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The sociocultural self-creation of a natural category: Social-theoretical reflections on human agency under the temporal conditions of the Anthropocene

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Abstract

Following the recent recognition that humans are an active force in nature that gave rise to a new geological epoch, this essay explores the implications of the shift to the Anthropocene for social theory. The argument assumes that the emerging conditions compel an expansion and deepening of the timescale of the social-theoretical perspective and that such an enhancement has serious repercussions for the concept of human agency. First, the Anthropocene is conceptualized as a nascent cognitively structured cultural model rather than simply a geological epoch. Second, the vast and deep timescale in the light of which the new time unit and its generative agency alone make sense is analysed along the human world's objective, sociocultural and subjective axes. Finally, the elements of the concept of agency are recomposed in their temporal and relational contexts. At the reflexive level throughout, the need for social theory to develop a cognitive-theoretical approach in conjunction with a weak naturalistic ontology is suggested.

Keywords

Agency, Anthropocene, culture, evolution, nature, time

The notion of the Anthropocene hardly needs introduction today, given that it is being used profusely in a variety of disciplines, from the natural sciences to the humanities, and has even become an object of chatter in the media, among politically aware citizens and in politics. A minimum of pointers toward the origin and meaning of the idea will therefore suffice.

The original broaching of the idea by Eugene Stoermer in the 1980s, its establishment by the Nobel laureate Paul Crutzen in 2002 and its popularization by Will Steffen and others since 2007 had been prepared for by a number of earlier authors. In 1873, for example, the Italian Antonio Stoppani (2013) proclaimed that humankind has entered a new age, the 'Anthropozoic', but his proposal fell on deaf ears. In 1938, even before the American atomic weapons tests which are now regarded as

the beginning of the Anthropocene (Zalasiewicz et al., 2015), the famous Russian founder of the science of the biosphere, V. I. Vernadsky, presciently pinned down the essence of the idea *avant la lettre* when he submitted that:

> 'the activity of Man appears as a geological factor…and is reflected in large-scale phenomena of a planetary scale…..We are living in a brand new, bright geological epoch. Man, through his labour – and his conscious relationship to life – is transforming the envelope of the Earth – the geological region of life, the *biosphere*' (2000-1: 22).

In 1968, Serge Moscovici echoed this insight in his book on 'the human history of nature', writing that '[h]umans have become a *geological force* with *enormous effect*', to which he added: 'the biomorphic character of human activities…[indicates that]…human agency is a version of the universal process' (1982: 498, my translation). And some five years before Crutzen's eye-opening essay of 2002, Peter Vitousek et al. (1997) compiled the necessary evidence for what they called 'the human domination of Earth's ecosystems'.

The responses to the idea of the Anthropocene vary widely. At present, the Working Group on the Anthropocene (2015) is preparing the way for the leading geologists of the International Commission of Stratigraphy to brood over the thorny question of whether the idea possesses any scientific merit. Besides an idea, this authoritative body requires an enduring global physical marker – what is called 'chronostratigraphy' or simply 'time-rock' (Revkin, 2012: 5). Seeking to give reality to Crutzen's expressed hope that the idea will lead to changed attitudes and practices, environmentalists and the change community are not waiting for the scientific decision, but rather enthusiastically propagate its transformative potential. For their part, the media (e.g. Lewis, 2009; Kolbert, 2011; The Economist, 2011; Revkin, 2012; Nestler, 2015) are exuberantly trumpeting the arrival of 'The Human Age' characterized by the re-establishment of humans on their pedestal after their humiliating demotion by Copernicus and Darwin. At one pole, the business community and their political handmaidens and henchmen are relishing the opportunities created by the idea for what will effectively turn out largely to be neo-colonialist ventures (Schulz, 2016). At the opposite pole, disadvantaged and poor communities are bracing themselves for what the developed world's assertion of its newfound Anthropocenic domination of Earth might bring to their modest doorsteps and depleted livelihoods (Rose, 2013). And, finally, cautious thinkers are warning against jumping on the bandwagon in view of the possibility that whatever merit the idea does have will rapidly dissipate if green technology and a decarbonized economy result in the curtailment or even elimination of the factors behind global warming and climate change.

As for sociologists, not untypically, they are coming late to the idea and will no doubt find their conceptualization and research endeavours entangled in this hornet's nest of competing and contradictory responses. The majority of those who pay attention to the idea, again not untypically, would probably join the environment and change activists without thinking too much about the remaining appropriations of the idea. It could be predicted with confidence that the least likely response would be the productive one of understanding the idea of the Anthropocene as compelling the long overdue expansion and deepening of the timescale of social theory and sociology. Neither the cognitive revolution nor the weak naturalistic turn diverted them from their myopic sociologistic and culturalistic ways, while a book dealing seriously with the topic of time and social theory (Adam, 1990) hardly left a trace, despite having received a British Sociological Association award in 1991. But considering the obvious radical implication that the idea has for the central concept of agency, the time might well now be right to contemplate such a fundamental shift in perspective.

This being my hope, the aim of this piece is threefold: first, to present a social-theoretical conception of the Anthropocene as a semantically and symbolically rich cognitive cultural model that is structured by principles selected from the cognitive order of society; second, to draw conclusions from the Anthropocene as a time unit about the necessity of an expanded, deepened, multidimensional conception time; and third, to relate the concept of agency in the sense of a capacity for variable engagements to this differentiated understanding of time so as to see it operating in different contexts at a number of different levels. In the course of taking these steps, suggestions are made in reflexive mode about those theoretical and ontological features of social theory itself that need rethinking under the conditions inaugurated by the Anthropocene – that is, innovatively departing in two distinct yet closely interrelated directions: a cognitive theoretical and a weak naturalistic one.

