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Authors	Strydom, Piet
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On the Origin of the Left-Hegelian Concept of Immanent Transcendence: Reflections on the Background of Classical Sociology

Piet Strydom University College Cork, Ireland

Abstract

This article pursues the question of the origin of the left-Hegelian concept of immanent transcendence that emerged in the 19th-century. Whereas some contemporary critical theorists apparently understand the concept as deriving from a religious origin, evolutionary and historical considerations would seem to indicate that more might be involved. Evolutionarily, the origin of the concept can be traced to the civilisation-founding cognitive achievement that marks the emergence of the current version of the human species and the concomitant cultural explosion during the Palaeolithic period. In this context, the cultural consolidation of the newly acquired metarepresentational capacity by language and visual symbolisation or art preceded religion by a considerable elapse of time. As one among a number of sociocultural practices, it could only have made a partial contribution to the conditions for the emergence of the concept. Historically, the thought of the key 19th-century left-Hegelians Marx and Peirce was fundamentally shaped, not by religion, but rather by the core modern innovation of the 17th and 18th century – the new mathematical-scientific-philosophical understanding of infinity as real – which gained primacy by significantly impacting on relevant late 18th- and 19th-century intellectual developments, including laying down the parameters of classical social thought in general and left-Hegelianism in particular. Since the competing religious understanding of infinity, despite having left traces on modern validity concepts such as truth, justice and truthfulness, remained shrouded in indefinite incomprehensibility, it could at best continue to play only the role of an identity-securing, identitycultivating and motivational source for some, not all. As such, it did not contribute to the 19thcentury left-Hegelian concept.

Keywords

Habermas, Honneth, infinity, left-Hegelianism, Kant, Marx, modernity, Peirce, religion

Introduction

An important outcome of certain contributions by Jürgen Habermas (1992, 1999a, 2002) and Axel Honneth (2007) in the late 1980s and 1990s was the insight that immanent transcendence is the key meta-theoretical concept of the left-Hegelian tradition.¹ This understanding was reinforced by the debate between Nancy Fraser and Honneth (2003) in the early years of the 21st century. A major step in grasping the key status of the concept is the appreciation that it stands for the metaproblematic of left-Hegelianism insofar as it provides the overall framework for its principle of practically available accumulated rational potential. Relevant in the present context is that the concept in general reflects the basic conceptual parameters that shaped the context in which classical sociology emerged. In a nutshell, it refers to a process with two moments in which historical-constructive activities and their products are given form by structures that had been generated previously by such activities and have become stabilised for the time being, leaving open the possibility of tension and conflict between the two moments which need to be practically worked through. Despite the fact that the relation between immanent transcendence and left-Hegelianism was discussed at some length in the course of the Fraser-Honneth debate, however, much remains to be clarified if this concept and its significance are to be adequately understood.

One of the issues that needs to be aired is the question of the origin of the concept. Giving attention to it provides an opportunity to reflect, besides the interface between the concept and left-

Hegelianism as a form of classical social thought, also on the interesting connections linking this metaproblematic to the human cognitively fluid mind and the related metarepresentational capacity as well as to sociocultural phenomena such as language, art and especially the core modern innovation reflected in mathematics, science and philosophy. If this sounds like an uncontrollable proliferation, a survey of these apparently rather diverse connections is actually necessary for an understanding of the origin of the concept. Considering the extant literature, however, these connections are made invisible by what comes across as a widespread, if not the standard, assumption about the origin of the concept of immanent transcendence – that it is of a religious origin. Heeding Adorno's (1970: 480-81) warning that the search for origins and claims to having found it typically eventuate in unacceptable ontologisation, the concept is treated here in terms of evolution and history as a particular cognitive cultural structure that has become identifiable only in the 19th century on the basis of general conditions which had been established far back in the past.

Honneth's claim and Habermas's suggestions

In his argument presented in the debate with Nancy Fraser that 'transcendence within social immanence' is the key concept of Critical Theory properly understood, Axel Honneth submits that, although associated with the left-Hegelian tradition, it is 'of religious origin' (2003: 244). In contrast to this emphatic statement, it is uncertain precisely what position Jürgen Habermas adopts on the matter. His reply from 1988 to papers delivered at a Chicago theology conference was presented under the title of 'Transcendence from Within, Transcendence in this World' (2002) – a title which indicates, in keeping with his characteristic postmetaphysical position, that he does not consider locating transcendence in a world beyond the human one. But being aware in detail of the Christian baggage carried by classical German philosophy, he writes as follows: '[P]hilosophy...understands itself as the critical appropriation and transformation, as the assimilation of essential religious contents into the universe of rational argumentation. This Hegelian self-understanding of philosophy has not been abandoned by Hegel's materialist students either and lives on in particular in Bloch, Benjamin and Critical Theory' (2002: 73).² The core Christian aspect Habermas (1974: 147) has in mind is the ideational complex of 'the dialectic of the moral relationship' which he explicates with reference to Hegel's Spirit of Christianity - precisely the same schema Honneth (1992) follows insofar as he allows his thought to be guided by the Hegelian idea of 'the struggle of recognition'. According to this model, the destruction or revoking of the moral totality of an intersubjective relation calls up a causal force that strikes the perpetrator in the form of torturing guilt which can be assuaged only by reconciliation. The strongest suggestion that Habermas (1987: 77) might well consider the concept of immanent transcendence to be of a religious origin, however, comes from his thesis of 'the linguistification of the sacred' which is a communication-theoretical extrapolation of Durkheim's (1976) view that the sacred is the original source of the categories of thought and their authoritative validity.3 Some ten years later, Habermas (1999a) repeated this genealogy of moral authority, but in a tightly controlled philosophical manner which, among other things, censures any vestige of moral realism in the sense of the assumption that it is society that imposes the moral point of view on us. Here, too, one gets the impression as though he does accept that the concept of immanent transcendence has a religious origin.⁴

