Energy, complexity and interior development in civilisational renewal

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Abstract

Purpose: Slaughter has proposed futures in which interior human development matches that of technological development as our best prospect for avoiding catastrophic collapse through overshoot of the Earth's carrying capacity. The purpose of this article is to highlight the importance of the primary energy resource context in making sense of the prospects for such futures, and to consider how subtle changes to our conceptual models for understanding the nature of human development can offer alternate pathways for proceeding in light of the fundamental limits this imposes.
Design/methodology/approach: Conceptual models for the relationship between energy and social complexity are reviewed, and proposals for connecting social complexity with interior human development are discussed. Popular models of interior human development are critiqued in light of recent clarifications relating to Integral Theory; specific reconceptualisations are proposed.
Findings: Technological and interior human development are intimately linked. There are important interdependencies between energy and social complexity that must be taken into account in establishing expectations for the way that these realms might evolve together. This presents significant challenges for realising on a society-wide scale development of the nature commonly associated with Integral Theory. However, alternative ways of conceptualising such development offer fresh opportunities for confronting the spectre of environmental and social breakdown.
Originality/value: The implications of models relating social complexity and resource context are extended to questions of human interior development; the unit of development is extended from the individual in relative isolation to the organism-in-environment.

1. Introduction

Richard Slaughter's exploration of the prospects for industrial civilisation, *The Biggest Wake up Call in History* (*BWCH*), is distinguished by its unusually comprehensive treatment of the nature and origins of our present global predicament. This is exemplified by his extensive consideration of the collective cultural worldviews and stories, and the individual capacities for sense-making and acting, underpinning our situation. Moreover, he extends this depth of consideration from assessment and analysis to the question of *response*. In thinking about how we might maintain human societies of satisfactory quality, Slaughter posits a spectrum of possible and preferred futures. This encompasses but extends beyond existing collapse and descent scenarios that he sees as having captured a large share of the more credible and better informed civilisational futures discourse.

Slaughter's futures spectrum is characterised by two principal variables, namely degree of *technological sophistication*, spanning from low to high technology, and predominant *societal worldview*, ranging in hierarchical complexity from "egocentric" to "kosmocentric" (see Fig. 1). In this way, he moves well beyond more familiar presentation of future images in terms of an overemphasis on exterior social and techno-economic forms. Beyond this again, the consideration of interior cultural characteristics extends to discussing the great importance, in his view, of the individuals who comprise a given social collective moving through the

hierarchy of worldviews, if we are to enact worlds aligned with the preferred image of "Civilisational Renewal & Fresh Horizons".

Within an overall context of appreciation for the significant nuance and thoroughness of this approach, a number of critical issues demand closer attention. Firstly, it is noteworthy that an essential and fundamental background element in the dire predicament to which *BWCH* responds, the primary energy resource base, is omitted from view. In considering the viability of any imagined future, the primary energy sources to which the society has access must be taken into account, as this has implications for the degree of institutional complexity that can be supported, and hence for the nature of its technology.

Secondly—and noting that this involves important interrelationships with the considerations outlined above—it may well be reasonable to posit a degree of dependence between a society's *energetic* context and the nature of the interior capacities that are realised on a population-wide scale. Available energy has implications for the ways of life amongst which we can choose, or to which we are subject, and hence for both a) the nature and extent of the mental demands with which our environments present us, and b) the leeway that we have to engage in interior development in response to these demands. This in turn raises questions about the nature of *adaptive* interior growth in the context of descent futures.

Thirdly, the way in which we understand interior development warrants closer scrutiny, in light of recent discussion on the nature of *integrality* and its suitability for characterising late-stage psychological growth. Far from undermining the value of the insights upon which *BWCH* is based, an alternative way of appreciating integrality may have beneficial implications for addressing the concerns raised above regarding a nexus between energetics and interiority.

The further thinking that I hope to encourage here stands to advance our understanding of, on the one hand, how the preferred future images sketched out in *BWCH* might guide our action in the present, and on the other, how ideas of what is preferable in the first place might continue to develop.