A social-theoretical conception of the Anthropocene

As the names of Stoppani, Vernadski, Moscovici and no doubt others indicate, there has been an intensifying feeling since the second half of the nineteenth century that humankind is on the brink of, or has entered, a new epoch. It is this subterranean motivating sense deriving from being caught between the old and the new that provided Stoermer and, joining him, also Crutzen with the necessary basis for the coining of the neologism, the Anthropocene. But even before this term was hardened into a viable concept and publicly aired in the early years of the twenty-first century, scientists like Vitousek and his colleagues were searching for the necessary evidence to sustain the argument that human activities have begun to override natural ecosystemic processes and cycles. In

the meantime, a good deal more evidence has been forthcoming which, in the view of many, confirms that humankind has entered a new geological epoch of its own making.

Through these shifts from feeling via evidence to conceptualization in the course of a protracted development shines a semiotic process that logically exhibits the interrelated moments of abduction, induction and deduction (Peirce, 1998; Strydom, 2011). The concept of the Anthropocene, presupposing both a disclosing perspective and the collation of indices of a new geological time interval, is what ultimately allows conclusions to be drawn about reality and its relevant components. It is evident that the meaning it carries is by no means exclusively of a logical nature. On the contrary, as the heated debates about it and the concomitant actions show, it also has an emotional and pragmatic resonance effect on those interpreting it – irrespective of whether scientists, environmentalists, change activists, journalists, business executives, the disadvantaged and poor or cautious and incautious thinkers. It is no wonder, then, that it is a highly controversial, socially contested construct that calls forth a wide variety of responses, both in words and actions. And it is entirely comprehensible why so many of those who are in some way or other drawn into the sphere of signification and discourse delimited by the concept are not waiting and, indeed, cannot wait for the heavyweights of the International Commission on Stratigraphy to scientifically formalize and legitimize the concept.

Considering that the concept of the Anthropocene allows different inferences to be drawn and thus equally different judgements to be formed about reality and certain of its components, it is apparent that it possesses structural aspects that facilitate cognitive processes necessary for the acquisition and articulation of knowledge. This implies that there are a number of conceptions of a class of constructs to which the Anthropocene would also belong that would not be sufficient to make the nature of the latter adequately comprehensible. Three such conceptions which seem to be relatively closely related in a certain respect are readily available in the literature – Umberto Eco's (1972) semiotics, Richard Dawkins (1989) and Daniel Dennett's (1996) memetics and, finally, Dan Sperber's (2002) epidemiological approach. In some sense, all of them focus on culture but are distinct from one another in that they decompose it in different ways. In the present context, this is taken as correctly suggesting that, in a key sense, a phenomenon like the Anthropocene is not just a material object, but has to be social-theoretically understood in terms of culture. Yet, the cognitive social theory employed here to theorize the Anthropocene does so with a decisive difference.

This theory also assumes a particulate conception of culture like the three positions mentioned above, but by contrast with them it breaks culture down neither into free-floating semantic units like Eco, nor into gene-like memes like Dawkins and Dennett, nor finally into individual mental representations and behaviour that are then located in an ecological environment like Sperber. The focal units are instead the cognitive properties that are in an intelligible manner mediated through the micro-, meso, macro- and meta-dimensions of sociocultural reality – properties that do bear a trace of the object of reference, yet can be reduced neither biologically nor infra-individually. The emphatic inclusion of the meta-dimension furthermore indicates at least two considerations that are relevant in the present context. The first is that social reality is understood within an immanent-transcendent framework (Strydom, 2011) that escapes the strong naturalism of Dawkins, Dennett and Sperber in favour of a weak naturalistic ontology which is complemented by a cognitive realist epistemology.[1] The former, going beyond Eco's strong culturalism, celebrates the continuity between nature and the human sociocultural form of life, which allows appreciation for the Anthropocene as a geological epoch in which humans are implicated; and the latter admits the treatment of certain features of sociocultural reality as nevertheless beyond natural determination, which makes room for the Anthropocene as cultural phenomenon. Of great importance, second, is the need to make a vital distinction where the referenced authors and many others besides fail to clearly differentiate – that is, the distinction between immanently located and operating cultural models and the transcendent meta-level cognitive order (Strydom, 2015a, In press) which is necessary for adequately grasping the cultural nature of the Anthropocene and without which one would be unable to account for its socially contested nature.

On the one hand, the immanent cultural models consist of more or less rich symbolically packaged semantic content, but as such they are cognitively structured. Their cognitive structuration, on the other hand, emanates incursively and recursively from the meta-level or transcendent cognitive order. It indeed has roots in individual brain-minds or the human organic cognitive endowment, but is articulated and mediated through action, practices, social interaction and communication of all sorts after having been stabilized as common presuppositions for a number of millennia. This stabilization occurred on two levels – that is, through the phylogenesis of the mind characteristic of *Homo sapiens sapiens* (Mithen, 1998) and through sociocultural evolution enabling the organization of sociocultural life. The components of the cognitive order of the sociocultural form of life include, among many others, what Peirce (1998: 197) called the universally assumed 'ideas of human life…[such as]…Truth, Right, and Beauty…[that serve as]…*Ends*' for human cognitive processes and activities.[2]

In the present context, the most appropriate example of a cultural model or, rather, of a candidate for becoming a full-fledged cultural model, is the Anthropocene. In conjunction with the identification of a new geological epoch, it has only very recently begun to take shape through as yet incomplete inferential and judgement processes.[3] These processes are, first, motivated by disclosing abductive feelings regarding the perceived state of the world; second, structured by deductions drawing from and selectively combining different components of the cognitive order; and, finally, informed by the tentative inductive forays into domains of potentially relevant indices. But it is the principles of the meta-level cognitive order that render inference, assessment and judgement of relevant matters possible.