The leading left-Hegelian among Hegel's materialist students is of course Karl Marx, in whose case the reference to religion fits rather uneasily (Marx and Engels 1955). Yet, Habermas obviously takes it that, due to the weight of tradition, he was in the same boat as his successors who could not escape at least some religious influence. While this observation could be interpreted as suggesting that the concept of immanent transcendence has a religious origin, Habermas does not harden it into such a claim. Another almost parallel case is that of Marx's contemporary left-Hegelian, Charles S. Peirce, the mathematically, scientifically and philosophically schooled American pragmaticist in relation to whom Habermas (1992: 103) explicitly relates the concept of immanent transcendence. There, however, the context of his discussion is the epistemological one of inferential relations in

which a reference to something necessarily presupposes the projection of 'a "transcendence from within" in the sense of being compelled to have recourse to a general concept beyond the object or aspect of reality being referred to. 5 Reflecting on these two representatives of the left-Hegelian tradition, one gets the sense that the story of the origin of the concept of immanent transcendence might be more complicated than it appears from Honneth's position and, perhaps too, from Habermas's various suggestions. On the one hand, it is undoubtedly the case that Hegel's philosophy was infused with Christianity – as well as more than just a smattering of Buddhism (Dumoulin 1981) not mentioned by Habermas – and that leading first-generation members of the Frankfurt School such as Max Horkheimer and Theodor Adorno retained a core Judaic element in their thought. 6 But the question of the 19th-century left-Hegelian position remains. On the other hand, it is the case that what Habermas calls the dialectic of the moral relationship is by no means the preserve of Christianity, nor even is it the monopoly of religion as such. He himself admits that much by discussing the vicissitudes of this relationship, like incidentally Hegel too, in the universal terms of the bond between two lovers. In fact, later he also refers to the Hegelian theme of 'the relationship of the one-sided recognition of the master by the slave' (Habermas 1974: 161) which was of course particularly important to Marx and not overlooked by Peirce either. Then there is also the question of whether Habermas's claim that it is 'the sacred' that had been linguistified could be upheld in the face of contemporary cognitive science research as well as of his own assumptions.⁷

In contrast to the emphasis on religion, accordingly, a little investigation brings the deep-time background of the concept of immanent transcendence to the fore, not only an historical one, but also an evolutionary one, which cannot simply be squared with religion. Historically, the intertwinement of philosophical and mathematical thought since Plato and Aristotle on which religion and theology subsequently piggy-backed for a considerable period sheds illuminating light on the left-Hegelian concept of immanent transcendence. But it is from the evolutionary perspective that it becomes apparent in the first instance that the conditions for the emergence of the concept had been laid down originally with the first civilisation-founding act of many millennia ago. Considering religion in relation to this cognitive-cultural founding act, it is abundantly clear that it is a later development which, moreover, presupposed the much older human social intelligence, took advantage of it once it had become linguistically and symbolically enhanced through pre-religious social practices and then, in its own way, embodied and partially took over its potential, but since early modernity had to cede its dominant cultural position once again to the cognitively fluid general social intelligence articulated symbolically, linguistically and numerically.

The evolutionary origin

The origin of the concept of immanent transcendence can be traced back to what in the relevant literature is known as the Middle/Upper Palaeolithic transition of 60,000-30,000 years ago, particularly to the 'Human Revolution' (Stringer 2012: 116; Tomasello 1999) and the concomitant 'cultural explosion' (Mithen 1998: 172) or 'creative explosion of culture' (Wilson 2012: 85). During this period, presupposing the previous enlargement of the brain, 'the final major re-design of the mind' (Mithen 1998: 174) occurred which eventuated in a flexible multi-modular intelligence or cognitively fluid mind, thus endowing humans with a 'metarepresentational' (Sperber 2000) capacity. Observable at this stage is the natural and sociocultural co-evolution of the brain-mind in the increasingly complex social environment.8 The evolution of language itself was vital to this extraordinary advance in the evolution of the mind. Enabled by the organic cognitive endowment, particularly the language faculty, and having been preceded by millennia of simple vocal articulation, it emerged approximately 70,000 thousand years ago (Jackendoff 2007; Wilson 2012; Tomasello 1999) when the thus far exclusively social language started to become extended to incorporate also references to physical and later to technical domains and, thereby, to evolve into the general purpose language we are familiar with today (Mithen 1998; Jackendoff 2007; Dunbar 2014). The role of music in the evolution of language should not be forgotten either (Cross 2001). The biopsychological centre of this whole complex which activates and articulates its fluidity or flexibility is occupied by the 'working memory' (Wynn and Coolidge 2011) unique to contemporary *Homo sapiens sapiens* whose members are able to grasp at least five orders of meaningful structure (Dunbar 2014). Building on these outcomes, a big bang followed which in a series of sparks laid down 'the origins of the universe of human culture' (Mithen 1998: 172). The most significant initial outcome of this co-evolution was the conscious awareness, underpinned by the language-mediated metarepresentational capacity, of a distance between humans and their world. This event turned out to be nothing less than the most basic founding act of civilisation. At least intuitively, humans from that moment on understood themselves as simultaneously being part of the world, yet able to take a distance from the world, to adopt a perspective on the world, to establish a variety of different relations to the world and, on that basis, able to act upon the world – what may be called the cognitive metaproblematic.

Having been opened by the imposition of a reflexive distance between humans and their world, the first consolidating move of the cultural explosion was the achievement of a new cognitive process dependent on the flexible or fluid mind that took the form of 'visual symbolization' (Mithen 1998: 185) or art. In respect of this development, the famous collector, art historian and theorist Aby Warburg made the following stunning statement: 'The founding act of human civilisation can be described as the conscious creation of a distance between itself and the external world; when this in-between space became the substrate of artistic form-giving, the conditions were fulfilled for this consciousness of difference to be stabilised as a permanent social function'.9 Henceforth, then, the function of art10 has been to socioculturally reproduce and thereby maintain the most basic humandefining cognitive achievement. It is this civilisation-founding cognitive-cultural achievement of the Palaeolithic period – namely, the continuous accomplishment and permanent sustaining of the distance between humans and the world and, thus, enabling engagement with the world - that can be regarded as the evolutionary origin of the concept of immanent transcendence. Indeed, if this is acceptable, and from palaeontological and cognitive science (e.g., neuroscience, cognitive biology, evolutionary psychology, cognitive archaeology) evidence it seems it is, then it would follow that this concept coincides exactly with the cognitive metaproblematic in the sense of the whole complex issue of the transcending reflexive relation that humans as part of the world maintain with the world. 11 Given the diversification entailed by the cultural explosion, however, it is certain that during the following millennia the reproduction of this achievement was no longer entrusted solely to art. The conditions for the emergence of a general concept of immanent transcendence were provided by a variety of culturally structured social practices, including religion.

