Tomlinson on deconstraint (*Ereignis*) and epicycle (*Ge-Stell*)

> [Dasein] itself is an evolved part of the phenomena it aims to understand, subject in its act of understanding to the conditions and constraints of its own history.[1]

Existenz[2] is a system of exploratory overproduction of variants;[3] sense-making is a variety of variant-making.[4] At least that's one inference possible from reading Heidegger in light of the notion of evolvability and its mechanics of facilitated variation. To recap: "The capacity of a process to evolve, that is, to generate nonlethal functional variation on which selection can act, may be termed the evolvability of a process. . . . Evolvability is itself a biological process, and has undergone its own evolution under selection."[5] (To study evolvability is to attempt the second derivative, to seek to know how how-life-changes changes.) The components of (classical) facilitated variation are certain properties of conserved core cell-processes; i.e., "modularity, robustness, adaptability, capacity to engage in weak regulatory linkage, and exploratory behavior."[6]

For Gerhart and Kirschner a fundamental question is raised by the descent of the metazoa. For

> "Metazoa have undergone rapid and diverse phenotypic change, particularly in morphology, tissue organization, development, and physiology, that has entailed an extensive elaboration of cell-cell communication. By contrast, eubacteria have undergone limited morphological change but have instead achieved extensive biochemical diversification. Bacteria are microscopic, asexual, ubiquitous, and slowly changing generalists, whereas metazoa are macroscopic, sexual, ecologically restricted, and morphologically diverse specialists with a history of repeated radiations."

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[1] Gary Tomlinson, *Culture and the Course of Human Evolution* (2018) 102. Tomlinson wrote 'mind.'

[2] ***Das »Wesen« des Daseins liegt in seiner Existenz***. Martin Heidegger, *Sein und Zeit* 42; H.'s emphasis: https://www.beyng.com/pages/de/SeinUndZeit/SeinUndZeit.042.html .

[3] Certain mechanisms "involving an initial overproduction of variants or paths, followed by selection of those that work, share the quality of extreme flexibility in ability to adjust to unpredictably varied situations. Because the particular solution adopted is not genetically specified or transmitted to the next generation of individuals, each generation begins with its flexibility undiminished." Mary Jane West-Eberhard, *Developmental Plasticity and Evolution* (2003) 43.

[4] Sense-making is "τὸ οὗ ἕνεχα of appropriated human being . . . the clearing is why human being is at all." Thomas Sheehan, "Astonishing! Things Make Sense!", 1 *Gatherings* 1, 20 (2011): https://www.beyng.com/papers/Gatherings2011-01Sheehan.html .

[5] John Gerhart and Marc Kirschner, *Cells, Embryos, and Evolution: Toward a Cellular and Developmental Understanding of Phenotypic Variation and Evolutionary Adaptability* (1997) 614. N.B.: "Getting better at evolving is not the same as evolving for the better." Kirschner and Gerhart, *The Plausibility of Life: Resolving Darwin's Dilemma* (2005) 260.

[6] John Gerhart and Marc Kirschner, "The theory of facilitated variation," 104 *Proceedings of the National Academy of Sciences of the United States of America* 8582 (2007): https://www.pnas.org/doi/10.1073/pnas.0701035104 .

The question then is "whether a capacity for rapid phenotypic change among metazoa can be reconciled with the conservation of most of the eukaryotic core cell biological mechanisms." Kirschner and Gerhart contend that "the conservation of these core processes for the past 530 million years [of metazoan phenotypic change and radiation] is related less to the processes' own constraint, embedment, or optimization than to the ***deconstraint*** they provide for phenotypic variation of other processes, on the basis of which they are continually coselected."[7] (my emphasis)

The authors might as aptly have called their theory 'deconstrained' variation since they use that term as a synonym for 'facilitated,' thus: "These conserved processes have, we think, facilitated or deconstrained evolution because of their special properties of robustness and adaptability, their modularity and compartmentalization, their capacity for weak regulatory linkage, and their exploratory behavior. These properties make regulatory change efficacious and phenotypic variation copious and [more diversely?] varied."[8]

Kirschner and Gerhart are cytophysiologists and embryologists so they don't say much about matters above the level of cells. They do acknowledge the possibility that the components of facilitation/deconstraint scale up when they say that "*Exploratory systems* like angiogenesis, nerve outgrowth, neural crest cells, and [microtubulin]-based morphogenesis (and even **behaviors such as ant foraging**) are based on epigenetic variation and selection."[9] (bold emphasis mine)

West-Eberhard, a principal contributor to the extended synthesis, comments that "Although Kirschner and Gerhart base this idea [evolvability] primarily on findings in animal cell biology and embryology, their conclusions regarding the contributions of flexibility, modularity, redundancy, and subunit versatility and reorganizability ('weak linkage' to any particular use) are likely to apply broadly to organisms." I.e., scale up. After reviewing much documentation supporting the so to speak 'fundamental theorem' of the extended synthesis—"genes are more accurately seen as followers, not leaders, in evolutionary change"—she writes (my emphasis),

> "**Selectable variation can originate at any level of organization**.[10] It can be induced by environmental factors and then accommodated as an evolved trait under natural selection without mutation—without novelty at the molecular

[7] Marc Kirschner and John Gerhart, "Evolvability," 95 *PNAS* 8420-8421 (1998): https://www.pnas.org/doi/10.1073/pnas.95.15.8420 .
[8] "The theory of facilitated variation" 8584.
[9] "Evolvability" 8426.
[10] Certainly at the four levels documented in Eva Jablonka and Marion J. Lamb, *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life* (rev. ed. 2014).