2. Overshoot, collapse and descent: definitional distinctions

Slaughter positions his preferred future of "Civilisational Renewal & Fresh Horizons" as an alternative possibility to societal-scale *overshoot and collapse*. In order to understand how this orienting image differs from others' collapse or descent scenarios, definitional clarity is required in relation to the concepts of *overshoot*, *collapse* and *descent*. Overshoot in both academic and public discourse usually describes the outcome when a population exceeds the carrying capacity of its environment—leading to decline in availability of resources necessary for that population's continuation (Tainter, 2006a). In positing such a mechanism as a threat to the viability of contemporary industrial societies, Slaughter draws in particular on *The Limits to Growth* (*LtG*) (Meadows et al., 2005). While recognising the overall value of the *LtG* thesis as an exploration of plausible *futures*, it's worth noting that in reviewing the archaeological literature, Tainter (2006a) finds the evidence for the role of overshoot in the decline of *past* societies to be at best equivocal. He is particularly critical of Diamond's (2005) views regarding the relationship between environmental deterioration and declines in human population. The cases that Diamond examines are more complex, and the major change processes at play less certain, than his thesis suggests. According to Tainter, human societies tend to have greater capacity than is recognised in Diamond's thesis for flexibly adjusting to emerging circumstances.

In Slaughter's account, *collapse* relates to breakdown in both non-human ecological systems and human social systems. It's the avoidance of the latter, including as a consequence of the former, with which he is particularly concerned. On this basis, following Tainter (1988) I use

the term collapse here specifically in relation to the loss of established levels of social complexity, measured by indicators such as the extent of differentiation in economic roles amongst a society's members, the degree of specialisation associated with these, the extent of the formal institutions and bureaucracies required to administer and manage a society's affairs, and the population proportion engaged in activities other than—and hence supported by—primary production.

Tainter's collapse model is part of a broader account incorporating the process by which societies initially increase in complexity. According to Tainter (2011), sustaining a given system of valued social arrangements requires that members of a society continue to solve the problems they encounter. Social sustainability is an active condition of problem-solving. Societies grow in size and complexity through being successful in this respect; success depends in turn on the availability of a resource base—especially an energy surplus—capable of expanding to support the *costs* of complexification. Where further resource expansion is curtailed, declining *marginal* return on investment in complexity as a problem solving strategy eventually leads to a plateau and then decline in *actual* returns. At this point, a society is forced—if it hasn't already *chosen*—to abandon arrangements contributing to its peak level of complexity. This abandonment—whether forced by circumstance, or through active choice—constitutes what Tainter means by collapse. Abandonment by choice is historically rare: the only societal-scale case he identifies is that of the Byzantine Empire in the seventh century CE (Tainter, 2000). While the concept of collapse tends to invoke dystopian associations, many strategies proposed in response to our contemporary situation can be appreciated in these very terms. When I advocate for the benefits of shifting our default mode of urban personal transport to bicycles in preference to Driver Only Driver Owned cars (DODOs) (Fisher, 2008), I'm essentially championing a form of collapse involving the abandonment of a particular set of social arrangements. That is, while commuter cycling is often regarded as promoting *sustainability*, where it replaces more resource intensive arrangements such as personal automobile use, it might be better regarded as promoting *resilience* (Tainter, 2006b); it is a response that involves intentionally *not* sustaining the incumbent social institutions and infrastructures.

While Tainter explicitly defines collapse as *rapid* loss of social complexity, playing out on a timescale of decades, Greer (2008) questions the necessity of treating this as essential, given that similar patterns in the loss of complexity are evident in the historical and archaeological record on timescales that extend well beyond this, as Tainter himself acknowledges. Like Tainter, Greer bases his thinking on historical accounts of past societies for which complexity has reduced over time. In relation to the long-term consequences of this reduction in complexity, he favours the term *descent*, partly on the basis that collapse tends to invoke apocalyptic images of the sudden loss of social organisation and cohesion "all at once" leading to society-wide chaos and destruction. Greer's *descent* concept recognises discontinuous and discrete phases that together comprise a general trajectory of decline. He reserves the term *collapse* for the particular mechanism by which social complexity reduces; his own model of *catabolic collapse* combines Tainter's findings with the environmental perspective advocated by researchers including Diamond (Greer, 2008). Terminology aside, Tainter and Greer are dealing with the same social change processes; both are interested in questions of how societies decline "in reality", as distinct from the apocalyptic visions of popular imagination. It is discourse of the nature that Tainter and Greer engage in that Slaughter regards as offering 'greater scope for human action and new grounds for informed hope'(2010, p. 101).

