Fromm's View of the Human Condition in Light of Contemporary Evolutionary and Developmental Knowledge

Mauricio Cortina

> Men work together, I told him from the heart,
> Whether they work together or apart
>
> *Robert Frost*

Introduction

Except for Freud, no other psychoanalyst made such an explicit, concerted and systematic effort to grapple with the human condition as Erich Fromm. Fromm called his view of the human condition his "concept or model of man" to get away from static and ahistoric concepts of human nature often used to justify power and privilege of the few over the many. Fromm saw human nature as being fluid and dynamic and always in the making, but also thought that some conditions are inherent to human nature and universal. He conceived the fluid and changing conditions as historical in nature and the inherent conditions as existential to the human condition. He first articulated this view in *Man for Himself* (Fromm 1947a) and later on in slightly different forms in many of his other books.

I will revisit here Fromm's view of the human condition and propose a different interpretation of the biological origins of the human condition. Fromm believed that human nature came about as a result of the combined effect of the relative loss of instinctual equipment and the dramatic enlargement of the neocortex. With the support of recent evolutionary and development literature I propose that human evolution was driven by a need to cooperate in ways that far surpass what is observed among our closely related ape relatives. Our instinctual equipment was not lost, as Fromm believed, but was gradually transformed to support the cooperative infrastructure of our species.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

Fromm's view of the human condition

Over the expanse of almost fifty 50 years, a particular view of the human condition was a unifying theme in Fromm's work. He integrated a humanistic outlook (Cortina, in press) with a very bold biological speculation that he first expressed fully in *Man for Himself* (Fromm 1947a).

> The first element that differentiates human from animal existence is a negative one: the relative absence in man of instinctive regulation in the process of adaptation to the surrounding world. (...) The less complete and fixed the instinctual equipment the more developed is the brain and therefore the ability to learn. The emergence of man can be defined as occurring at a point in the process of evolution where instinctive adaptation has reached a minimum. But he emerges with new qualities which differentiate him from the animals: his awareness of himself as a separate entity, the ability to remember the past and visualize the future, and to denote objects and acts as symbols; his reason to conceive and understand the world; and his imagination through which he reaches far beyond the ranges of his senses. Man is the most helpless of all animals, but this very biological weakness is the basis for his strength, the prime cause for his development and his specifically human qualities (Fromm 1947a, p. 48).

The dynamism between minimal instinctual equipment and a large brain capable of learning, creating symbolic representations, and imagining past, present, and future produces several existential dichotomies that are built into the fabric of our humanity. Self-awareness, reason and imagination have disrupted the "harmony" which characterizes animal existence. Their emergence has made man into an anomaly, into a "freak of nature". As Fromm eloquently put it:

> He is part of nature, subject to her physical laws and unable to change them, yet he transcends the rest of nature. He is set apart while being a part; he is homeless, yet chained to the home he shares with all creatures. Cast into the world at an accidental place and time, he is forced out of it, again accidentally. Being aware of himself, he realizes his own powerlessness and the limitations of his existence. He visualizes his own end: death. Never is he free from the dichotomy of his existence: he cannot rid himself of his mind, even if he

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

should want to; he cannot rid himself of his body as long as he is alive – and his body makes him want to be alive. (Fromm 1947a, p. 49)

Adaptive flexibility was driven by the need to cooperate during human evolution

Fromm was correct in identifying the dramatic expansion of the neocortex among our hominin ancestors as one of the major characteristics of our species, but Fromm was mistaken in thinking that there was no continuity between our species and other animals (we had "lost our home in nature" as he put it poetically) and that social character and cultural influences were the substitute for these missing instincts. We cannot fault Fromm for making this assumption. The prevailing concept of instinct when he was developing his view of human evolution was of instincts as fixed action patterns that were relatively immune to environmental influence, but this view of instinct does not hold true for social animals. This became clear when Bowlby developed attachment theory.

Bowlby showed that infants and young children's instinctive need for protection and care was exquisitely responsive to the quality of their mothers (instinctive) need to provide care and protection (Bowlby 1969; 1988). Another reason why Fromm thought our instinctive nature had become greatly reduced was based on the ethnographic data that supported the view that cultural rather than biological influences had a decisive role in molding human personality and human motivation. The relative lack of instincts in determining culture and personality was also supported by Fromm's Marxist version of the culture and personality school, in which the mode of production plays a fundamental role in determining social organization and social character types. This link was shown convincingly in the major research project in the Mexican village that Fromm undertook in collaboration with Michael Maccoby (Fromm & Maccoby 1970b). If a relative lack of instincts does not explain the adaptive flexibility in response to ecological and socioeconomic conditions, how else can we account for this remarkable adaptive flexibility?

I propose the following alternative explanation based on new research on human evolution that has accumulated in the last few decades. Severe

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

climate changes that took place in Africa during Pliocene -Pleistocene transition 2.5 to 1.8 million years ago (the beginning of the ice ages) produced prolonged droughts in Africa that drastically reduced the forest and river ravine environments that had been home to our hominin ancestors for the past four million years. These changes forced our hominin ancestors to find a mode of living in the open African savannah. To survive in this new environment they had to learn to cooperate at higher levels in order to scavenge for high caloric foods left behind by other predators and to protect themselves from these predators. The need for high levels of cooperation put strong selective pressures on the development of prosocial motives, particularly helping others, and wanting to share activities, as well as developing more effective modes of communications. Rather than having lost our instinctual equipment, the social instincts we share with other Great Apes (attachment and care giving bonds between mothers and young infants, affiliations of various sorts to group members, sexual bonds, and dominance hierarchies) have been *transformed* to support the highly cooperative nature our species (Suddendorf 2013; Tomasello et al. 2012).

To be clear it is not that chimpanzees and bonobos, our closest ape relatives, do not help or cooperate with their group members in many ways, it is that they cooperate and help almost exclusively from an individual-need perspective, and prosocially only when the costs of collaboration are not great. Collaborating from a "we" perspective in which the group members' collective welfare becomes important is *uniquely human* (Hermann et al. 2007; Tomasello & Carpenter 2005; Tomasello et al. 2012). The other major difference between human cooperation and the other Great Apes is one of scope. With the exception of territorial scouting expeditions and infrequent group hunting for small prey, chimpanzee collaboration is primarily limited to dyadic interactions (Mitani 2006; Tomasello et al. 2012). In contrast, human collaboration ranges from small-scale dyadic interactions to large-scale multinational forms of cooperation, and everything in between (for reviews see Suddendorf 2013; Tomasello 2009; Tomasello et al. 2012).

Prosocial instincts coevolved with socio-cognitive abilities to imitate, learn and communicate with others and with changes in the timing of development. Changes in the timing of development produced an extended childhood and adolescence, the most prolonged of any known species.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

This extended period of development allowed our hominin ancestors time to assimilate the social competencies, cultural knowledge and communicative abilities necessary to collaborate effectively in small, but complex nomadic hunter gatherer groups (Bjorklund & Rosenberg 2005; Konner 2010).

