

Alienated Nature, Reified Culture: Understanding the Limits to Climate Change Responses under Existing Socio-ecological Formations

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Abstract

This article explores the limits to climate change responses under the current socio-economic paradigm. It takes an interdisciplinary approach from critical cultural studies and geography, to suggest that these limits are, in part, attributable to a double process of alienation and reification in two key areas - those of culture and nature. The societal relationship with nature influences the available prescriptions for mitigating climate change. However, how those prescriptions are framed, articulated and interpreted, depend on mediated communication and culture. Therefore, alienation and reification processes need to be explored at a systemic level in the societal relationship with nature, and in regard to how that relationship is articulated through culture. However, such cultural communication is itself reified by industrialisation processes, and also plays a role in alienation processes. In the case of the society/nature relationship, current economic arrangements both alienate society from nature and reify the societal relationship with nature. Understanding the double processes of alienation and reification can significantly influence what can be known to society about the socio-ecological relationship. This, in turn, affects how praxis is mobilised in such conditions. The article therefore suggests that while radical praxis is not precluded under existing socio-ecological conditions, those with an interest in radical climate action need to take account of alienation and reification, as well as the concept of social praxis itself. This will avoid over-estimating the potential of the media and culture to effect change and foreground the socio-economic and socio-ecological situatedness of peoples affected by climate change.

This article begins from the scientific standpoint that the spectre of anthropogenic climate change exists, and is already acting to influence the ecosystem. To date, the earth has warmed by at least 0.7°C, and potentially nearer to 1°C, on pre-industrial levels (IPCC2013a, b, 2014a, b); humankind is already one third of the way to 2°C warming. This is the threshold that will in itself bring about significant ecosystem damage. Whilst climate denial is alive and well, especially as seen in the recent decision of the Trump administration to withdraw the US from the Paris agreement, the scientific

consensus following the fifth assessment report of the Intergovernmental Panel on Climate Change (known as, and referenced here as IPCC AR5) has strengthened. At an international level there exists broad agreement that human-induced climate change is a material reality that requires action.

However, despite the rhetoric of most world leaders about prioritising climate change, and despite the apparent rise of climate policy enforcements, greenhouse gas emissions continue to increase *at an accelerating rate* (IPCC2013a, b, 2014a, b). This disparity between enforcements and emissions reveal obvious limits concerning responses to climate change under existing socio-economic arrangements. This is not entirely surprising when such arrangements are locked into the compounding of economic growth, and the production of surplus (Harvey, 2010, 2014). This is characterised in the contemporary setting by the transition from goods manufacture to meet needs, to a consumerist economy where needs are manufactured to meet the demands of an inherently expansive production system. Given this background, more radical action on climate change is needed than is currently discussed through mediated communication. However, the required breadth and depth of thought concerning radical action is challenging under social formations imbued with alienation and reification processes (which include the fetishizing of quantification and measurement). This also influences praxis, revealing a complex dialectical process between reification and praxis in particular.

A backdrop of inaction

Notwithstanding the positive consensus and commitment to action on climate change that took place at the Paris Agreement in 2015, one must acknowledge the deep concerns with the level and extent of proposed climate action. Critics suggest that the proposed emissions reductions are inadequate to even meet a 2°C reduction target, and that the agreement “risks being total fantasy” (Anderson, 2015: 437). Critique has been levelled at the reliance on so-called ‘negative emissions’ scenarios which assume that future technologies will be able to successfully remove carbon dioxide from the atmosphere. This could allow current emissions to either rise further or to fall at a slower rate than IPCC data suggests is necessary. Such strategies have been deemed potentially risky and inadequate, in that they are “not an insurance policy, but rather an unjust and high-stakes gamble. There is a real risk they will be unable to deliver on the scale of their promise” (Anderson and Peters, 2016: 183). The hubris around Paris dissipates when it is realised that moving to achieve the agreed 1.5° target depends upon an untested “techno-finance fix” (Morgan, 2016) which does not acknowledge the deep socio-economic challenges involved. One can argue that the proposed solutions merely shift the issues around in time and space, rather than tackling the long term impossibility of an economic system predicated on infinite compounding growth reproducing itself on a planet with finite resources (Dale et al, 2016).

Furthermore, it is evident that society is locked into an “iron cage of consumerism” (Davies et al, 2014). Irrespective of how damaging the production of surplus is to the ecosystem, societal responses to date are impotent as long as the production of surplus continues to be prioritised. Under these existing conditions, radical action to assure future liveability is postponed in favour of the present comforts that consumerism offers. From the individualist perspective of neoliberal ideology, human beings are psychologically indisposed to understanding the seriousness and pervasiveness of climate change (Gifford, 2011; Clayton et al, 2015). Rather than defining the core problem as a complex nexus of structural, economic and social issues, emphasis is placed on individual inaction, especially in regard to our “ancient brain” and its inability to consider any long-term actions beyond immediate

threats (Clayton et al, 2015: 291). Indeed, those members of society who do have a grasp of the problem of climate change are accorded special responsibility with the rebuke that “most could do more” to offset their carbon footprint (Gifford, 2011: 290). Likewise, the task of reducing energy consumption utilises certain types of individuals with “strong self-transcendence values” to act as advocates for behaviour change (Clayton et al., 2015: 642).

Overall, such arguments suggest that climate change is either temporally and/or spatially too remote for humankind to comprehend. Responsibility for both the socio-ecological damage and potential mitigation lies at the feet of individuals. While this perspective offers insight into the constraints and affordances influencing individual behaviour, it does not take account of the structural limitations within which individuals operate. At present, the structural limitations of neoliberal policy frameworks are unlikely to favour robust laws to promote ecosystem preservation and renewal (Whitehead, 2013).

This article suggests that supposed ‘psychological deficits’ do not satisfactorily explain the lack of robust action on climate change to date. Indeed, such an approach veils the structural impediments to acting on climate change. At the same time, its normative position of individualism disavows collective social praxis. However, the effects of climate change transcend geography, class, race and gender. This is a counter to the argument that the first world is relatively immune to the effects of climate change due to its spatial remoteness from disaster zones. Although existing socio-economic arrangements undoubtedly leave underdeveloped countries at greater risk, disasters such as hurricane Sandy in New York, and the subsequent snowstorm Juno that precipitated a shut-down of the city, and the California drought and ground water crisis together suggest that climate change is globally pervasive. However, the focus on (Western) individualism does ignore regions of the world that are more disposed to discussing collectivist actions and social praxis on climate change (Evans, 2015).