The interpretation of the origin of the concept of immanent transcendence Honneth offers and Habermas seems to suggest is obviously problematised by this broad evolutionary perspective supported by Palaeontological and cognitive science research. If not entirely wrong, it is undoubtedly selective and thus one-sided. The original primitive strands of what after the elapse of millennia came to be bundled as religion, while presupposing the social intelligence, ¹² were stimulated by and capitalised on the language-mediated phylogeny of the human mind and the cognitive achievement of visual symbolisation and, thus, the unified form followed their emergence only much later. The more structured forms of music and dancing which came in the wake of visual symbolisation preceded the emergence of religious ceremonies and rituals (Wilson 2012). When art first appeared between 40,000-35,000 years ago following an extended period of groping experimental activity, it took a naturalistic style imitating realty and had a magical purpose serving both the hunting of animals and defence against other humans, and it continued in this vein for millennia (Hauser 1951; Wilson 2012; Dunbar 2014). Toward the end of the Palaeolithic, naturalistic art gradually started to assume conventional features such as simplification and stereotyping of contours which opened the way for the geometrical art style of the Neolithic (Hauser 1951). Such strands as burial and trance states which subsequently would come to be taken as characteristic features of religion had already been present in the Middle Palaeolithic, but at that stage there was

still a complete absence of worship cults. The caves in France and Spain such as Chauvet, Lespugue, Cosquer, Lascaux and Altamira where the art of the time including magnificent masterpieces were discovered, for example, served as shelters for human bands and not as proto-churches (Wilson 2012). Different sets of conditions, first hesitantly taking shape in the Upper-Palaeolithic, were necessary before any further development could take place. It was only once the cognitively fluid mind mediated by a general purpose language had been available that assumptions and knowledge about different kinds of entities could be combined or mixed, such as for example the complementary phenomena of the attribution of human characteristics to natural phenomena in anthropomorphism and the embedding of human individuals and groups in nature in totemism. And it was only once naturalistic art had symbolically focused the conceptual component isolated by language and became an established practice symbolically releasing a range of cognitive properties that assumptions about non-physical beings, the survival of a person's non-physical component and death as a transition to a non-physical realm could emerge. 13 Only this late could the distinction between the sacred and profane as a particular socioculturally mediated manifestation of the metarepresentational capacity take effect. But even then, one can hardly at this relatively early stage speak of religion in the conventional sense of an ideational and, indeed, ideological complex on the basis of social relations fused by ritual practices, since for any consolidation of the relevant strands into some kind of a whole on a social basis required a shift to the more organised form of social relations that is associated with the appearance of agriculture under Neolithic conditions from around 10,000 years ago.

This brief overview reveals that the conditions of the concept of immanent transcendence are to be sought in the evolutionary acquisition of the cognitive capacity for metarepresentation and its reproduction by a variety of culturally structured social practices,¹⁴ including from engagement with objective reality, through language, art and music, to religion¹⁵ and social organisation. To account for the emergence of the modern, specifically left-Hegelian, concept of immanent transcendence and thus to further qualify the assumption from which Honneth and, perhaps, Habermas too proceed, an equally condensed account of the history behind the concept is still required.

The historical background

The shortest and most profitable route to an historical account of the emergence of the left-Hegelian concept of immanent transcendence is to concentrate on the core modern intellectual innovation which had a thoroughgoing and broad-ranging impact by the 19th century. It is to be found in the revolutionary idea of real infinity introduced in early modernity which can be made intelligible by reference to the mathematical-scientific-philosophical line of thought (Strydom 2017). Presupposing the earlier achievements of other civilisations, this tradition had been inaugurated by the ancient Greeks, was interrupted during the 2000-year dominance of religious thought, in particular Christianity which appropriated and monopolised the central idea cast in the mould of an imaginary totality of ultimate reality, and was finally recuperated to great effect during the revival of learning in the Renaissance and developed in the 17th, 18th and 19th century. It was in the latter context, which witnessed tension and even conflict and unspeakable violence between the representatives of faith and the new learning, where the ancient and medieval problem of infinity was radically transformed and for the first time properly grasped rather than diverted and sequestered in an imaginary projection.

Aristotle created a philosophical precedent by raising the question of 'infinity' in his *Physics* (2015: Book VII, Part 8; Book III, Part 6) where he conceived it as a continuous sequence which could be understood as going in two different directions: as 'complete infinity' in the sense of all the elements of a sequence taken together in their completeness or totality, and as 'potential infinity' in the sense of a never-ending progression tending toward the realisation of its inscribed potential. In his *Metaphysics* (1961: 32), in addition, Aristotle introduced also the complementary concept of 'limit'

to denote the last point of each of these sequences. It is not this ancient Greek position that directly informed the left-Hegelian concept of immanent transcendence, however, but rather a radicalised version that was developed in the wake of the revival of learning and the associated flowering of modern mathematics, science, engineering, perspective painting and philosophy. The starting point for these developments was provided by the renewal of mathematics and the Copernican revolution which Galileo as well as Newton and Leibniz continued consequentially, all of which impacted centrally on Kant and by extension on Hegel and 19th-century thought.

Spearheading the radicalisation of Aristotelian science for which he, like Giordano Bruno, was made to pay a heavy personal price, Galileo (Galilei 1967; Körner 1968; Dantzig 2007) first rendered complete infinity, which for Aristotle was a logical impossibility, thinkable through his epoch-making method of idealisation which entailed the imposition of a limit on infinity in its totality. Assuming Catholic culture's ingrained resistance against radical intellectual innovation in the wake of the condemnation of Copernicanism, the Inquisition took exception to this form of idealisation since the implicated notion of infinity and the audacity of imposing a limit on it undercut the Christian idea of infinity and, hence, potentially the dominance of the Church. Galileo's feat was followed by Cavalieri, Wallis, Newton, Huygens and Leibniz (Leydesdorff 1994; Dantzig 2007; Alexander 2015; Wootton 2016) who capitalised on the notion of a finite limit to potential infinity in order to create the mathematical branch of calculus - something they did by harnessing the process of trying to approximate a given finite value through the execution of infinitesimal steps while the potential tends toward infinity. 16 The honour for this achievement, which both Newton and Leibniz claimed, came at the expense of the concerted yet abortive attempt of the Jesuits over decades to quash the then so-called 'doctrine of indivisibles' according to which any continuous magnitude, whether a line, a surface or a length of time, is composed of distinct infinitely small or infinitesimal parts. Tellingly, the campaign of the Society of Jesus was motivated by their motto legem impone subactis (impose your rule upon the subjects!) which was symbolised by its coat of arms depicting the female figure of Theology on a throne dominating her servants Philosophy and Mathematics at the ready to receive and obey her every command (Alexander 2015).

In collaboration with some of the early modern mathematicians and scientists, such founders of perspective painting as the engineer Brunelleschi and the artists Alberti and Dürer (Panofsky 1955; Wootton 2016) grappled with the very same problems Galileo, Newton and Leibniz tackled, as is graphically apparent from how they dealt with the framing of a scene, on the one hand, and the construction of the perspectival vanishing point, on the other. Not only the outer parameters suggested by mathematics, but in particular the idea of zero originally introduced by Hindu mathematicians (Dantzig 2007; Wootton 2016; *Guardian* 2017) also proved vital for this pictorial innovation. Lacking the number zero which Fibonacci introduced into Europe in 1202 under Arab influence, the correlating idea of a perspectival vanishing point would not have occurred at all. On the whole, then, these are the mathematicians, scientists, philosophers, engineers and artists who eluded the dogmatic restrictions imposed by theologians in the name of religion to create the conditions for the mathematical and philosophical achievements of the late 18th- and early 19th-century from which the left-Hegelian concept of immanent transcendence arose.

