrate the history (or histories) of particular accumulations of inventions, but not the other way around. No universal history (of the five aforementioned spaces and their interrelations) can emerge from a history of particular accumulative inventions; however, the reverse is possible.

In their strict application, such considerations seem to relegate a universal history of cultural techniques to the realm of utopian projects. On what can such a history rely if it abandons the familiar terrain of series of accumulating inventions and their effects, which only apparently ramify in linear sequence but are, in fact, more fluctuating and entangled? I believe it can rely on the fundamental principle of modern universal-historical historiography: historical discontinuities are to be explained through continuities and not the other way around.

Jared Diamond offered a textbook example for the implementation of this principle in his global history of the domestication of animals and plants.[65] The geographical, climatic, and ecological conditions for domestication processes were unequally distributed at the very outset of the history of domestication—already due to the presence of various animals, plants, and human migrants. These conditions can explain the varying rates at which different domestication processes and their associated technical inventions spread. Once these factors are accounted for on a global scale, "culturalist" or "culturalizing" explanations of the differential success or failure of domestication practices are ruled out, or become so marginal that they can no longer be treated as causes, even if actual cultural differences are acknowledged. As far as the domestication of animals and plants is concerned, humanity's ingenuity and disposition to invention can be regarded as a temporally and spatially continuous constant. The variables of unequal ecological and demographic distribution and rates of diffusion, and of domesticatable animals and plants, fungi and microbes suffice to plausibly integrate all subsequent

discontinuities—and that means above all: the discontinuities of power—the unequal distribution of power among the military, political, and economic organizations that arose from domestication processes. Continuity may explain discontinuity, but not the other way around. The continuity of the factors concerned (ecology; ingenuity and disposition to invention; and the constant goals of further empowerment by the economic, political, and military organizations that grew out of domestication—that is, by no means all organizations of power, and by no means all societies) and their contingent interdependence explain the discontinuities and unequal distributions of forms of domestication.[66] But this continuity also explains the discontinuities that resulted from the interactions between social organizations created with the aid of these discontinuities, right up to the emergence of the global distribution of wealth and poverty that arose through European imperialism. The single most consequential domestication process and impact factor for power organizations lies in the domestication of the horse and its distribution within the competition between pastoral and agricultural societies in Eurasia, with accumulating skills not only of warfare and conquest, but also of the art of pacification and assimilation of foreign emperors. For ecological reasons, there is no comparable accumulation process in the Americas or in sub-Saharan Africa, let alone in the Pacific.

Which animals and plants were domesticated by whom and in which sequence, and which of them were domesticatable at all? And why did writing only emerge in four or five of the worldwide centers of continuous and deeply entrenched domestication? If Jared Diamond was able to write such a synthesis for an entire domain of cultural techniques on the basis of a single explanatory principle, might this one day also be possible for all media? For selected areas of media history, a direct transfer of the model makes sense, and Diamond has, in fact, already attempted such a transfer in his book (though not with the same subtlety as in his discussion of domestication).[67] At the very least, the *writing systems* still in use today arose exclusively in societies that had undergone successful domestication processes, and whose political centers had developed an increased administrative burden. One can thus perform a cross-check and find that societies whose subsistence was not based on domestication processes either had no writing at all or only developed "counterscripts" in opposition to those of more powerful foreign empires.[68] One thereby arrives at a relatively crude, but still-unfalsified correlation between post-Neolithic organizations of power and the emergence of writing specialists—precisely the correlation that Claude Lévi-Strauss already diagnosed in his "writing lesson," and one still supported by comparative evidence from both historical and recent hunter-gatherer societies.[69] Any attempt at further generalization, however, breaks

down in the face of the relentless "heterogony of ends" to which writing systems are subject in their implementation. Indeed, the history of writing practices and writing specialists over millennia has been one marked more by fluctuation than by any steadily increasing accumulation or integration.

Thus, the transfer of the model of domestication history is only possible within certain limits, and even Diamond succeeds only partially in doing so. Nevertheless, the attempt demonstrates that it *is* possible to embed a certain "accumulative history" of the media most familiar to us within a more universal history (and thereby to relativize it)—by prioritizing the principle of explaining discontinuity through continuity and contingent interconnection.

