Transculturality and the Biology of Empathy

My paper discusses assumptions of an emerging cultural-studies theory that operates with two distinct concepts of human commonalities, pre-cultural universals and trans-cultural overlap and intersections. My main references are the philosopher Wolfgang Welsch and the neuroscientist Wolf Singer. The paper offers a critical outline of philosophical and scientific assumptions that have the potential to help in rethinking the role of fiction for empathy and compassion. The context for my critique is a larger thesis – not developed in this paper – that central aspects of the cultural evolution of compassion, as a special case of empathy, are historically bound to transcultural (cosmopolitan) visions of humanity. I will return briefly to this thesis at the end of the paper.

First, I offer a brief summary of the theory of transculturality that has emerged in the last fifteen years out of a need to address (by now) widely acknowledged conceptual problems of multiculturalism and interculturalism. Wolfgang Welsch traces the basic shortcomings of both concepts to their common assumption that cultures are more or less unique and closed units that compartmentalize humans into inherently estranged groups, divided by rather stable barriers, which in some political contexts have been increasingly used to legitimize potentially fundamentalist or nationalistic ideologies of radical cultural particularism. Transculturality, on the other hand, tries to account for the phenomenon that large populations live as cultural hybrids and that cultural diversity occurs primarily
within the individual itself. What has changed “is the type of cultural variety. Differences no longer emerge between different kinds of monolithic identities, but between identity configurations that have some elements in common while differing in other elements.”\footnote{1} Thus strategies for cultural understanding could and should build on the considerable amount of cultural overlap, intersections, and partial commonalities that are already present in modern individuals, rather than remain caught in endless exercises of identifying ever more minute levels of difference – as is still the main political emphasis in today’s cultural studies (as practiced in the Humanities).

In recent years, Welsch has begun to amend his theory of modern global transculturality with hypothetical assumptions of deeper-level pre- and proto-cultural commonalities. Studies since the early 1990s suggest that, in addition to “commonalities that arise through the permeation of cultures […] there also exist commonalities that already precede and underlie the formation of cultures.”\footnote{2} To give a few widely acknowledged examples: surface universals (expression of happiness, sadness, initiating communication – also true for children born blind and deaf) and aesthetic universals (preference for the same facial features in all cultures and age groups). Culturally formed societal norms – no matter how diverse they may appear – are based on common basic human likes and needs. Evolutionary anthropologists assume that these ‘universals’ came about through biological feedback in the course of human evolution and became “frozen at a certain point in time as the reserves of ‘human nature’ – at a point in time before the spread of \textit{homo sapiens} across the globe, and hence before the emergence of cultural variety.”\footnote{3} It is important to point out that the concept of biological feedback entails both natural and
sexual selection. The latter operates by means of aesthetic attributes that often emerge in stark contrast to any notion of natural selection as survival of the fittest.\(^4\) Darwin’s best known example is, of course, the male peacock.

The human brain too has remained unchanged for 40,000 years. We still have a stone-age brain; and a stone-age baby born into our world would develop as any other baby. What differentiates us, according to this model, from stone-age populations is culture alone. Welsch summarizes the onset of cultural evolution as follows: “further development of humans could take place only by way of culture. The genetic route [has] been exhausted, and cultural evolution, as everyone knows, no longer has any genetic repercussions.”\(^5\)

As soothing as this two-step model of human evolution is (in spite of the reintroduction of universals) from the point of view of cultural studies as practiced in the humanities, a growing number of scientists from various fields insists on complicating some of its assumptions: a) There is little proof that the biological evolution of humans has come to a complete hold. Evolutionary selection by random mutation happens over such long time frames that it is very difficult to observe – with the possible exception of genetic adaptations to diseases that have been observed to occur within decades. b) Although other futures are quite conceivable, there is much to be said about the argument that natural selection needs deprivation and that sufficient levels of food, shelter, and safety have decreased the need for further biological selection on the basis of fitness survival. It is not clear, however, why sexual selection that operates with the emergence of aesthetic attributes should be affected by a decrease in deprivation. To the contrary, it is quite concei-
viable that economic surplus could allow for a blossoming of aesthetic attractors. c) Human biological adaptations include adaptations to an already cultured environment. Conversely, primates that transmit the use of tools from one generation to the next by trans-generational imitation already develop diverse cultural traditions. d) Research in epigenetics (information that determines the activation of particular DNA strands without changing the DNA) points to the possibility that epigenetic information can be sensitive to cultural and environmental factors (for instance the availability of certain food items). While most of this epigenetic information disappears with the organism it helped create, some studies suggest that some epigenetic information can be transmitted to an organism’s offspring (including humans up to four generations). Eva Jablonka and Marion J. Lamb have recently proposed a more comprehensive evolutionary theory that attempts to take these and other findings into account.