The intellectual ecosystem in which the left-Hegelians grew up and matured was certainly populated by Christian-infused philosophical ideas, such as Hegel's stressed by Habermas, and more generally it is also the case that Christian thought historically contributed to the formation of ideas which became defining of modernity. The notion of real infinity advanced on the back of Galileo's epochmaking idealisation entailed, however, both the simultaneous incorporation, cancellation and downgrading of religious ideas¹⁷ and the generation of modern validity concepts and ideals that respectively possess universalistic and general significance in principle free from religious content. Besides Christian ideas, then, entirely different ones gained prominence. Chief among the

alternative ideas that underpinned the validity concepts and ideals and fundamentally shaped the context of the left-Hegelians were significant interrelated mathematical, scientific and philosophical breakthroughs which more than just chipped away at the religious baggage of thought.

Already in the 17th and 18th century, mathematicians had a sense of real infinity in terms of the distinction between what came to be called a 'divergent series' and a 'convergent series', each with its own limit or 'nth term' representing a general concept (Dantzig 2007: 150-51; Nelson 2008: 399). Ratifying the significance of preceding breakthroughs, in the 1820s the French mathematician Augustin-Louis Cauchy (Dantzig 2007; Nelson 2008) put the spectacular attainments of Galileo, Newton and Leibniz regarding real infinity on a secure footing by confirming the cogency of the distinction between complete and potential infinity in terms of the concept of limit. What he demonstrated was that the two series differed significantly – the former implying the limit of a sum and the latter the limit of a ratio. Continuing this tradition, the German mathematician Karl Weierstrass contributed to bringing still greater rigour along these lines into 19th-century thinking. Decisive for the 19th-century intellectual context, however, was how this radical distinction had been appropriated in philosophy in the late 18th century and extended to social thought. Central here was Immanuel Kant (1968: B xi-xii, xvi) who not only admired the revolutionary success of mathematics and science, but sought to emulate it by making his own Copernican revolution. Just how influential the mathematical distinction and its uptake in philosophy were can be gauged from their conspicuous impact on 19th-century thinkers of such widely divergent persuasions as, for example, the positivist founder of sociology August Comte¹⁸ and, relevant in the current context, the left-Hegelian classical sociologist Marx and the left-Hegelian pragmaticist Peirce. As for Marx (1974, 1967) and Peirce (1992, 1998), their writings where they reflexively display their mode of thinking are replete with conceptualisations and formulations, as briefly illustrated below, that are undoubtedly in line with the philosophically digested mathematical distinction. The German Idealism of Kant and Hegel provided the basic conceptual structure of the left-Hegelianism of both Marx and Piece. While Marx studied Kant before turning to Hegel, Peirce grew up in a mathematical and scientific world but studied Kant throughout his life and appropriated Hegel in certain central respects.

Although Kant is at times criticised for not having been competent in mathematics, some forty years before Cauchy he had already explicitly grasped the philosophical significance of his predecessors' revolutionary treatment of the problem of infinity. Besides the homage paid to Copernicus, Galileo and Newton (B xi-xii, xxii), this is borne out by his reformulation of it as the distinction between what he called the 'ascending series...on the side of the conditions' and the 'descending series...on the side of the conditioned' (1968: A 331-2=B 388-9). Each of these he moreover saw as having its own type of general limit concept – an imagined 'totality' (1972: 93) *qua* 'idea[s] or concept[s] of reason' (1968: A 320=B 377) or validity concepts in the former case, and 'ideals', 'models' or 'examples' (1968: A 569-71=B 597-99; 1956: 151-2) or achievement concepts in the latter which are in principle unrealisable since their potential, which can only be approximated, keeps on stretching into infinity. It is this crucial context-setting distinction which Kant had made philosophically intelligible and compelling that came to pervade German Idealism from which left-Hegelianism emerged, but not before Hegel's ambivalent treatment of it inspired and spurred on his left-leaning students.

Adopting a Christian standpoint enriched by Eastern thought regarding 'nothingness' or 'emptiness', Hegel (2010: section 47, 62, 823; Dumoulin 1981) started from Kant's (1968: A 61=B 86) highly suggestive concept of 'dialectic' and the 'transcendental logic' which is built on the conceptual distinction between the two series with their limit concepts and harbours the dialectically interrelated inferential relations among an intuitive standpoint, a transcendental idea and an object without which neither judgement nor critique is intelligible nor action on that basis is possible. In contrast to Kant's philosophical reformulation of the revolutionary early modern mathematical-

scientific insight, however, Hegel's restoration-inspired conservatism compelled two negatively inspiring deviations. On the one hand, he clouded the transcendental dimension of complete infinity and associated general validity concepts by lowering it to the potential infinity of history; and, on the other, he repeatedly failed to unfold the dialectical process consistently so as to include a moment of practice or action that could interrupt the idealistic dialectical circularity. Correction of Hegel's dual lapse eventuated, first, in Marx (1974: 85-108, 1967: 19) and Peirce's (1998: 207, 401-2, 439) restoration of general validity concepts freed from their religious confinement; and, second, in Marx's (1967: 29) famous turning of Hegel 'right side up again' and in Peirce's (1998: 13-26) three-pronged semiotic theory of signs and inference and his related pragmatic maxim which, via ideas, leads to action. Positively inspiring for the left-Hegelians, of course, were both Hegel's (1966: 228-40) analysis of the dialectical process of struggle and conflict in the context of the relation of master and slave, which was not couched in the framework of religious thought, and his critical forays in the *Philosophy of Right* (1967: paragraphs 5, 201, 244 and addition 149) which opened a vista both on the basic division and pathologies of modern society and on steps beyond it.