The argument that humankind cannot comprehend matters that are spatially distant is contradicted by copious evidence of how sophisticated understandings of astronomical events have been expressed in traditional cultures. The Pyramids of Egypt, Stonehenge in the United Kingdom, Mayan constructions, and passage tombs such as Newgrange in Ireland all testify to profound knowledge of the solar system, the major constellations and even in some cases, the precession of the equinoxes, or the ‘wobble’ of the earth on its axis over long timescales (Patrick 1974). Each of these examples attests to considerable understanding of both space and time on a scale that might be deemed unimaginable in ‘primitive’ cultures. Yet these ancient constructions still function and accurately reflect contemporary knowledge about constellations and celestial motion. Such complex apprehension of astronomy undermines the view that the human species is incapable of forging collective knowledge across geographic space. That such constructions of antiquity often took generations undermines the view that humankind is incapable of long-term temporal cognition. Indeed, that the native American Indians could implement a principle of thinking seven generations ahead from current actions mitigates against the existence of a species deficit with respect to either the vastness, remoteness or long-term nature of climate change (Cox, 2010: 366). Thus, the cognitive and political shortcomings with respect to climate change but must be considered as socially, culturally and structurally situated.

Rather than accepting that human nature cannot understand the temporal and spatial vastness of climate change, this article argues that contemporary structural processes of alienation and reification limit the remit of responses available to society. These twin processes distance society from a collective self-understanding of its embeddedness in the ecosystem. Alienation and reification also work to undermine the depth of understanding that is required for radical action on climate change.

From these insights a central question arises: what can be known about climate change in the contemporary cultural landscape? Media studies of how climate change is covered reflect upon whether it is too difficult to visualise (thereby providing an ‘excuse’ for the media not to foreground climate change as a suitable storyline) (Doyle, 2009). In this context, it is important to consider how alienation and reification processes limit the range of mediated discourses on climate change. It is to these matters that I now turn.

Alienation and reification

The word *alienation* evokes varied meanings, from legal definitions to psychic disconnectedness from the self. The term generally refers to “an action of estranging or state of estrangement” (Williams, 1983: 33). The Hegelian and Marxian interpretation of alienation can be described as an estrangement from one’s own “essential nature” (33), with historical forces seen as active agents in this process. For Marx, it was the labour process based on capitalist ownership and exploitation that acted as an alienating agent. Specifically, the division of labour in the capitalist economic system mean that the worker was denied ownership of the ‘tools’ or means of production, attachment to the products of labour, and access to the wealth which might acquire the products of labour. Together, all of these factors intensified the experience of alienation. In short, when alienation is dominant, “the world man has made confronts him as stranger and enemy, having power over him who has transferred his power to it” (35).

Processes of alienation within contemporary capitalism can be viewed in terms of Cox’s (1998) four categorisations. These are: (1) alienation from the products of labour; (2) alienation from the labour process itself; (3) alienation from fellow human beings; and (4) alienation from our own ecologically embedded human nature. The fourth category of alienation involves the alienation of human labour from nature itself, such that nature is “external” to social processes (Dale et al., 2016: 15). Therefore, when alienation is systemic, as in the current socio-economic paradigm, so is the understanding that nature is external to society. Under these arrangements, nature is instrumentalised.

For Marx, the powerlessness arising from these alienation processes could be transformed into resentment, anger and, subsequently, a movement for positive change (Cox, 1998). However, it is important to note that alienation is not simply experienced as a subjective, psychological state, nor is it, necessarily, consciously perceived by the alienated. Rather, alienation is a symptom of the social arrangements of capitalism. This perspective acknowledges that the responsibility for alienation lies not with the alienated subject but with the system itself (Schmidt, 2013). Therefore, the transition to positive action on climate change is by no means guaranteed; the alienated subject is also alienated from their relationship with nature. Such a subject is likely to view themselves as separate from matters pertaining to ecosystem crisis and may treat nature as the abject ‘other’ to be dominated.

The subject of alienation and nature was central to the *Dialectic of Enlightenment* (Horkheimer and Adorno, 2002). The source of alienation outlined here comports with general Marxist formulations which foreground the division of labour. This is seen to necessitate “self-preservation” in an economic landscape not favourable to the wellbeing of the individual. Self-preservation further “enforces the self-alienation of individuals who must mould themselves into the technical apparatus body and soul” (Horkheimer and Adorno, 2002: 23). In other words, the individual needs to adapt to the economic system in order to function and reproduce. In terms of the socio-ecological relationship then, the individual is inclined to adopt a position in relation to nature that is aligned with the economic paradigm.

In critiquing the processes of alienation, Horkheimer and Adorno noted that “the individual is entirely nullified in the face of the economic powers. These powers are taking society’s domination over nature to unimagined heights. While individuals as such are vanishing before the apparatus they serve, they are provided for by that apparatus and better than ever before” (Horkheimer and Adorno, 2002: xvii). This alienation distances individuals from each other, but also from ecological and cultural aspects of nature. We are being “torn out of the beauty of the countryside and cut off from the inspirations of culture and art” (Rush, 2004: 60). The dialectical aspect of this was also evident to Horkheimer and Adorno; the more the processes of alienation involve a distancing from nature, the more society comes to be dominated by it. They declared that “in the mastery of nature, without which mind does not exist, enslavement to nature persists” (32).

This point reveals that an alienated understanding of nature (including human nature) would see society dominating, taming and controlling nature. However, a dialectical approach to these processes of domination reveals that the interdependence between society and nature is becoming more intensive. Thus, any action on climate change that is itself estranged or alienated from nature may further societal dependence on this ‘damaged’ nature. Ideas of geoengineering can be subjected to this critique. They originate from alienated and impoverished concepts of the socio-ecological relationship. Furthermore, in neglecting the interdependency between society and nature, such actions, when they failed, would seriously damage the ecosystem on which society is increasingly dependent.