The distinction and difference in level between immanent cultural models and the transcendent cognitive order and, hence, between the distinct directing and guiding potencies they possess and exert, can be clarified and justified by recourse to a venerable intellectual tradition of serious research and design work done by mathematicians, scientists, philosophers and logicians over the past 2000 years which has had a thorough-going impact on social theory. In the course of a certain line of thought running from Aristotle, via Hindu-Arab thought, Galileo, Newton, Leibniz and Kant, to philosophers and modern mathematicians such as Peirce, Dedekind and Cantor, a fundamental distinction which came to inform many a discipline, including social theory, has become stabilized and legitimized, both mathematically and philosophically. In mathematics, it is known as the distinction between the 'convergent series' and 'divergent series' (Dantzig, 2007: 150-51; Kline 1990: 1110). The best known example of a convergent series from mathematics is pi (π). When it is algorithmically derived, a number is obtained which grows ever longer in decimal places and tends ever closer toward the value of π, the growth being infinite and the value in principle remaining just out of reach. Decimal places could be added indefinitely, but the calculation of π will never finish. This endlessly ongoing series with its finite yet ideal limit, the unattainable value, is since Aristotle (2015: Book III, Part 6) known as 'potential infinity'. A divergent series, by contrast, is one in which the addition of more and more numbers leads to a total that outgrows any boundary one might try to impose. This exponentially accumulating series with its projected sought after totality, its infinite ideal limit, is known as 'actual' or 'complete infinity'.

In philosophy, Kant (1968: B386=A330-B388=A332) took cues from this mathematical distinction in identifying two continuous or infinite series – what he respectively called the 'descending series' on the side of the conditioned which represents a '*process of becoming*' possessing potentiality; and the

'ascending series' on the side of the conditions which we can never comprehend in its totality, but in respect of which we nevertheless must envisage such a totality given '*in its completeness*' if we were to be able to make inferences and judgements. Complete infinity in this sense, contrary to Aristotle, is a logically possible idealization and, although it does not apply to any experiential object, is nevertheless indispensable for making sense of such objects, as long as it is internally coherent and consistent. Such a complete totality of conditions refers to our necessary and unavoidable presuppositions without which it is impossible not just to investigate any object domain, but also to create and organize society. It represents the infinite ideal limit of the accumulative divergent or ascending series. There is of course also a third infinite series implied here – the subjective dimension from which sense is made of the descending and ascending series. While Kant conceived it in the solipsistic form of the transcendental subject of knowledge, it has since become understood in communicative terms (Peirce, 1992; Apel, 1980; Habermas, 1984).

Now, to cut a long story short, these ideas not only lie behind fundamental parametric social-theoretical assumptions, but also inform the distinction between immanent cultural models and the transcendent cognitive order. On the one hand, the Anthropocene as a cultural model is conceived as the finite yet ideal limit concept of the infinite process of becoming of nature, or natural history, in which the sociocultural form of life is embedded. As such, it is a concrete immanent value – in conjunction with others discussed below (see Figure 1) – that humans have begun to work toward but which, like π, will always recede as an ideal that cannot be fully realized. On the other hand, the cognitive order is conceived as complete infinity, the totality of conditions, that has ascended over millennia and became stabilized as the set of infinite ideal limits of the historical and evolutionary accumulation of the necessary and unavoidable conceptual, logical and mathematical foundations of *Homo sapiens sapiens'* sociocultural form of life – embracing such principles as truth, right and beauty, but also many others, for instance, nature, number, justice, equality, solidarity, truthfulness and so forth. These principles provide the commonly presupposed cognitive parameters and material for the construction of cultural models, including the emerging model of the Anthropocene.

Time and social theory in the wake of the Anthropocene

The Anthropocene is an idea that arose due to disturbing feelings about the quality of the world and confirmation by a variety of perceived indicators that those feelings are by no means mistaken. On this basis, the idea has not only been hardened into a concept, but it is for some time already in the process of being constructed into a new cultural model (see Figure 1). It is a model of the universal process of the spontaneous natural generation of forms of which the human species forms part and

actively helps to drive and direct. A vital factor in its construction is that this species has become acutely aware of this unity and the geophysical and biomorphic nature of its practices. As such, this cultural model is structured and formed by presupposed principles of the cognitive order, more precisely, by variable selective combinations of those principles, depending on the angle of interpretation, appropriation, response and action of the different groups involved. At a minimum, commonly taken-for-granted presuppositions belonging to the conceptual and quasi-conceptual foundations of the sociocultural form of life are drawn upon, including for example, truth, nature, humans, unity, process, practice, justice, number or measure (e.g. degrees Celsius, carbon molecule count, profit), life, crisis, consciousness, responsibility and so forth.

To this list should be added, furthermore, the concept of time, for the idea of the Anthropocene stretches beyond the awareness of the unity of humankind and nature and the role of the former in the latter in so far as it itself belongs to a larger multidimensional patterned process. The tendency that is becoming conventional is to regard it as classifiable as the geological epoch following upon the sequence of the Pleistocene (last glacial epoch) and the Holocene (subsequent warm epoch). This sequence falls under the Quaternary period which covers some 2.588 million years, the Anthropocene being its most recent epoch. But in the geological timescale of hierarchically ordered aeons, eras, periods, epochs and ages, the Anthropocene forms part of yet a longer timespan (Stanley, 2005). The consideration that besides an idea, concept or cultural model, it also refers to a time unit that fits into so-called 'deep time', leads the sense of time to morph into an awareness of billions of years of Earth history and the evolution of life. The age of planet Earth is reckoned to be circa 4.54 billion years, while the evolution of life unfolded through successive waves of forms, from single-cellular organisms, via multicellular sea life growing in complexity and a whole variety of insects, land animals, plants and mammals, to the appearance of the *Homo* line some 1.8 million years ago. But of particular importance is the evolutionary outcome that represents the subject of the Anthropocene – namely, anatomically modern *Homo sapiens sapiens*. Not only does it possess the unprecedented brain-to-body ratio (EQ: encephalization quotient) of 5.4 (Stringer, 2012) and cognitively fluid mind which appeared as recently as between 60,000-30,000 years ago (Mithen, 1998), but by 16th July 1945 it was also able to leave sufficient chemico-stratigraphically identifiable traces of radionuclide to draw the boundary between the Holocene and the Anthropocene (Zalasiewicz, 2015).