> level. Indeed, that is the order of events most likely to produce evolutionary change. . . . Indeed, it is reasonable to hypothesize that the more major, in terms of organizational and genetic complexity, an evolutionary change in the phenotype, the more likely it originated as a product of environmental influence rather than mutation, given the greater likelihood that environmental induction will affect large numbers of individuals and will recur, even if initially non-adaptive, across generations. . . . **Selectable variation occurs at all levels** . . . We are presently at a turning point where progress depends on agility to work at one level of organization while seeing its neural and hormonal connections to others—up and down among the molecular, cellular, systemic, behavioral, social, populational, and phylogenetic/historical levels of organization."[11]

"In evolution," say Gerhart and Kirschner, "selection always acts on variation of the *phenotype*, which includes all the observable and functional features of the organism. . . . Selection does not directly act on the DNA sequence (also called the *genotype*)." The authors have proximately in view here *natural* selection and very likely *sexual* selection; even perhaps, remotely, good old-fashioned *artificial* selection. They went on to say (in 2005) that "As attractive as it would be to discover a process for loading the genetic dice, thereby improving the rate and course of evolution, there is in fact no evidence for facilitated *genetic* variation and there is conclusive evidence that it does not exist."[12] In fact Doudna and Charpentier won the 2020 Nobel Prize in Chemistry "for the development of a method for genome editing," the CRISPR technique for facilitating genetic variation (altering genes to accomplish chosen purposes in a phenotype, such as treatment of sickle-cell disease).[13] Evidently an unprecedented event (the method not the award) in the history of evolvability. And evolvability arrived at that event by evolving human existence; evolvability's latest surviving species-level venture in its own evolution is *Homo sapiens*—better, Dasein—vector of (extended) facilitated variation *per se*.

The middle book of Gary Tomlinson's trilogy[14] explicates the feedback regimes[15] driving the *sapiens* venture. That explication accords with evolvability theory regarding

> "*what was selected for* in the long period leading up to the stable coalescence of our modernity. The watchword here is . . . Shea's variability. All observers agree

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[11] *Developmental Plasticity and Evolution* 162, 615-616.

[12] *The Plausibility of Life* 12-13. *Cf.* https://www.cell.com/cell/comments/S0092-8674(17)30344-6 .

[13] https://www.nobelprize.org/prizes/chemistry/2020/press-release/ ; https://www.statnews.com/2023/12/08/fda-approves-casgevy-crispr-based-medicine-for-treatment-of-sickle-cell-disease/ .

[14] *A Million Years of Music: The Emergence of Human Modernity* (2015); *Culture and the Course of Human Evolution* (2018); *The Machines of Evolution and the Scope of Meaning* (2023).

[15] "A system can combine different forms of feedback that work together to regulate it. A suite or network of feedback loops is a 'feedback regime' consisting of the linked processes that stimulate and inhibit activity, such as the signaling pathway in a cell or a set of relationships in a social group." Deborah M. Gordon, *The Ecology of Collective Behavior* (2023) 59.

> that this is what sets modern humans apart from other living species and from our extinct relatives (with the usual, cautious qualifications for Neandertals); this is the broadest consensus in archaeology, paleoanthropology, ethology, and related disciplines. . . . from the beginning of our species down to our founding lineage, cumulative culture, its systems, and its niche-constructive effects altered this variability, bringing about the selection of a genome that enhanced its scope. The effect of this enhancement of human variability was to widen more and more the distance between phenotype and genotype—the gap in which variability itself found its expression on the taskscape."[16]

Evolvability's power to deconstrain appears throughout Tomlinson's book under various personae. He begins by invoking the information-theoretic account which Maynard Smith and Szathmáry had set out in *The Major Transitions in Evolution* (1995). He notes that these major transitions include "the appearance of information-bearing RNA and DNA molecules, cells bounded within a membrane or wall, cells with nuclei and internal organelles, multicellular organisms, sexual reproduction, animal sociality, and, most recently, modern *Homo sapiens*." He points out that these major transitions often involve "a shift in the nature of *information transmission.*" A leading example is the advent of sexual reproduction, which facilitates reshuffling of genetic information.[17] A deconstraint, in other words, from a replicative to a stochastic mode of descent. In Gordon's terms, from a 'default not to go' (vary not) feedback regime of replication to a 'default go' (vary always) feedback regime of recurrence.[18]

Tomlinson is not satisfied, however, with Maynard Smith and Szathmáry's account of the latest major transition insofar as they "were unequipped to explain *why* human evolution could amount to a major transition, though they worked to make a limited view of language and its acquisition fill the bill." Accordingly, Tomlnson's book may be regarded as "a long footnote to Maynard Smith and Szathmáry's identification of our evolution as a major transition."[19] Tomlinson summarizes the argument of his 'long footnote' in these words:

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[16] *Culture and the Course of Human Evolution* 143; referring to John Shea, "*Homo sapiens* Is as *Homo sapiens* Was: Behavioral Variability versus 'Behavioral Modernity' in Paleolithic Archaeology," 52 *Current Anthropology* 1 (2011).