For the modern history of media development—that is, for the ongoing history of accumulative communication technologies—such a perspective is also possible in principle, as Brian Winston's history of modern media has demonstrated.[70] Against the discourse of a "digital revolution" and a sweeping series of modern "media revolutions," Winston puts forward a social-determinist view of the three-hundred-year continuity of scientific and technological development (i.e., of one particular social organization among others) and modern organizations of power. The latter includes political, military, and economic organizations and, above all, the lingua franca of all cultural techniques that have become operative in modern organizations of power: "bureaucratic domination" in its organizational and medial metamorphoses. When one takes this continuity into account, most notions of a modern media history structured by caesuras and "revolutions" become null and void, like foam on the waves of a river's flow (or flow chart).

Winston's structure of the process of accumulation of modern media inventions is straightforward.[71] He distinguishes

> 1. the emergence of *prototypes* in the isolation of scientific or industrial laboratories, from
>
> 2. their designation as implementable inventions, which only becomes possible through the intervention of "supervening social necessities" (Brian Winston's term), that is, through their becoming instrumental within large-scale modern organizations of power, the promise of a technical improvement in the context of military, business, administrative tasks, or of aesthetic, private, and leisure-time procedures. A clear sign of such "supervening social necessities" is found in the priority disputes over "simultaneous inventions"—for how could one argue over who invented what, if this "what" were not already subject to a common social definition?[72] In this process, further "spin-offs" arise from the prototype and its socially integrated "invention"—through the ineluctable "heterogony of ends,"

one might add—but these too become

3. subjected, along with the initial or simultaneous *invention*, to an inevitable social control: a strict choice and delimitation of possible applications, most often through direct censorship and manifold forms of self-censorship. Thus, and contrary to all public rhetoric (and its awarding of divided copyright claims), the implementation phase of a "new medium"—which for laypersons seems to manifest a kaleidoscope of creative competition—demonstrates for Winston above all the continuity of existing organizations of power and the conformism of our culture.[73] However, the exception holds when this continuity leads to the construction of not-yet-recognized "prototypes" or results in an unforeseen "heterogony of ends."

Winston's concept has the virtue of brevity, and historiographically speaking, it is doubtless an effective antidote to the peculiar modern desire to derive historical discontinuities from other (usually particularly striking) historical discontinuities, as though anything could result from such thinking other than a secularized belief in miracles (or the idea of individual and collective "genius"). Still, any precise application of the concept to individual cultural techniques and media inevitably requires unraveling Winston's somewhat crude social determinism through a cyclical analysis of the technical derivation of persons (i.e., organizations), artifacts, and types of signs.[74] The plausible embedding of a history of accumulative media inventions in universal-historical observations, as I have only briefly sketched here with the works of Jared Diamond and Brian Winston, can therefore only be one tool on the path toward consensus between media anthropology and a universal history of cultural techniques. This does not in any way replace all of the other means and methods that may contribute to this consensus, particularly the diversity of new media-ethnographic research and its historiographical applications. Nor does it allow us to anticipate the heuristic form that universal-historical research and its media-anthropological turn may take in the future.[75] But then as now, the guidelines will remain the primacy of explaining discontinuities by factors of continuity, of operational chains over artifacts, of the principle of repurposing over simple means-ends relationships, and the acknowledgment of an all-pervasive realm of cold techniques, of the principle of equally artificial worlds, and of the transitionality of material artifacts, signs, and persons in their mutual making; and for reasons that have to be discussed elsewhere, they constitute a fairly consistent methodological set.

Notes

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1. Thomas Macho, "Zeit und Zahl: Kalender- und Zeitrechnung als Kulturtechniken," in Sibylle Krämer and Horst Bredekamp, eds. *Bild, Schrift, Zahl* (München: Wilhelm Fink, 2003), 179–192. [Translator's note: The English rendering of this Macho quotation is taken from: Bernhard Siegert, "Cacography or Communication? Cultural Techniques in German Media Studies," trans. Geoffrey Winthrop-Young, *Grey Room*, no. 29 (Winter 2008): 26–47.]

2. Sybille Krämer and Horst Bredekamp, "Kultur, Technik, Kulturtechnik: Wider die Diskursivierung der Kultur," in Krämer and Bredekamp, *Bild, Schrift, Zahl*, 11–22, 18.

3. Bernhard Siegert, "Was sind Kulturtechniken?," mission statement of the Professorship for Cultural Techniques (Weimar: Bauhaus University), accessed on November 16, 2005, http://www.uni-weimar.de/medien/kulturtechniken/kultek.html. [Translator's note: this link is now inactive; its content, however, is archived at the Wayback Machine, https://web.archive.org/web/20050927162041/http://www.uni-weimar.de/medien/kulturtechniken/kultek.html.]