Reification has associations with Marx’s concepts of commodification and commodity fetishism (Berry, 2014). However, Gillian Rose (1978) argues that there is “no canonical source” to the term (Rose, 1978: 28), and that it cannot be simply conflated with commodity fetishism, a more subtle approach is required. A full appreciation of how the concept has developed requires us to consider the insights of Georg Lukács (1971a). For Lukács, reification is linked to the “commodity-structure”, in that “a relation between people takes on the character of a thing and thus acquires a ‘phantom objectivity’, an autonomy that seems so strictly rational and all-embracing as to conceal every trace of its fundamental nature: the relation between people” (Lukács, 1971a: 83). This formulation points not only to the illusory character of the commodity itself, but to the illusory character of the rational and objective conditions under which the commodity is exchanged. Lukács’ contribution was to develop the notion of commodity fetishism beyond the economic sphere, in order to take account of “the illusion inherent in every aspect of bourgeois social existence and culture” (Thompson, 2011: 198).

Thus, for the purposes of our discussion, reification occurs when instrumentality and over-rational thought simplifies concepts or processes into ‘thing-like’ entities. Such entities disavow the existence of relationships between individuals who have produced an artefact independently of monetised exchange value. Of course, such a relationship depends upon human labour that is also embodied in the artefact. In Marxist thought, the alienation process both adds to and requires reification. For example, under capitalism, the soil is treated as static and ‘thing-like’. It is the mere ground upon which the spatial expansion of capital and the exploitation of labour takes place. Soil can be removed by machinery, and it can be cultivated with man-made inputs such as fertilisers and pesticides. However, such an approach ignores the complexities of soil itself. In the reified view of soil, there is no place, or indeed, no need to account for soil *processes* such as the interactions between microbes and nutrients. Nor is there a need for acknowledgement of soil fauna such as earthworms, who mechanically and chemically ‘digest’, aerate, and move the soil. A dialectical approach treats soil not

as a 'thing-like' entity but as a process. Marx and Engels understood this, and proposed a critical analysis of soil under colonial conditions, using the example of Ireland (Slater and McDonagh, 2008).

According to Marx's theory of value, "exchange-value is the *only form* in which the value of commodities can manifest itself or be expressed" (Rose, 1978: 27). Thus, increasing commodification, inherent in capitalist production gradually advances commodity fetishism, and the understanding of relationships according to exchange value. In this context, Adorno argues that commodification reifies and obscures the complexities of class processes in society (Cook, 2011: 97). Adorno was influenced by Lukács, but subsequently disagreed with him on the concepts of realism, modernism, and the potentials for a proletarian revolution (Thompson, 2011: 75, see also Hall, 2011). In *History and Class Consciousness*, Lukács maintained that reification could potentially activate working-class revolutionary praxis, whereas Adorno insisted that this potential had broken down. Revolutionary potential could only be found through the negative dialectics of radical modern art (Thompson, 2011: 88; Horkheimer and Adorno, 2002). In *Dialectic of Enlightenment*, Horkheimer and Adorno were wary of placing "too much trust in contemporary consciousness" and its revolutionary potential (Horkheimer and Adorno, 2002: xiv). It was this pessimism and scepticism about the potential for revolutions which compelled Lukács to declare that "a considerable part of the leading German intelligentsia, including Adorno, have taken up residence in the 'Grand Hotel Abyss'" (Lukács, 1971b: 22). Lukács further described this construction as "a beautiful hotel, equipped with every comfort, on the edge of an abyss, of nothingness, of absurdity. And the daily contemplation of the abyss between excellent meals or artistic entertainments, can only heighten the enjoyment of the subtle comforts offered" (22). This pointed to Lukács' refusal to deny that the potential for radical praxis still existed.

Notwithstanding this fundamental clash, the positions of Adorno and Lukács both reveal that alienation and reification processes reinforce each other, whilst compromising the understanding of alternate societal formations and relationships. Thus, reification reduces human, societal and ecological relations to "formally commensurable variations of the exchange relationship" (Adorno, 2005: 229). The process of reification is, for Adorno, deeply insidious because it generalises a societal condition whereby "individuals tend to think of themselves and others as 'the same', while becoming increasingly less tolerant of differences" (Cook, 2011: 98). Furthermore, to ensure their survival in this economic paradigm, individuals are required to adapt to the very system that is dysfunctional for them. That means being complicit in maintaining a system which operates to "self-destructively promote and strengthen the very economic forces that make a mockery of their individuality" (98). For Adorno, reification is further intensified by advertising and commodified culture. I will now consider the significance of this argument in relation to socio-ecological relationships.

Critical Theory and the industrialisation of culture

Thus far, it has been established that the alienation characteristic of the current socio-economic production system is itself veiled by reification processes. Alienation and reification together perpetuate a reductionist view both of society and the socio-ecological relationship which allows society to form. The way in which alienation and reification processes manifest culturally can be seen in Adorno and Horkheimer's depiction of the 'culture industry'. In a commodified social system where "buyer and seller confront each other as equals" (Smith, 2008: 76) through the exchange relationship, consumption becomes a unifying process. This reification of the relationship between producer and audience therefore veils other, non-exchange, aspects of the relationship. The 'culture

industry' reinforced the veiling of class difference through the aspirational and libidinal messages of advertising. The very idea of class difference is eroded as consumption gives the impression of a society in which all members are equally free to consume:

With mass consumption, advertising, television, spectator sports, and so on, bourgeois ideology marks the most successful separation of consciousness from the immediate production process. Where it is most successful, as in the United States, it leads to the conclusion that class differences no longer exist; virtually everyone has become middle class. (Smith, 2008: 76).

Indeed, the media and cultural industries actively promote mass, excessive and conspicuous consumption of commodity goods and spaces of consumption. The latter domains include "dreamworlds for the super-rich" providing "models of lives that, through multiple media and global travel, inflame the desires for similar kinds of often addictive experience from parts of the world's population" (Urry, 2010: 207). Thus, under conditions of cultural commodification, both natural spaces, and independent and autonomous works of culture can be 'repurposed' for entertainment value, instead of intellectual insight, aesthetic or documentary appreciation (Baran and Sweezy, 2013: 57). This is significant when considering the role of culture in constraining or mobilising action on climate change.

At a time of ecological crisis, Adorno's work is exemplary and prescient in problematising the limits to action. He is principally concerned with whether, and to what extent, the industrialisation of culture allows cultural artefacts to offer an alternate space of disruption and ultimately hope. Adorno and others in the Frankfurt School were concerned that "the vision of the other society, had been systematically eradicated from what was increasingly an 'affirmative culture'" (Jay, 1996: 179). The inability of industrialised culture to develop a critique of societal relations promoted a compliance with the dysfunctional society from which it was produced. Thus, those commodified cultural items which promise a sense of transcendence or escape from disenchantment - that which Adorno terms 'immediacy' - in fact offer a 'false immediacy'. Instead of actually offering the sense of an 'other' experience, this kind of immediacy repetitively reinforces the status quo, and thus precludes any possibility of transcending it.