It is obvious that the emergence of the Anthropocene understood as a time unit which contemporary humans themselves inhabit and help shape must have profound implications for

social theory. To begin with, it compels reflection on the manner in which time figures in it. Once such reflection surveys the process into which the Anthropocene slots, social theory's typical myopic social and historical sense of time gets re-contextualized by a vast, layered timescale accommodating simultaneously occurring temporalities. The sobering insight that follows is that social theory cannot but expand and deepen the timescale relevant to its perspective. Such expansion and deepening require the incorporation of an awareness of different times and features of time. Taking cues from its own historical-theoretical background and foundational assumptions reviewed earlier, the relevant features of time can be identified in terms of infinite processes – the objective, sociocultural and subjective – and their limit concepts or, differently, in terms of the temporal features of process and structuration.

First, there is the vast and deep time of the objective world – that is, the timescale of natural history, including Earth history events (e.g. successive time intervals, including the Anthropocene) and biological history or palaeontological events (e.g. life and periodical mass extinctions, including contemporary species extinction) which is systematized in evolutionary terms with reference to irreversible temporal achievements (Stanley, 2005; Schopf, 1999). Particularly important for social theory is to incorporate an understanding of the biological time of the human species (Stringer, 2012), particularly the transition from *Archaic Homo sapiens* (EQ 4.3) and *Homo sapiens* (EQ 5.3) to *Homo sapiens sapiens* (EQ 5.4) in their respective time units with a view to grasping better what is characteristic of the latter and, hence, significant for inhabiting and shaping the Anthropocene – for example, organically endowed capacities and both actual and possible elaborations and developments of competences. Crucial here is the central temporal anatomical structure, namely, the phylogenetically shaped, cognitively fluid mind of contemporary humans (Mithen, 1998; Strydom, 2015d), which is structurationally of the greatest importance. It is not only presupposed by the construction of the Anthropocene as a cultural model representing the finite ideal limit value of the infinite objective process, which is the most relevant immanent structurational time feature today and thus the one toward which humankind has begun to tend. At the same time, it is also the natural evolutionary basis of the cognitive order which primarily through its principle of truth incursively draws the parameters of this cultural model and recursively regulates its application.

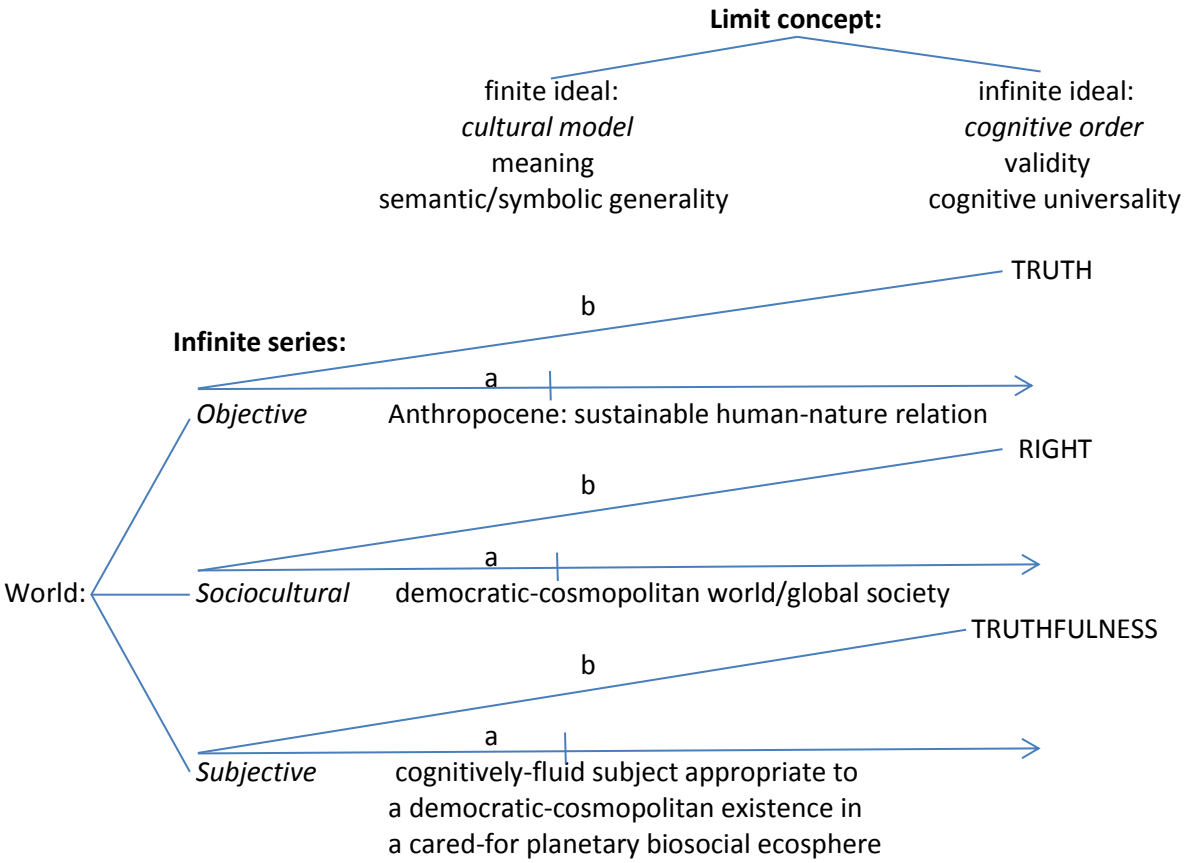
The time of the sociocultural world, the second infinite process, is of course much more familiar to social theorists (Adam, 1990). Most prominent is the explicitly formulated and symbolically articulated concept of time which finds expression in particular in the universally imposed calendar and clock time with its many ramifications for the organization of social life. Now, however, it needs