An alternative way to make sense of the descent process is as a form of *evolutionary drift* (Maturana and Varela, 1988), as members of a society actively *conserve their adaptation* with social and natural environments, in the overall context of a contracting resource base. The evolutionary drift metaphor can help avoid the conceptual trap of treating fitness between

individual or social group and environment as a matter of *optimal* rather than *viable* adaptation (Thompson, 2007). This will take on particular significance in examining later the role for interior development in mitigating collapse or its consequences.

3. Energy resources, institutional complexity and societal futures

Tainter's and Greer's models highlight the strong dependencies between the sustainability of social systems, continuous problem solving, institutional complexification and resource availability. In light of this, in relation to Slaughter's characterisation of possible futures in terms of *technological sophistication* and *societal worldview*, we can now ask how reasonable it is to consider the nature of a society's characteristic modes of technology independently of other key attributes in considering that society's prospects. All technological developments require commensurate levels of institutional development—integrating increasingly diverse techniques for the manipulation of matter is possible only where the social means are available for coordinating the work of many individuals acting in differentiated and relatively discrete roles. This is the basis on which Mumford (1966) recognises language itself—the informal institutional foundation for all human social organising—as humanity's pre-eminent invention, surpassing every subsequent achievement in transforming our environmental conditions. It's against this background that the primary energy resources to which a society has access play such a prominent role in the society's future technological prospects: following Tainter and Greer, by placing constraints on the level of institutional complexity that can be supported, energy resources have flow-on consequences for the complexity of the technology platforms that can be developed, applied and maintained in practice.

That the role of primary energy sources—and of the fuels that are derived from them—is essential to understanding the economic basis and associated technological context of any given form of social organisation can be seen clearly in relation to the organisational forms arising with industrial civilisation enabled by fossil fuels, and especially conventional petroleum. In this sense, *energy* resources occupy a special place in our attempts to understand the nature, origin, course and future prospects for social systems in resource terms. Energy resources can be regarded as the keys that unlock other resources: having sufficient energy available in appropriate forms enables access to the other resources we need.

Appropriate technologies are needed to make the energy associated with primary sources available to us in useful forms—but the characteristics of the energy resources themselves play an intrinsic role in shaping a social system's prospects; appropriate technology is necessary, but not sufficient, for making available the energy required to support a given level of social complexity. No amount or quality of technology can on its own substitute for the absence of suitable primary energy sources.

While fossil fuels in general—and conventional petroleum in particular—have various characteristics that mark them as unique and quite remarkable amongst the energy sources with which human societies have evolved to their present forms, conventional petroleum stands out for both its convenience of handling and storage, and for its high *energy density*. These characteristics are central to its role in directly fuelling almost all of industrial society's transport. Each has fundamental implications for the nature and scale of the infrastructure, and hence the amount of economic activity, required to make petroleum-based fuels available to us in useful forms. Returning to the portrayal of technology in futures imaging, it's apparent that while this has an important role to play, any society's capacity to meet its aspirations is inherently dependent on the associated energy requirements. This is not just a question of energy *quantity*—we must also take into account a range of critically important considerations associated with the *quality* of available sources. Ingenuity or technological sophistication cannot overcome this—rather, these social factors influence the *extent* to which the primary energy sources that *are* present can be exploited.

Following from this, technological development has only very limited scope to substitute for the *energetic* surplus required to maintain the levels of institutional complexity that support what we typically understand as *high* technology itself—and hence the benefits of such technology are dependent on an appropriate resource base. It is in this sense that the technological means available to us are subject to environmental constraints, not simply to socio-political limits. This has critical implications for the widespread view that energy sources of great abundance and concentration await us, if only the right (lower-energy-enabled) technological key can be cut to unleash them. Such a view tends to misconstrue the relationship between know-how and energy availability. The dream of harnessing nuclear fusion's energy potential—sometimes taken as the basis for positing futures in which "anything is possible" materially—is a classic case in which such contextual naivety is often evident. Efforts towards this proceed in the hope that it might be a) possible b) practical and c) a significant net provider of energy in forms useful to us—but such hopes typically involve discounting the investment role played by our *present* energy resources in enabling research. Even the marginally more modest vision of transitioning complex industrial societies en mass to renewable energy sources is subject to the basic limits this entails (Smil, 2010a).