For Adorno and others in the Frankfurt School, the commodification of culture turns cultural forms into entities to be exchanged as cultural capital. Such exchange prevails over the most profound form of culture, that of transformation. Through commodification, culture loses its power as a set of "productive impulses which rebelled against conventions" (Adorno, 1991:33). Instead, the production of culture becomes beholden to profit-based production and "the old adversaries of materialistic alienation, now succumb to it" (33). Thus, when, for example, the "proper listening" of musical culture is prevented by the overwhelming totality of commercialised products, the audience becomes reduced to "the acquiescent purchaser" of culture (33), a subtlety lost in formulations of culture which unproblematically conflate audiences with consumers of cultural goods. On a societal level, industrialised culture no longer provides an opportunity for critical evaluation of society, but rather "suspend[s] the critique which the successful aesthetic totality exerts against the flawed one of society" (33). Under such analysis, the general commodification of culture also generalises the alienation and reification processes that help to preserve the socio-economic and, indeed, socio-ecological, status quo. My point here is that an understanding of these processes helps in the analysis of socio-ecological relationships and the discourses associated with climate change action.

Alienation, reification and culture

We have seen that, for Adorno, along with other members of the Frankfurt School, the capitalist industrialisation of culture intensifies and foregrounds alienation and reification. In what follows, I contend that such processes are under-theorised in the context of responses to climate change.

For Horkheimer and Adorno, alienation in culture manifested in a ‘sameness’ (Horkheimer and Adorno, 2002: 94). They critiqued the standardisation, staging and management of cultural artefacts through the process of industrialisation. In these circumstances, the cultural artefact “denies its audience any dimension in which they might roam freely in imagination” leading to “the withering of imagination and spontaneity in the consumer of culture today” (100). This had implications for the potentials of radical praxis. In Adorno’s perspective on culture, the “liking” of a commodified cultural product, or “every ersatz satisfaction” that the audience derives from a commodified cultural product, “depends on ... social substitution” of its ideal use value, that of transformation, with its exchange value or appearance (Adorno, 1991: 39). Put simply, the potentials of praxis are foreclosed by the familiar. The transformative potential of culture is also discussed in *Dialectic of Enlightenment* as the “hic et nunc”, or *here and now* quality of existence (Rush, 2004: 60). The absence of the ability to witness the hic et nunc indicates the estranging and distancing aspect of alienation. In this respect, “it is the inability to see or feel what is here, now, in front of us that characterizes our inability to come to terms with our existence” (60). This further reinforces the substitution of that potentially different way of understanding our relationship with the world, for its lesser exchange value. This is the very mechanism of alienation at work; a richer understanding and experience of culture is substituted for an exchange relationship. The audience is alienated from a deeper interaction with culture, as culture itself is reified. Thus, the consumer of the commodified cultural product does not see their own alienation because the exchange value provides a substitute pleasure, and a surrogate cultural experience. Consequently, the alienated audience, at the behest of reified culture, never witnesses a discourse involving radical action. This has implications for what can be imagined through industrialised culture in terms of climate change action through social praxis.

For Adorno, alienation is increasingly pervasive and yet at the same time veiled by the entertainment value of the commodified cultural artefact. He observed how “the more inexorably the principle of exchange value destroys use values for human beings, the more deeply does exchange value disguise itself as the object of enjoyment” (Adorno, 1991: 39). Thus, audiences lose “along with the freedom of choice and responsibility, the capacity for conscious perception” of non-commodified culture (39). This is enforced by the audiences themselves who “stubbornly reject the possibility of such perception” (39) such is their total alienation. In compounding their own alienation, audiences reject alternate cultural offerings and perspectives. They are accustomed to perceiving culture atomistically and in a dissociated way.

However, what also requires consideration, is the generalisation of alienation processes through to audience experiences. The ‘alienated ears’ that reject alternatives, need to be considered as alienated subjects in a twofold way. First, in the contemporary setting, they are alienated in their position as neoliberal subjects in a capitalist mode of production. Second, the alienation that is intensified through culture affects these audiences as *political* subjects. When political discourse itself is mangled through an alienating form of mediated communication, the audience can only understand discourse in an alienated way. Thus, cultural pathways to radical praxis are compromised. I shall return to this point later.

As we have seen, reification refers to the making of matters ‘thing-like’ through the dominance of exchange relationships and is deeply connected to alienation. For Adorno, a reified cultural product, when coupled with the alienation of the audience, becomes pleasurable in that “the more reified the music, the more romantic it sounds to alienated ears” (Adorno, 1991: 41; Morgan, 2013). Another ramification of reification for Adorno was in how it “forcibly retarded” the development of audiences by rendering them dependent on the exchange relationship (Adorno 1991: 47). Thus, audiences could not develop sophisticated and autonomous responses to culture. Adorno did not claim that audiences were culpable, he was very clear that the impairment of their experience was due to the commodification of culture, and its associated reification processes.

Thus, Adorno insisted that the audience was ‘forcibly retarded’ by industrialised culture, having never been offered a full palette of cultural goods from which to choose. At a time of eco-system crisis, this assessment requires particular attention. The processes of alienation and reification place unreasonable responsibility on audiences to understand climate change science, decode the myriad pathways to climate action, whilst decoding the multiple ideologies that also frame the way in which climate change action is posited in media and culture. Although Adorno is considered a critical cultural theorist, his insights can be transposed to the socio-ecological dimension. We can problematise the socio-ecological relationship in a way that transcends the normalisation of reification or ‘identity thinking’.

For Adorno, ‘identity thinking’ was a mode of thought that identified with concepts and universals rather than appreciating the particularity and uniqueness of the subject in mind. This is reification at its core – where a rational concept can be made ‘thing-like’ due to its over-conceptualisation and where nuance is lost. If we return to our example of the soil, ‘identity thinking’ holds that it is inert, unmoving, stultified, yet existing as a resource for nutrients. The concepts with which we may view the soil can potentially be substituted for a more thorough understanding of the soil’s non-linear and organic processes.