I will begin describing this alternative model of human evolution by elaborating on what Fromm got right: the dramatic expansion of the neocortex (encephalization) among our hominin ancestors in the last two million years.

The social brain and the expansion of the neocortex in primates

Robin Dunbar has been one of the main proponents of the most recent view that the enormous expansion of the brain – which in primates is centered on the neocortex – is primarily the result of the need of primate brains to compute complex social relations (Dunbar & Shultz 2007). A basic statement of the social brain hypothesis is that:

> Individuals living in stable social groups face cognitive demands that individuals living alone (or in unstable aggregations) do not. To maintain group cohesion, individuals must be able to meet their own requirements, as well as coordinate their behavior with other individuals in the group. They must also be able to defuse the direct and indirect conflicts that are generated by foraging in the same space (Dunbar & Schultz 2007, p. 1337).

The competing hypothesis is that the expansion of the neocortex in primates is driven by the need to solve ecological problems. Finding ways to survive in specific environments is of course essential, but the social brain hypothesis postulates that solving ecological problems is achieved by developing closer social bonds and collaborative strategies. In contrast, the earlier ecological explanations assume that these problems are solved individually through trial and error.

Two measures of social complexity, group size and the formation of long-term sexual bonds ("monogamy") have a very strong correlation with the

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

expansion of the neocortex.[1] Correlation is not causation, and the strong correlation between neocortical expansion and social complexity could be a coincidence. To get an overall picture it is necessary to consider the energetic demands required by the brain to compute life in complex societies and solve ecological problems. Brain energy costs are eight to ten times more per unit mass than those of skeletal muscles. This large expenditure competes with other demands, such as the vast energy resources needed by mothers to feed immature infants. But constraints placed on brain size by these energy demands do not tell us what type of selective pressures drove the evolution of large brains in the first place. Using a sophisticated path analysis, Dunbar and Schultz (2007), show that these selective pressures are explicitly social.

In the next section I show how these explicitly social selective pressures are causally connected with the emergence of very advanced forms of cooperation during the course of human evolution.

Three steps toward the evolution of high levels of cooperation and prosocial motives

Michael Tomasello and his group at the Max Plank Center for Evolutionary Anthropology in Leipzig (Tomasello et al. 2012) and Benoit Dubreuil at the Université du Québec à Montréal (Dubreuil 2010) have proposed that the evolution of advanced forms of cooperation emerged in more than one

1 Brain size has to be measured in *relation* to body size to have any meaning. This measure is called the *encephalization quotient* (EQ). An EQ of 1.0 is the expected ratio between brain size and body size of a cat taken as the prototypical mammal. An EQ of less than I means that brain size is smaller than excepted and an EQ of more that 1.0 means that brain size is larger than expected in relation to body size. The EQ of humans is the largest of any land animal, 7.6, compared to 5.3 of dolphins, 4.8 of capuchin monkeys (that are the only other primate that is a full fledged cooperative breeder) and 2.5 for chimpanzees. Primates have achieved enlarged brains by expanding the neocortex, so a useful juxtaposition in primates is to compare the size of the neocortex in relation to the rest of the brain, the *neocortex ratio.* In anthropoid primates the mean social group size (a measure of social complexity) increases in proportion with the neocortex ratio. That is, the relative neocortex size in primates increases with mean group size. Together these two measures of brain expansion, the *encephalization quotient* and the *neocortex ratio* support the social brain hypothesis.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

step during human evolution. Based on Tomasello's and Dubreuil's work, I propose a three-step model.

Step I:

Obligatory Cooperation and the emergence of "emotional modernity"
(Pliocene-Pleistocene transition about 2.5 million to approximately 500,000 years Before Present (BP))

Climate produced severe droughts reduced the forest and river-ravine environments in many parts of Africa. To survive in the new open environment, small bands of nomadic foragers were forced to become dependent. Some refer to this step as the African Savannah hypothesis. The first Homo species fully adapted to this new environment is *Homo erectus* (*Homo ergaster* when referring to its African origin) appearing 1.8 million years BP. Home erectus is tall, with an anatomy adapted to walk and run long distances and a brain almost twice the size of previous *Australopithecine* species.

When meat was taken back to home base from scavenging expeditions or by hunting small prey, the meat would have had to be distributed to all the members of the group (probably no larger than thirty individuals) if collaboration and interdependence between group members was to work. This step required suppressing the dominance hierarchies which are the main form of social organization that characterizes primates and many other mammals. In species in which dominance hierarchies exist, high-ranking males and females use their power to claim preferential access to scarce food resources and sexual mates over lower ranking individuals.

According to Christopher Boehm the transformation toward a more egalitarian social structure was achieved by an inversion of dominance, in which group members acting as a collective exert dominance against alpha males (or females) who try to establish dominance over others (Boehm 1999). To support his hypothesis Boehm did a systematic examination of ethnographies of extant nomadic hunter-gatherer groups studied in the past eighty years all over the world. There are many cultural differences among these nomadic foragers that live in very different geographic environments, but they are all egalitarian when it comes to sharing food, particularly food obtained from hunting big game. As long as the groups remain nomadic,

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

they will punish, shame and ostracize individuals who do not share or take advantage of this system of sharing.[2]

In researching material for *The Anatomy of Human Destructiveness* (1973a) Fromm became aware of the shift from dominance hierarchies to cooperation. Fromm quotes Service (Service 1966), who participated in a famous 1966 symposium *Man the Hunter* that gathered the leading experts of the day on hunter-gatherers:

> Hunter-gathering bands differ more completely from the apes in the matter of dominance than do other types of human society. There is no pecking-order based on physical dominance at all, nor is there any superior-inferior ordering based on sources of power such as wealth, hereditary classes, military or political office. (...) It seems that the most primitive human societies are at the same time the most egalitarian. This must be related to the fact that because of rudimentary technology, this kind of society depends on cooperation more fully most of the time than any other. Apes do not regularly cooperate and share, human beings do – this is the essential difference (Fromm 1973a, pp. 140–1).

An important part of step I is what Sarah Hrdy calls the emergence of "emotional modernity" (Hrdy 2013). By emotional modernity Hrdy means the beginning of a system of care for infants and young children in which other members of the group assist mothers in the care and feeding ("provision-

2 Some anthropologists specializing in hunter gathering societies have raised serious questions of using extant nomadic foragers as "models" to understand human social organization during the whole Paleolithic era (Kelly 2013). This criticism is valid, but somewhat muted by two factors. First, despite many cultural differences observed among nomadic hunter–gatherers around the world, the fact that they all remain fiercely egalitarian suggests that a nomadic foraging mode of subsistence favors an egalitarian-cooperative social structure. Second, and more importantly, the recent discovery in a cave in South Africa shows that the tools and artifacts found in the cave dating 40,000 years ago are almost identical to tools used by the San people who have maintained their nomadic hunter-gatherer form of subsistence in South Africa to the present day (d'Errico et al. 2012). This is the first direct evidence of cultural continuity among nomadic foragers that can now be traced backed to the late Stone Age in Africa. This is not the whole span of the Paleolithic of 2 million years, but is still quite impressive. At the very least this finding suggests that the life styles of extant nomadic hunter-gatherers can still be used cautiously in order to shed light on the evolution of Homo sapiens that first appear 200,000 years BP in Africa.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

ing") of infants and young children, technically called cooperative breeding. Hrdy uses the term emotional modernity as a contrast to the cognitive and behavioral modernity[3] that appears much later in rudimentary form in Africa 100,000 years BP and more fully in Europe 60,000 years later.