While these questions complicate the matter considerably, they do, in my view, not necessarily invalidate a weaker formulation of the two-step model of human evolution, namely, that the blossoming of cultural diversity rests on the basis of a common human nature and that, therefore, humans already have a lot in common even before they share their diverse cultural experiences. These proto-cultural commonalities are of such an elementary nature that, to put it into philosophical terms, from the point of view of the individual they often have a-priori status.

One of these a-priori presuppositions is the innate human capacity for logical thought. Evolutionary anthropology and cognitive science have begun to question the linguistic
turn in philosophy. “According to recent findings the basic logical elements are anchored in the brain’s modes of neural processing. Logical particles such as ‘and’ and ‘or’, logical relations such as ‘same’, ‘identical’ and ‘other’, connectives such as ‘either/or’, ‘as well as’ and ‘if … then’, also the quantitative categories ‘one’, ‘many’, ‘all’ as well as the qualitative categories of affirmation and negation correspond to deep-seated operational modes of the neuronal system.”

Transcultural communication is, on a fundamental level, only possible because it rests on elementary proto-cultural logical forms common to every human, no matter how distinct and incongruent specific formulations of logical systems that developed in various cultural contexts may appear. Furthermore, as already mentioned, numerous emotions and their expressions that participate prominently in successful communication are also fundamentally proto-cultural. The observation that expressing an emotion or admitting to an emotion is normatively restricted in a given culture does not change the fact that the emotion is nevertheless on some level present.

However, and this amounts to a further questioning of the two-step model of biological and cultural evolution, a-priori status is not limited to basic proto-cultural (evolutionarily frozen) structures of perception, desire, and interpretation. It also holds true for much of what we learn in the first years of our lives within the context of a specific cultural environment, including the basic dispositions for the development of empathy. Humans experience world formations (patterns of interpretation), which they have learned before the age of about four, as a-priori matter-of-fact realities, because the brain cannot remember the interpretations it learned before its first phase of architectural formation had been completed. From a neuro-scientific point of view, empathy and imagination
are closely connected at this developmental stage. The architecture of the human brain develops before and after birth until the end of puberty, but this development is particularly accelerated in the first two to four years, as a self-organizing system based on genetic and epigenetic information, as well as on sensory data from the child’s environment. The developmental dependency on environmental signals describes a general mechanism of human development. It is already true on the cellular level from the first cell division onwards and continues to hold true when sensory data come into play after birth. Different aspects of brain development occur at different times. During particular phases of the development of its architecture, the brain makes a large number of neuronal connections available to stand ready for the processing of particular sensory input. The baby actively craves and seeks at the same time particular sensory experiences, such as pictures, sounds, movements, and so on. Synaptic connections that are being used over and over again in these experiences are being strengthened. A popular phrase that captures the formation of synaptic connections is: Those that fire together wire together and vice versa. Eventually a particular structure of synaptic connections solidifies and remains in place for the rest of the individual’s life.

Connections that are not being used during these specific developmental stages disappear again (30% to 40%). It appears that the brain’s development includes a mechanism for experiential and educational plasticity, which allows it to adapt to specific environments. The brain makes a surplus of potential neuronal connectivity available, which undergoes a long and repetitive series of experiential exposure and practical tests to determine which neuronal networks seem useful and should be retained and which will
be allowed to disappear. After this process has come to an end, hardly any new connections are being made and any further learning happens almost exclusively on the basis of emphasizing or deemphasizing existing synaptic connections. To give at least one example, the most evident research in this area has been done on the development of sight. Babies that are born with an infected retina will not learn how to see if the retina does not recover or is replaced before the neuronal architecture for sight is being developed. Later repairs allow sensory data to make it to the brain, but the brain will no longer develop the specific synaptic connections that allow for the processing of these data. The child remains blind, even though its eyes can see.