Holding in mind this relationship between technological sophistication and energy availability, if we're to make most effective use of the zone Slaughter calls "Civilisational Renewal & Fresh Horizons" (see Fig. 1), we need to know something about the primary energy sources envisaged to get a sense of the potential this might hold, and what the prospects might be for heading in such directions. Possible futures for contemporary industrial society are by necessity intertwined with declining availability in the ultimately limited fossil energy resources with which this system of social organisation has evolved (Floyd, 2012). There are direct implications for decline in the level of societal complexity that might be maintained. If it is *collapse* (following Tainter) or *descent* (following Greer) with which we're concerned, we must come to terms with the energy resource question. Whether we describe the process as collapse or descent, a decline in availability of the energy resource base that supported a society's earlier complexification, *and the absence of a suitable alternative*, sets the stage for a subsequent decline in complexity. Nonetheless, this does not imply inevitable loss of all valued attributes of our present ways of organising—such loss is a function of how resilient these are in the face of reduced institutional complexity. Without wishing to downplay the serious hardships that typically accompany decline in a society's energy resource surplus and associated reductions in techno-economic and institutional complexity, humans clearly live well today—as they have done in the past—in situations far more modest in energetic, material and organisational terms than those characteristic of contemporary industrial societies with the highest rates of per-capita energy use, and the most complex institutional arrangements (Smil, 2010b).

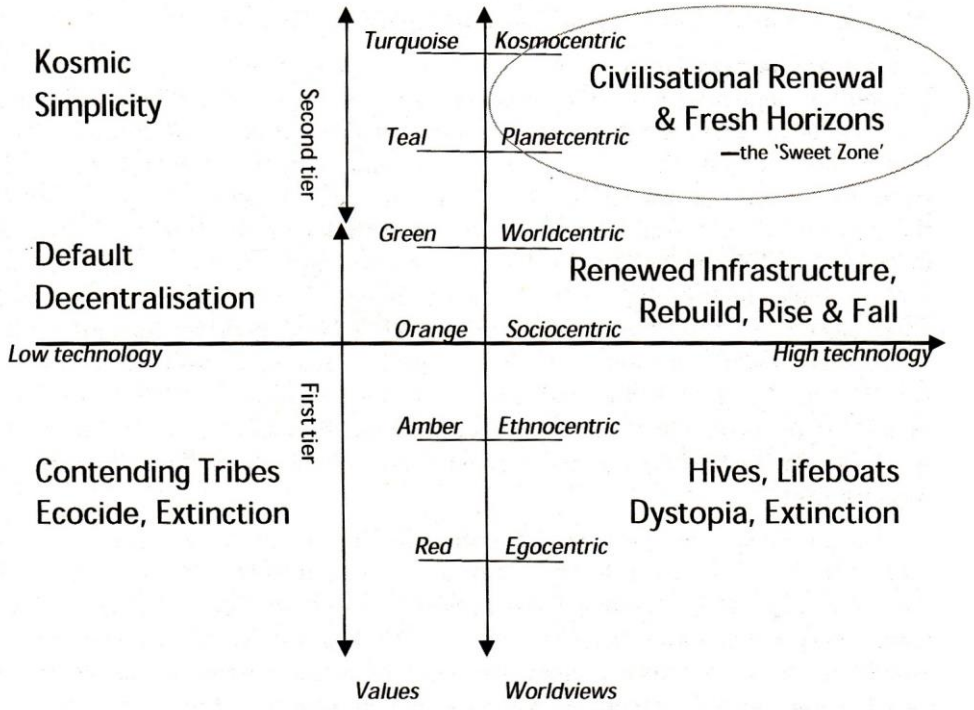

Figure 1: Futures Imaging Matrix from *BWCH* (Slaughter, 2010, p. 168, fig. 11.1). Used with permission.