The concept of immanent transcendence as exemplified by the writings of the left-Hegelians is embedded in the conceptual complex stemming from the mathematical-scientific-philosophical tradition, especially as distilled in Kant and historised by Hegel, as it became entrenched at the base of modern philosophy and social thought. In this complex, on the one hand, the idea of complete infinity encapsulates the transcendent dimension of necessary conditions stabilised by sociocultural evolution – namely the modern limit-setting validity concepts such as truth, justice and truthfulness – by recourse to which reality is rendered in principle intelligible, knowable and pursuable in the long run. Notwithstanding Christian thought's historical contribution, under the new conditions this conception of infinity was privileged over the 'indefinitely incomprehensible' (Peirce 1998: 439) religious idea of infinity. On the other hand, the idea of potential infinity captures the immanent dimension of the historical construction of society through action and praxis teleologically engaged in pursuing the fulfilment of particular ideals and goals. In this case, both Christian and Judaic ideas for many continued to function as identity-securing, identity-cultivating and motivational resources, although by no means being the exclusive future-oriented resources.

The representatives of 19th-century left-Hegelianism, not only Marx but also his contemporary Peirce, were thus provided with formal conceptual parameters which possessed a degree of clarity the irredeemably foggy and dogmatic yet vaguely inspiring religious notion of infinity could not possibly have done. And by bringing these conceptual means to bear on the social world, irrespective of whether from the perspective of radical transformation of the status quo, as in Marx's case, or of action aimed at creating a reasonable world, as Peirce envisaged, the left-Hegelians unambiguously grasped the dialectical immanent-transcendent dynamics involving the corresponding historical-genetic and evolutionary-structural dimensions. In contrast to a purely abstract understanding of these parameters and dynamics, to be sure, they moreover decisively seized the concrete embodied moment by means of the concept of praxis, in Marx's case (1969a: 197), and abductively guided responsible action, in Peirce's (1998: 133). And simultaneously, they recognised also the indispensable role of latency¹⁹ – the new that is yet to be born, in Marx's case (1967: 715), and feelings that are yet to emerge, in Peirce's (1992: 325-26).

When Marx (1974: 101, also 1967: 29) criticises Hegel for labouring under 'the illusion of conceiving the real as the product of thought concentrating itself', he is effectively taking him to task for remaining under the spell of the traditional religious understanding of infinity and, by implication, of the relation between immanence and transcendence. To correct Hegel it would be mistaken, he cautioned, to adopt the opposite approach of insisting on empirically following the historical-constructive process alone. Marx's dialectical counterproposal, which presupposed the 17th-century mathematical-scientific insight (Galileo) into the necessity of idealisation or 'abstraction' (Marx

1974: 85, 105, 1967: 19) and benefitted from the philosophical (Kantian) and perhaps not entirely consciously from the mathematical (Cauchy) clarity gained in the early 19th century, is therefore to take two axes into account instead: first, the 'real historical process' whereby 'rational categories' as the 'common element' become 'sifted out through comparison' carried by concrete activities; and, second, the axis topped by 'the most abstract categories' in which 'validity' inheres that have become established as 'belonging to all epochs'. While taking seriously the convergent historicalconstructive process following the arrow of time, Marx (1974: 85, 100-108, 1967: 19) accordingly stresses that the intellectual endeavour to grasp reality has to follow the second divergent axis in a direction opposite to historical development, that is, against the arrow of time. Starting from the idealised abstract or transcendent rational categories on the universal supra-historical plane, thought has to follow the sequence of their 'segmentation' or 'splitting' into narrower 'determinations' applicable to progressively more specific contexts and situations with a view to capturing their structuring effect on social relations lower down the scale. This is necessary since the 'full validity' of the rational categories can be realised and affirmed 'only for and within these relations' on the immanent historical plane. Considering that Marx regards communism as 'the next stage of historical development' and thus as a particular ideal and goal to be actively pursued by interventionist praxis, yet not as 'the final form of human society' (1969b: 252), it is incontrovertible that he locates it immanently on the convergent axis of potential infinity. In contrast, the idea of the final form of society is represented by 'association' (1969b: 153) in the sense of the most abstract rational validity concept on the transcendent divergent axis of complete infinity which provides the most general necessary structure for the historical process. Although this brief but precise analysis could be repeated with reference to many passages in Marx, particularly from his analysis of capitalism in his main work, it should suffice for present purposes.

There is a striking parallel between the immanent-transcendence framework and thus the left-Hegelian principle Marx adhered to and what Peirce adopted under the influence of Kant, Hegel and mathematics in which he was not only fully competent but to which he in fact also made a lasting contribution. The comparison becomes conspicuous when one recalls Marx's concern with historical development bringing particularities and differences into play through labour and praxis and following the arrow of time in generating rational categories, on the one hand, and the opposite move against the arrow of time from the most abstract of those categories along the trajectory of their determining effect on lower levels of social relations right to the point where their validity becomes concretely established, on the other. For his part, Peirce is entirely aware of just 'how important for philosophy is the mathematical conception of continuity' or infinity, and he see acutely what this means for the second great German idealist from whom he not uncritically learned much: 'Most of what is true in Hegel is a darkling glimmer of a conception which the mathematicians had long before made pretty clear, and which recent researches have still further illustrated' (1992: 296). It is in the conviction of the simultaneously overwhelming importance yet debilitating inadequacy of Hegel that Marx and Peirce are at one – the former understanding it in terms of social theory which had been subterraneanly shaped by mathematical-philosophical thought as mediated by Kant, the latter in explicit mathematical-philosophical terms which are by no means oblivious to social reality. What is required to brighten up the darkling glimmer pervading Hegel's thought is to distinguish between two manifestations of continuity or infinity and to specify the dynamic generative and structuring relations between them. Peirce's (1992: 312-33) investigation into 'the law of mind' which shows that ideas spread continuously and affect other ideas is illuminating in this regard.²⁰ The first axis, corresponding to potential or 'innumerable infinity', is the historical process of determinate action in lived time in which ideas 'gain generality' and get 'welded' to other ideas. The second, corresponding to complete or 'endless infinity', accommodates the most general fused ideas, such as 'Truth, Right, and Beauty' (1998: 197), that serve as the conditions of less general conceptions and, standing in a conceptual dependency hierarchy, thus exert a structuring effect against lived time on the lower levels while in their operation they themselves progressively 'lose

intensity'. As regards dynamics, Peirce is emphatic that humans always already have 'a bond' with the long-term accumulated most general ideas, each of which engenders a 'living feeling'. As such, a general idea could engender a latent 'feeling which has not yet emerged into immediate consciousness' but, if it so emerged, could bring to mind a 'habit' or a sense of 'a vague possibility of more than is present' which, in turn, could trigger action or even burst into the social world given the appropriate circumstances. Such engagement could either serve problem solving or contribute to the creation of a concretely reasonable world, or both.