Horkheimer and Adorno also critiqued identity thinking in relation to the socio-ecological relationship, which has implications for what can be known about action on climate change. As Nelson observes, their insistence on the significance of ‘non-identity’ thinking offers an alternative to instrumental and dualistic thought on the human-nature relationship (Nelson, 2011). A mistake of such thinking is that “animals and sensuous humanity are condensed into causally calculable nature, while rational humanity is exempted from nature” (Nelson, 2011: 108). For Horkheimer and Adorno, the flaw in this perspective significantly affects environmental praxis, in that “in not listening and responding to animals, environments, and the materiality of the world, which correlates with not being able to address and be addressed by them, numerous human forms of life and suffering are silenced” (113). In refusing this dualism, Horkheimer and Adorno’s analysis provides a more rounded ontological perspective, which in turn “offers strategies for engaging the contemporary environmental crisis by correcting the anthropocentric humanism, intersubjective constructivism, and deontological idealism of contemporary discourse ethics, dialogical ethics, and social contract theory” (106). Therefore, while circumspect about the potentials for radical praxis, Horkheimer and Adorno nonetheless foreground the necessity to encourage a dialectical ontological perspective beyond rational instrumentalism. This influences the way nature can be understood as I will next explain.

The socio-ecological relationship

Let us now address the ways in which the socio-ecological relationship may be described, analysed and problematised. In order to map this relationship, the work of radical geographers will be considered alongside critical cultural perspectives on alienation, reification and identity thinking.

Copious evidence reveals histories of stewardship over the ecosystem. However, the contemporary predominance of 'identity thinking', alienation and reification tends toward a reductionist view of nature and of humankind's historical and contemporary relationship with nature. As Kovel notes, traditional cultures, despite their spatial differences all recognised the "greatness of nature and the awe with which humans beheld it" (Kovel, 2013: 8). The work of Elinor Ostrom (1990) counters the ideology that humankind is not able to successfully manage ecosystems sustainably by citing case studies of communities across the globe managing finite resources in difficult ecological circumstances. O'Malley Gannon (2015) similarly analyses the 'rundale' system of common crop production on the Atlantic coast of Ireland that prevailed until the early to mid-twentieth century. The ecologically prudent nature of this system facilitated agricultural practices "in areas beset by extremely difficult physical conditions of production despite communities in those areas having little access to modern technology" (117). Co-operative stewardship of the rundale areas reveals that such communities "worked with nature using together different commonage spaces and commonage resources in a way that limited risks to agriculture and supported agricultural sustainability at an ecological level" (117).

Such historical examples of stewardship render the current formulation of the nature/society relationship as anomalous and reductionist. Current economic and social formations displace society from its fundamental basis in nature, and veil that relationship through alienation, reification and identity thinking. Thus, the current dysfunction of the socio-ecological relationship is such "that at the centre of all modern culture lies the subordination of nature to 'Man', and with this, the reduction of nature's ecosystems to instrumental resources, mere objects of its master's needs and desires" (Kovel, 2013: 8). When the ecosystem is reduced in this way, the range of imaginaries available can be viewed only through the lens of instrumentalism. Furthermore, as cultural communication is enmeshed in that instrumental logic, the realm of ideas available to discuss, problematise and critique the socio-ecological relationship becomes limited to those that foreground instrumentalism. The range of potential imaginaries with respect to the socio-ecological relationship is thereby diminished.

If we apply a critical theory of culture to the socio-ecological relationship, our understanding of why such imaginaries are diminished becomes clearer. From the contributions of the Frankfurt School, particularly Adorno and Horkheimer, we can see that a critical awareness of alienation, reification and identity thinking provides a way of problematising the current zeitgeist. In my view, the advancement of radical discourse and action on climate change lies in claiming agency and subjectivity away from identity thinking. We must allow for the possibility that the species is in fact capable of non-instrumental, non-rational interactions with nature, and that humans are capable of stewardship. From the refusal of humans as a destructive species, the structures of power and capital in which most of the species currently operates can be problematised. This, in turn, points towards the possibility and viability of a social praxis that does not regard stewardship of the ecosystem as anomalous, radical or dangerous, but as amenable to reconstruction across spatially disparate social groups.

Having established that traditional ecological knowledge reveals the capability to understand and implement ecological stewardship, we now explore how conceptions of the socio-ecological

relationship have been foregrounded under current economic conditions. Here, we can point to a rich interdisciplinary literature that complements the work of Horkheimer and Adorno in understanding perceptions of nature under conditions of capitalism (for example Foster, 2000; Smith, 2007, 2008; Moore, 2011a, b, c; Magdoff and Foster, 2011). This corpus considers how treatments of nature are linked to the production system and to social labour such that nature is formulated as “but a means to the end of realising an ecologically indifferent form of ‘value’, one measured in specifically capitalist terms as abstract, temporally denominated labour” (Castree, 2010: 193). This insight reinforces the ‘identity thinking’ critique in relation to the socio-ecological relationship under capitalism. The means-end formulation reifies nature as an object of social arrangements, and in so doing propounds the notion that nature is ‘thing-like’, available to society for its domination or control through technological, instrumental and rational means. At the same time, society is alienated from a nature which is positioned as an ‘other’ to be managed by capital and its technologies. A deeper perception of the socio-ecological relationship is obscured by alienation and reification process which make it “impossible to discern, in a non-arbitrary fashion, the boundary between capitalism, the social system, and ‘the environment’” (Moore, 2011a: 114). Thus, it can be argued that the reification process creates artificial bounded categories that do not exist in the socio-ecological relationship. Such bounded categories have implications for the understanding of the socio-ecological relationship and the ecological crisis associated with anthropogenic climate change.

Indeed, whilst society and ecology may be thought of as comprising a ‘world system’ (Moore, 2011a), the processes of alienation from nature and the reification of natural processes culminate in an ecological crisis where society is “radically estranged from nature” (Kovel, 2013: 6). Indeed, such a reified relationship can be described as one that “generates a pathological economy” (6) where the exchange value of goods is prioritised over their use value to the extent that exchange “takes on an estranged life of its own” (8). Such prioritisation is manifest in a fetishism for commodities that “flows into the religious character of accumulation, which, unlimited as only pure number can be, drives toward infinity and drags the planet Earth to ruin” (8). Thus, the capitalist accumulation imperative has changed the scale of human impact on the earth, while alienating humans from both awareness and control of this impact. This tendency has been intensified by the processes of globalisation and neoliberal environmental deregulation.