4. Siegert, "Was sind Kulturtechniken?"

5. Marcel Mauss, "Techniques of the Body," in *Sociology and Psychology: Essays*, trans. Ben Brewster (London: Routledge & Kegan Paul, 1979). [Translator's note: In the following, Mauss's concept of *techniques du corps* has been rendered as "body techniques" rather than its more familiar translation in English as "techniques of the body."]

6. Cf. the remarks in Macho. "Die Bäume des Alphabets," *Neue Rundschau* 115, no. 2 (2005): 66–80.

7. Siegert, "Was sind Kulturtechniken?"

8. Siegert, "Was sind Kulturtechniken?"

9. Michel Serres, *The Parasite*, trans. Lawrence R. Schehr (Baltimore: Johns Hopkins University Press, 1982).

10. Siegert, "Was sind Kulturtechniken?" [Translator's note: adapted from Siegert, "Cacography or Communication?," 30.]

11. Cf. esp. on the "door" as medium: Jim Johnson [Bruno Latour], "Mixing Humans and Nonhumans Together: The Sociology of a Door-Closer," *Social Problems* 35, no. 3 (1988): 298–310.

12. On "education and invention" as the grounds for the concept of culture, see Claude Lévi-Strauss, *The Elementary Structures of Kinship*, trans. James Harle Bell, John Richard von Sturmer, and Rodney Needham (Boston, MA: Beacon Press, 1969), 30ff.

13. Mauss, "Techniques of the Body," 202–206.

14. Cf. the first German anthology on actor-network theory (ANT): Andréa Belliger, David J. Krieger, eds. *ANThology: Ein einführendes Handbuch zur Akteur-Netzwerk-Theorie* (Bielefeld, Germany: Transcript, 2006). This German anthology inspired a corresponding French anthology edited by the protagonists of French ANT: Madeleine Akrich, Michel Callon, Bruno Latour, eds., *Sociologie de la traduction: Textes fondateurs* (Paris: Presses des Mines de Paris, 2006).

15. André Leroi-Gourhan, *Gesture and Speech*, trans. Anna Bostock Berger (Cambridge, MA: MIT Press, 1993), 237.

16. André Haudricourt, *La Technologie, science humaine*: *Recherches d'histoire et d'ethnologie des techniques* (Paris: Éditions de la Maison des sciences de l'homme, 1987), 158.

17. On "technology": François Sigaut, "More (and Enough) on Technology!" *History and Technology* 2, no. 2 (1985): 115–132; Sigaut, "Haudricourt et la technologie," in Haudricourt, *La Technologie, science humaine*, 9–36.

18. Bruno Latour, "The 'Pédofil' of Boa Vista: A Photo-Philosophical Montage," *Common Knowledge* 4, no. 1 (1995): 144–187.

19. Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999), esp. chaps. 2, 4, 5, and 6.

20. Leroi-Gourhan, *Gesture and Speech*.

21. Leroi-Gourhan, *Gesture and Speech*, esp. chaps. 8 and 9.

22. Ernst Kapp, *Grundlinien einer Philosophie der Technik* (1877; repr., Düsseldorf: Stern-Verlag Janssen, 1978). [Editors' note: See Kapp, "Selections from *Elements of a Philosophy of Technology*," *Grey Room* 72 (Summer 2018): 16–35, https://doi.org/10.1162/grey_a_00249.]

23. Leroi-Gourhan, *Gesture and Speech*, chaps. 8 and 9.

24. Sigaut, "Technology," in Tim Ingold, ed. *Companion Encyclopedia of Anthropology* (London: Taylor and Francis, 1994), 420–459, esp. 449–451.

25. Cf., for example, Jonathan Parry, "The Brahmanical Tradition and the Technology of the Intellect," in Joanna Overing, ed. *Reason and Morality* (London: Taylor and Francis, 1985), 200–225.

26. Haudricourt, "Domestication des animaux, culture des plants et traitement d'autrui," *L'Homme* 2, no. 1 (1962): 40–50.

27. For more on this dictum, I recommend an essay on the medium of the "bellwether" (in connection with Haudricourt, "Domestication") and its political zoology: Yutaka Tani, "Domestic Animal as Serf: Ideologies of Nature in the Mediterranean and the Middle East," in *Redefining Nature: Ecology, Culture, and Domestication*, ed. Roy Ellen and Katsuyoshi Fukui (Oxford: Berg, 1996), 387–415.