Considering Marx and Peirce, two representatives of left-Hegelianism who effectively contributed to the intellectual articulation of its characteristic conceptions, it becomes apparent that the idea of immanent transcendence cannot unequivocally be said to be of a religious origin. Whatever religious baggage might still have accompanied the contributions of the mathematicians, scientists and philosophers prior to the 1840s, or afterward for that matter, the overview of the historical background against which the thought of these two figures took on shape shows clearly that the 19th-century left-Hegelian immanent-transcendence concept would not have been possible without the characteristically modern innovation introduced by the mathematical-scientific-philosophical tradition which relativised the religious understanding of infinity in favour of real infinity – albeit, mathematical-scientific-philosophical thought extended to social reality and rendered relevant to its various dimensions. And given the close relation between immanent transcendence and the left-Hegelian principle of the reflexively available practical structuring efficacy of evolutionarily stabilised rational potentials, the same can be said to hold also of this principle.

This ascription of importance to the modern understanding of infinity, does not as suggested earlier necessarily exclude the possibility of religious thought or faith entering as an identity-supporting conative or motivational factor which is important to many in the pursuit of particular ideals and goals, including some philosophers and social theorists among whom are many later Critical Theorists. While renouncing religion in his own case, Marx was in agreement with Engels on the need to resolutely denounce any attempt to use coercive methods against religion (Marx and Engels 1955: 10). For his part, Peirce (1992: 117-18, 184) decisively rejected the religion-based 'method of authority' in the context of the development of knowledge since, as the history of organised faith communities shows, it would lead to 'intellectual slavery', yet he insisted that room must be left for 'that aspiration toward the perfect which constitutes the essence of religion' and that 'no man [sic!] need be excluded from participation in common feelings'. What is clear, however, is that religion is not a requirement in the conceptual context of immanent transcendence and even less does its indisputable identity-securing and identity-cultivating potential confirm it as the origin of the left-Hegelian concept.

Conclusion

Considering the general significance of the conception of real infinity associated with the revival of mathematics and science in the context of early modern society and the formative impact that the resolute pursuit of this new understanding had on philosophical and social thought, to conclude, it would be inaccurate to paint the left-Hegelian concept of immanent transcendence and, by implication, its principle in religious colours. From an evolutionary perspective, on the one hand, the immanent transcendence concept has its origin in the metarepresentationally underpinned civilisation-founding distance between humans and their world that was consolidated by a series of cultural and social practices, including later religion, representing the conditions of the immanent transcendence concept. At best, it could have made only a partial cognitively anomalous contribution to those conditions. From an historical perspective, on the other hand, the left-Hegelian concept, while feeding particularly on the centuries-old mathematical-philosophical tradition, owes its emergence to the radical modern mathematical, scientific and philosophical reversal of the Greek horror infiniti and relativisation of the religious understanding of infinity as the imaginary totality of

ultimate reality by introducing the revolutionary idea of real infinity and extending it to social thought. Beyond the sheer anthropologically rooted cognitive capacity and related preceding sociocultural developments, this is what finally allowed the self-reflexive social and cultural extrapolation of the concept of immanent transcendence. During the modern period, the development of this line of thought had indeed been accompanied by persistent tendencies, at times even hostile attempts, to encapsulate the central issue at stake in the concept in religious terms. But under the sign of real infinity, religion left but a sublated trace in modern validity concepts, while on the historical and action plane it at best retained only an identity-securing, identity-cultivating and motivational role for some, but by no means for all. From the standpoint of the development of knowledge rather than the cultivation of faith, then, it is obvious that the religious canopy imposed on the concept during two millennia of the stifling of learning had been mathematically, scientifically and philosophically deconstructed. Insofar as such tendencies and attempts in excess of its identity-securing and motivational significance are still in evidence, there is obviously a need to continue the necessary deconstruction.

If the concept of immanent transcendence were to be adequately understood, a number of specific requirements need to be observed. The first requirement, as the mathematical-scientificphilosophical tradition has taught us, is that the historical and evolutionary parameters of social thought and especially the distinct types of general concepts corresponding to them should at all cost be shielded from being collapsed and confused. But to succeed in this, as the left-Hegelian principle in particular demands, the second vital requirement is that the latency which precedes and impels problem solving, responsible action and interventionist praxis transcending the status quo, themselves guided by context-specific general concepts such as ideals and goals, should be seen in relation to the whole cognitively fluid spectrum of the crucial class of world-defining nth terms or general concepts – that is, the rational categories or validity concepts composing the cognitive order of the human social form of life – without capitulating before the temptation to reduce them to a single inevitably muddled denominator. Within this multi-pronged dialectical framework of immanent transcendence punctuated by problem solving, world-creating action and worldtransforming praxis, all the intermediate sociocultural structures and their dynamics could then be deciphered, interpreted and explained without perplexity and confusion. This framework formed an inherent part of the left-Hegelian thought of the time as well as more generally of the emerging classical sociology, regardless of whether implicitly operative or more or less explicitly grasped.

Notes

¹ Historical and systematic clarification of the concept in Critical Theory, a 20th-century elaboration of left-Hegelianism, is offered in Strydom (2011 and 2018a). In this article, however, the focus is confined to 19th-century left-Hegelianism as represented by Marx and Peirce.

² The translation of this passage was slightly modified with reference to Habermas (1991: 134-35).

³ It is curious that Habermas should continue using the expression 'the sacred' since he obviously understands it less problematically than Durkheim as belief and ritual practice securing social integration which, moreover, presupposes 'anthropologically deep-seated structures' of rationality (1987: 91).

⁴ To my knowledge, the more recent writings of Habermas and Honneth do not add to their respective positions as described here.

⁵ Also partially influenced by Hegel but by no means a left-Hegelian, Durkheim (1976) indirectly grappled with the problem of immanent transcendence too but, unlike Marx and Peirce, from approximately 1895 went unequivocally and emphatically for a solution in terms of religion. While accounting for transcendence with reference to the sacred, he accordingly sought to render it immanent by relating it to the social practice of ritual and, quite problematically, identifying the

sacred with society – problematically, that is, due to the elision of the cognitive metaculture and the collective.

⁶ For a compilation of the positions of the members and associates of the Frankfurt School on religion, see Mendiata (2005).