Alienation and reification processes therefore veil the interconnectedness of social and ecological crises. Instead of seeing them as connected processes, relations under capitalism have us believe that “in one box there’s a ‘social crisis’, and in another box that there is something that we can call an ‘environmental crisis’” that can be fixed “if we just fix the markets, fix the machines, if we just fix this or that problem that we put in a nice convenient, tidy little box” (Moore, 2011b: 137). This binary, or dualism, exemplifies identity thinking, and as such divorces society from an awareness of its situatedness in a wider ecosystem. Indeed, this schism between economic capital and ecological wealth “was precisely what was impossible before capitalism” (137), and is thus out of kilter with historical formulations of humanity’s relationships with nature.

Over recent decades, neoliberalism has intensified the alienation and reification processes pertaining to the socio-ecological relationship. One manifestation of this can be found in the preference for ecological consumerism over political action. Indeed, in the United Kingdom “somehow, buying organic food or Fair Trade coffee is seen as more effective than voting for the British Green Party or joining Greenpeace UK” (Castree, 2010: 198). This supposed offsetting of ecological destruction, itself wrought by conspicuous consumption, is typically neoliberal because it entails individualistic discourses of waste reduction, resource efficiency and green consumerism. The

message here is that continued spending and consuming is infinitely permissible, as long as the consumption is 'green'. This eco-market mentality does not conceptualise structural impacts on the ecosystem and who might be responsible for them. There is instead a soothing reassurance that citizens are 'doing their bit' by consuming. It thus seems preferable to remain in an alienated and reified relationship with nature even under conditions of ecosystem crisis.

Furthermore, the normative position of eco-consumption exemplifies the identity thinking problematised by the critical cultural theories of Adorno and Horkheimer. The problem in the nature/human solution duality is a simplification of the complex interactions between society and nature. On this matter, critics have argued that scholars associated with the later Frankfurt School, such as Honneth and Habermas, have fostered such a dualist position (Nelson, 2011). Indeed, "Habermas's and Honneth's antinaturalistic ethics of discourse and recognition appears to overly restrict the ethical to inter-human interaction, while nature, the environment, and animals are abandoned to instrumentalisation. Animals and environments are either considered analogically with human life or as objects of pragmatic calculation and manipulation" (Nelson, 2011: 111). This reveals the complexity of holding a meaningful dialectical position with respect to the socio-ecological relationship. On the one hand, Honneth and Habermas refuse, like Lukács, the more pessimistic position of Horkheimer and Adorno. Yet in doing so, they potentially neglect the nuanced and contingent relationships between society and nature.

In terms of the nature/society relationship under current political conditions, Swyngedouw observes the trend towards depoliticisation or "post-politicisation" (Swyngedouw 2014: 124). The practices of politics revolve around consensual and technocratic means, within a landscape that "reduces political terrain to the sphere of consensual governing and policy-making centered on technical, managerial and consensual administration (policing) of environmental, social, economic or other domains" (Swyngedouw in Bryant, 2015: 138). Significantly, "these efforts remain within the realm of existing social relations" (138), signalling that the socio-economic status quo is to be maintained as much as possible (Pelling, 2011; Davoudi, 2012). This is significant for our discussion because there are substantial socio-economic dimensions to climate change, which need to be the subject of political action. Post-politicisation implies that substantive political framings are disavowed in favour of a techno-managerial and bureaucratically consensual set of actions. And, universalising imaginaries which frame climate change as apocalyptic devalues politics in favour of a watered down consensus on action. (Swyngedouw, 2010). Indeed:

...the attractions of apocalyptic imaginaries are not to be gainsaid, and display various characteristics. Symbolically, they are extraordinarily powerful in disavowing or displacing social conflict, thereby foreclosing a proper political framing. Thus presentation of climate change as a global humanitarian cause produces a depoliticized imaginary – one that does not revolve around choosing one trajectory over another, one that does not articulate specific political programs or socio-ecological projects. Such mobilization without political issue led Badiou to declare, 'ecology is the new opium for the masses', whereby promising a benign retrofitted climate exhausts the horizon of our social and political aspirations and imaginations. Solutions then follow: technomanagerial and behavioural transformations organized within a liberal-capitalist order beyond dispute will 'retrofit' the climate (Swyngedouw in Bryant, 2015: 136).

In my view, post-political populism is a manifestation of alienation and reification processes. The commodity fetishism evident in consumerist processes intensifies under neoliberal conditions under 'free-market' states. Neoliberal ideology itself is premised on a vacuous and limited version of

freedom to consume and dignity as an economic entity with little regard to matters that lie outside the market (Harvey, 2005). With respect to socio-ecological relations, alienation and reification processes conflate the role of citizen with that of a consumer. This forecloses the potentials of radical action, as citizens are depoliticised in the reification process. Thus, whilst humanity is threatened by climate change, society or the people affected by climate change “are not constituted as heterogeneous political subjects, but as universal victims, suffering from processes beyond their control” (Swyngedouw, 2010: 222). What results (according to Moore, 2011a, b) is an entrenched dualism, which implies that nature is “other” and has a “causal power” to “derail civilizations” (Swyngedouw, 2010: 223). Problems are constituted as natural rather than social, thus implying that social action is ineffectual and therefore pointless.

Others such as Castree note the apathy concerning political action on climate change. Meanwhile, as mentioned earlier, ecological consumerism is seen as preferable to political action (Castree, 2010: 198). Natural space itself is becoming a site for extreme consumption and consumerism. Indeed, there has been an increase in “places of consumption” to which certain cohorts travel in order to consume, sometimes to excess, “certain products and services of global capitalism, legal, illegal or semilegal” (Urry, 2010: 205). These encapsulations of extreme wealth also bespeak structures of privilege and power. Here, the political economy of destinations such as Las Vegas, Dubai and the Caribbean is significant. These spaces are dependent on the exploitation of low-paid, semi-legal and illegal workers (207). They also operate as tax-havens for corporates and showcase the architectural, engineering and technical accomplishments of corporate investment, without regard for the ecosystem in which they are developed. Such places ideologically exemplify triumph over nature and “represent the ruse of reason by which the neoliberal order both acknowledges and dismisses the fact that the current trajectory of human existence is unsustainable” (209). Thus, while the ecosystem is subject to increasing distress, the spatially expanding consumption of nature challenges the notion that society needs to respect the planetary environment and excludes the efficacy of social praxis. However, as we will see, it is important not to relegate the potentials of such praxis, but to conceive of it as dialectically connected to alienation and reification.