4. The energetic context of interior development

The significance of a society's energetic context is not restricted to its technological prospects. As noted in introducing the preceding section, the requisite social complexity on which human technological development depends—at least beyond the most rudimentary levels—is itself enabled by our capacity for organising *linguistically*. The near-universal participation of humans in linguistic organisation lends this capacity an important democratising function. In Mumford's terms, 'Every member of the community has access to this linguistic organization and can use it up to the capacities of his experience and intelligence, his emotional responsiveness, and his insight' (1966, p. 97). The implicit caveat here is crucial though: while participation in linguistic organisation *in general* may be close to universal, the extent to which each of us can participate in *specific* organisational forms depends on capacities that vary between individuals, and within individuals across their lives. Social environments place demands on our minds; the success with which we can participate in these environments depends on how well-matched the complexity of our minds is with that of the demands (Kegan, 1997). According to Kegan, the transformations in mental complexity by which human psychological development unfolds are a function of both the challenges presented by the culture-at-large, and the support provided for organising our meaning-making in ways commensurate with the complexity of the challenges. It's in this context that energy resources also have important implications both for the demands placed by our environments on our interior capacities, and for the processes by which interior transformation unfolds, with consequences in turn for the nature of the interior capabilities potentially available to members of a society, and for how extensively these might be realised across a population.

While individual human development cannot be separated from the socio-cultural context with which the individual is developing, development also cannot be separated from the techno- and political-economic circumstances that afford individuals different transformational opportunity. In the Tibetan Buddhist tradition, the circumstances that allow some individuals to develop societally-valued interior dispositions are typically translated as "leisures and endowments" (Kyabgon, 2003). Certain conditions support transformation better than others. Traditionally—that is, in pre-industrial times—the circumstances that underpinned more

organised and widespread (as distinct from isolated and idiosyncratic) individual development were typically those of the monastery or nunnery. Having the time to devote to training associated with such development was a matter of ensuring a suitable resource surplus. Such a surplus can be achieved by having very modest resource needs—with the added advantage that living in self-enforced conditions of relative material poverty offers those who might help themselves to this surplus the prospect of only a modest return on their effort. Living in relative poverty is one way to ensure sufficient spare time away from materially productive labour to focus on interior development.

In contemporary Western societies, the institutional arrangements supporting interior development tend to take the form of what Kegan (1997) calls *self-expansion activities*, including therapy, formal classroom learning, and participation in organised religious or spiritual practice. For Kegan, the real work of modern society is not just that which we do to earn a living, but the work that we do on ourselves. It's noteworthy that the rise to prominence of such work coincides with the early emergence of postmodern outposts within characteristically modern industrial societies, for which Habermas (1979, p. 165) speculates that, consistent with preceding socio-cultural forms, 'a scarce resource would become thematic,' in this case, 'the supply of motivation and meaning.' The characteristic problem with which citizens of such societies, in Habermas's (1979, p. 165) estimation, are likely to be occupied is that of '*self-regulated exchange of society with internal nature*'—as distinct from exchange with *external nature*, the focal problem of industrial societies, where the principal scarce resource is economic value. To understand how so many of us today have the opportunity to engage in work aimed at addressing not only the supply of value, but that of motivation and meaning, a key characteristic of industrial organisation must be taken into consideration: the substitution of fossil fuels for human labour in most areas of materially productive activity. In short, most of us in industrialised societies are required to do very little physical work in order to meet our material needs. On average, we each command many times the work capacity, via fossil-fuelled machines, that we could produce through our own labour directly. As a result, we have a great deal more *discretionary* time than those living in non-industrialised societies—which is not necessarily to say *free* time, rather time that may be devoted to interests and activities other than those required to meet survival needs. Moreover, the institutional complexity that our large-scale command of mechanical power requires for its direction and oversight entails that the work we *are* required to carry out focuses on the manipulation of symbols rather than matter on a much greater scale than in any previous age. This has entailed the complexification and democratisation of certain types of conceptual skills that were previously the domain of a much smaller proportion of a society's population. The ubiquity of jobs relating to product marketing, corporate communications and IT illustrates this well.