[17] *Culture and the Course of Human Evolution* 1, 2.

[18] *The Ecology of Collective Behavior* 58-62. "Recurrence is a similar [though variable] outcome from similar causes, and not the same as replication, which is the production of many copies from the same blueprint." *Id.* 108.

[19] *Culture and the Course of Human Evolution* 14, 2. Like Tomlinson, Jablonka and Lamb also claim that culture evolves, saying they are interested in "complex cultural practices that did not emerge in one single step, but are the result of cumulative historical processes. With such complex cultural practices, we can see no alternative to the assumption that the historical changes involved some form of selective retention of cultural variants that allowed the elaboration of the cultural practice. Of course we need to understand how the cultural changes happen and how they become established. These processes have to be based on some valid theories of cognitive and social psychology, and an understanding of the dynamics and logic of social systems. There are some good theories in each of these domains, but they are not integrated into a general theory of historical cultural change. We believe that it may be possible to construct such a general theory or set of theories." *Evolution in Four Dimensions* 223-224. Tomlinson's work contributes to the construction of such a general theory or set of theories.

> "*Niche construction* builds *feedback* loops between the environment and genome, altering selective terrains for many, probably all, organisms. *Semiosis* arises with the perception of an aboutness in the world that many animals experience. From this springs, in the behavior of fewer animals, *culture*, and where cultures arise they become active forces in niche construction and its dynamics. Still fewer animals construct and transmit culture in the form of organized, hierarchized *systems;* to do so in any advanced form probably requires cognitive capacities limited to the late hominin line, capacities not only for the organizing of cultural forms but also for the *accumulation* of deep archives of cultural knowledge and practice. The resulting systematization enables culture not only to influence niche-constructive feedback cycles from the inside, so to speak, but to assume in varying degrees a controlling, *feedforward* influence from outside the cycles."[20]

Tomlinson discusses each of the italicized terms and, taking them as historical components, proposes how from their interactions "emerged dynamics complex enough to bring about the last major transition in the history of life."[21] The latest, anyway. To put his account in terms of our special interest, Tomlinson proposes what is supposed to be impossible: an etiology of *Ereignis.* To be clear, mine is an off-label use of Tomlinson's argument; the book contains not a word about Heidegger.

In Heidegger's work the Master Signifier of human uniqueness is *Ereignis.* Sheehan gives a concise account of the central place of *Ereignis* in Heidegger's project in his essay "Heidegger Never Got Beyond Facticity,"[22] where he notes that Heidegger makes a crucial distinction, *viz.*:

> 1. *Anwesenlassen: **Anwesen**lassen: das Anwesende.*
> 2. *Anwesenlassen: Anwesen**lassen** (d.h. auf das Ereignis zu) gedacht.*[23]

Sheehan glosses (1) as "letting <u>things</u> be meaningfully present" and (2) as "letting <u>meaningful presence</u> (not things) come about at all."[24] He emphasizes that "*Ereignis* actually *is* the second

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[20] *Culture and the Course of Human Evolution* 17-18.
[21] *Id.* 18.
[22] Thomas Sheehan, "Heidegger Never Got Beyond Facticity," 13 *Journal of Philosophical Investigations* 45 (Tabriz, 2019); and here https://drive.google.com/file/d/1JGX0oiAWVcHffgef3Vw0umbUv5dqmhVY/view .
[23] GA 14: 45: https://www.beyng.com/gaselis/?vol=14.00&pg=45 .
[24] The word 'thing' suggests 'object' which implies 'extant.' Yet in the Noneist view, "Some objects do not exist: fictional characters, such as Sherlock Holmes; failed objects of scientific postulation, such as the mooted planet Vulcan; God (any one that you do not believe in). Yet we can think of them, admire them, just as we can existent objects. Indeed, we may not know whether an object to which we have an intentional relation of this kind exists or not. We may even be mistaken about its existential status. The domain of objects comprises, then, both existent and non-existent objects." Graham Priest, *One: Being an Investigation into the Unity of Reality and of its Parts,*

lassen: it is the indefinable 'it' that 'allows for' or 'gives' meaningfulness, at all." The term *Ereignis* subsumes a number of metaphors redescribing *Geworfenheit,* 'thrownness,' "and more fully *der geworfene Entwurf,* 'thrown-openness' – facticity."[25]

All Heidegger's imagery of the open, the clearing, the field for *discurrere*—all this speaks, per Sheehan, of "the dynamic space of mediation 'between' the human knower or actor and whatever is known or acted upon. That space is the field of *meaning*, and phenomenology in its first moment is about the meaningful presence (Heidegger: the παρουσία or *Anwesen*) of what one encounters."[26]

The dispositive issue for Heidegger in distinguishing human from animal is "whether the animal can apprehend something *as* something, something *as* a being, at all. If it cannot, then the animal is separated from man by an abyss."[27] More precisely, an abyss separates the animal from *Existenz, das Wesen des Daseins.* Whereas Dasein is fundamentally *das Offene, die Lichtung, der Spielraum,* etc., Heidegger says "*Benommenheit* [captivation] is the fundamental essence [*Grundwesen*] of the organism [i.e. *das Tier*]."[28] He describes a notion approximating that of reaction norm:[29] "Capability for [*das Fähigsein zu*] __ and thus behavior [*das Benehmen*] itself is open for such occasions, for stimuli, for that which initiates, i.e., disinhibits the capability for [*enthemmt das Fähigsein zu*] ____ in such and such a way in each case." The animal "surrounds itself with a *disinhibiting ring* [***Enthemmungsring***] which prescribes what can affect or occasion its behavior." I.e., the range of stimuli proper to its form of life. The result is that "the life of the animal is precisely the struggle to maintain this encircling ring [*ist gerade das*

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including the Singular Object which is Nothingness (2014) xxi-xxii. In other words, we do inhabit (and are inhabited by) what Quine called Meinong's 'ontological slum.' Human being is the animal with abundant capacity to enter into intentional-affective (and thereby causal) relations with objects—*Anwesen*, meaningful presences—that may not exist. Such transcendent, or gonzo, desconstraint is possible only in a medium, a space, of super-high Reynolds number, where inertial forces ('thought') greatly preponderate over viscous forces ('reality').

[25] "Heidegger Never Got Beyond Facticity" 7, 6.

[26] *Id.* 6.

[27] *The Fundamental Concepts of Metaphysics: World, Finitude, Solitude* (tr. William McNeill and Nicholas Walker 1995) 264. *ob das Tier überhaupt etwas **als** etwas, etwas **als** Seiendes vernehmen kann oder nicht. Wenn nicht, dann ist das Tier durch einen Abgrund vom Menschen getrennt.* H.'s emphasis. *Gesamtausgabe Band* 29/30: 384: https://www.beyng.com/gaselis/?vol=29.30&pg=384 .

[28] *Die Benommenheit ist das Grundwesen des Organismus.* GA 29/30: 376: https://www.beyng.com/gaselis/?vol=29.30&pg=376.

[29] I.e., "the set of phenotypes that can be produced by an individual genotype that is exposed to different environmental conditions. . . . plasticity always refers to a reaction norm, but a reaction norm is not necessarily plastic. . . . The reaction norm approach . . . considers plasticity to be a character itself and under genetic control. As such, reaction norms could be a direct object of selection." Carl D. Schlichting and Massimo Pigliucci, *Phenotypic Evolution: A Reaction Norm Perspective* (1998) 51-52, 58-59. "Variation in the ways that individuals respond to conditions is the raw material for selection. For collective behavior, these are reaction norms in how individuals respond to interactions with each other and with conditions, which are shaped by the consequences for the group." *The Ecology of Collective Behavior* 137.

Ringen um dieses Umring] or sphere within which a quite specifically articulated manifold of disinhibitions [*eine bestimmt ausgegliederte Mannigfaltigkeit von Enthemmungen*] can arise. . . . The way in which the animal is in each case taken [*die Hingenommenheit*] by the whole is directed by the range of possible disinhibitions [*liegt in der Richtung der möglichen Enthemmungen*] within its encirclement." This determinate spectrum of 'openness for' delimits the animal's possible relations to entities—the range of its reactions and responses—in contrast to Dasein's wide-open capacity for taking-as: the animal's "being taken is open for [*Die Hingenommenheit ist offen für*] manifold forms of disinhibition, but this openness is precisely not the manifestness of anything that behaviour could relate to as a being [*gerade nicht Offenbarkeit von solchem, worauf als Seiendes sich das Benehmen beziehen kann*]. This open being taken [*geöffnete Hingenommenheit*] intrinsically involves the withholding of any possibility of apprehending beings [*des Vernehmens von Seiendem*] [*sc.* as *Anwesen*]."[30]

Heidegger does not take up the question of how the *Enthemmungsring* of an individual animal may change (e.g. by development) or how the *Enthemmungsring* proper to a species may change into that of a descendant species (by selection). He declares descent to be of no moment to his purpose: "When we ask this question concerning the relation between man and animal, we cannot therefore be concerned [*kann es sich auch nicht darum handeln*] with deciding whether or not man is descended [*abstammt*] from the ape [*sic*; if this is not just a misleading figure of speech it seems Heidegger was unaware that the claim is that apes are our cousins, not our ancestors]. For we cannot begin to pose this question, let alone answer it, until we clearly appreciate what the distinction between them is and how this distinction should be drawn."[31]

As stated above, human being's distinctive feature is the as-structure: "The manifestness of beings as such, of beings *as* beings, belongs to world.[32] This implies that bound up with world is this enigmatic 'as', beings *as* such, or formulated in a formal way: 'something *as* something', a

[30] *The Fundamental Concepts of Metaphysics* 254, 255. GA 29/30: 369, 370-371: https://www.beyng.com/gaselis/?vol=29.30&pg=369 .

[31] *Id.* 179. GA 29/30: 265: https://www.beyng.com/gaselis/?vol=29.30&pg=265 .

[32] "The world is the unfolding complex of actual and possible relationships that matter to human beings. In this complex of relationships, human beings essentially find and define themselves, others, and the things around them, while also being defined by the latter." *The Cambridge Heidegger Lexicon* (ed. Mark A. Wrathall 2021) s.v. 'World (*Welt*)' p. 822. "The stone is *weltlos*, the animal is *weltarm*, human being is *weltbildend*." GA 29/30: 272. All organisms are niche-constructors. *See* "The Organism as the Subject and Object of Evolution" in Richard Levins and Richard Lewontin, *The Dialectical Biologist* (1985). In *sapiens* niche-construction takes the form of 'taskscaping.' "In describing the cultural niche construction of these early sapients I have reintroduced the term *taskscape*, which I borrowed from anthropologist Tim Ingold . . . to name the meeting space of signs, ideas, forms, systems, and behaviors, on the one hand, and the stuff of the environment, on the other. The long-term development of sapient culture across our first 150 millennia may be conceived in terms of the increasing power of human groups to build culturally fashioned taskscapes from more neutral ecologies and more neutrally inhabited landscapes." *Culture and the Course of Human Evolution* 138.

possibility which is quite fundamentally closed to the animal."[33] Alternative formulation: the animal's ken is constrained, the human's deconstrained. Whence this deconstraint? *Ereignis.*

Sheehan proposes translating the term as 'coming into view.' Endorsing this proposal as "nearer to the mark than 'event,' 'enownment,' or 'appropriation,'" Wrathall writes, "In and through *Ereignis*, relationships, meanings, and possibilities come into view that are suited to the situation, thus at times **altering** the essential structure of the things and situations we encounter."[34] (my emphasis) *Ereignis* is variagenic and "Variation, in fact, *is* Evolution."[35] Human beings are cases[36] of Dasein, and Dasein is a case of evolvability, the capacity to generate nonlethal functional variation.

What first possessed a hominid to mutilate an innocent stone for some purpose is lost to history. Anyhow, Tomlinson tells us that artifacts of this sort discovered by the Leakeys at Olduvai Gorge "are now thought to reach back 2.7 million years" and "were produced either by the earliest hominins or by now-extinct lineages of australopithecines—or by both." In making such things, "Often two or more of these [knapping] blows were struck adjacent to one another, resulting in characteristic overlapping scars left on the core where flakes were removed."[37] And here is where 'coming into view' shows up by its absence: "Apes today can be taught to chip flakes off a core, though there is no evidence that they do it in the wild; but they do not manage this adjacency even with human encouragement."[38] In Wittgenstein's term apes are aspect-blind to the adjacency-feature; their task-capacity doesn't detect it; it does not 'come into view' for them.

For Tomlinson, a threshold separates most of the biota from a handful of animal species. "The emergence of signs from information," Tomlinson writes, "was a momentous change, enriching a biosphere of [information-processing] correspondence with aboutness, content, and representation." The difficulty of locating this threshold in life's history, he says, should not lead us to underestimate the threshold's importance. "We can see . . . organisms on each side of the divide: those living by information processing alone and those that additionally make

[33] *Id.* 274. GA 29/30: 397: https://www.beyng.com/gaselis/?vol=29.30&pg=397 .
[34] *The Cambridge Heidegger Lexicon* s.v. 'Adaptation (*Ereignis*)' p. 24; citing Thomas Sheehan, "A Paradigm Shift in Heidegger Research," 34 *Continental Philosophy Review* 183, 198 (2001).
[35] William Bateson, *Materials for the Study of Variation* (1894) 6.
[36] John Haugeland, "Heidegger on Being a Person," 16 *Noûs* 15, 19-21 (1982).
[37] *See* Mary Leakey's typology of Oldowan tools reproduced here: https://www.tandfonline.com/doi/full/10.1080/0067270X.2018.1439558 .
[38] *Culture and the Course of Human Evolution* 88, 89.

interpretants."[39] Those that make interpretants can be arranged along a semiotic gradient constituted by the stages icon, index, and symbol—C. S. Peirce's 'signs.'[40]

Tomlinson explains that "semiotic abstraction marks the appearance of culture" in animals; e.g. in songbirds, humpback whales, and Japanese macaques. This abstraction is "temporal displacement from the face-to-face interaction" in which signs were first deployed. In face-to-face interaction the sign is

> "bound to the transaction of which it was a part, registered as a conveyance of content, and discarded in the ongoing flux of social interaction. In the cultural situation, on the other hand, *the signs themselves are learned,* whether songs, calls, or even material procedures. A new abstraction appears by which signs are distanced from any particular situation, readied for repeated application in future situations, released from their here-and-now proximity."[41]

That is, culture appears in animals with the deconstraint of signs, their unbinding from the immediate here-and-now transaction. In my view we don't risk serious money if we take interpretant and *Anwesen* as synonymous. This move lets us see *Anwesen* as such, beings *as* beings, as gradually coming into view by the stages of deconstraint which Tomlinson describes—iconicity, indexicality, hyperindexicality, and, only in *sapiens,* symbolism.

In Tomlinson's account the culture-driven niche construction of earlier hominins eventually selected a neuroanatomy capable of supporting organized, hierarchical systems of culture accumulating deep archives of knowledge and practice. In Haugeland's term, Dasein got 'instituted.' But what is Dasein? This, Haugeland says, is the fundamental question for any interpretation of *Being and Time*; which text maintains that

> "the anyone [*das Man*], the world, language, and even the sciences all have '*Dasein's* kind of being.' We can make sense of this astonishing diversity if we understand *Dasein* to be the anyone and everything instituted by it: a vast intricate pattern [Tomlinson's 'system']—generated and maintained by conformism—of norms, normal dispositions, customs, sorts, roles, referral relations, public institutions, and so on. On this reading, the anyone, the (everyday) world, and language are different coherent 'subpatterns' [subsystems]

[39] *Id.* 79.
[40] Tomlinson explicitly identifies a gradient in the range from indexicality to symbolism: "Such possibilities [of hyperindexicality like music and ritual] suggest an unbroken gradient from indexicality to symbolism;" and he argues later that "symbolism arose, in our deep history, by smooth gradations from earlier indexicality and requires no dramatic leaps in the cognitive capacities of ancient humans to explain it." *Culture and the Course of Human Evolution* 78.
[41] *Id.* 81, 80. His emphasis.

> within the grand pattern that is *Dasein*; they have *Dasein's* kind of being because each of them is *Dasein* (though none of them is all of *Dasein*). Within the anyone and all it institutes, the science of chemistry is a coherent subpattern: chemistry is *Dasein*—and so are philately, Christmas, and Cincinnati."[42]

Taking the coherent subpatterns/subsystems that are chemistry and astronomy as variants, and so as well the subsystems philately and numismatics, Christmas and Kwanzaa, Cincinnati and Cleveland, etc., as variants, we see that Dasein is a variant-producing system, or pattern. Taking human beings as each a variant case of Dasein,[43] plus the variations each of these cases produces in its lifetime, the resulting sum is a large quantity of selectable variation originating at all levels, all supatterns/subsystems of Dasein. The ensemble of all these at any given moment is the *Seinkönnen* of the institution of Dasein as a whole. The aggregate of these *Seinkönnen* over time is, metaphorically speaking, Dasein's reaction norm to date.

Tomlinson goes on to describe an even higher level of organization, the epicycle; the level of the Daseinish variant Heidegger calls *das Ge-Stell.* (If Dasein is 'institution' *Ge-Stell* is 'im-position,' as Dahlstrom translates the term.[44]) Tomlinson takes from control systems theory the term *feedforward*: "elements sending a signal into a system from outside it are called *feedforward* elements." E.g. orogeny; mountain-forming has impacted the system of life in the course of its history but not the other way around, life does not affect orogeny. Tomlinson contends that "In certain circumstances, feedback cycles can generate elements that come to stand outside them with emergent, organized dynamics of their own. These can then function *as if* they were controlling, feedforward elements, altering and determining the systems from which they arose with little change to themselves." Since they originate from the systems they direct they are not strictly speaking feedforward elements; Tomlinson says that 'pseudo-feedforward' or 'quasi-feedforward' are more accurate descriptors of the phenomenon. He calls the phenomenon 'epicycle': "hominin cultures came at a certain point to generate an abundance of such feedforward controls: these I call *epicycles*."[45] Epicycles "are the systems that broke loose from their cultures, so to speak, to achieve an operation so independent that they could turn back and guide culture in the manner of a feedforward control mechanism. . . . a dynamic

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[42] "Heidegger on Being a Person" 19.

[43] "People are to *Dasein* as baseball games are to baseball, as utterances are to language, as works are to literature. *Dasein* is the overall phenomenon, consisting entirely of its individual 'occurrances,' and yet prerequisite for any of them being what it is. English lacks a convincing word for this relation; so I will settle for saying that a person is a *case* of *Dasein*. People are, in one sense, on a par with everything else the anyone institutes; they are identifiable coherent subpatterns within the overall pattern that is *Dasein*." *Id.* 20.

[44] Daniel O. Dahlstrom, "Im-position: Heidegger's Analysis of the Essence of Modern Technology," in *Heidegger on Technology* (ed. Aaron James Wendland, Chistopher Merwin, and Christos Hadjioannou 2019); also here: https://www.beyng.com/docs/Dahlstrom-Imposition.html .

[45] *Culture and the Course of Human Evolution* 33-34.

entirely beyond or prior to human command or alteration, and this forms a driving force of its extended autonomy."[46] Epicyclic operation "marks the apogee of sapient culture."[47]

Ge-Stell is apogee in the sense 'highest level of organization.' Interpreting Heidegger's *The Question Concerning Technology* Dahlstrom writes, "In the case of modern technology, human beings collaborate in challenging nature, but only by virtue of being challenged to do so." And quoting Heidegger now, "we call that challenging claim [*herausfordernden Anspruch*] that gathers human beings together in the direction of ordering the self-disclosing as standing reserve [*das Sichentbergende als Bestand zu bestellen*] the im-position [*das* ***Ge-stell***]."[48]

Ge-Stell is not at the same level of hierarchy as this or that culture's *das Man*. *Ge-Stell* turns back and guides in the manner of feedforward control **every** modern culture's *das Man***.** *Ge-Stell* is *capo di tutti capi.* To illustrate: Sapolsky writes that "every culture's values include ways to make their inheritors recapitulate those values, to become 'the sort of people you come from.'" Right, Heidegger calls those ways *das Man.* Sapolsky goes on to say that "Cultures produce dramatically different behaviors with consistent patterns." Cultures are variant systems of variants, and one of the most studied aspects of cultural variation is that of 'individualist' versus 'collectivist.' Sapolsky describes the distinctive features of each of these two culture patterns, and you're no doubt familiar with what those features are.[49] Two variants of *das Man* then; so far so what? Sapolsky then recounts the "standard explanation" for American individualism and East Asian collectivism, respectively. For East Asian collectivism the explanation is of "ecology dictating the means of production—ten millennia of rice farming, which demands massive amounts of collective labor to turn mountains into terraced rice paddies, collective planting and harvesting of each person's crops in sequence, collective construction and maintenance of massive and ancient irrigation systems."[50]

Then there's the anomaly: "parts of northern China where the ecosystem precludes rice growing, producing millennia of the much more individualistic process of wheat farmers. Farmers from this region, and even their university student grandchildren, are as individualistic as Westerners." Given the explanation from ecology it follows that a mosaic of ecologies will produce a mosaic of *das Man.* So "beyond cool" for Sapolsky is the finding that "Chinese from rice regions accommodate and avoid obstacles (in this case, walking around two chairs experimentally placed to block the way in Starbucks); people from wheat regions remove

[46] *Id.* 160.
[47] *Id.* 145.
[48] "Im-position." GA 7:20: https://www.beyng.com/gaselis/?vol=7&pg=20 .
[49] For a bi-cultural observer's meditation on the variants of how to love a dying parent *see The Farewell* (dir. Lulu Wang 2019).
[50] Robert M. Sapolsky, *Determined: A Science of Life Without Free Will* (2023) 74-76.

obstacles (i.e., moving the chairs apart)."[51] In terms of *Ereignis* and the as-structure, chair-obstacles 'come into view' for the two sorts of *das Man* differently—as to-be-accommodated/avoided and as to-be-altered/disrupted, respectively.

That's right, Starbucks. These variant patterns of *das Man* in China take place side-by-side within the space of global techno-capitalist consumerism, avatar of *Ge-Stell*. They might treat chairs-in-the-way differently, but everybody's there to buy standardized product. *Ge-Stell* gathers human beings together—at Starbucks everywhere, in the collectivist PRC and in the individualist USA—in the direction of ordering from the barista the self-disclosing as standing reserve.

And *Ge-Stell*, world-dominant epicycle of guidance and control, bears the features of evolvability:—modularity, robustness, adaptability, capacity to engage in weak regulatory linkage, and exploratory behavior.

Modularity and weak regulatory linkage go together, each complementing the other, as *Fähigsein zu Ersetzbarkeit.* In his discourse on the components of *Ge-Stell* Heidegger says, "One piece of standing reserve [*ein Bestand-Stück*] is replaceable by another. The piece as piece is already imposed upon for replaceability [*Ersetzbarkeit*]. Piece of standing reserve means: that which is isolated, as a piece, is interchangeably [*auswechselbar*] confined within a requisitioning [*ein Bestellen*]."[52] "All that is, in the most manifold of ways and variations [*Abwandlungen*] and whether obviously or in a still hidden manner, is a piece of inventory of the standing reserve in the requisitioning of positionality [*Bestand-Stück des Bestandes im Bestellen des Ge-Stells*]."[53] "Requisitioning is in itself universal. It gathers in itself all possible types of placing and all manner of their linking [*Verkettung*]."[54] "Unlocking, transforming, storing, distributing and switching about are ways of revealing [*Erschließen, umformen, speichern, verteilen, umschalten sind Weisen des Entbergens*]. . . . The revealing reveals to itself its own manifoldly interlocking paths [*vielfach verzahnten Bahnen*], through regulating their course [*sie steuert*]. . . . Where [*das Ge-Stell*] holds sway, regulating and securing [*Steuerung und Sicherung*] of the standing-reserve mark all revealing."[55] "Positioning [*das Stellen*] has the character of challenging forth [*des Herausforderns*]. Accordingly it becomes an expediting along [*ein Herausfördern*]."[56]

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[51] *Id.* 76.
[52] "Positionality" in *Bremen and Freiburg Lectures*: Insight Into That Which Is *and* Basic Principles of Thinking (tr. Andrew J. Mitchell 2012) 35. GA 79: 36-37: https://www.beyng.com/gaselis/?vol=79.00&pg=36 .
[53] *Id.* 38. GA 79: 40: https://www.beyng.com/gaselis/?vol=79.00&pg=40 .
[54] *Id.* 30. GA 79: 32: https://www.beyng.com/gaselis/?vol=79.00&pg=32 .
[55] *The Question Concerning Technology and Other Essays* (tr. William Lovitt 1977) 16, 27. GA 7: 17, 28: https://www.beyng.com/gaselis/?vol=7&pg=17 .
[56] "Positionality" 28. GA 79: 29: https://www.beyng.com/gaselis/?vol=79.00&pg=29 .

An epicycle is robust in the sense that it is, in Tomlinson's words, "a dynamic entirely beyond or prior to human command or alteration." Heidegger repeatedly insists on this aspect of *Ge-Stell*. *Ge-Stell,* "spoken as the thoughtful name as the essence of technology . . . says: technology is no mere product of culture and no mere [*kein bloßes*] manifestation of civilization. According to its essence, technology, reigning of its own accord [*aus sich waltende*], is the gathering of positioning in the sense of a requisitioning into standing reserve of all that presences."[57] *Ge-Stell*, the essence of technology, "cannot be anything merely human [*nichts nur Menschliches sein*]."[58] "In the age of technological dominance, the human is placed into the essence of technology, into *das Ge-Stell*, by his essence. In his own way, the human is a piece of the standing reserve in the strictest sense of the words 'piece' and 'standing reserve'."[59]

As for adaptability, this startling passage occurs in 'The Turning':

> "If *Ge-Stell* is a destining of the coming to presence of Being itself [*ein Wesensgeschick des Seyns selbst*], then we may venture to suppose that *das Ge-Stell*, as one among Being's modes of coming to presence, changes [*unter anderen wandelt*]. For what gives destining its character as destining is that it takes place so as suitably to adapt itself to the ordaining that is ever one [*daß es sich in die je eine Schickung schickt*]. To take place so as to adapt means [*Sich schicken heißt*] to set out in order to adjust fittingly [*sich aufmachen, um sich zu fügen*] to the directing already made apparent [*die gewiesene Weisung*]—for which another destining, yet veiled, is waiting [*ein anderes noch verhülltes Geschick wartet*]. That which has the character of destining moves [*Das Geschickliche geht*], in itself, at any given time, toward a special moment [*einen ausgezeichneten Augenblick*] that sends it into another destining [*in ein anderes Geschick schickt*], in which, however, it is not simply submerged and lost [*nicht einfach unter und verloren geht*]."[60]

Now joining together the theory of facilitated variation, Tomlinson's account, and Heidegger's vision forms a chimaera[61] with the following features. The *Enthemmungsring* of the animal

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[57] "The Danger" in *Bremen and Freiburg Lectures* 63. GA 79: 67: https://www.beyng.com/gaselis/?vol=79.00&pg=67 .
[58] "Positionality" 37. GA 79: 39: https://www.beyng.com/gaselis/?vol=79.00&pg=39 .
[59] *Id.* 35. GA 79: 37: https://www.beyng.com/gaselis/?vol=79&pg=37 .
[60] "The Turning" in *The Question Concerning Technology and Other Essays* 37; GA 79: 68: https://www.beyng.com/gaselis/?vol=79&pg=68 . Instead of 'adapt' Mitchell translates literally "it sends itself each time in a sending;" and glosses *sich schicken* as "to be fitting, suitable; to reconcile oneself with." "The Turn" in *Bremen and Freiburg Lectures* 64.
[61] "One of the interesting consequences of the peculiar life cycle of the cellular slime molds is that, unlike organisms that become larger by growth, it is far easier for them to have a mixture of cells that might be related to different degrees; in other words, to form chimaeras." John Tyler Bonner, *The Social Amoebae: The Biology of Cellular Slime Molds* (2009) 24. Chimaerafication is a variety of variant-making. *Cf.* 'Father, Son, and Holy Ghost.' *Wieviel Chimaera so viel Abwandlung.*

("which prescribes what can affect or occasion its behavior") eventually mutates in *sapiens* into the totalizing epicycle-genus *Geschick*, 'dispensation.' The current epicycle of guidance and control, the modern *Geschick* of disclosing/revealing, is *das Ge-Stell.* *Ge-Stell* bears a strong family resemblance to evolvability, not least in that both exhibit adaptability; evolvability evolves, as does *Ge-Stell*, as does apparently every *Geschick,* every dispensation of *Entbergen*, every one of which changes, *unter anderen wandelt,* into its successor *Geschick*. Yet each *Geschick* "takes place so as suitably to adapt itself to the ordaining that is ever one"—*die je eine Schickung*. This *je eine Schickung* can only be *Ereignis*, *Anwesen**lassen*****,*** that which lets meaningful presence come about at all, the site of deconstrained, exploratory interpretant-making.

Every *Geschick* is a higher-order sense-making in that it guides and controls, 'prescribes,' what sense we are to make of sense-making itself, what sense-making is for, what sense is. In *Being and Time* and its adjacent works presence-at-hand is our modern *Geschick* Heidegger says, "here the beings that surround us are *uniformly manifest* [***gleichmäßig offenbar***] as simply *something present at hand in the broadest sense* [***Vorhandene im weitesten Sinne***] . . . We board the tram, talk to other people, call the dog, look up at the stars, all in the same way [*in einem Stil*]—humans, vehicles, human beings, animals, heavenly bodies, everything in the same uniformity of what is present at hand [*alles in einer Gleichmäßigkeit des eben Vorhandenen*]."[62] As dread grows in him this vision morphs into *das Ge-Stell, Vorhandenheit* on meth.

I take "another destining, yet veiled, is waiting" as Heidegger's gothic style of saying that the current dominant epicycle will change into another, and that we have no way of predicting the features of what's to come. If it means instead that there exists some *eidos* in *Geschick*-Heaven awaiting its mortal turn then Heidegger was a preformationist and all bets are off.

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[62] *The Fundamental Concepts of Metaphysics* 275. GA 29/30: 399: https://www.beyng.com/gaselis/?vol=29.30&pg=399 .