The post-political, the possible, and praxis

The alienation of the social from the ecological, combined with the intensification of reification processes associated with consumerism have “evacuated the politics of the possible, the radical contestation of alternative future socio-environmental possibilities and socio-natural arrangements, and has silenced the antagonisms and conflicts that are constitutive of our socio-natural orders” (Swyngedouw, 2010: 229). Alienation and reification are thus reactionary processes which limit, marginalise and even exclude spaces for alternative, collective and strategic imaginaries around action on climate change. This influences the socio-ecological relationship in that “certain aspects of nature are available to some classes only as a conceptual abstraction, not as a physical partner or opponent in the work process” (Smith, 2008: 62). Natural processes as ‘first’ nature are replaced by manicured lawns, landscaped urban spaces and simulacra of the natural (Slater, 2013). Thus, the very possibility of apprehending ‘first’ nature, or the socio-ecological relationship, is further eroded as simulated nature is offered in exchange for the real thing.

In the post-political context, action on climate change is more likely to be discussed and ‘managed’ by “dialogical consensual practices” rather than by “proper political choice as the agonistic confrontation of competing visions of a different socio-ecological order” (Swyngedouw, 2010: 226).

In the case of ‘green’ politics, organisations such as Greenpeace have undergone a rapid transformation in how they engage with climate action. They have veered away from “engaging in a politics of contestation, organized action, radical disagreement and developing visionary alternatives” (227). Instead, such organisations, along with green political parties have undergone an “integration into stakeholder-based negotiation arrangements aimed at delivering a negotiated policy” (228). This signals a turn to the post-political at the level of non-government organisation (NGO) and party politics as an accepted normative practice.

For Swyngedouw, ideas of “great new fictions that create real possibilities for constructing different socio-environmental futures” are required (Swyngedouw, 2010: 228). He advocates the practice of “reclaiming proper democracy” including “public spaces for enunciating agonistic dispute” (Swyngedouw in Bryant, 2015: 142). In drawing from Balibar’s (2010) concept of “ega-libertarian” spaces, where equality and freedom are aligned, Swyngedouw suggests that such public spaces would enable the “naming of positively embodied ega-libertarian ... socio-ecological futures that are attainable” (142). In noting the vast challenge of anthropogenic climate change and ecosystem distress, Swyngedouw also remarks that “egalitarian ecologies are about demanding the impossible and realizing the improbable” (142), rather than hoping that the existing status quo will provide adequate responses. In a sense, Swyngedouw is discussing conceptual ideas and geographic spaces of praxis. It is to such matters that we now turn.

So far I have argued, first, that it would be unwise to neglect or downplay ideas of alienation, reification and indeed the post-political condition and, secondly, that this condition is not total. In acquiescing to the totality of that condition, the voices of those actually engaged in radical praxis are disavowed. It is thus imperative to maintain the dialectical and contingent potential for radical praxis, even under conditions of generalised alienation and reification. Opposition to the Dakota Access pipeline is a case in point. Following major protests, the Obama administration refused a permit for the pipeline to be drilled under the Missouri river, signalling a significant environmental victory for not only the ecosystem, but the indigenous Standing Rock Sioux tribe. Their land and sacred sites were directly threatened (Wong, 2016). The protesters who had camped at the development vehemently maintained their ecological rights to be represented under conditions of state opposition that included the use of rubber bullets, water cannons and teargas (Wong, 2016). However, while this act of praxis was successful, Obama’s decision was reversed once the Trump administration reviewed it and allowed the project to proceed. A chief executive of the company building the pipeline is reported to have donated \$100,000 to Trump’s campaign (BBC, 2017). In a more recent development, a federal judge concluded that a thorough environmental impact statement accounting for effects of spills was not conducted (NoiseCat, 2017). Therefore, the decision to approve the pipeline was illegal.

The protests clearly show the dialectical nature of praxis under conditions of alienation and reification. Thousands of citizens mobilised to set up camps to support the protesters, revealing that alienation from nature is not total, nor is the idea of the post-political condition. Furthermore, the considerable media attention also revealed that reification in culture is not total in respect to ecological matters. And, although Trump allowed the first decision to be overturned, his power to do so was subsequently contested by a federal judge. This turn of events points to the fact that alienating and reifying forces are not total, and that the powerful do not rule absolutely. This cannot be cause for excessive hubris; such victories must be seen under current conditions as fragile and contingent. Nonetheless, in terms of praxis, the protests showed that radical praxis can be effectual.

This brings us to the ideas of praxis themselves, and how they might be understood in the contemporary setting. A ‘third generation’ Frankfurt School theorist, Axel Honneth, has attempted to

refine Lukács' ideas of praxis. As discussed earlier, Adorno critiqued Lukács for his idealism and romanticism, and Lukács found Adorno's pronouncements on praxis and radical action nihilistic and disempowering. Honneth has attempted to build on both the work of both.

He argues that thinkers such as Horkheimer and Adorno provided "inadequate accounts of the social and restrictive theories of social action" (Petherbridge, 2011: 3). Indeed, he characterised the 'second generation' Frankfurt School, exemplified by Habermas, as seeking to effect the "recovery" of the social, which had suffered a "definitive repression" under Horkheimer and Adorno (Hall, 2011 in Thompson, 2011: 195). Honneth can be seen as attempting to synthesise rather than reject the critique and conceptual positions of earlier Frankfurt School theorists. His project can be understood as "directed towards the key problem of reconstructing a conceptual framework that can both comprehend the structures of social domination and identify the resources for its practical transformation" (Petherbridge, 2013: 1). There is therefore an "emancipatory intent" in Honneth's work that may be more understated, or even neglected in the work of earlier Frankfurt School theorists (Zurn, 2015: 1). He draws on the critical, descriptive and diagnostic strengths of earlier Frankfurt School theorists, while turning more attention to "contemporary social struggles for recognition and social freedom" (5). The Frankfurt School were noted for their immanent critique of the status quo. Honneth seeks to extend this into the "the 'immanent transcendent'" by examining practices of intersubjective recognition (6).