We are the only Great Ape whose mothers allow others to take care or feed their infants (Hrdy 2009). This exclusive form of maternal care seen in the great majority of primate species is probably due a very high incidence of infanticide (Hrdy 1999; 2009). Only ten percent of species of birds and mammals have some type of cooperative care that combines different degrees of feeding (provisioning) and taking care of infants, technically called cooperative breeding (Hrdy 2009; 2005). This "it-takes-a-village-to-raise-a-child" type of sociality had profound effects on human evolution. Freed from the exclusive care and provisioning of infants, mothers could assist in foraging activities and provide more food for other members of the group. Being able to wean their babies earlier, hominin mothers were able to increase their fertility rates, roughly double that of chimpanzees. Finally being exposed to multiple adults and caregivers greatly accelerated infants' abilities to interact collaboratively and communicate with others, a phase that paved the way for the development of language and the ability to understand the minds of others (Hrdy 2009).

Another important step toward emotional modernity was the emergence of long-term pair bonding. With the exception of the gibbons (sometimes called "the small ape") humans are the only Great Ape whose males establish long-term pair bonding (monogamous) relations with females. In all the other Great Apes, sexual relations are limited in duration and are promiscuous. In the case of the gentle bonobos sexuality is used to smooth out social tensions of all kinds – which is why some call bonobos the "make love not war" ape (de Waal 2013). According to Chapais, the effects of establishing monogamous relations had cascading consequences for human evolution.[4] As males began to recognize their offspring as "one of their own",

3 Cognitive and behavioral modernity is defined by the use of symbols, sophisticated tools such as poisoned arrows, the use of nets to catch fish and traps to hunt animals, art in the form of cave paintings and sculpted figures, body paintings and musical instruments.

4 Chapais is not claiming that monogamy is normative among humans. Cultures have successfully adopted polygamy (one man many wives) and more rarely polyandry (one

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

they became more tolerant of other males, particularly males that developed long term relations with their daughters. Residence patterns began to change. Rather than leaving their natal group, females stayed in their local group and maintained these connections even when their siblings moved to a neighboring group. Greater familiarity among kin and non-kin begins to create social networks in surrounding groups (Apicella 2012).

The development of these social networks allowed for cooperative exchanges within and between groups of nomadic foragers. A study by Hill et al. of nomadic foragers across the world that included thirty-seven nomadic groups and a total 5067 individuals provided further evidence that monogamy does produce the type of social relations described by Chapais (Hill et al. 2011). Pauline Weissner, an anthropologist who lived for several years with the San people (commonly referred to as the "Bushmen") in the Kalahari Desert, was able to observe intergroup cooperation during a severe drought that threatened their survival. She found that the Bushmen had elaborate gift-giving exchanges, called *Hxaro*, that averaged sixteen stable partners, some of whom where kin and others where "adopted" kin. Some of these partners lived in groups 200 kilometres apart. This elaborate exchange system turned out to be crucial for their survival under those extreme conditions (Weissner 2002).

It is important to note that cooperative breeding and long term pair bonding (monogamy) are socio-biological adaptations that appear in other species of animals, which is why they should be included in step I, before the emergence of cultural evolution (step II). Cooperative breeding and monogamy are "pre-adaptations" to use the biological lingo.

Based on evidence coming from several lines of research, Benoit Dubreuil believes that these steps toward greater sociality among nomadic foragers ("emotional modernity") may have been present in *Homo Heidelbergensis*, (700.000 to 300,000 BP), an ancestor to Neanderthals and modern humans (Dubreuil 2010). The largest expansion of the prefrontal cortex[5] (up to 1100 to 1400 cm3) a size that is similar to or slightly larger

woman many husbands). Chapais' point is that the shift toward monogamy was a major change during human evolution.

5 This encephalization is particularly evident in the dorsolateral area of the prefrontal cortex, believed to regulate cooperation and functions like the inhibition of impulses and planning, (Dubreuil 2010).

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

than that of *Homo sapiens*, coincides with the appearance of *Homo heidelbergensis*. Human's control of fire and evidence of first campfires coincides roughly with this time period. As Richard Whrangham argues in *Catching Fire* (Wrangham 2009) cooking meat has a lot to do with this enormous expansion of the brain that develops in a relatively short period during the mid-Pleistocene period. It also has to do with the development of greater sociability, as campfires then and now have always been times when a group meets to eat together, converse and share stories.

Step II:
The emergence of cultural evolution, the transmission of cultural knowledge, shared social norms, social selection operating between and within groups, and the emergence of cognitive and behavioral modernity
(Mid to Late Pleistocene about 500,000 to 40,000 BP)

Cultural evolution is based on cultural knowledge being able to be transmitted from one generation to the next, on group behaviors being regulated through shared social norms and social reputations, and on selective pressures operating within and between groups. The result of all these changes acting together was the emergence of cognitive and behavioral modernity in our species 100,000 to 40,000 years ago.

A new form of inheritance

Humans are the only ape that deliberately teaches and learns from other group members, what Csibra and Gergely call the human capacity for natural pedagogy (Csibra & Gergely 2009). Natural pedagogy allows for cultural knowledge and skills to be transmitted from one generation to the next, the "ratchet effect" of culture (Tomasello 1999). The ratchet effect contributes powerfully to the enormous capacity for human inventiveness and to cultural diversity.[6] The transmission of learned knowledge interacts

6 This malleability and change is what makes human nature so diverse. The enormous

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

with gene-based inheritance. Heritability requires faithful transmission (Richerson & Boyd 2005). As long as cultural traits show stability over time (which many do) and phenotypic variation (which they also do) they are subject to selective pressures. The major differences between that gene-based and culturally-based inheritances are that the former is transmitted through DNA, whereas the latter is transmitted through learning and imitation. The other major difference is that they operate at vastly different scales of time. In large animals it might take a minimum of 10,000 years before a gene-based biological trait can become dominant (go to fixation in biological terms), whereas a cultural trait can become dominant in a matter of one generation.

The emergence of shared social norms and the importance of social reputations

One of the main stumbling blocks in understanding how advanced forms of cooperation could have evolved during human evolution is the difficulty of understanding how natural selection solved the free rider problem. The free rider problem emerges when a common good that benefits all members (in economic terms a public good) is exploited by free riders, who benefit from the public good but do not contribute to it. Among nomadic foragers sharing meat from big game hunting among all group members is a public good. There is no single answer to the free rider problem and many proposals have been put forward. Punishing free riders and bullies is one answer and has been shown to be effective (Boyd, Gintis, & Bowles 2010). Punishment, however, can be very costly if it falls to just one or a few individuals, since the punished individual(s) can retaliate in kind which in turn can lead to a cycle of violence. A way to avoid the high cost of punishing free riders is to develop shared social norms that support cooperation. By internalizing shared social norms, the high costs of punishment are significantly diminished, since prosocial norms become enforced by shame, humiliation and ostracism and by the power that social reputations have in human societies

diversity and malleability have led some to view the concept of human nature as a myth (Buller 2005).