Consider then that the research identifying the emergence in individuals of late-stage psychological development (associated by Slaughter with the planetcentric and kosmocentric worldviews depicted in Figure 1) has been conducted in the context of the contemporary industrialised world (Wilber, 2000). This is not to suggest that the *occurrence* of all aspects of the identified development is itself necessarily a consequence of industrialisation—but its identification, and our understanding of its relative *prevalence*, cannot be separated from this background context. The knowledge developed in recent decades into the ways that interior capacities in human beings unfold reflects interests and research methodologies that are themselves set against this industrial-world backdrop. We are now seeing the individual human in terms of concepts and categories established within this industrial context itself. Individual human developmental capacities with characteristics similar to—and even beyond—those that have been formally identified by contemporary research were very likely enacted by people in pre-industrial times also—but in the absence of an interest in describing this and availability of the means to do so, these did not necessarily show up as phenomena in their own right. If it is

reasonable to suggest that these late-stage capacities are dependent for their emergence on appropriate socio-cultural circumstances, and that not being burdened by the need to engage in long hours of arduous physical labour in order to meet one's immediate survival needs correlates positively with developmental opportunity, then it also seems reasonable to suggest that we might expect to see greater prevalence of such development in the present era than was common in previous eras. If so, then increasing prevalence of late-stage interior development is itself positively influenced by more abundant and highly concentrated primary energy sources. If we conclude that human interior development seems to be on an "upward trend"—more people moving into later stages of development today than appears to have been the case in the past—then it seems that it would be inappropriate to characterise this as a phenomenon independent of the energetic and techno-economic circumstances within which it is occurring.

Note that this argument does not hinge on time availability alone, but on the relationship between time available for activities beyond meeting basic material needs, and the complexity of the mental demands typically encountered by a society's members. It has long been recognised that members of at least some hunter-gatherer societies worked relatively few hours per day to meet their nutritional needs, leaving significant scope for what we might today recognise as "leisure time" (Sahlins, 1972, Lee, 1979). It is also generally recognised, though, that such circumstances coincide with very modest material needs, and moreover, very low levels of social complexity—inferring commensurately modest demands for mental complexity amongst most members of such societies. Descent trajectories for industrial society do not imply a widespread return to hunter-gatherer ways of life (though neither is this necessarily precluded as part of a broader social ecology). Especially during an initial transition period, descent might be better understood as the reinforcement—drawing again on Habermas (1979)—of the industrial world's concern with *self-regulated exchange of society with external nature* as the preeminent problem focus, rather than an advance towards greater concern with self-actualisation, or rapid retreat to the more fundamental problems of earlier historical epochs. As Kegan (1997) highlights, the "mental curriculum" of modern industrial societies is a stretch for most of us even today, when we still have ready access to the full range of self-expansion institutions. There is abundant scope even within environmental conditions of declining institutional complexity for the challenges with which we are collectively faced to overwhelm the interior coping capacities that most of us currently have on hand—under such conditions, the "honours course" of post-modernity may have diminishing relevance, while also being decreasingly attainable.

On this basis, we may need to look more closely at the prospects for widespread individual interior transformation of the scale imagined by Slaughter in chapter 11 of *BWCH*—it seems reasonable to posit that the spread of such transformations across populations (as distinct from the depth of any *individual's* transformation) is dependent on a resource *surplus* that is a function of: a) the particular life expectations that we hold; and b) the commensurate resource-constrained techno-economic means available to us. Following from this, in the absence of a primary energy resource base suitable for obviating the need for an increasing proportion of us to engage in physically demanding labour, what it is that constitutes an *advanced* technological base might be better understood in terms of Schumacher's (1973) *intermediate* technology, rather than contemporary notions of *high* technology. It may be that a focus on intermediate technology—technology that extends the productivity of individual workers, rather than seeking to replace them—and widespread acceptance of suitably simplified material needs could herald an age in which, despite primary energy source constraints, many people engage in interior transformational practices towards teal-turquoise values and planetcentric-worldcentric worldviews, something along the lines of Slaughter's "Kosmic Simplicity". This assumes, though, that the institutions in which citizens are required to participate and the challenges of societal membership are commensurate with the development of such values and worldviews. For future societies inherently less complex than those within which these late-

stage values and worldviews have only relatively recently been recognised and championed, the appropriateness of this assumption remains an open question.