to be appreciated as being embedded in the vast and deep timescale of the objective world which embraces multiple times and temporalities. Not only sustained natural cycles like day and night or the seasons and biological cycles like birth, growth and death substructure sociocultural time, but also the more specific temporal conditions of the particular geological epoch in which it falls. Then there are the organizational features of time, such as attentional focalization, prioritization, ordering, coordination and sequencing so pervasive in social life, which have roots in natural and biological soil. Of particular significance from the viewpoint of the expansion and deepening of social theory's sense of timescale are those features making up elementary social forms that humans share with their *Homo* ancestors and contemporary primates which show up in behaviour and social arrangements of all sorts (Bateson, 1973; Jackendoff, 1999; Kaufmann and Clément, 2007; Piaget, 1983). Such forms often operate in social life virtually unmodified, at times with ill-effects which provide starting points for critique, learning and transformation in a more sociocultural direction.

When the sociocultural world is considered as an infinite process with an associated accumulated limit value, however, time appears in yet another light. On the one hand, if it is a matter of the infinite process of becoming or historicity, then time comes into play as a dimension that lends itself to the creation, production or construction of the sociocultural form of life. Such generative activities take place through the interrelation in the present of different, often socially contested orientations to the future via recourse to the past as well as to time congealed in artefacts, social and cultural objects and technologies. On the other hand, the historically accumulated and evolutionarily stabilized design and evaluative features of time loom large as limit concepts that are necessary for the incursive structuring and recursive regulating of the temporalized process of becoming as it follows its meandering course. As made clear earlier, these features of accumulated time take the form both of finite ideal limit concepts or immanent cultural models and of infinite ideal limit concepts or transcendent cognitive order principles. Whereas the creative, productive or constructive process of becoming borne by a plurality of different actors follows the trajectory of the arrow of time, the cultural models and, especially, the cognitive order hold position against the relentless impetus of the arrow of time to secure the irreversible, accumulated, temporal achievements emerging structurally from the process.[4] The Anthropocene as the nascent cultural model assigned to the infinite process of the objective world is complemented on the side of the sociocultural world by a matching, equally nascent cultural model of a democratic-cosmopolitan world or global society (see Figure 1). Here the rejection of the separation of nature and society would show in the reorganization of social relations as the levelling of the unjust class hierarchy of

human capacities and competences in harmony with the new conditions and the cognitive order principle of right.

Figure 1: Infinite Processes and Limit Concepts in the Anthropocene



Key:
a = decreasing or convergent series: indefinite tendency toward a finite limit value
b = increasing or divergent series: historically long-term accumulation and evolutionary stabilization of universally presupposed rational potentials

The third and final infinite process with its associated limit concepts, the formation and cultivation of subjectivity, has its own characteristic times and temporalities. Subjectivity is inextricably embedded in the vast and deep evolutionary timescale that is marked, on one extreme, by distant evolutionary ancestors possessing a social module going back some 35 million years and, on the other, by the emergence of hominins some six to seven million years ago toward the end of the Miocene and their evolution via three or four different human species to *Homo sapiens sapiens* most recently. Besides the biologically given organic and cognitive endowment, subjectivity also shares in the characteristic phylogenetically acquired, cognitively fluid species mind which has been shaped to a significant degree also by social and, later, by cultural factors (Mithen, 1998; Stringer 2012; Dunbar 2014; Strydom, 2015d).

As this temporal embedding of subjectivity has by no means been left behind, it is still as relevant today as at any moment in previous periods and epochs. Here elementary evolutionarily acquired social forms are of importance, but also and especially dormant capacities as yet locked up in both the organic endowment and the mind that could over time be developed into competences required by future imperatives. Such extraction and development require the multiple times of ontogenesis, maturation, socialization and individuation which presuppose time-sensitive and time-consuming cognitive processes of various kinds, from biological information exchange to socially and culturally important aggregative, dialogical or interactive and discursive learning processes (Strydom, 2009). In felicitous cases, the outcomes of these processes are evidenced by such qualities as health, autonomy, authenticity, a sense and consciousness of time, aesthetic freedom, an inferential and reflexive-critical ability, creativity, a sense of well-being, moral consciousness, self-expression, self-realization and the ability to engage in speech, interaction, actions of various kinds and, if need be, transformative praxis.

The larger process of the formation of subjectivity is in principle also conditioned by time in the sense that it transpires within the substantive context of a historically specific sociocultural world which itself is embedded in a particular geological epoch. Subject-formation is thus inevitably and fundamentally affected by a transition from one geological epoch to another and the unavoidable concomitant reconfiguration of the sociocultural world. Reconfiguration involves reflection on and articulation of the structure and semantic potential of cognitive order principles and their rethinking and re-appropriation in the light of changing conditions, the related alteration or construction of cultural models and corresponding changes in the organization of social life. But subject-formation as an externally induced and socially manifest process requires to be complemented from the inside by self-cultivation which entails a multidimensional learning process involving appropriate timing, sequencing and linking with the irreversible temporal achievements and imperatives of the time. Absolutely central to such a learning process, whether the social actor's or the social theorist's, is the reframing of the relevant set of subjective cognitive structures or schemata in relation to, and in interaction with, the reconfiguration of cognitive order principles and symbolically packaged cultural models. This applies to all the different social actors engaging in the generative historical-constructive process.