28. Haudricourt, *La Technologie, science humaine*; Sigaut, "Technology," passim; Latour, "A Collective of Humans and Nonhumans: Following Daedalus's Labyrinth," *Pandora's Hope*, 174–215.

29. Cf. Siegert, "Was sind Kulturtechniken?": "Due to the focus on practices, technologies can be understood as open (nondetermined) systems, which first and foremost provides a concept of media that takes into account the 'repurposing' of technologies that is so constitutive for media history from the very outset."

30. Serres, *Parasite*.

31. Michael Mann, "Societies as Organized Power Networks," "The End of General Social Evolution: How Prehistoric Peoples Evaded Power," and "The Emergence of Stratification, States, and Multi-Power-Actor Civilizaton in Mesopotamia," in *The Sources of Social Power*, vol. 1, *A History of Power from the Beginning to AD 1760* (Cambridge: Cambridge University Press, 1986), 1–104.

32. Latour, "Revolution," in *We Have Never Been Modern*, trans. Catherine Porter (Cambridge, MA: Harvard University Press, 1993), 49–90.

33. Cf. the modification of Latourian reflections by Richard Bauman and Charles L. Briggs, *Voices of Modernity*: *Language Ideologies and the Politics of Inequality* (Cambridge: Cambridge University Press, 2003).

34. Émile Durkheim and Marcel Mauss, *Primitive Classification*, trans. Rodney Needham (Chicago: University of Chicago Press, 1963).

35. Roy Wagner, *The Invention of Culture,* 2nd rev. ed. (Chicago: University of

Chicago Press, 1981), 21–34.

36. Alfred W. Crosby, *Throwing Fire: Projectile Technology through History* (Cambridge: Cambridge University Press, 2002).

37. Mauss, "Techniques of the Body," 102–103.

38. Mauss, "Techniques of the Body," 103.

39. Mauss, "Techniques of the Body," 103.

40. Mauss, "Techniques of the Body," 103.

41. Cf. Mauss. "A Category of the Human Mind: The Notion of Person, the Notion of Self," in *Sociology and Psychology: Essays*, trans. Ben Brewster (London: Routledge & Kegan Paul, 1979), 57–94.

42. Mauss, "Techniques of the Body," chapters 2 and 3, on the classifications and biographical sequentiality of body techniques.

43. Lévi-Strauss, *Elementary Structures of Kinship*, esp. chapter 1.

44. Lévi-Strauss, *Race and History* (Paris: UNESCO, 1952), passim and chapters 5 and 6, on the conceptualization of progress, and on cumulative and stationary history.

45. Lévi-Strauss, "The Scope of Anthropology," in *Structural Anthopology*, vol. 2, trans. Monique Layton (Chicago: University of Chicago Press, 1976), 3–32.

46. Undoubtedly, there are also specialists in the field of ritual techniques who have an interest in writing a history of progress or decline, be it in theological or secular terms; but their constructions do not stand up to historical scrutiny. And insofar as socialization remains dependent on ritual techniques, this also applies to techniques of socialization as a whole (and those of the oldest and newest media alike).

47. Wagner, *Invention of Culture*, on invention and convention, and on education and invention.

48. The reservations about an "accumulative history" result in a threefold division analogous to the Latourian triad of "making social" (in ritual terms), "making discursive" (in linguistic terms), and "making natural" (in physical and ecological terms). This in turn demonstrates that even a "critical ethnocentrism" cannot escape our own "primitive classifications"—and that it can draw on insights in the natural sciences, social sciences, and humanities.

49. On the resulting epistemology of a necessary "underdetermination" of any scientific or nonscientific explanation of these areas (rituals, body techniques, speech), cf. Hans-Peter Duerr, "Können Hexen fliegen?," in *Unter dem Pflaster liegt der Strand* (Berlin: Kramer, 1975), 55–81.

50. On the corresponding historiography, cf. Jürgen Osterhammel, *Geschichtswissenschaft jenseits des Nationalstaats: Studien zu Beziehungsgeschichte und Zivilisationsvergleich* (Göttingen: Vandenhoeck & Ruprecht, 2001).

51. Esp. Peter J. Hugill, *World Trade since 1431: Geography, Technology, and Capitalism* (Baltimore: Johns Hopkins University Press, 1993); Hugill, *Global Communication since 1844: Geopolitics and Technology* (Baltimore: Johns Hopkins University Press, 1999).

52. Cf., for example, Mann's re-analysis of the Roman Empire—"The Roman Territorial Empire," in *Sources of Social Power*, 250–300—with that of Innis.