There may be reasonable grounds for considering that future institutional environments will demand of most of us on a day-to-day basis *lesser* rather than *greater* mental complexity, compared with that demanded of us today by industrial societies. In the absence of energy sources of the nature that our present social institutions have evolved with, and in the presence of historically typical aspirations for material accumulation, we may well find that the late-stage development that Slaughter characterises in terms of teal-turquoise values and planetcentric-worldcentric worldviews is beyond reach of all but a small part of our populations. In either case, technology level plays the role of an enabling factor, the means of "making the most of what we've got" energetically, while also shaping in important respects the nature of the mental curriculum for which citizens will require mastery if they are to participate fully in a society's institutions. In a world characterised by declining availability of concentrated, convenient and cheap fossil energy sources, we will have far less technological leverage than we do at present for influencing our material circumstances—in this sense, even if technology takes forms that we would recognise as advanced today, we will face basic limits to the amount of *work* that we can make it do for us. As such, future advanced technologies—technologies that are themselves enabled by and reflective of advanced stages of *interiority*—will almost certainly be less ubiquitous than the technologies that we today regard as advanced: with the depletion of our fossil fuel endowments, we will lack the energetic means for their proliferation.

5. Reflecting on the normative nature of *integrality*

In the discussion above, I have proceeded on the basis that late-stage psychological development does in fact unfold as Slaughter describes, and following from this, that widespread development of this nature is therefore a desirable response to the prospect of overshoot and collapse. At this point I will make a significant departure from this stance, by calling into question the idea that human development necessarily unfolds *as a matter of course* in this way. Slaughter (2010, p. 78) outlines a sequence of four broadly defined "levels of complexity"—*pre-conventional, conventional, post-conventional* and *integral*—through which human beings' ways of approaching their worlds can grow. He describes the integral level as follows:

Finally the integral stage is holistic and systemic. It accepts and values contributions from all other perspectives and seeks to work sympathetically across boundaries, disciplines and cultures. It embraces 'an ecology of appreciative action' and is open to the development of new ways of knowing and being. Human systems are nested within their appropriate natural contexts where intrinsic value prevails over use value. (Slaughter, 2010, p. 79)

Comparison of this with his characterisations of the three earlier levels suggests that Slaughter is not simply *describing* this most complex level, but is also in important respects *evaluating* it. That is, his description suggests—and this is consistent with "Civilisational Renewal and Fresh Horizons"—that he is presenting his understanding of how human development *does* in practice unfold as also being preferable. While I am sympathetic to and supportive of this expressed preference, the implicit assertion that this is the *necessary* pathway through which human development unfolds, and that this can be treated as a matter of observed scientific fact rather than normative commitment, requires closer scrutiny. Stein (2010) has dubbed the conflation of evaluation and description in relation to late-stage capabilities and dispositions as *the growth-to-goodness assumption*, a phenomenon that he identifies as widespread in the Integral movement formed in the wake of American philosopher Ken Wilber's work. When we operationalise this assumption, we effectively side step the findings of developmental psychological research that depicts far more heterogeneous outcomes from late-stage

development. In fact, looking in detail at the broader body of research, Stein points out that there is no basis for the across-the-board claim that this development leads to outcomes resembling what it is that those who identify with the movement typically mean by *Integral*. The term *Integral*, he suggests, is best reserved for what it is that we *prefer* about late-stage human development, rather than as a descriptor for all that actually emerges. Late-stage development can produce outcomes that proponents of *integrality* would regard as anything but integral—in Stein's (2010, p. 13) own terms, 'People are not always admirable just because they are highly developed along certain important parameters' and 'It is also not true that the artifacts produced at the higher levels are uniquely prone to be valuable.'