What Habermas (1987: 91) refers to as the 'anthropologically deep-seated structures' of social integration could be understood in terms of the human organic cognitive endowment that contains the system of innate preverbal concepts such as parent, group and hierarchy (Jackendoff 2007; Conein 2005) that is central, among other domains, to the evolution of language. Rather than the sacred, then, what got linguistified are these preverbal cognitive structures as they became relevant in the social context, but in the modern period this required the shaking off or the communicative dissolution of the cultural straitjacket that had been imposed on social relations over two millennia. The specific 'archaic core of the normative' Habermas (1987: 92) seeks to salvage from the sacred can then be seen as actually being given with the social intelligence or socio-cognitive domain which, in the social context of the Middle/Upper Palaeolithic, yielded proto-cultural rules regulating burial and care for the injured, the disabled and the elderly, as observed even among the Neanderthals, as well as crucially food provision and distribution, especially for pregnant and nursing women as bands grew larger and social spatial behaviour changed (Mithen 1998; Wilson 2012; Dunbar 2014). 8 As the reference to 'co-evolution' indicates, the position adopted in this article is by no means naturalistic per se, but rather a 'weak naturalistic' (Habermas 1999b: 13, 32, 38, 41; Strydom 2002, in press) one that, while acknowledging the continuity between nature and society, stresses the epistemological priority of the sociocultural dimension as is sociologically required. This is borne out by the intermittent emphasis on the sociocultural dimension in the text and, hence, also by the historical sketch of the emergence of the Left-Hegelian concept involving a variety of sociocultural practices.

⁹ This quotation appears in Habermas (1997: 16) reproduced from E. H. Gombrich's intellectual biography of Abby Warburg. Here it is presented in my translation from the German.

¹⁰ Art, of course, fits in the broad subjective-aesthetic-ethical domain (Strydom 2018b). Considering the multidimensional nature of this domain, it becomes intelligible how religion could have followed evolutionarily on art and built upon it. After all, religion is more characteristically rooted in the subjective-aesthetic-ethical than the normative domain, despite the impression of universalism signalled by the 'Golden Rule' of the monotheistic religions. In religion, the ethical typically becomes writ large as collective morality.

¹¹ Durkheim (1976: 38) advanced an entirely different position by submitting that the distinction between the sacred and the profane is the profoundest distinction ever reached by the human mind. In this he is fundamentally mistaken, though, since this distinction can explain neither the human revolution nor the cultural explosion. Rather, this dualism presupposed the Palaeolithic cognitive-cultural achievement and thus emerged only much later, at the earliest hesitantly during the tail end of the Palaeolithic and then definitively under Neolithic conditions (Hauser 1951). From this faulty assumption flowed a series of related errors which misdirected much subsequent thought.

¹² There is an extensive literature on social intelligence which is discussed under a variety of titles as part of the more complex architecture of the mind (e.g.: Conein 1997, 2005; Mithen 1998; Hirschfeld 2001; Jackendoff 2007; Kaufmann and Clément 2007). Habermas's (1987: 91) expression 'anthropologically deep-seated structures' implicitly refers to this broad architecture.

¹³ Various authors (e.g. Scott Atran, Steven Mithen, Dan Sperber, Pascal Boyer) have made proposals for the explanation of the rise of religion but, since this is not the purpose of this article, the statement here is sufficient for the present.

¹⁴ The sketch offered in this article implies scepticism of the influential thesis of the 'axial age'. As suggested, whereas this thesis is focused on religion and confined to the historical axis of the cultural projection of a transcendent ideal or goal that is potentially realisable on earth, a broader perspective is required to understand the developments that generated the outcomes observable in

the period 800-200 BCE cited by Jaspers, Eisenstadt and others. Both time and the wide range of cognitive components and related sociocultural practices need to be taken into account.

- ¹⁵ Attributing to religion the function of socioculturally reproducing the metarepresentational capacity seems plausible, yet it should be qualified, as for example suggested by Atran's (1996: 217) discussion of religion under the title of 'cognitive "pathogenesis" and by Mithen's (1998: 201) characterisation of religious thought as 'a mix-up of knowledge about different types of entities in the real world'.
- 16 A readily available example of an indefinite convergence toward a definite limit which is expressible as a ratio is the number pi (π) the ratio of the circumference of a circle to its diameter the calculation of which delivers only more digits after the decimal point without ever reaching an end. As made clear below, this conception of indefinite convergence toward a finite yet unreachable value is of relevance to the understanding of the pursuit of ideals and goals in the historical construction of society.
- ¹⁷ This describes the process of *Aufhebung* or sublation of religious ideas.
- ¹⁸ Comte (1896, vol. 1: 37-49) was competent in mathematics and is recognised as among those who had some influence on Marx. There are indications that his thought impacted also on Peirce for example, the latter's concern with the law of mind and the classification of the sciences. Particularly relevant is the impact on the conceptualisation of basic social-theoretical parameters such as the distinction between progress and order or process and structure. Comte (1896, vol. 2: 140-42, 166, 218-19) contrasts the modern manifestation of the problem of progress and order to the ancient Greek view of their incompatibility a contrast that corresponds to the difference between the ancients and moderns on the question of infinity.
- ¹⁹ Important here is Hegel's (2010: section 47, 62, 823) 'nothingness' which is of course not nothing.
- ²⁰ Peirce's position in this respect is clarified in some detail in Strydom (2018c).

References

Adorno, Theodor (1970) Ästhetische Theorie. Frankfurt: Suhrkamp.

Alexander, Amir (2015) *Infinitesimal: How a Dangerous Theory Shaped the Modern World*. London: Oneworld.

Aristotle (1961) Metaphysics. London: Dent.

Aristotle (2015) Physics. Adelaide: University of Adelaide.

Atran, Scott (1996) *Cognitive Foundations of Natural History*. Cambridge: Cambridge University Press.

Comte, Auguste (1896) The Positive Philosophy, Vol. 1-2. London: Bell & Sons.

Conein, Bernard (1997) 'La reconnaissance des relations sociales et la notion de groupe social', in R. Boudon, A. Bouvier and F. Chazel (eds) *Cognition et Sciences Sociales*. Paris: Presses Universitaires de France, pp. 137-53.

Conein, Bernard (2005) *Les sens sociaux: Trois essais de sociologie cognitive*. Paris: Economica. Cross, Ian (2001) 'Music, Cognition, Culture and Evolution', *Annals of the New York Academy of Sciences* 930: 28-42.

Dantzig, Tobias (2007) Number: The Language of Science. New York: Penguin.

Dumoulin, Heinrich (1981) 'Buddhism and Nineteenth-Century German Philosophy', *Journal of the History of Ideas* 42(3): 457-70.

Dunbar, Robin (2014) Human Evolution. London: Pelican Books.

Durkheim, Emile (1976) The Elementary Forms of the Religious Life. London: Allen & Unwin.

Fraser, Nancy and Honneth, Axel (2003) Redistribution or Recognition? London and New York: Verso.

Galilei, Galileo (1967 [1632]) *Dialogue Concerning the Two Chief World Systems, Ptolemaic and Copernican*. Berkeley: University of California Press.

Guardian, The (2017) 'Much Ado about Nothing', Retrieved 14 September at

https://www.the guardian.com/science/2017/sep/14.

Habermas, Jürgen (1974) Theory and Practice. London: Heinemann.