As regards the cognitive order, truthfulness *qua* infinite ideal limit concept is the chief principle that lays down the parameters of the process of subject-formation and self-cultivation. In turn, the immanent cultural model *qua* finite ideal limit concept that has begun to substantively direct and

guide the cultivation of subjectivity under the currently emerging conditions is what can be circumscribed as a fully cognitively fluid subject that is appropriate to a democratic-cosmopolitan world or global society in a cared-for planetary biosocial ecosphere. In a characteristically human manner, the subject that is emerging at present is increasingly able to relate in a self-referential and self-reflexive way to its nascent conditions of existence – that is, the ecological context and the cultural models of the Anthropocene, a democratic-cosmopolitan society and a cognitively fluid subject, all of which require that the cognitive order principles of truth, right and truthfulness be reflexively related to and acted upon (see Figure 1). Considering the plurality of different social actors, such reflexive relation and action can and typically do take distinct, even competing and conflicting forms. The unfolding of the complementary processes of subject-formation and self-cultivation already in train today obviously promises to be a difficult, even painful, protracted process that will require time – much time from a human perspective, but less that a nanosecond in terms of geological and evolutionary time.

Agency in context

The first section proceeded from the widely accepted assumption that the Anthropocene is a natural phenomenon – a new geological epoch recently inaugurated by human activities which demonstrably began to overshadow natural ecosystemic processes and cycles in a variety of ways. To this view the social-theoretical argument was added that the Anthropocene is simultaneously a cultural phenomenon – an idea arising from human experience and perception which was sufficiently hardened into a concept to serve as the starting point and vehicle for development into a cultural model possessing the efficacy of a directing and guiding orientation complex for thought and action. The second section then explored this complex of relations in terms of the multiple manifestations of time in the infinite processes transpiring in the objective, sociocultural and subjective worlds. At every level in both these sections, the continuity of nature and humans together with their sociocultural world and, hence, the relations of mutual implication stood out graphically. Simultaneously, however, it was equally apparent that in certain respects, predetermined by the cognitively fluid species mind and reflected in cultural models and the cognitive order, humans and their sociocultural world are at times capable of transcending the determination of nature and the relentless forward rush of the arrow of time. It is in this context of both nature and the sociocultural world with its immanent and transcendent dimensions that the question of agency under the temporally articulated contextual conditions of the Anthropocene has to be considered.

In social theory, it has been conventional to locate human agency strictly within the sociocultural domain, whether it was correctly understood as a capacity for variable engagements or confused with the outcomes of agency. A blinkered sociologistic and, more recently, a culturalistic outlook prevailed. Only now, with the advent of the Anthropocene in the course of which we are encountering emergent events which are problematizing our familiar world, both in social life and in social theory, are we compelled to expand and deepen our perspective so as to be able to develop an innovative way of mediating between the old and the new and the past and the future. Irrespective of their differences, all the theorists who have ventured statements on agency since the upsurge of interest in the concept some four decades ago have without exception remained beholden to sociologism and/or culturalism. Leaving aside older writings, two examples of relatively recent contributions that advance claims to a comprehensive treatment of the concept bear this out. Neither of them appreciates the need for the expansion and deepening of the timescale of social theory and, thus, for broadening the understanding of agency enforced by the transition to the Anthropocene.

Mustafa Emirbayer and Ann Mische (1998: 1012, 963) present their extensive article as the only study that 'radically reconceptualized' agency and dealt with it in its 'full complexity'. That this is an exaggerated claim, however, is confirmed by their befuddlement in the face of Mead's inclusion of references to the physical, biological and evolutionary aspects relevant to a temporal theory of agency and their consequent incomprehensible exclusion of them on the grounds of their being 'metaphysical' (1998: 969). Against this it should be insisted that not only is agency a capacity rooted in the human organic and cognitive endowment which had been evolutionarily acquired in a physical environment, as Mead (1959) recognized in his combining of Newton, Einstein and Darwin with Kant, but it is also manifest in humans in so far as they are part of nature and a factor in it which exerts itself as a geophysical and biomorphic force, as evidenced by the emergence of the new geological epoch.

Barry Barnes, unlike Emirbayer and Mische, does appreciate in his campaign against individualistic notions of agency such as Roy Bhaskar's and Anthony Giddens' that there is continuity between nature and the sociocultural world. Accordingly, he describes his position on one occasion as 'uncompromisingly monistic naturalistic' in the sense that human agency and behaviour have 'causal, "biological" antecedents' (2000: 151, 80). But on another, he qualifies it as 'a sociological version of compatibilism', which implies a commendable moderation of strong naturalistic monism so as to allow room for the sociocultural world and 'members' own accounts of each other as free

agents' (2000: xi, 80). Since continuity for him means at most that 'human beings may be understood naturalistically as social creatures' (2000: ix), however, agency as a collective capacity is not considered in terms of humankind as a geophysical and biomorphic force operative in nature, but rather remains confined exclusively to the inherent sociability of humans in the sociocultural world.

With the shift to the Anthropocene, the continuity between nature and the sociocultural world and their mutual implication is the crucial insight from which an analysis of agency has to start. The realization has dawned now that human agency is operative not only in the sociocultural world, but also in nature. Humans exercise their agency in a number of different temporal contexts through different activities by means of which they simultaneously activate a variety of relations. By engaging in activities in the sociocultural world, they are simultaneously exerting their agency in nature as well as in relation to themselves as subjects. Ever since they have succeeded in extrapolating certain potentials encapsulated by their evolutionarily acquired capacities and developed and honed them into potent competences, they have been busy, however modestly for a considerable period, on the level of natural history, through their participation contributing indirectly to the evolutionary emergence of various structures. Today, the altered stratigraphic and species profiles of the planet stand as a monument to this natural historical agency of theirs.