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

(Boehm 2012; Gintis 2003; Tomasello & Vaish 2013). There is a growing literature on the importance of social norms and their internalization in explaining how high levels of cooperation evolved in humans (Bowles & Gintis 2011; Boyd & Richerson 2005; Gintis 2004; Henrich & Henrich 2006).

This literature on social norms is consistent with Fromm's concept of social character, which describes how shared social norms are adapted to prevailing socio-economic conditions. Based on their systematic and exhaustive study of a Mexican village, Fromm and Maccoby show the historical and socio-economic origins of shared social norms and how they become internalized and how the process of internalization actually works (Fromm & Maccoby 1970b). Children as young as five years old are already concerned about their social reputations, a concern that is totally lacking in chimpanzees (Engelmann et al. 2010). For example, when a pre-schooler is put in an experimental situation where it is very tempting to cheat, all it takes is to have a familiar peer from preschool in the room to prevent cheating – an unfamiliar peer will not prevent cheating (Engelmann et al. 2010).

Shared social norms and social reputations regulate social life in small groups of nomadic foragers, and according to Tomasello these social norms lead to the emergence of "group mindedness" (Tomasello et al. 2012). This emerging form of group identity creates a sense of "we-ness" associated with group membership. The emergence of self-conscious emotions of shame, humiliation and guilt are linked with this sense of we-ness and the internalization of shared social norms. The internalization of shared social norms, the emergence of group mindedness and the significance of social reputations in regulating group life was the second major step toward emotional modernity during hominin evolution.

The emergence of selection operating at the level of groups

In the course of human evolution selective processes began to operate at the level of groups, with highly cooperative and cohesive groups having better chances of surviving than groups that were less cooperative and cohesive. Selection at the level of groups has been a controversial subject ever since George Williams wrote a brilliant critique of group selection showing that

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

concepts such as "selection for the benefit of a species" lacked rigor and precision (Williams 1966). Williams accepted that group selection was a theoretical possibility, but given the pervasive selective pressures operating at the level of individuals, Williams believed that in practice group selection was rare or nonexistent. Since William's critique there has been a rehabilitation of group selection theory based on a pluralistic and multilevel perspective in which selective pressures operate simultaneously at three different levels: genes, individuals and groups (Sober & Wilson 1998; Wilson & Sober 1994; Wilson & Wilson 2007).

Multilevel models of selection require specifying the trait selection is targeting. For instance, when the question is how altruism or cooperation could have evolved, the multilevel perspective shows that at the lower levels of genes and individuals, selfish or non-cooperative genes or individuals (such as the free riders) will prevail, but at a group level, groups with more cooperative and altruistic individuals will prevail over groups with fewer altruistic and cooperative individuals. Further precision requires a multilevel perspective to examine how selection operates at each level. Just averaging gene frequencies across groups over time (as the gene-centered and individual-centered approaches do) is very misleading, since it only informs us about the end product of what evolves and that selection has taken place. But it obscures what actually happens by not showing at what level selective pressures are having an effect or how these different levels are interacting (Sober & Wilson 1998).

Common or uncommon selection at the level of groups, however, may turn out to be (an empirical question that is still not resolved) many important researchers and thinkers working in the field of human evolution have come to think that several especially favorable conditions came together to make group selection, or cultural selection as some have called it (I think cultural group selection would be a better name), a very powerful agent during human evolution (Bowles & Gintis 2011; Boyd & Richerson 2005; Henrich & Henrich 2006; Sober & Wilson 1998; Tomasello et al. 2012; Wilson 2012). These favorable conditions were the cumulative effect of cultural knowledge in producing diversity and competition between groups and the effects of the internalization of shared social norms. Selective forces then begin to operate between cultures, ethnic groups, chiefdoms, kingdoms and states (Wilson 2012).

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

In *Social Character in a Mexican Village* Fromm and Maccoby (1970b) describe a process of cultural selection they called social selection that operates at the level of individuals and groups. Social selection is based on the selection of social character types (individuals that have internalized shared values and character traits) within the same society. Social character types that are better adapted to socio economic conditions usually prevail over less adapted types (Fromm & Maccoby 1970b, pp. 232–5). The concept of social selection expands cultural selection theory showing that selection operates *within* a society and not only *between* distinct cultural groups, corporations or nation states. Maccoby has given us many examples of social selection operating within corporations, governmental bureaucracies and non-profit organizations that are responding to changes from industrial-bureaucratic economies to service and knowledge based economies (Maccoby 1976; 1981; 2007).

The cumulative effects of cultural evolution lead to behavioral and cognitive modernity defined in the literature as the use of language, symbols, body paintings, cave paintings, sculptured pieces, musical instruments and advanced tools. It appears in rudimentary form in Africa 100,000 BP (McBrearty 2007; McBrearty & Brooks 2000) and more completely some 60,000 years later as seen in the Chauvet and Lascaux caves in Southern France and the Altamira cave in Spain.

Step III:
First human settlements, institutional building, the reemergence of social hierarchies and rapid cultural change
(17,000 years ago to the present)

The first evidence of permanent human settlements appear during the "terminal Pleistocene" 17,000 to 11,500 BP in the Levante (now Israel). These settlements were based on an economy in which extensive hunting of large and small ungulates (hoofed animals such as deer) and rabbits became a main mode of subsistence (Yeshuran et al. 2014). The trend toward a sedentary life accelerated with the Neolithic revolution 10,000 BP characterized by the discovery of agriculture and the domestication of plants and animals.

As human settlements grew, life in groups could no longer be regulated informally through gossip, social reputations and shared social norms. It

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

became necessary to build human institutions that control basic functions such a military defense against invading groups, as well as policing, judicial and governing functions. These institutions require a combination of vertical and horizontal forms of coordination and cooperation. With verticality comes a resurgence of dominance hierarchies, but this time transformed into the form of social hierarchies (Dubrueil 2010). Social elites that control these institutions can govern more or less despotically (the "return of the repressed" in Freudian terms) or can retain vestiges of our prehistoric yearnings for equality, dignity and fairness observed in existing nomadic foragers (Kelly 2013; Lee 1979), and, I think were also present during the prehistory of our species during the middle to late Paleolithic era.

As humans begin to create their own cultural and institutional environments to which they *must* adapt, a process of self-creation begins to emerge[7], which the Chilean biologist and philosopher Humberto Maturana called *autopoiesis*, from the Greek, *auto* = self, *poiesis* = creation, self-creation (Maturana & Varela 1973). Echoing a theme in Fromm's work, Loren Eisley expressed this idea in a beautiful essay, *Uncompleted Man* (Eisley 1971).

The evolution of childhood

High levels of cooperation and socialization would not have been possible if it weren't for changes in the timing of development that allowed children and adolescents time to develop the socio-emotional competencies and assimilate the cultural knowledge and technical skills needed to function in complex societies.

Evolution can have very large effects on development, either by accelerating or slowing certain developmental processes or milestones. These effects

7 The process of a species creating its own environment to which it must adapt is not unique to our species and is described in the evolutionary literature as niche construction (Fuentes 2012; Kendal et al. 2011). Beavers create their own dams, bees create their own hives, ants create elaborate underground cities, and spiders spin their own webs. What makes human niche construction different is that once these other species create their own niche, niche construction remains rather static. In comparison human niche construction based on cultural evolution is dynamic, pleomorphic, and becomes more complex over time.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

on the timing of development are called heterochrony (from the Greek *hetero* = different. and *chronos* = time) and can have huge effects on the life cycle of a species (McKinney & McNamara 1991). The most important examples of acceleration of development in humans are the maintenance of fetal levels of rapid brain growth though the first year of life and the timing of weaning. In comparison with chimpanzees that wean their infants once they become nutritionally self-sufficient by the age of four or five, human nomadic hunter-gatherers wean their young by the time they are two and a half years old. The most important example of prolonging development during human evolution is the age at which sexual maturity is reached. Female chimpanzees mature by age ten, while human females in nomadic hunter-gatherer groups reach full sexual maturity six to eight years later. Weaning at a younger age and a very delayed sexual maturation makes for a very prolonged childhood and adolescence, the most prolonged of any known species (Konner 2010). Many believe that one major reason that changes in the timing of development were favored by natural selection was to allow for an extended period of developmental plasticity that facilitates children's ability to absorb the vast amount of accumulated cultural knowledge that is necessary to become a competent adult (Bjorklund & Rosenberg 2005; Gibbons 2008; Tomasello 1999).

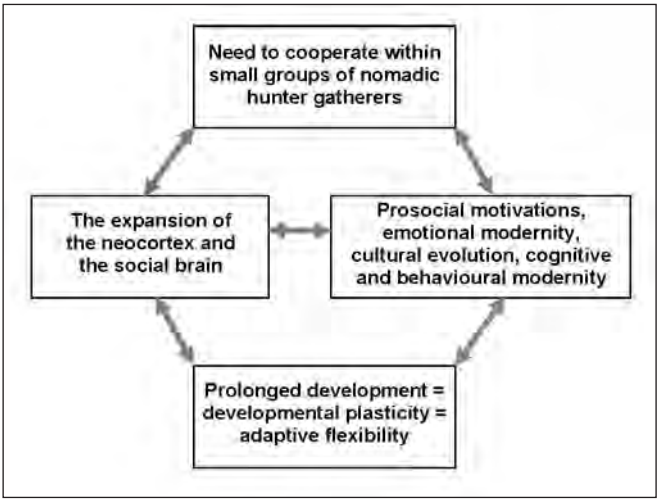
A prolonged development came at a huge cost. Chimpanzees are nutritionally self-sufficient by the age of five. While there is significant diversity among different cultures depending on whether they are nomadic, horticultural, pastoral, agricultural or industrial societies, in most cases children remain nutritionally dependent on their families and communities until early or late adolescence. Infants and children need thirteen million calories before they reach nutritional self-sufficiency (Hrdy 2009, p. 101) and twenty-five percent of total metabolic resources go to meet the energy demands of a huge brain.

If these high costs were born by mothers alone, high levels of cooperation would probably have never evolved. This is why it seems likely that a very large neocortex, an extended period of development and cooperative breeding evolved together, so that the high costs of rearing immature infants and slowly developing children with a brain that consumes enormous energy could be spread around through cooperative breeding (D. F. Bjorklund & J. S. Rosenberg 2005; Gibbons 2008; Hrdy 2009). Cooking and

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

consuming a high caloric meat and tuber diet is also an integral part of the story (Wrangham 2009).

The following diagram summarizes this model of human evolution:



Research showing the emergence of prosocial motivations early in the ontogeny of our species

Prosocial motivations show up very early in human development, before culture begins to have a large impact. Research shows that social norms do not begin to have an effect until the end of the second year of life, but most clearly by age three and four (Rakoczy & Schmidt 2013). The early expression of helping and cooperative motives and the desire to share experience with others supports the view that humans have developed a motivational infrastructure needed to develop high levels of cooperation that characterizes our species and prepares children to live within human-created cultural environments (For review of the literature on the development of prosocial motivations see Bloom 2013; Suddendorf 2013; Tomasello & Vaish 2013).

A generation of infant researchers has shown how infants and primary caregivers are socially engaged very early in development. The engagement

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

is already evident by the second month of life and more clearly by the fourth month as shown in the charming "proto-conversations" between primary caregivers and their infants that have all the markings of a real conversation, except that infants can't speak words (Beebe et al. 2005; Stern 1985; Tomasello et al. 2005; Trevarthen 1979; Trevarthen & Aitken 2001; Tronick 2007; Warneken & Tomasello 2006; 2007; 2009). It is not surprising that social engagement takes the form of a conversation, since communication is its most important function (Cortina & Liotti 2010; Tomasello 2007; Trevarthen 1979; 1988) and prepares the ground for extensive cooperation and social learning needed to assimilate a huge amount of cultural knowledge (Boyd, Richerson, & Henrich 2011). For humans, this form of social engagement is the earliest expression of a social instinct to engage with others. Other primate species show rudimentary forms of this social engagement system and make eye contact, and face-to-face interactions soon after birth, but it disappears after a month or two, while in humans it continues to develop throughout life.

The work of Steven Porges has shown us the evolutionary origins of this social engagement system. The autonomic nervous system is comprised of the sympathic system that is a mobilizing system that prepares the organism for fight or fight reactions, and a parasympathic system that is a demobilizing system. One of the sub branches of the parasympathic system, the myelinated branch of the vagus nerve, in conjunction with cranial nerves involved in making eye contact and in facial expressions, developed in mammals, and especially in primates, to allow for emotional closeness (Porges 2011).

By the end of the first year of life an attachment to an exclusive parenting figure is fully developed. We share this social instinct to attach in moments of distress with other mammals and some species of birds (Bowlby 1969). The enormous significance of this attachment bond is that it provides a base of security for developing the capacities to self-regulate emotions and levels of arousal, (Sroufe 1996) and explore the material world (Bowlby 1988). A secure attachment is also the basis for developing cooperative relations and competencies needed for adapting to an expanding social world (Sroufe et al. 1999; Sroufe et al. 2005).

By fourteen months of age a new set of social motivations begins to emerge. Children engage in simple joined tasks or games like playing peek-

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

a-boo, and spontaneously helping strangers. Tomasello and colleagues at the Max Plank Institute in Leipzig have documented these spontaneous prosocial motivations (Hepach et al. 2013; Warneken & Tomasello 2007; 2009). It is impressive to watch these videotaped demonstrations of spontaneous helpful and cooperative behaviors with strangers in fourteen to eighteen month-olds who are not prompted by parents and have no immediate reward[8].

By the second year of life infants are engaging in a new form of "we-centered" interactions and infants show a strong desire to share experiences with others. When playful interactions are suddenly suspended by an adult, children expect and request that the adult continue the playful interaction (Warneken et al. 2006). Toddlers even turn instrumental tasks into a social game. The desire to share experience with others can also be seen by the simple gesture of pointing as a way to call attention of others to objects or situations of interest. This gesture to share something of interest is *unique to humans* (Tomasello et al. 2007).[9] All these developments prepare young children to internalize shared social norms and assimilate cultural values and begin to enforce social norms by age three (Rakoczy & Schmidt 2013). Three year olds enforce norms as if they were mandates ("you most do it this way" or "it is like this"), while five to seven year –old children are more flexible and use context to enforce social norms (Köymen et al. 2014).

As any parent who has raised a toddler knows, the presence of prosocial motivations in young children does not mean that they are always cooperative and helpful. Toddlers have not earned the reputation of "the terrible two's" (or "threes") for nothing. Sporadic selfishness, stubbornness, and resistance to share with siblings, peers and even with adults they love are normal parts of development. But parents' cooperativeness and helpfulness with their children strongly predicts how cooperative and helpful they will become with peers and teachers later in development (Sroufe et al. 2005).

Culture would not have taken root if it weren't for teaching and imi-

8 The videotapes illustrate, in ways that a verbal description fails to convey the importance of these prosocial instincts. You can see some of these videos by going to Michael Tomasello's website at: http://www.eva.mpg.de/psycho/videos/children_clothes.mpg.

9 Apes raised in captivity can learn to point to request something, but they never point to share an object of interest.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

tation. Teaching is vertical, from adults to children, and horizontal, between siblings and peers. Learning occurs through deliberate teaching and through imitation (Tomasello, Kruger, & Ratner 1993). Apes may learn by imitation but adult apes do not deliberately guide learning as humans do (Tomasello 1999; Tomasello & Vaish 2013).

Humans are gifted imitators. In fact early in development they over imitate, even if the imitation may not be the most direct way to achieve a goal. If a two or a three year-old sees an adult turning on a light with her forehead, they will imitate this behavior even though it is clear that they can turn on the light with their hands (Horner & Whiten 2005; Nielson 2006; Suddendorf 2013). Over-imitation greatly facilitates absorbing ways of being and acting within different cultural settings.

Fromm's last effort to revisit the historical and biological conditions that determine human nature

In *The Anatomy of Human Destructiveness* (1973a) Fromm once again assumed that during the course of human evolution a split emerged between character-based passions rooted in socio-economic and cultural conditions and instincts based on our biological heritage. This split led him to include in *The Anatomy of Human Destructiveness* (Fromm 1973a) a list of character rooted passions: *rootedness*, (need for human relatedness), *unity* (need for coherence by developing our capacity for love and reason), *effectiveness* (the need to feel competent) and the need for *stimulation*. Of this list, only the need for a frame of orientation and devotion and the need for unity (based on developing our capacity for love and reason) can be considered uniquely human. The other items in the list, the need for rootedness, effectiveness and stimulation are present in other animals and have deep biological roots.

As I have tried to show, there is not a rupture between character-rooted passions that have their origin in socioeconomic, cultural and historical conditions *and* biological instincts. There is a gradual transformation of social instincts that support high levels of cooperation. But Fromm was on to an important idea when he focused on major changes in human evolution that had produced some uniquely human qualities that separate us from other animals. Some evolutionary changes occur quite rapidly and

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

represent something new, such as the emergence of symbolic and imagistic abilities, language and the cultural transmission of knowledge.

Until the 1970's it was an accepted "fact" that evolution occurred through gradual change as the result of selective pressures favoring mutations better adapted to environmental conditions, that is, microevolution in contrast to rapid and sudden change (macroevolution). So when Stephen Jay Gould and Niles Eldridge introduced the concept of punctuated equilibrium to account for the non-gradual and rapid changes (in geological time scales of tens of thousands of years instead of millions of years) they observed in the paleontological record, it sent shock waves in the evolutionary world, (Gould & Eldridge 1977). It was believed that what appeared to be sudden change was due to deficiencies in the paleontological record. Gould and Eldridge challenged this belief and they were proven right. Punctuated equilibrium and macroevolution have now been accepted into the mainstream of evolutionary thinking (Eldridge 1995).

So while Fromm was right in thinking that human evolution had produced major changes that created unique qualities in human nature, he was wrong in thinking that these changes represented a rupture with our biological heritage. Major changes with new properties can be modelled as dynamic systems that have nonlinear effects. In these systems change is not linear and continuous but can be sudden (have nonlinear effects) and take on new *emergent qualities* that signal an organizational transformation of the system (Thelen & Smith 1994).

Conclusion

Were Fromm with us today I think he would have been delighted to hear about the paradigm change we are witnessing in seeing cooperative and prosocial motivations as being central components of understanding the evolution of our species. This new understanding would have supported what he and many of his contemporaries, such as the anthropologist Ashley Montague (Montague 1950) believed, namely, that Hobbs and Freud's pessimistic view of man as being selfish and brutish was one sided and wrong. Fromm's attempt to redefine human nature by emphasizing its more positive potential assumed a rupture between our biological and cultural her-

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

itage in which character rooted passion influenced by economic, cultural and parental influences had become a substitute for our missing instincts. As I have shown there are both continuities and discontinuities during human evolution –that are also observed during ontogenetic development (Sroufe et al. 2005). The discontinuities are best conceived as emerging properties (such as cultural evolution) that are rooted in social instincts that we share with the Great Apes. These social instincts were not lost; they were transformed to support high levels of cooperation. In addition to cooperative breeding and the emergence of monogamy and the internalization of shared social norms, one of the main mechanisms that led to this transformation was achieved by a prolonged period of development that allowed infants and children to become more receptive to environmental influences through learning and imitation.

I think that Fromm would also have been pleased to see that the new evolutionary paradigm has an unmistakably Marxist undertone – which as far as I know has not been conscious to the researchers and scholars who have advanced these views. The cooperative social organization of our species emerges as a response to ecological conditions (climate change in step I), and the emergence of permanent human settlements in step III due to efficient hunting and the invention of agriculture and the domestication of animals. In other words, how humans make a living (the mode of production) determines to a large extent the social organization. But that is not the whole story. With the emergence of shared social norms, (social character in Fromm's terms), cultural values and influences also begin to have a large impact during human evolution. A new bi-directional dynamic emerged between how humans make a living (the mode of production) and cultural influences mediated by the internalization of shared social norms and practices, a central thesis of social character theory. Updating Fromm's theories in light of these new developments in human sciences is vitally important as our species confronts new challenges to our survival in the twenty-first century and beyond.

References

Apicella, C.L. (2012). Social networks and cooperation in hunter gatherers. Nature 481, pp. 497–501.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

Beebe, B. et al. (2005). Forms of intersubjectivity in infant research and adult treatment. New York (Other Press).

Bjorklund, D. F., & Rosenberg, J. S. (Eds) (2005). Origins of the Social Brain. Evolutionary Psychology and Child Development. New York (Guilford Press).

Bjorklund, D. F., & Rosenberg, J. S. (2005). The Role of Developmental Plasticity in the Evolution of Human Cognition. In: D. F. Bjorklund & B. R. Ellis (Eds.). Origins of the Social Brain. Evolutionary Psychology and Child Development. New York (Guilford Press), pp. 45–75.

Bloom, P. (2013). Just Babies. The Origins of Good and Evil. New York (Random House PPC).

Boehm, C. (2012). Moral Origins. The Evolution of Virtue, Altruism, and Shame. New York (Basic Books).

Boehm, C. (1999). Hierarchy in the Forest. The Evolution of Egalitarian Behavior. Cambridge (Harvard University Press).

Bowlby, J. (1969). Attachment (Vol. I). New York (Basic Books).

Bowlby, J. (1988). A Secure Base New York (Basic Books).

Bowles, S., & Gintis, H. (2011). A Cooperative Species. Human Reciprocity and It's Evolution. Princeton (Princeton University Press).

Boyd, R. et al. (2010). Coordinated Punishment of Defectors Sustains Cooperation and Can Proliferate When Rare. Science 328, pp. 617–620.

Boyd, R. et al. (2011). Rapid Cultural Adaptation Can Facilitate the Evolution of Large-Scale Cooperation. Behavior Ecology Sociobiology 65, pp. 431–444.

Boyd, R., & Richerson, P.J. (2005). The Origin and Evolution of Cultures. New York (Oxford University Press).

Buller, D.J. (2005). Adapting Minds. Evolutionary Psychology and the Persistent Quest for Human Nature. Cambridge (A Bradford Book. The MIT Press).

Cortina, M. (In press). The Greatness and Limitations Erich Fromm's Humanism. Contemporary Psychoanalysis.

Cortina, M., & Liotti, G. (2010). Attachment is About Safety and Protection. Intersubjectivity is About Social Understanding and Sharing. Psychoanalytic Psychology 27, pp. 410–441.

Csibra, G., & Gergely, G. (2009). Natural Pedagogy. Trends in Cognitive Science 13, pp. 148–153.

d'Errico, F. et al. (2012). Early Evidence of San Material Culture Represented by Organic Artifacts from Border Cave, South Africa. PNAS. 109, pp. 13214–13219.

de Waal, F. (2013). The Bonobo and the Atheist. In Search of Humanism Among the Primates. New York (W.W. Norton).

Dubreuil, B. (2010). Paleolithic Public Goods Games. Why Human Culture and Cooperation Did not Evolve in One Step. Biology & Philosophy 25, pp. 53–73. doi: 10.1007/s10539-009-9177-7.

Dunbar, R.L.M., & Shultz, S. (2007). Evolution in the Social Brain. Science317, pp. 1344–1347. doi: 10.1126/sceince.1145463.

Eisley, L. (1971). The Uncompleted Man. In: B. Landis & E. S. Tauber (Eds), In the Name of Life. Essays in the Honor of Erich Fromm. New York (Holt, Rinehart and Winston), pp. 130–142).

Eldridge, N. (1995). Reinventing Darwin. The Great Debate at the High Table of Evolutionary Theory. New York (Wiley).

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

Engelmann, J. et al. (2010). Five-Year Olds, but not Chimpanzees, Attemptto Manage Their Reputations. PLoS ONE 7 (10) e48433. doi: 10.1371/journal.pone.0048433Ferrari, P.F. et al. (2009). Reciprocal Face to Face Communication between Rhesus Macaque Mothers and Their Newborn Infants. Current Biology 19, pp. 1768–1772.

Fromm, E. (1947a). Man for Himself. An Inquiry into the Psychology of Ethics. New York (Holt, Rinehart & Winston).

Fromm, E. (1973a). The Anatomy of Human Destructiveness. New York (Holt, Rinehart and Winston).

Fromm, E., and Maccoby, M. (1970b). Social Character in a Mexican Village. Englewood Cliffs (Prentice Hall).

Fuentes, A. (2012). Race, Monogamy and Other Lies They Told You. Bursting Myths about Human Nature. Berkeley (University of California Press).

Gibbons, A. (2008). The Birth of Childhood. Science 322, pp. 1040–1042.

Gintis, H. (2003). The Hitchhiker Guide to Altruism. Gene-culture Coevolution, and the Internalization of Norms. Journal of Theoretical Biology 220, pp. 407–418.

Gintis, H. (2004). The Genetic Side of Gene-Culture Coevolution. Internalization of Norms and Prosocial Emotions. Journal of Economic Behavior & Organization 53, pp. 57–87.

Gould, S.J., & Eldridge, N. (1977). Punctuated Eguilibrium. The Tempo and Mode of Evolution Reconsidered. Paleobiology 3, pp. 115–151.

Henrich, J., & Henrich, N. (2006). Culture, Evolution and the Puzzle of Human Cooperation. Cognitive Systems Research 7, pp. 220–226.

Hepach, R. et al. (2013). A New Look at Children's Prosocial Motivation. Infancy 18, pp. 67–90.

Hermann, E. et al. (2007). Humans Have Evolved Specialized Skills of Social Cognition. The Cultural Intelligence Hypothesis Science 317, pp. 1360–1366.

Hill, K.R. et al. (2011). Co-Residence Patterns in Hunter-Gatherer Societies Show Unique Human Social Structure. Science 331, pp. 1286–1289.

Horner, V., & Whiten, A. (2005). Causal Knowledge and Imitation/Emulation in Chimpanzees (Pan troglodytes) and Vhildren (Homo sapiens). Animal Cognition 8, pp. 164–181.

Hrdy, B.S. (1999). Mother Nature. Maternal Instincts and how they Shape the Human Species. New York (Ballantine Books).

Hrdy, S.B. (2005). Evolutionary Context of Human Development. In: C.S. Carter et al. (Ed.). Attachment and Bonding. A New Synthesis. Cambridge (The MIT Press), pp. 9–32.

Hrdy, B.S. (2009). Mothers and Others. The Evolutionary Origins of Mutual Understanding. Cambridge (The Belknap Press).

Hrdy, S.B. (2013). Development and Social Selection in the Emergence of "Emotionally Modern" Humans. In: C.L. Meehan & A.N. Crittenden (Eds). Origins and Implications of the Evolution of Childhood. Santa Fe (SAR Press).

Kelly, R. (2013). The Lifeways of Hunter-Gatherers. The Foraging Spectrum. Cambridge (Cambridge University Press).

Kendal, J. et al. (2011). Human Niche Construction in Interdisciplinary Focus. Philosophical Transactions of the Royal Society B: Biological Sciences 366(1566), pp. 785–792. doi: 10.1098/rstb.2010.0306.

Konner, M. (2010). The Evolution of Childhood. Relationships, Emotion, Mind. Cambridge (Harvard University Press).

Köymen, B. et al. (2014). Children's Norm Enforcement in Their Inteeractions With Peers. Child Development 85, pp. 1108–1122.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

Lee, R.B. (1979). The Kung San. Men, Women and Work in a Foraging Society. Cambridge (Cambridge University Press).
Maccoby, M. (1976). The Gamesman. The New Corporate Leaders. New York (Simon and Schuster).
Maccoby, M. (1981). The Leader. New York (Simon and Schuster).
Maccoby, M. (2007). The Leaders We Need. And What Makes Us Follow. Boston (Harvard Business School Publishing).
Maturana, H., & Varela, F. (1973). Autopoiesis and Cognition. The Realization of the Living. In: R.S. Cohen & M.W. Wanofsky (Eds). Boston Studies in the Philosophy of Science No. 42. Dordech (D. Reidel Publishing Co).
McBrearty, S. (2007). Down With the Revolution. In K. Boyle et al. (Ed.). Rethinking the Human Revolution. Cambridge (McDonald Institute Monographs).
McBrearty, S., & Brooks, A.S. (2000). The Revolution that Wasn't. A New Interpretation to the Origin of Modern Human Behavior. Journal of Human Evolution 39, pp. 453–563.
McKinney, M.L., & McNamara, K.J. (1991). Heterochrony. The Evolution of Ontogeny. Plenum Press (New York).
Mitani, J.C. (2006). Reciprocal Exchange in Chimpanzees and Other Primates. In: P. Kappeler & C. van Schaik (Ed.). Cooperation in Primates. Mechanisms and Evolution. Heidelberg (Springer), pp. 101–113.
Montague, A. (1950). On Being Human. New York (Henry Schumna, Inc).
Nielson, M. (2006). Copying Actions and Copying Outcomes. Developmental Psychology 42, pp. 555–565.
Porges, S. (2011). The Polyvagal Theory. Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-Regulation New York (W.W. Norton).
Rakoczy, H., & Schmidt, M.F.H. (2013). The Early Ontogeny of Social Norms. Child Development Perspectives 7, pp. 17–21.
Richerson, P.J., & Boyd, R. (2005). Not by Genes Alone. Chicago (The University of Chicago Press).
Service, E.R. (1966). The Hunters. Englewood Cliffs (Prentice Hall).
Sober, E., & Wilson, D.S. (1998). Unto Others. The Evolution and Psychology of Unselfish Behavior).
Sroufe, L.A. (1996). Emotional Development. The Organization of Emotional Life in the Early Years. New York (Cambridge University Press).
Sroufe, L.A. et al. (1999). One Social World. The Integrated Development of Parent-Child and Peer Relations. In: W.A Collins & B. Laursen (Eds). The Minnesota Symposia on Child Psychology 30. Relationships as Developmental Contexts. pp. 241–261.
Sroufe, L.A. et al. (2005). The Development of the Person. The Minnesota Study of Risk and Adaptation from Birth to Adulthood New York (The Guilford Press).
Stern, D.N. (1985). The Interpersonal World of the Infant. New York (Basic Books).
Suddendorf, T. (2013). The Gap. The Science of What Separates us from Other Animals. New York (Basic Books).
Thelen, E., & Smith, L. (1994). A Dynamic Systems Approach to the Development of Cognition and Action. Cambridge (MIT Press).
Tomasello, M. (1999). The Cultural Origins of Human Cognition. Cambridge (Harvard University Press).
Tomasello, M. (2007). Cooperation and Communication in the 2nd Year of Life. Child Development Perspectives 1, pp. 8–12.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.

Tomasello, M. (2009). Why we Cooperate. Cambridge (Boston Review Book).
Tomasello, M., & Carpenter, M. (2005). The Emergence of Social Cognition in Three Young Chimpanzees. Monographs of the Society for Research in Child Development 70 (1), pp. 46–72.
Tomasello, M. et al. (1993). Cultural Learning. Behavioral and Brain Sciences 16(03), pp. 495–511. doi:10.1017/S0140525X0003123X.
Tomasello, M. et al. (2005). Understanding and Sharing Intentions. The Origins of Cultural Cognition. Behavioral and Brain Sciences 28, pp. 675–735.
Tomasello, M. et al. (2007). A New Look at Pointing. Child Development 78, pp. 705–22.
Tomasello, M. et al. (2012). Two Key Steps in the Evolution of Human Cooperation. Current Anthropology 53, pp. 673–692.
Tomasello, M., & Vaish, A. (2013). Origins of Human Cooperation and Morality. Annual Review of Psychology 64, pp. 231–255.
Trevarthen, C. (1979). Communication and Cooperation in Early Infancy. A Description of Primary Intersubjectivity. In: M. Bullowa (Ed.). Before Speech. The Beginning of Human Communication. London (Cambridge University Press), pp. 321–346.
Trevarthen, C. (1988). Universal Cooperative Motives. How Children Begin to Know Language and Skills and Culture. Acquiring Culture. Cross-Cultural Studies in Child Development, pp. 37–90.
Trevarthen, C., & Aitken, K.J. (2001). Infant Intersubjectivity. Research, Theory, and Clinical Applications. Clinical Psychology and Psychiatry 42, pp. 3–43.
Tronick, E. (2007). The Neurobehavioral and Socio-Emotional Development of Infants and Children. New York (W.W. Norton).
Warneken, F. et al. (2006). Cooperative Activities in Young Children and Chimpanzees. Child Development 77, pp. 640–79.
Warneken, F., & Tomasello, M. (2006). Altruistic Helping in Human Infants and Young Chimpanzees. Science 311, pp. 1301–4.
Warneken, F., & Tomasello, M. (2007). Spontaneous Altruism by Young Children and Chimpanzees. PLoS Biology 5, pp. 1414–20.
Warneken, F., & Tomasello, M. (2009). Varieties of Altruism in Children and Chimpanzees. Trends in Cognitive Science 13, pp. 397–402.
Weissner, P. (2002). Hunting, Healing and Hxaro Exchange. A Long Trem Perspective On King Ju-Hoansi Large-Game Hunting. Evolution and Human Behavior 23, pp. 407–36.
Williams, E. (1966). Adaptation and Natural Selection. Oxford (Oxford University Press).
Wilson, D. S., & Sober, E. (1994). Reintroducing Group Selection to the Human Behavioral Science. Behavioral and Brain Sciences17, pp. 585–652.
Wilson, D.S., & Wilson, E.O. (2007). Rethinking the Theoretical Foundations of Sociobiology Quarterly Review of Biology, pp. 327–328.
Wilson, E.O. (2012). The Social Conquest of Earth. New York (Liveright Publishing Company).
Wrangham, R. (2009). Catching Fire. How Cooking Made Us Human. New York (Basic Books).
Yeshuran, R. et al. (2014). Intensification and Sedentism in the Terminal Pleistocene Natufian Sequence of El-Wad Terrace (Israel). Human Evolution 70, pp. 16–35.

in: R. Funk and N. McLaughlin (Eds.), Towards a Human Science.
The Relevance of Erich Fromm for Today, Giessen (Psychosozial-Verlag) 2015.