In specific terms, Honneth investigated how "social practices and institutions are integrated and reproduced through specific regimes of recognition" (Zurn, 2015: 7). He suggests that such relationships change over time such that social change becomes visible. This perspective cautions against assuming that alienation and reification are total across all times and spaces. Honneth implies that from the outside, it is difficult to ascertain to what extent an experience within a relevant group engaging in praxis may be generalised at any point in time. However, once experiences of misrecognition become generalised and obvious, a critical mass of thought and praxis emerges where "the potential exists for social movements aiming to change an insufficient status quo toward a more just recognition order" (7). If the Dakota Access pipeline protests are viewed through an Adornian lens, alienation and reification can explain the failures of the protests to have secured a permanent overturning of the proposed project. However, when Honneth's perspective is taken into account, a potentially more transformative potential unfolds. At any point in time, it is difficult to foreclose the purported success or failure of a protest. Honneth's critical social theory recognises the contingency in acts of protest, while allowing for societal positions to shift over time to redress the unjust social and ecological practices which have attracted opposition. In Honneth's perspective, "reifying behaviour" exists "as a form of distorted social praxis" (Thompson, 2011: 200).

In relation to reification and praxis therefore, Honneth is nuanced, both returning to Lukács' concepts of reification, and extending them. Three forms of reification in Lukács are identified: reification of objects and nature; reification of other people; and reification of the self (Thompson, 2011: 198). For Honneth, reified behaviour is not attributable to an individual or moral failing, rather, it is a failure of social praxis. This leads to the realisation that "if reifying modes of behaviour are ultimately distorted forms of social praxis then, ... it must be possible to specify, in positive terms, the genuine forms of praxis that they are a distortion of" (199). However, given the primacy of recognition in Honneth's project, the Lukácsian notion of praxis as organic and improvised is somewhat undermined. In Honneth's formulation, genuine praxis is predicated on full intersubjective recognition. However, it is clearly the case, as in the Dakota Access pipeline, that radical praxis can be possible without intersubjective recognition. Thus, Honneth's formulation of praxis "represents a

missed opportunity to inject into contemporary debates hitherto unconsidered forms of action as well as overlooked forms of social pathology” (201). Indeed, in downplaying the idea of spontaneous praxis, Honneth somewhat misses the significance of the lived, embodied potentials of praxis. This is a crucial point. If an ‘unrecognised’ or partially-recognised group have a potentially alternative socio-economic or socio-ecological paradigm, its instigation and development are necessarily contingent on gradual paradigm shifts. The paradigm does not shift automatically, or in one whole movement that generates intersubjective recognition. In achieving one progressive victory to shift the status quo, another step has to be taken afterwards to keep momentum.

The improvised and spontaneous aspect of praxis can be seen as necessary for recognition, although not dependent on it. The Dakota Access pipeline protests show the dialectical and iterative aspects of praxis (arising from the success and failure thus far). If the project of moving towards a more emancipatory socio-ecological paradigm is to be achieved, such praxis has to be continued so that socio-ecological issues can be the subject of full intersubjective recognition. Therefore, ideas of praxis and its emancipatory potential must be combined with an understanding of the socio-ecological relationship that transcends rationalistic ‘identity thinking’. In this respect, one need not regard different generations of the Frankfurt School as antagonistic. My preference is to consider the theoretical stances in relation to alienation, reification and praxis as ever-dialectical.

Conclusions

This article has problematised the processes of alienation and reification, with a view to assessing whether a critical understanding of them can challenge standard societal responses to climate change. It takes the standpoint that these processes are active in societal formulations of both nature and culture. In this respect, the work of critical cultural theory can be ‘ecologised’ in order to assess the potentials and limitations within society for radical action on climate change.

Despite differences in perspectives amongst members of the Frankfurt School of critical theory, the importance of non-identity thinking and the dialectical sensibility remain to the fore (against the preponderance of alienation, reification and identity thinking). However, one must also appreciate the view that a market economy could, through intensification of commodification (and the associated processes of alienation, reification and identity thinking) create a society “where individuals and communities are somehow encouraged to ‘live with’ the fairly stark forms of creative destruction that are the hallmark of capitalism in its ‘free market’ form” (Castree, 2010: 193). Thus society adapts to successive encroachments of capitalism which marginalises revolution or meaningful change. Societies adapt to commodification, as the self-narrative of capitalist culture articulates how it can both self-manage and manage nature.

However, worrying though these predictions are, Adorno also argued that these social relations of production and exchange are man-made and therefore temporary and reversible. The prospect of annihilation of the species might provoke in the zeitgeist the means to avert it. The self-preservation necessary under capitalism is deemed self-destructive, as is exchange. They must, therefore, be transformed. In this regard, progress is dialectical, in that like capitalism itself, destructive processes of self-preservation have embodied in them the negation and transformation of the system. There is thus a veiled hope, predicated on the ability of society to transcend the alienation and reification inherent in the capitalist mode of production.

For Adorno and Horkheimer, critical thinking was key. Adorno regarded unthinking action as ineffectual. He issued a retort to Marx’s own dictum that the point was to change the world, noting

that “*one* reason why the world was not changed was probably the fact that it was too little interpreted” (Cook, 2011: 115). Thus, further sustained critique, interpretation and understanding is, for Adorno, necessary to change the system. However, it would be wise for such intellectual sensibilities to be influenced by ‘non-identity thinking’ rather than an over-reliance on conceptualisation, generalisation and instrumentalism. If we take Adorno’s advice, our understandings about responses to climate change can move beyond dominant policies and actions that are imbued with identity thinking and over-identification with abstract concepts.

However, as we have seen, charges of nihilism have been wrought against thinkers such as Adorno and Horkheimer. Interminably analysing the societal conditions of capital is ineffectual, in that an avoidance of praxis may eventuate. Both Lukács and Honneth were critical of that position, and therefore foregrounded the importance of praxis. Thus, if both sets of thinkers are considered, a position emerges that allows for praxis to be contingent, spontaneous and improvised, yet with an emancipatory goal. What has been offered in this article is a move towards understanding the underlying processes of alienation and reification that are intensifying under neoliberal capitalism. This, in turn, activates the potential to reject neoliberal solutions to ecosystem crisis that involve further ‘production all the way down’ (Smith, 2007). From here, the potential exists for an active opposition to the current system in the form of spontaneous praxis. Such praxis potentially provides transitional, improvised and piecemeal moves towards intersubjective recognition with respect to the prevailing socio-ecological condition and ecological crisis. This crisis has brought together the “environmental working class” (Foster, 2013: 17) and all those who reject the naked intensification of free-market economic growth. Change will not necessarily come in one major act. Rather, it will emerge from those countless acts of critical praxis which advance practical knowledge and theory in action.

Endnotes

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