A crucial step in the baby’s neuronal development is the emergence of a sense of self and other, i.e. the baby’s ability to recognize others as human beings with sovereign emotions, concepts of the world, and agendas that are similar to its own. Many neuroscientists assume a system of mirror neurons in the brain’s architecture for empathy. These mirror neurons are active when an individual engages in a particular activity or experiences a situational emotion (such as a fear of spiders) and when she observes another individual who engages in the same activity or experiences the same situation. The brain provides for ‘imaginations’ of the mental state of another human being – including presumed intentions, thoughts, and emotions – by stimulating the same regions of the brain that are also stimulated when we have these experiences and emotions ourselves.¹²
Interestingly, the baby’s acquisition of the capacity for empathy mediates between sensory experiences and self-initiated ‘imagination’. The baby imagines the inner state of another person – something it cannot see or really know. But this person’s facial and tonal expressions, body movements, etc. are, at the same time, present to the baby’s sensory system and guide this learning process. Once the brain is fully developed, it seems that the same areas of the brain are active when we experience a particular activity, watch someone else engaged in the same activity, imagine (or remember) to be engaged in this activity, imagine someone else to be engaged in this activity, or read the story of someone engaged in this activity. This begs the question of what the status and function of sensory stimuli actually are for neuronal representation in complex brains with a high number of interconnected areas in the cerebral cortex. The answer that emerges from neuro-scientific trials is: The more complex neuronal architectures are, the more they appear as closed autopoietic systems, in that they spend most of their energy for processing information that was generated in one area of the neuronal system in numerous areas of the cerebral cortex and relatively little energy for picking up sensory data. One piece of data – experienced, remembered, or imagined – sets a gigantic computational apparatus into action, and from a scientific point of view it is not easy to determine what in this process should be called imagination and what can be called an outside world experience. This is somewhat different in species with less complex brains and fewer interconnected areas within the cerebral cortex, where sensory data jump much more directly to a particular area and invoke a biological response.
One has to assume that, while developing all the other vital neuronal networks on the basis of sensory stimuli and interpersonal interaction – not the least by means of repetitive imaginary role play and make-believe –, the child also develops neuronal structures that will help govern its emotions and interpretations of basic socio-cultural structures and relations. Likely examples are: safe and afraid, us and them, possible and impossible, sometimes permitted and never permitted, permitted for some people and forbidden for others, familial and social hierarchies, submission and rebellion, and so on. Here too, it is important to take into account that we cannot remember that we have learned these fundamental interpretations in our early years of experiential neurological development, because the neuronal structure for declarative memory had itself not yet been completed. The cultural traits that have been learned in this phase appear to the adult not as learned knowledge, but rather as factual knowledge, as a given fact of nature. Singer speaks in this context of two preconscious levels of knowledge that both fundamentally structure our conscious interpretations of the world: one emerged as a result of millions of years of evolution and has remained pretty much unchanged for 40,000 years; the other emerges as a result of neuronal developments in the first years after birth. These latter a-prioris are obviously not entirely universal, they are also directed at adapting to a specific environment, including a specific socio-cultural environment. This does, of course, not mean that humans cannot learn additional and quite different cultural and social traits, preferences, expectations, mentalities, linguistic abilities, grammatical-logical patterns, etc., but it may mean that these later acquisitions do not have the same ontological status.
As already mentioned, a few (medical) studies seem to suggest that some epigenetic information must perhaps be understood as trans-generational. While nothing has changed in the genetic information (DNA) with regard to the susceptibility to a certain disease (e.g. diabetes), boys can, for instance, inherit epigenetic information from their grandfathers that governs the turning on of specific DNA sequences, which then influence the susceptibility to the disease. This seems to suggest that, at least in this area, epigenetic information can spread in – and perhaps help form – particular ethnicities on the basis of a common socio-cultural history of the group’s recent ancestors. In other words, we cannot fully exclude the possibility that nature might provide for a more immediate and directed intersection of culture and biology than previously assumed.

Epigenetic information develops less randomly than genetic mutations, but, on the other hand, it seems to be short-lived – no more than four generations. To the extent that epigenetic information is indeed a participant in the formation of ethnic traits, it seems, therefore, likely that these traits, and with them perhaps the ethnicities themselves, are rather transitory and short lived.