While noting that the evaluative function performed by the term *Integral* is relevant for assessing capabilities arising at *any* level of development, Stein accepts that the limited set of preferable human attributes typically grouped under this banner are indeed products of late-stage psychological development. As Murray (2009) points out though, the necessity of this relationship between the attributes typically characterised as *Integral*, and the growth in hierarchical complexity that typifies the various psychological development models commonly associated with such attributes, itself demands closer examination. He draws attention to the broad overlap between such attributes, and the way that the concept of *wisdom* is widely understood. In light of this, he notes that the growth of wisdom entails—according to common intuitions—'elements of un-learning (subtracting), of letting go and emptying, and of opening' and wonders if the development of such skill 'may need to be explained with something other than hierarchical processes'(Murray, 2009, p. 351). Change of this nature, he suggests, may call 'for different mechanisms and metaphors' (Murray, 2009, p. 352).

A clear implication of the preceding considerations is that if we wish to enact worlds aligned with Slaughter's "Civilisational Renewal & Fresh Horizons", then we cannot simply rely on a "rising (psycho-developmental) tide to lift all boats". We may need instead to attend to two specific areas:

i) the means by which we decide collectively on the particular human attributes—whether resulting from late-stage development in hierarchical complexity or via other growth and transformative pathways—that we regard as most worthy of promoting, encouraging and valorising within our societies; and

ii) how we might organise our societies in such ways that individuals' development tends towards the ways of being that we value.

In other words, it is the nature of our shared institutions—rather than more complex individual development per se—towards which we should direct our efforts. Moreover, we will need to consider how our public institutions might become living *embodiments* of our most valued ethical principles and commitments. Such insight is in fact inherent in Slaughter's (2010, p. 166) reminder of the interdependence of individuals and societies, and 'between human attributes and those that characterise the organisations and social institutions that we've created'.

The emphasis on *interdependence* warrants particular attention. Appreciating the consequences of environmental factors—such as extant primary energy sources—for human interior development requires that we move beyond treating these as a relatively static background against which the more dynamic process of individual growth plays out. Fischer highlights that the *specific* skills people acquire in the course of their development are always linked to the prevailing environmental circumstances—an individual's skills are always *situated* (Fischer et al., 1984). Our thinking about human development needs therefore to shift from a predominant focus on the individual as the unit of study (and intervention), towards the coupled organism-

and-environment. As discussed briefly in concluding Section 2, fitness is in this view a matter of conserved adaptation between organism and environment (both social and bio-physical), in the course of their structurally-coupled evolutionary drift together through time (Thompson, 2007). Notions of fitness based on developmental (at the organism-scale) or evolutionary (at the species-scale) *optimality* cease to serve us well here—there is no given, external standard against which to establish one or another mode of being as "better adapted" when prevailing environmental circumstances are themselves a function of the particular ways in which adaptation is conserved. We would do better instead to treat fitness as a matter of *viability*—of how well the ways in which adaptation is conserved between organism and environment pave the way for ongoing conservation of adaptation. This has profound implications for the question of what we regard as preferable in human development: any set of preferences is *always* established in the context of particular expectations about environmental conditions. And these conditions are themselves subject to the consequences of realising such preferences. This has the effect of rendering indeterminate the particular skills and interior capacities—and the associated levels of hierarchical complexity—that might emerge as adaptive in highly uncertain future circumstances. This leaves open to us the avenue of embodying in the present ways of being that are consistent with such knowledge—that is, of living in the knowledge, following Maturana and Varela (1988), that the futures we have available to us are those that we co-construct with others, and hence entering into that dance of co-construction with a humility and circumspection reflecting the uncertainty this entails.

6. Conclusion

Herein lies the essence of an integrally-oriented response to the spectre of environmental and social breakdown: not *how can I more effectively recreate the world in my preferred image*, but *how can I be present in the-world-that-I-know in ways that contribute to our bringing forth together worlds that reflect what is most noble in humanity and "existence itself"*? Such an appreciation is apparent in the closing pages of *BWCH*. When writing through the framework of Integral Theory, I sense that it is Slaughter's *mind* from which we are hearing. In the closing reflections, we are hearing from somewhere different—perhaps some might characterise this as writing from the *heart*. Slaughter's voice resonates most strongly in moving beyond advocacy for the Integral approach on the basis of its objective validity, and calling on us to embrace a more open *integrality* in our being-together. Here, *BWCH* conveys not only a deep sense of moral responsibility, but an equally deep care—a message of great compassion. