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Bodily changes during the proto-cultural period and their ongoing impact on culture

I want to draw attention to the importance of the proto-cultural period of humankind. This period extended from roughly 2.5 million years ago to 40,000 years ago. It was during this period that homo sapiens attained his characteristic constitution as it still persists today. We are, I suggest, in our basic bodily, emotional, affective and even cognitive setup still much the same as our ancestors were at the end of the proto-cultural period and at the beginning of the subsequent take-off of cultural evolution 40,000 years ago.¹

The text that was most inspirational to me when developing this view was Clifford Geertz' article "The Impact of the Concept of Culture on the Concept of Man", published almost 50 years ago. In this article Geertz characterized the proto-cultural stage as an "overlap period of cultural and biological change" resulting in the human constitution as we know it today.² During this period, Geertz stated, man "quite literally created himself"³ by producing "the innate, generic constitution of modern man".⁴

1. Classification of the proto-cultural period

In the development towards the modern human, three stages are to be distinguished. It goes without saying that this division is rather schematic; future research may move one or the other date a bit but the overall picture that I draw is likely to hold water. And don't let us ignore that in addition to individual data one must develop an overall picture – an account of where continuity prevails and where big changes take place.

The first stage began about 7 million years ago when the hominid line split off from the chimpanzee line, a period which lasted until about 2.5 million years ago when the first members of the genus *homo* appeared. During this first and comparatively longest stage (it lasted four and a half million years, after all) surprisingly little happened. The australopithecines (the various precursor forms of *homo*) differed little from their closest relatives, the chimpanzees. Their body size was similar, their brain volume was barely larger, and many among them still spent part of their lives in trees. All this did not change for a long time.

The second stage began about 2.5 million years ago and lasted until about 40,000 years ago. This stage I call the *proto-cultural* period. It was of paramount importance for the human constitution. At the beginning of this phase our ancestors were, as I said, hardly any different from the first australopithecines about 7 million years ago. But at the end of the proto-cultural period (40,000 years ago), people not only had a brain three times the size of the beginning, but were producing highly sophisticated weapons, figurative representations and musical instruments. During this period (between 2.5 million years and 40,000 years ago) the crucial development must have occurred that transformed the human animal into a fully-fledged human being.

¹ The following is largely based on the more detailed account provided in: Wolfgang Welsch, *Homo mundanus: Jenseits der anthropischen Denkform der Moderne* (Weilerswist: Velbrück Wissenschaft, 2012, 2nd ed. 2015), 715–735.

² Clifford Geertz, "The Impact of the Concept of Culture on the Concept of Man" [1966], in: *The interpretation of cultures* (New York: Basic Books 1973), 33–54, here 48.

³ Ibid.

⁴ Clifford Geertz, "The Growth of Culture and the Evolution of Mind" [1962], in: *The interpretation of cultures* (New York: Basic Books 1973), 55–83, here 67.

Finally, the third stage – that of cultural evolution – began about 40,000 years ago and extends to the present day. During the proto-cultural period there was an interplay of biological evolution and cultural innovation. While increasing their cultural activities, people also underwent biological and genetic modifications. Crucially, this no longer occurs during cultural evolution. Now the development is primarily cultural with barely any biological or genetic alterations.⁵

How did the proto-cultural changes come about, and what did they consist in?

2. Proto-cultural changes

a. Physical changes

Firstly, physical changes occurred. Upright walking was perfected, the hand was refined, body size increased considerably (while *homo habilis*, about 2.1 million years ago, was little taller than 1 meter, *homo erectus*, only 300,000 years later, measured up to 1.80 meter). And by reducing their body hair (whilst reinforcing their head hair), people have increasingly disassociated themselves from their closest relatives, the great apes.⁶

Changes occurred in the area of sexuality too: males lost their penis bones, female breasts became sexualised, a-fronte practices began to replace the conventional a-tergo practices, and in this context not only the sense preferences changed dramatically but, as Freud suspected, human sexuality altogether was forever "heavily damaged".⁷

Humans' external appearance and essential practices changed significantly during the proto-cultural period. As products of this period we are clearly distinguished from our animal relatives as well as from our hominid ancestors.

b. A brain beyond comparison

The human brain also changed considerably during the proto-cultural period. First, there was a rapid increase in volume: from about 400 cubic centimeters in the early australopithecines to more than 600 cm³ in *homo rudolfensis* (the first species of *homo*, about 2.5 million years ago), then notably to *homo erectus* (before about 1.8 million years) with almost 1000 cm³, and to *homo sapiens* (200-150,000 years ago) with more than 1200 cm³ – an increase by a factor of 3 over 2.5 million years.

⁵ Genetic changes include, in particular, skin and eye color. Other alterations are a consequence of agriculture. Currently immunological adjustments are taking center stage.

⁶ Hairlessness is not, as previously supposed, an adaptation to climate change (in this case our ancestors would, in the first place, have been obliged to reduce their head hair instead of reinforcing it) but a result of sexual selection. Hair growth reduction became attractive as a means to visibly distinguish ourselves from our closest apish relatives. In mating, those candidates were preferred who matched this new human fashion – which entailed a spread of hairlessness in the genome of our ancestors. In this way, an aesthetic inclination generated a new distinctive human feature. One might add: it is an aesthetic phenomenon insofar as our hairlessness is only a visual *appearance*. In fact, human bodies possess as many or even more hairs than many primate species, it's just that our hairs have in most cases become so unremarkable that the *optical illusion* of hairlessness or nakedness arises (cf. Winfried Menninghaus, *Das Versprechen der Schönheit*, Frankfurt/Main: Suhrkamp 2003, here 88). Gender-specific variations (stronger hair and especially beard growth in men) are to be seen as strategies of gender distinction (dimorphism).

⁷ Sigmund Freud, "Das Unbehagen in der Kultur" [1930], in: ders., *Studienausgabe*, Bd. 9 (Frankfurt/Main: S. Fischer 1974), 197–270, here 234 [IV].

But the increase in size (caused mainly by the growth of the neocortex⁸) is only one thing; at least as important are the structural changes which occurred over that time. It was during the proto-cultural period that the basic configuration of the human brain developed that is still characteristic of *our* brains. The human brain turned increasingly into an apparatus of self-reference. The relationship between external and internal functions of the brain shifted more and more in favor of the latter. At the end of this period, only 10 percent of cortex volume served outer reference (perception and motor skills), while 90 percent served inner reference (internal coordination processes).⁹

The extent of this imbalance becomes fully clear when one looks at the number of neural connections instead of the ratios of volume. Of the roughly 10^{14} connections in our brain only every ten millionth serves purposes of external communication, whereas all others serve purposes of internal communication.¹⁰ Thus the internal communication paths outweigh those of external communications by the enormous ratio of $10^7:1$. Each external connection is counterbalanced by 10 million internal connections! Our brain is predominantly an apparatus for self-reference. We humans are world champions of internal communication, of reflection in the broadest sense. Herein lies the unique feature of the human brain.¹¹

3. Tool development and new social requirements as the driving factors

How did this brain configuration come about? Basically through feedback processes between brain development on the one hand and the human activities made possible by it on the other. The brain did not just grow on its own, like a tumor. Neither the increase in its size nor the growth in its self-referentiality were results of an autonomous process, so to say a 'greenhouse of the skull'. Instead the human brain has evolved via feedback from the activities it afforded. The increased performance of the enlarged brain enabled new activities; to master these amounted to a selective advantage, which in turn reinforced the increase. Thus, brain optimization and activity development have continually provoked each other.¹²

⁸ In humans the neocortex accounts for about three quarters of the brain weight.

⁹ Cf. Volker Storch, Ulrich Welsch, Michael Wink: *Evolutionsbiologie* (Berlin: Springer 2001), 375. A comparison with rats (with whom, after all, we share 90 percent of our genome) makes the amount of change evident. In rats, the ratio of external to internal communication is (conversely to our case) 90:10 (cf. *ibid.*). The quantitative reversal of the ratio in humans amounts to a qualitative leap. In human evolution it was probably above all the prefrontal lobe and the rear associative cortex that grew disproportionately compared to the primary sensorimotor structures (cf. Todd M. Preuss, "The discovery of cerebral diversity: an unwelcome scientific revolution", in: *Evolutionary Anatomy of the Primate Cerebral Cortex*, eds. Dean Falk and Kathleen R. Gibson, Cambridge, Mass: Cambridge University Press 2001, 138–164, here 154 f; Todd M. Preuss, "What's Human about the Human Brain?", in: *The New Cognitive Neurosciences*, ed. Michael S. Gazzaniga, Cambridge, Mass.: The MIT Press 2000, 1219–1234, here 1223–25). It is also noteworthy that the overall genetic similarity between humans and chimpanzees (more than 98 percent) applies much less to the brain. In the course of human evolution, gene expression patterns concerning the brain have changed significantly more than those in chimpanzees: about 5.5 times as much. (By contrast, there exist no such changes in other cells, e.g. liver or blood cells; cf. Svante Pääbo et alia, "Intra- and Interspecific Variation in Primate Gene Expression Patterns", *Science* 296, 2002, 340–342, here 341). This is a further indication of how important brain modifications were in the course of hominization.

¹⁰ Cf. Manfred Spitzer, *Lernen. Gehirnforschung und die Schule des Lebens* (Heidelberg: Spektrum Akademischer Verlag 2002), 52.

¹¹ To be sure, this growth of reflectivity already began with the great apes, but in humans it has reached an unparalleled extent.

¹² "His [man's] large and efficient brain is a consequence of culture as much as its cause. He does not have a culture because he has a large brain; he has a large brain because several million years ago his little-brained ancestors tried the cultural way to survival. Of course, the correct way to view this is a feedback process. [...] the cultural things themselves propelled him into getting a larger brain" (Robin Fox, *Encounter with Anthropology* [1975], New Brunswick/London: Transaction ²1991, 283 f.). Already in 1966 Clifford Geertz had stated: "Between the cultural

Two types of cultural activity were particularly important for this: the development of tools and new requirements of social life.

Clearly indicative of the connection between brain development and tool development is their synchrony. The oldest tools date back to around 2.6 million years ago,¹³ just when a significant enlargement of the brain occurred. The steps in brain development which followed were likewise associated with advances in tool technology, both in *homo habilis*, who was the first to chip sharp-edged pieces from stones (thus the suffix "the skillful" – *habilis*), and in *homo erectus*, who developed an intensified culture of tools.

It is perfectly understandable that tool techniques require reflective skills. The perception of an encountered object as a tool already requires the re-interpretation of that object from the perspective of an internal purpose. Likewise its transformation into a better tool (such as in the production of bifaces) requires anticipatory imagination and an assessment of one's operations in comparison with one's goal. And the production of completely novel tools (such as spears, bows and arrows) again requires a high degree of internal reflection: first the draft of a new possibility, then the equally internal calculation of the means to achieve this goal. All these operations are essentially based on internal, reflective processes.

In addition to new tool technologies, new social demands promoted the increase in reflectivity. Already in the animal kingdom we notice a correlation between brain size and social life: animals living in large groups generally have more brain mass than those who interact with only a few conspecifics.¹⁴ During the proto-cultural period human social life became more and more complex and so required an increase in reflection. Conventionally, humans had already learned to master the understanding of intentions and states of consciousness of conspecifics. Now, however, they developed new social rules (division of labor, group privileges, initiation rites, etc.) and new practices (building huts, strategies for hunting, tanning of animal skins, etc.) for which they did not possess genetic programs, but which needed a brain capable of learning. Thus a pressure of social selection emerged in favor of learning and reflectivity. In this way social life, too, has contributed to the optimization of the brain.¹⁵

In short: the proto-cultural progress of both tool technology and social complexity fostered reflective capacities. Through a continuous feedback between activity innovation and brain

pattern, the body, and the brain, a positive feedback system was created in which each shaped the progress of the other" (Geertz, "The Impact of the Concept of Culture on the Concept of Man" [1966], l.c., 48).

¹³ The Oldowan-tools were found in Ethiopia.

¹⁴ Sometimes there is even a directly proportional correlation between the size of the group and the size of the cortex (the part of the brain that is responsible for the intelligent processing of information). While the typical group size is 50 members in chimpanzees, it is 150 members in hunter-gatherer populations – which corresponds perfectly to the fact that the human brain has about three times the size of a chimpanzee brain.

¹⁵ It is in this context that the emergence of human language or proto-language should be considered. It certainly helped increase the associative-reflective abilities to a remarkable extent. However, we know to date very little about the evolution of language – almost nothing. Already the *Australopithecines* and *Homo habilis* showed an increase in Broca's area (which, in humans, is responsible for syntactic language), but this does not entail that they used language (presumably their vocal apparatus was not yet sufficiently developed for that). Moreover, even in chimpanzees and orang-outangs an increase occurred in those parts of the brain where our language centers reside: Broca's area (for syntax) and Wernicke's area (for semantics). Damage to these parts of the brains in apes result in disturbance of their vocal communication. It appears that the human ability to speak rests on a prehuman prototype. The most common hypothesis concerning the origin of verbal language is that it was first developed (as a proto-language) by *Homo erectus* (about 1.8 million years ago). The formation of syntactic language may have occurred only 50–40,000 years ago.

optimization, the extremely reflective and efficient brain that is typical of humans emerged. The specificity of the human brain (the overwhelming dominance of internal, reflective functions over external, stimulative functions) is a result of the proto-cultural development. And, as we shall soon see, an extremely momentous result at that.

4. The dynamics of proto-cultural development before the take-off of cultural evolution

Let us take a brief look at the dynamics of proto-cultural development. In the beginning (2.5 million years ago) the number and importance of proto-cultural inventions and achievements was still low. But slowly these grew and became increasingly important for survival in nature and against competitors. Thus a selection pressure developed which managed such capacities and encouraged further ones.

In this way, over time, the balance between natural and cultural virtues shifted towards the latter. Previously, only physical assets had been decisive for the success of individuals and groups. When hunting, for example, the faster was the more successful. But now the slower could compensate for his physical handicap with a more sophisticated strategy. The physical virtues were increasingly confronted by cultural and intellectual advantages. These represented a new kind of power and created chances for physical underdogs to gain the upper hand.

In the course of this development, the efforts of early humans shifted more and more to proto-cultural achievements. These became the decisive factors of success in the competition between different groups and between different individuals within the same group. Proto-cultural advancement was augmented, and investment in proto-cultural achievements (inventions, learning processes) became key – both for the group and the individuals. Proto-cultural stocks grew faster and faster, shifting into an acceleration phase.

It is foreseeable that eventually a point will be reached, in evolutionary terms, from which *only* cultural innovation can lead any further. (Biological optimization, which takes a long time, would now be simply too slow). This point was actually achieved about 40,000 years ago.¹⁶ At that time the proto-cultural acceleration passed over into the take-off of a new type of evolution, of cultural evolution. The arrow of culture was released from the bow of proto-culture.¹⁷

Humanity entered a new evolutionary mode. Long before, in the time of the australopithecines, everything had moved along the paths of natural evolution; subsequently, during the proto-cultural period, there was an interplay of biological and cultural development; now, however, humanity crossed the Rubicon towards an exclusively cultural evolution. A new mode of transmission became the order of the day: learning and tradition-building instead of genetic transfer; and the previously occasional invention of cultural achievements shifted into the cumulative mode of cultural evolution.¹⁸ From now on, the cultural path alone was open.¹⁹

¹⁶ Before that date *Homo sapiens* had already spread beyond Africa, about 100,000 years ago to Israel, about 60,000 years ago to East Asia and about 45 to 40,000 years ago to Europe (Cro-Magnon). Cf. Steven Mithen, *The Prehistory of the Mind*, London: Thames and Hudson 1996, 172 f). But in each of these lines, and independently of each other, a transition to cultural evolution occurred around 40,000 years ago.

¹⁷ It is similar to Uranium: If one accumulates Uranium 233, up to about 12 kg not much happens, but once one reaches 15 kg, an unstoppable chain reaction breaks out. One might imagine the explosion of cultural evolution in a similar manner. The initially slow increase in proto-cultural goods and activities gained momentum, accelerating to the point where it reached a critical mass: the take-off of cultural evolution.

¹⁸ Cf. Michael Tomasello, *The Cultural Origins of Human Cognition* (Cambridge, Mass.: Harvard University

To briefly indicate its main stages: in Europe, the take-off of cultural evolution led to the *Upper Paleolithic Revolution* (45,000 to 30,000 years ago) with its gigantic explosion of creativity, where the first musical instruments²⁰ and the earliest statues (human and animal figures) emerged,²¹ but also new tools (narrow blade technology) and highly refined weapons (balanced spears and harpoons) were developed,²² soon followed by the first cave paintings (Chauvet, Lascaux).²³ The next big step was taken with the *Neolithic Revolution* in the Middle East more than 10,000 years ago, when agriculture began, cities were founded and a sedentary life form replaced that of hunter-gathering.²⁴ Finally, about 6000 years ago, the stage of *advanced civilizations* which extends to the present day began.

5. The emergence of culture from nature and proto-culture

In short, proto-culture first emerged from nature, and then culture from proto-culture. For this to occur, nothing had to be added from the 'outside'. Proto-culture developed from natural beginnings, and culture emerged through the increasing dynamics of proto-culture.

This explanation dispenses with the crux of older theories – the recourse to an external factor supposedly responsible for the foundation of culture. The old dichotomous thinking – nature versus culture – had necessitated such an assumption. Today, however, we can understand how culture de facto emerged from nature via the mediating pivot of proto-culture. Culture did not originate through some disruption or through the influence of higher forces; it has emerged step by step from nature and proto-culture.

6. The great importance of the proto-cultural development

Let me once again underscore the great importance of the proto-cultural development. It has created our – physical as well as intellectual – nature, the nature which everyone still bears within himself. It has made us the special beings we are – from physical characteristics such as baldness and upright walking via our behavior in sexual and social life through to the unique brain configuration that has become vital for our existence as learning and cultural beings. And lastly, the proto-cultural development even fired the starting pistol for cultural evolution. One can hardly overestimate its importance. The proto-cultural development accomplished the transition from the human animal to a fully-fledged human being.²⁵

Press, 1999).

¹⁹ By analogy with Kant's claim that "the *critical* path alone is still open" (Immanuel Kant, *Critique of Pure Reason* [1781], trans. Norman Kemp Smith, New York: St. Martin's 1965, 668 f. [A 856]).

²⁰ These are bone flutes – the oldest specimen (to date) was found in 1995 in Slovenia.

²¹ Currently the oldest find is a human figure made from a mammoth tusk (discovered near Kostenski, about 400 km south of Moscow).

²² They date back to around 37,000 years ago.

²³ The paintings in Chauvet could be 30,000 years old, those at Lascaux may have originated 17,000 years ago.

²⁴ The Neolithic Revolution occurred (like the earlier turn to cultural evolution) independently in the Middle East, in Africa, in China, in America and in Europe (there relatively late, in Central Europe only in the 6th century BC).

²⁵ To be sure, proto-culture already exists in the animal kingdom. Some higher animals have developed practices that one could hardly not describe as proto-cultural. Examples are the use and production of tools, forms of social organization, efficient ways of communication, aesthetic practices, and the emergence of cultural diversity. This occurrence of proto-culture in the animal kingdom is not surprising at all. It is generally the case that we find *nothing completely new* in the human sphere. Everything exists in weaker form already in other animals – and the closer they are to us, the more the traits crucial to us have already undergone an increase in their evolution. We make the most of the prehuman talents bequeathed to us. It is just that our relatives stopped in their proto-cultural activities at a relatively modest level. As far as one can see, nowhere in the animal

a. Cultural evolution still rests on proto-culturally formed human nature

The whole of cultural evolution is based on the human constitution as it was achieved at the end of the proto-cultural period. Since then our genetic setup has hardly changed. We are still born as stone-age babies.

At the same time, this makes clear how great and eminently powerful our proto-culturally accumulated capital was: it was good enough to carry all future cultural evolution. From the first works of art to Picasso, from the invention of writing to the internet, from the pyramids to moon landing, people have been able to produce their cultural achievements with the help of their proto-cultural set-up. Einstein invented the theory of relativity on the basis of a Stone Age brain.²⁶

In particular it was the brain-configuration reached at the end of the proto-cultural development which has made possible not only the leap into cultural evolution but also all the extraordinary achievements during its course. Through proto-culture the treasure of our nature blossomed, and culture is acting it out.²⁷

b. Universals: continuing witnesses to the proto-cultural level of development

We can easily verify our proto-cultural imprint by looking at details of our emotional life, our aesthetic assessments and our cognitive activities. The keyword here is "universals". These universals are firmly connected with human nature as it was attained at the end of the proto-cultural period – and they are still effective across otherwise existing cultural differences, precisely because that nature is common to all humans.²⁸

During the heyday of cultural relativism, the existence of universals was systematically denied. Since then, hard scientific evidence has emerged to refute such relativism. Brent Berlin's and Paul Kay's study on *Basic Color Terms* from 1969 was groundbreaking.²⁹ The authors showed that the members of different cultures, even when dividing the color spectrum according to the number of color words their language possesses (the number ranges from two to eleven), give amazingly matching answers when asked which color sample (from about

kingdom did an acceleration get under way that would have lead to a take-off of culture in the emphatic sense. This has only happened in human evolution.

²⁶ Certainly the environment – especially the cultural environment – plays an important role during epigenetic development. A Stone Age brain was not capable of inventing the theory of relativity during the Stone Age, it could do so only in the social cognitope of highly sophisticated modern physics. The brain is not just a biological but also a social entity. But the basic configuration of the apparatus which is capable of all the subsequent cultural achievements was developed in the Stone Age and is no different today than it was then. Wolf Singer has expressed this relationship between ancestral hardware and cultural software as follows: if a Stone Age baby were to grow up in our civilization, it would look the same and achieve the same learning results as our children; conversely, were a baby from the 21st century to grow up in a Stone Age culture, it would be indistinguishable from genuine Stone Age children (cf. Wolf Singer, *Der Beobachter im Gehirn. Essays zur Hirnforschung*, Frankfurt/Main: Suhrkamp 2002, 44).

²⁷ This once again throws light on the aforementioned congruence between the end of the genetic modification of humans and the beginning of cultural evolution. This simultaneity is no coincidence but a congruence on both sides. Through proto-cultural development, humans' biological setup had become good enough to support the entire future cultural evolution. And conversely, it belongs to the nature of cultural evolution to have only very little genetic retroaction and to rely instead on cultural continuity and progress.

²⁸ Cf. in more detail: Wolfgang Welsch, *Homo mundanus: Jenseits der anthropischen Denkform der Moderne*, I.c., 731–734.

²⁹ Brent Berlin and Paul Kay, *Basic Color Terms: Their Universality and Evolution* (Berkeley: University of California Press 1969).

300) best represents a color type for which they have a word. Thus the *phenomenal* experience of color is not culturally determined, but universal. Berlin and Kay found, furthermore, that the sequence of the appearance of color words is by no means arbitrary. If a language has only two color words, these are always white and black; the third one is always red; the fourth is either green or yellow, and the fifth yellow or green; followed by blue and brown; and only at the end come purple, pink, orange and gray. There *are* hard universals for phenomenal judgments and linguistic (incidentally, also phonological) sequences.³⁰

In addition, universals exist in the relation of facial expression to basic emotions, the understanding of elementary gestures, and to some aesthetic preferences.³¹ All these universal features are anchored in the still persistent proto-cultural nature of all humans.³² To express it in a take home message: what is universal, is proto-cultural; what is not, is cultural.

c. The ongoing impact of our proto-cultural nature on our cultural existence

Our basic proto-cultural nature will certainly be refined (sometimes also twisted) in epigenetic and cultural processes. But it supports and determines us from the ground up. It provides our possibilities – and sets certain limits. To take a practical example, just try to produce, whenever you feel joy, the expression of sadness, and vice versa. With some effort you may succeed for a short time, but you will then begin to feel a deep inner confusion, and the experiment is best stopped before you end up in a mental hospital. It is wise to trust these old routines rather than delve too deep into them – otherwise our cultural activity breaks down.

Proto-cultural achievements not only tacitly support all our cultural activity, but sometimes even explicitly come to the fore. For example, when Renaissance art introduced perspective, it did not invent perspectival seeing (this had been successfully practiced from time immemorial) but only raised this age-old habit to its representational principle; it switched from the hitherto culturally predominant pattern of the self-being of things to the phylogenetically much older perspectival perception of things in space – and was thus able to create wonderful paintings which we feel closer to than previous iconic representations. Here an age-old proto-cultural invention was culturally brought to bear; the recourse to ancient stock gave culture a new direction. And this holds true for other innovations in the arts, such as impressionism or op-art: each draws on old practices of everyday perception, making them explicit.

Contemporary mass media is another example: they widely rely on the proto-culturally bred ability to decipher facial expressions. Hence the many close-ups of faces in film and television, which convey important information, and do so independently of specific languages and cultures, by making recourse to universally shared age-old patterns of understanding.³³

³⁰ In the meantime, similar sequences have been demonstrated for the classification of plants and animals (cf. Donald E. Brown, "Rethinking Universality: Six Cases", in: *Human Universals*, New York: McGraw-Hill 1991, 9–38, here 14).

³¹ On aesthetic universals see especially: Wolfgang Iser, "Zur universalen Schätzung des Schönen", in: *Blickwechsel – Neue Wege der Ästhetik* (Stuttgart: Reclam 2012), 292–330.

³² Darwin already emphasized the "similarity, or rather identity" of humans in their elementary skills and behavior: One could "hardly fail to be deeply impressed with the close similarity between the men of all races in tastes, dispositions and habits" (Charles Darwin, *The Descent of Man, and Selection in Relation to Sex* [1871], Princeton: Princeton University Press 1981, I 232).

³³ "[...] it is the emotional displays on the generic side of the ledger that the mass arts gravitate toward – such as fear, elation, sadness, anger, surprise, lust, and so on. This is the stuff upon which mass art thrives, as a quick review of the most popular motion pictures attests. Moving-image mass art is able to convey, to a significant de-

These are just a few examples of the impact of proto-cultural achievements on our cultural existence. We often understand the latter better when we take their proto-cultural grounding into account.

I am not saying that all cultural phenomena could be sufficiently explained by pointing out their proto-cultural contents. That would be an erroneous claim. But *some* traits of cultural phenomena do have proto-cultural explanations.

With respect to our evolutionary heritage, I suggest, a fundamental change of thinking, a reorientation in contrast to deep-seated habits is needed. Our biological and proto-cultural preconditions are not something dubious that we would better leave behind. On the contrary, they are productive potentials which *enabled* everything which was to come. Their vector points forward as well as backwards. As our proto-cultural nature once allowed the emergence of culture, so it still provides us with the energy to continue the path of culture. Cultural evolution has not occurred against the grain of our biological nature, but grew out of it, and its subsequent course unfolds that nature's potentials rather than choking them off. We should cherish this potential in its proto-cultural as well as cultural form.

gree, this emotional information so effectively to large and diverse audiences of heterogeneous backgrounds because of its reliance on close-ups of faces, something that within a certain range of emotional expressions, ones particularly germane to the territory mass art cultivates, audiences can comprehend in large part by dint of their innate biological equipment" (Noël Carroll, "Art and Human Nature", *The Journal of Aesthetics and Art Criticism*, 62/2, 2004, 95–107, here 104).