To return to the question of the role of pre-cultural universals within the context of modern trans-cultural commonalities, I would like to summarize my observations as follows: a) The idea of a fundamental division between human evolutionary biology and cultural evolution, whereby the evolution of diverse cultures rests on a wealth of biologically evolved commonalities, is a workable model, but may in the end not be as clear-cut as has been assumed. For instance, biological changes brought about by epigenetic cellular selection, which can be culturally induced, can be inherited over
several generations. b) The irreversible development of the brain’s architecture, particularly in the first four years (but to some degree until the end of puberty), is dependent on sensory stimuli, which can differ in distinct cultures and socio-economic settings. Proto-cultural commonalities that emerged in the course of human evolution underlie all mental processes as knowledge that determines basic concepts we employ to interpret the world without any conscious awareness of this a-priori knowledge. This knowledge, present in the brains architecture and common to all humans, cannot be unlearned. Much of the knowledge that is acquired during an individual’s primary phase of neuronal development remains below the level of conscious knowledge and cannot, as such, be unlearned either. This knowledge is much more adaptive to a specific environment and likely already includes among many other basic neuronal formations of sensory interpretation some specific socio-cultural information. In other words, it already provides for cultural difference, which, furthermore, appears to the individual as ‘natural’. I believe that theories of transculturality will have to come to terms with this possibility of an early emergence of difference within an individual’s development, which must be described at the same time as experiential and neuronal processes (culture and biology). c) This includes the specific formations of an individual’s capacity for empathy with other humans during the first years of culturally informed role plays and imaginary make-belief. While we know that sensory deprivation in this area can lead to insufficient emphatic abilities (autism), the question arises as to what extent differences in sensory and inter-active information during the crucial early years can lead to different empathic abilities, as well as different conceptions of others and self. Is there a relationship between these early culturally-informed experiential developments and the
adult’s ability and desire to experience imaginary or fictional empathy while reading or watching a theater play?

To return to the broader contextual thesis mentioned above, allow me to suggest this much in regard to the history of aesthetic fictional representation: I believe that – to take European modernity as an example – it is no coincidence that compassionate genres such as the sentimental comedy and the bourgeois tragedy together with their poetological conceptualizations of the role of empathy and compassion were developed within the context of the cultural, ethical, economic, and democratic aspirations of the emerging bourgeoisie during the course of the 18th century (Diderot, Mercier, Lessing, et al.). I further believe that it is also no coincidence that an elaborate theory of culture studies emerged at the same time. It concerned itself with educating historians and cultural critics in the tools for empathizing with humans from very different cultures, past and present, by experiencing and aesthetically reliving their peculiar cultural manifestations (e.g. J. G. Herder). I would further like to suggest that this Enlightenment bourgeois project of empathizing with acknowledged difference as a cultural expression of assumed anthropological commonalities was, and perhaps is, in itself a cultural achievement, bound to specific political and moral ideas of equality, fairness, sovereign individuality, and cultural particularity. Herder, for instance, understands diverse cultural expressions as historical concretizations of an open-ended universal humanity that can only be experienced fully at the moment of aesthetic empathy with the very particularity of the other culture. I believe that the discovery of aesthetic empathy within the context of the
Enlightenment project of equality and the discovery of the humanity of otherness are not fully understood if we do not acknowledge their political roots and presuppositions.

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3 Welsch, Commonalities, 17.


5 Welsch, Commonalities, 21.


7 Eva Jablonka and Marion J. Lamb, Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life (Cambridge: MIT Press, 2005). The narrow understanding of evolutionary selection as individual fitness survival has in the last ten years been questioned (and amended)

8 Welsch, Commonalities, 23.

9 Mix-ups such as this one can, in my estimation, often be credited to a general undervaluation of the normative and restrictive character of cultures. Among other things, cultures habitualize social power structures and organize prominently around norms and hierarchies that determine who belongs and who doesn’t, who is allowed to do (and own) what and who isn’t, whose needs and emotions are legitimate and whose aren’t, and so forth.


11 In describing their theory of facilitated variation on the cellular level, Marc W. Kirschner and John C. Gerhart develop “plasticity in development” and “exploratory behavior” as general concepts of biological evolution: The Plausibility of Life (New Haven: Yale University Press, 2005), 84-90 and 143-176.

12 Currently, the assumption is that autism may, in part, be caused by genetic, epigenetic, or sensual deprivations that result in an insufficient development of the particular neuronal architecture for empathy.