Human agency in the sociocultural world exhibits unmistakable signs of the pervasive impact of nature, whether natural or biological processes and cycles, through different types of activities and their modulation and phasing as well as through numerous organizational features of social life. Leaving aside the correspondence between agentic brain modules and the range of activities engaged in, there is the social-theoretically important matter of the universal elementary social forms that humans through their organic and cognitive endowment have in common with their evolutionary ancestors and neighbours and which provide templates for typical activities and their institutional and organizational forms. Among them are, for example, socio-ecological forms like kinship, dominance, deference, subordination, cooperation, rivalry, competition and conflict (e.g. Jackendoff, 1999; Kaufmann and Clément 2007); and coordination forms like attending, comparing, relating, combining, ordering, counting, interacting, evaluating and judging (e.g. Piaget 1983). To the extent that such forms are enabling by making available a range of capacities, they are directly related to agency. But in varying ways they can simultaneously also be and indeed are constraining, even to a debilitating degree – such as, for instance, natural social dominance being turned into authoritarianism, illegitimate power, discrimination, repression, extra-judicial use of force, genocide

and so forth. This is where the possibility and the need arise to enlarge naturally endowed agency by extrapolating the dormant potentials of capacities, critically if need be, and developing them into socioculturally endorsed, human-specific competences in tune with the sustainability imperatives of their Anthropocenic conditions.[5] This is where the social-scientific task of critique (Strydom, 2011) finds its most basic foothold.

In the sociocultural world, however, agency is most immediately manifest at the level of historicity – the process of the creation, production or construction of that form of life. It is due to both its centrality and high visibility that this process of becoming is the focal point of many a social theorist when explicating agency. Not only is it the seat of social and historical time, but also of social and historical action. In locating his argumentation in the domain of humans living and acting together in a shared form of life, Barnes for example is emphatic that the key problem of sociology is collective agency. His focus is thus trained on inherently sociable actors who engage in social interaction in the medium of which they relate and mutually affect each other, while being necessarily actively oriented toward collectively accepted norms and rules which, nevertheless, leave them scope for freedom and initiative in the generation of all the defining features of their intersubjective world. To grasp agency, therefore, sociology has to make intelligible how sociable humans as responsible actors who relate to shared norms and rules engage with their environment through their inherited knowledge. By means of their temporal theory of agency schooled on the pragmatist model, Emirbayer and Mische are able to provide more analytical detail regarding agency at the level of historicity. By thus effectively differentiating and suggestively pointing toward a plurality of actors who draw differently from their organic endowment and consequently manifest different and even competing agentic competences, they in principle mitigate Barnes' typical sociological tendency to over-emphasize collective agency. Synthesizing different theories of agency, they identify routine, purposiveness and deliberation/judgement as the three moments comprising the process, while these moments are then seen as being modulated by the actors' variable orientations to the past and future from within the present. Depending on the agentic orientation toward time, different outcomes emerge: the enactment of past-oriented habitual schemata contributes to the reproduction of conditional factors; devising a future-oriented imaginative projection allows disburdening of the past, critical reflection and the identification of alternative possibilities; and, finally, practical engagement in the present through deliberation about possible avenues to follow and evaluation of their feasibility creates opportunities for judiciously and effectively working through the contingencies collectively faced in the concrete situation.

In the case of the sociocultural world, however, agency can by no means be conceived exclusively with reference to the process of creation, production and construction of that world alone. There can be no doubt about the fact that the traditional social-theoretical focus on a plurality of socio-culturally different actors who drive the historical-constructive process through their interaction, competition, contestation and conflict as well as learning, alignment and cooperation must and will retain its central analytical importance. But now under the currently emerging conditions, historicity has to be appreciated as being embedded in a set of relations that involves the remaining two infinite processes, natural generation and subject-formation, as well as the cumulative emergence and evolutionary stabilization of commonly presupposed rational properties generated by those processes. Thus it has a relation also to the structures formed as concomitants of those processes. Put in terms employed earlier, agency has a connection with both convergent and divergent series and, importantly here, with the respective limit concepts punctuating them (see Figure 1). This means that agency, which itself of course features the type of organically rooted cognitive structures or schemata characteristic of the subject, must be regarded in its relation both to cultural models constructed at the immanent level and to the cognitive order which becomes stabilized at the meta-cultural or transcendent level. Cultural models concern structures that are equivalent to the limit concepts punctuating the three infinite processes of becoming – which means the models of the Anthropocene, of a democratic-cosmopolitan world or global society and of a cognitively fluid subject. The evolutionarily stabilized principles of the cognitive order – for example, truth, right and truthfulness – represent structures that are equivalent to the limit concepts of the three concomitant accumulation processes which, in turn, provide the parameters of the cultural models. On the one hand, agency as a set of enabling structures or capacities makes possible the competences, actions, practices, social interaction, competition, conflict, discourses, evaluations, judgements, selections, decisions and institutional and organizational moves that give rise to the cultural and meta-cultural structures and thus it contributes – albeit indirectly – to them. But on the other, the competences, actions, practices and so forth enabled by agency, and thus agency as a set of capacities itself, are both incursively structured and recursively regulated by the cognitive order [6] and, mediately at the lower immanent level, by cultural models – structures toward which agency is reflexively oriented.

The distinction between cultural models and the cognitive order, although theoretically absolutely crucial, is nowhere clearly made in the relevant literature due to the prevalence of undifferentiated and opaque talk of patterns, symbols, structures, norms, values and rules. And nowhere, further, is this distinction linked in any remotely precise manner to the corresponding features of the agentic

subject oriented toward and relating to those structures. Nevertheless, Barnes' position is worth mentioning – not, however, because of distinguishing between 'socially functional values and norms' and 'universal moral imperatives of which we are transcendentally aware' (2000: 22) in criticism of Parsons, which comes as a total surprize since it makes no sense in the context of his version of naturalism and insistence on empiricism. In general, he regards structures not as aggregates of similarities between individuals as in rational choice theory, but rather as collective accomplishments that have been achieved as agreements overcoming differences through social interaction in which the participants mutually affect each other. Of particular interest, however, is his account of structure in terms of the 'delocalised phenomenon…[forming]…a persistent macro-pattern…[which goes]…unremarked by members…[and]…is manifest…[in]…the distribution of knowledge across the collective as a whole' (Barnes, 2000: 150-51). In fact, he approaches the matter still more closely for, rather than simply knowledge, it is a question also of 'those very elements of their [i.e. the members'] awareness that constitute their knowledge' of structure (2000: 150). Barnes obviously lacks the appropriate concept to designate these elements, but they are actually the cognitive properties or structures that can be found in the heads of the members as basic to agency, in immanent cultural models and in transcendent cognitive order principles, and are constantly mediated through this threefold framework.