Habermas, Jürgen (1987) The Theory of Communicative Action, Vol. 2. Cambridge: Polity.

Habermas, Jürgen (1991) 'Exkurs: Transzendenz von innen, Transzendenz ins Diesseits', in J.

Habermas, Texte und Kontexte. Frankfurt: Suhrkamp, pp. 127-56.

Habermas, Jürgen (1992) 'Peirce and Communication', in J. Habermas, Postmetaphysical Thinking.

Cambridge, MA and London: MIT Press, pp. 88-112.

Habermas, Jürgen (1997) Vom sinnliche Eindruck zum symbolischen Ausdruck. Frankfurt: Suhrkamp.

Habermas, Jürgen (1999a) 'A Genealogical Analysis of the Cognitive Content of Morality', in J.

Habermas, The Inclusion of the Other. Cambridge: Polity, pp. 3-46.

Habermas, Jürgen (1999b) Wahrheit und Rechtfertigung. Frankfurt: Suhrkamp.

Habermas, Jürgen (2002) 'Transcendence from Within, Transcendence in this World', in J. Habermas, *Religion and Rationality*. Cambridge: Polity, pp. 67-94.

Hauser, Arnold (1951) The Social History of Art, Vol. 1. New York: Vintage Books.

Hegel, Georg W. F. (1966) The Phenomenology of Mind. London: Allen & Unwin.

Hegel, Georg W. F. (1967) Philosophy of Right. Oxford: Oxford University Press.

Hegel, Georg W. F. (2010) The Science of Logic. Cambridge: Cambridge University Press.

Hirschfeld, Lawrence A. (2001) 'On a Folk Theory of Society: Children, Evolution, and Mental

Representation of Social Groups', Personality and Social Psychology Review 5(2): 107-17.

Honneth, Axel (1992) Kampf um Anerkennung. Frankfurt: Suhrkamp.

Honneth, Axel (2003) 'The Point of Recognition: A Rejoinder to the Rejoinder', in N. Fraser and A.

Honneth, Redistribution or Recognition? London and New York: Verso, pp. 237-67.

Honneth, Axel (2007 [1994]) 'The Social Dynamics of Disrespect: On the Location of Critical Theory Today', in A. Honneth, *Disrespect: The Normative Foundations of Critical Theory*. Cambridge: Polity, pp. 63-79.

Jackendoff, Ray (2007) Language, Consciousness, Culture. Cambridge, MA: MIT Press.

Kant, Immanuel (1956) Critique of Practical Reason. Indianapolis: Bobbs-Merrill.

Kant, Immanuel (1968) Critique of Pure Reason. London: Macmillan.

Kant, Immanuel (1972) Critique of Judgement. New York: Hafner.

Kaufmann, Laurence and Clément, Fabrice (2007) 'How Culture Comes to Mind: From Social Affordances to Cultural Analogies', *Intellectica* 2: 1-30.

Körner, Stephan (1968) The Philosophy of Mathematics. London: Hutchinson.

Leydesdorff, Loet (1994) 'Uncertainty and the Communication of Time', *Systems Research and Behavioural Science* 11(4): 31-51.

Marx, Karl (1967) Capital, Vol. 1. London: Lawrence & Wishart.

Marx, Karl (1969a) 'Theses on Feuerbach', in K. Marx, *The German Ideology*. Ney York: International Publishers, pp. 197-99.

Marx, Karl (1969b) Selected Writings in Sociology and Social Philosophy. Harmondsworth: Penguin.

Marx, Karl (1974) *Grundrisse: Foundations of the Critique of Political Economy*. Harmondsworth: Penguin.

Marx, Karl and Friedrich Engels (1955) On Religion. Moscow: Foreign Languages Publishing House.

Mendiata, Eduardo, ed. (2005) *The Frankfurt School on Religion*. New York and London: Routledge.

Mithen, Steven (1998) The Prehistory of the Mind. London: Phoenix.

Nelson, David (2008) The Penguin Dictionary of Mathematics. London: Penguin.

Panofsky, Erwin (1955) Meaning in the Visual Arts. Garden City, NY: Doubleday Anchor.

Peirce, Charles S. (1992) *The Essential Peirce: Selected Philosophical Writings*, Vol. 1 (1867-1893). Bloomington: Indiana University Press.

Peirce, Charles S. (1998) *The Essential Peirce: Selected Philosophical Writings*, Vol. 2 (1893-1913). Bloomington: Indiana University Press.

Sperber, Dan (2000) 'Metarepresentation in Evolutionary Perspective', in D. Sperber (ed.)

Metarepresentation: A Multidisciplinary Perspective. Oxford: Oxford University Press, pp. 117-37.

Stringer, Chris (2012) The Origin of Our Species. London: Penguin.

Strydom, Piet (2002) *Risk, Environment and Society*. Buckingham and Philadelphia: Open University Press

Strydom, Piet (2011) *Contemporary Critical Theory and Methodology*. London and New York: Routledge.

Strydom, Piet (2017) 'Infinity, Infinite Processes and Limit Concepts: Recovering a Neglected Background of Social and Critical Theory', *Philosophy and Social Criticism* 43(8): 793-811. DOI: 10.1177/091453717692845.

Strydom, Piet (2018a) 'The Metaproblematic of Critical Theory: Reflections on the Key Concept of Immanent Transcendence in the Fraser-Honneth Debate', Unpublished paper, available at ResearchGate, DOI: 10.13140/RG.2.2.14664.83202.

Strydom, Piet (2018b) 'Afterword: The Complex Imbrication of Aesthetics in the Multidimensional Process of Development', in J. Clammer and A. K. Giri (eds.) *The Aesthetic Side of Development*. Singapore: Palgrave Macmillan, pp. 307-36. DOI: 10.1057/978-1-349-95248-9.

Strydom, Piet (2018c) 'A Cognitive Sociological Perspective on Cultural Structure and Dynamics: A Peircean Rationale', Unpublished paper, available at ResearchGate, DOI: 10.13140/RG.2.2.16852.09609.

Strydom, Piet (in press) 'Critical Theory and Cognitive Sociology', in W. Brekhus, *Oxford Handbook of Cognitive Sociology*. Oxford and New York: Oxford University Press.

Tomasello, Michael (1999) 'The Human Adaptation for Culture', *Annual Review of Anthropology* 28: 509-29.

Wilson, Edward O. (2012) *The Social Conquest of Earth*. New York and London: Liveright. Wynn, Thomas and Coolidge, Frederick (2011) 'The Implications of the Working Memory Model for the Evolution of Modern Cognition', *International Journal of Evolutionary Biology*, DOI: 10.4061/2011/741357.