53. Friedrich Kittler, "History of Communication Media," *CTheory*, July 30, 1996, https://journals.uvic.ca/index.php/ctheory/article/view/14325/5101.

54. Cf. Latour. *Re-assembling the Social: An Introduction to Actor-Network Theory* (Oxford: Oxford University Press, 2005), 187–190.

55. Cf. Jürgen Osterhammel and Niels P. Petersson, *Geschichte der Globalisierung: Dimensionen, Prozesse, Epochen* (Munich: Verlag C.H. Beck, 2003).

56. Kirti N. Chaudhuri, *Asia before Europe: Economy and Civilization of the Indian Ocean from the Rise of Islam to 1750* (Cambridge: Cambridge University Press, 1990).

57. J.R. McNeill and William H. McNeill, *The Human Web: A Bird's-Eye View of World History* (New York: W.W. Norton & Company, 2003).

58. William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000* (Chicago: Chicago University Press, 1984); William H. McNeill, *Plagues and Peoples* (Harmondsworth: Penguin, 1985); William H. McNeill, *Keeping Together in Time: Dance and Drill in Human History* (Cambridge, MA: Harvard University Press, 1995).

59. Peregrine Horden and Nicholas Purcell, *The Corrupting Sea: A Study of Mediterrean History* (Oxford: Oxford University Press, 2000); Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* (Berkeley and Los Angeles: University of California Press, 1995).

60. Horden and Purcell do not advocate in earnest for such a claim to uniqueness, nor do they contend otherwise.

61. Horden and Purcell, *Corrupting Sea*, chapter VII.7 and 594–597.

62. Horden and Purcell, *Corrupting Sea*, chapter IX.5 and passim.

63. Please consult: Erhard Schüttpelz, *Medium, Medium: Elemente einer Anthropologie* (Berlin: Matthes & Seitz, 2025).

64. When it comes to the assessment and representation of concrete historical locations and their sequence of events, the pursuit of progress offers little assistance. For the longest time in history, inhabitants of this earth were incessantly looking for improvements, yes, for innovation, yes, but putting both to work did not strive to include a linear "progress" of mankind. Until recently, most large-scale projects of improvement almost inevitably summoned the idea of "restoring a glorious past," in political or military, religious or cultural, and even in technical terms. Nearly all people before the European nineteenth century held a nonlinear view of innovation. Even the "Printing Press as an Agent of Change" was understood to be an "Agent of Change *for the better*," which initially and "from the native's point of view" meant a change for ancient ways and their restoration, as Reformation and Renaissance, as imitation and emulation of antiquity, and finally, as the reconstitution of a political "Ancient Constitution," or "revolution." It is only in the relatively short period of worldwide European imperialism that a strictly linear idea of "progress" seems to have been universalized and identified with a perennial "Western Civilization." (Endnote added in 2025—E. Schüttpelz.)

65. Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton, 1997). As many reviews have pointed out, Diamond's monograph is a popularization of the results of domestication research systematically developed by Carl Sauer and his school, and monographic works by William H. McNeill (cf. note 58) and Alfred Crosby.

66. Cf. Mann, "General Social Evolution."

67. Diamond, "Lethal Gift of Livestock: The Evolution of Germs," in *Guns, Germs, and Steel*, 195–214).

68. Cf. Michael Harbsmeier, "Inventions of Writing," in *State and Society: The Emergence and Development of Social Hierarchy and Political Centralisation*, ed. John Gledhill, Barbara Bender, and Morgens Trolle Larsen (London: Routledge, 1988), 253–276.

69. Lévi-Strauss, "A Writing Lesson," in *Tristes Tropiques*, trans. John Weightman and Doreen Weightman (New York: Penguin, 1992).

70. Brian Winston, "Breakages Unlimited," in *Electronic Media and Technoculture*, ed. J. Thornton Caldwell (New Brunswick, NJ: Rutgers University Press, 2000), 77–89.

71. Winston, "Breakages Unlimited," 80ff.

72. Winston, "Breakages Unlimited," 84.

73. Winston, "Breakages Unlimited," 83f.

74. Cf. the exemplary implementation of such a "cyclical approach" in Alex Preda's short history of the stock ticker: Alex Preda. "The Stock Ticker," in *Making Things Public: Atmospheres of Democracy*, ed. Bruno Latour and Peter Weibel (Cambridge, MA: MIT Press, 2005, 622–627).

75. The following sentence was added in 2025 by the author—E. Schüttpelz.