As regards the study of the relation of agency to cultural models and cognitive order principles as well as of the incursive structuring and recursive regulating of agency and its entailments by these models and principles, then, the focus needs to be on those cognitive properties or structures that mediate agentic subjects or actors, conventional culture and meta-culture in the course of the temporally unfolding process. Substantively, such an analysis dealing in particular with what takes place on the temporally unfolding historical-constructive axis would obviously require the type of weak-naturalistic, cognitive-sociological approach with a critical capacity (Strydom, 2011 and 2015a) that has been suggested in the foregoing. Indications of an analysis of this type have been offered above by way of references to a plurality of different actors, orientations and engagements; competition, contestation and conflict; social interaction and discourse; learning, alignment and cooperation; limiting, debilitating and deforming elementary natural social forms; the constructive generation of a variety of options, selection from among them, decision-making, institutionalization and the organization of sociocultural life; and, cognitively crucially, both the positive and negative incursive and recursive effects of cultural models and cognitive order principles. In the present context, however, it is clearly not possible to attempt to give even an outline of such a complex analysis.[7]

Conclusion

Recently, under changing conditions of existence, humans discovered themselves to be a natural category – part of and a force in nature. In response, they have begun to reflect on and re-articulate their commonly taken-for-granted cognitive presuppositions in a way that facilitates the construction of new directing and guiding cultural models of nature, of their sociocultural world and of themselves as agents. Being inseparable from nature yet able to transcend it in certain significant respects, the human species is neither just a natural category nor the matrix or the filter of nature, but through its sociocultural character rather central to the mediation of nature.

For them, the word or material sign, 'the Anthropocene', iconically signifies a new field of concern. What it more precisely signifies, the object of reference, embraces, on the one hand, deep time, natural history, evolution, global warming, climate change, time-rock and the new geological time interval; and, on the other, the cognitively structured cultural models of a species recognizing that it has to take responsibility in its social and historical engagements for being a force of nature clothed in sociocultural garb – that it has to commit to sociocultural self-creation to secure its conditions of existence as a natural category. Beyond the word and the object of reference, the ultimate signification, which incorporates a trace of the object, is the in principle intelligible concept of the Anthropocene. This concept affects the sign-interpreters in a number of different yet interrelated ways – not only logically through its linguistic and logico-numerical presuppositions and formation, but simultaneously also emotionally, as evidenced by the heated debates surrounding it, and pragmatically so that it is employed for a variety of different, even competing and conflicting purposes by scientists, environmentalists, change activists, business executives, politicians, the disadvantaged, the poor and both cautious and incautious thinkers, including social theorists.

The problem facing humankind today and in the following number of years is, first of all, to get the logical, emotional and pragmatic responses to the concept of the Anthropocene in more or less harmonious alignment.[8] Without such a collective learning achievement gained through competition, conflict, interaction, discourse, deliberation, evaluation and judgement, no selection and decision leading to the construction of a proper set of mutually supporting cultural models necessary for institutionalization and the associated organization of society will be forthcoming. For such alignment and construction, the activation of the dormant potentials of the as yet only partially mobilized cognitively fluid mind will be necessary. This implies overcoming certain barriers to the free flow of the cognitive properties mediating between heads, cultural models and cognitive order

principles. To be sure, the first step toward such elimination of barriers has already been taken with the currently widespread insight into the misleading quality and destructive consequences of the separation of humans from nature. Whereas the imposition of this separation on the sociocultural form of life hitherto led to a hierarchical form of organization of social life which resulted in wasting the majority of capacities and talents, the lifting of barriers would enable the maturing of human agency – the extrapolation of human capacities and the mobilization of all talents as well as the releasing of wealth and power resources from their monopolistic confinement for the purposes of the development of the full range of competences called for by the emerging Anthropocenic form of life.

If social theorists manage to appreciate that their own agency is implicated and take seriously the new field of the sociocultural self-creation of a natural category, then it would sooner or later dawn on their minds that a weak naturalistic assumption regarding the continuity of nature and the human sociocultural world is unavoidable and, further, that a cognitive theoretical perspective possessing a critical capacity is required to come to terms with the – in many respects uniquely human – sociocultural mediation of nature.[9]

Notes

[1] Compare Habermas (2003) on weak naturalism with which he pairs epistemic realism.

[2] Habermas' (1984) theory of formal pragmatics follows this same line, but as I have argued elsewhere (Strydom, 2015a and In press) it has to be transformed both cognitively and sociologically.

[3] For an example of the analysis of the formation of a cultural model, see Strydom (2012).

[4] Unlike Kant's ideas of reason, the cognitive order principles share the dynamic nature of all things, whether natural, social, cultural or individual. However, there is no direct relation between history and those principles since their temporality is of an evolutionary kind instead.

[5] The first law of the social sciences, as it were, is as follows: 'The broad history of the evolution of learning seems to have been a slow pushing back of genetic determinism to levels of a higher logical type' (Bateson, 1973: 278).

[6] This notion is important for understanding social structure in distinction to cultural structure. Incursive structuration and recursive regulation or 'transcendental indexing' opens a 'space of placement' (Badiou, 2009: 6), such as for example the modern class structure, and not only a 'space of reasons' (Habermas 2003: 132).

[7] For the theoretical-methodological specification of such analysis as well as examples of substantive analyses, see Strydom (2012, 2015b and 2015c).

[8] Perhaps, the Paris agreement of 12 December 2015 at COP21 involving 195 nations may be regarded as a first step toward such harmonization.

[9] Human uniqueness is captured by the cognitive metaproblematic: that something belonging to the world is nevertheless able to take distance from, develop a perspective on, assume any of a number of relations to, and engage with the world.

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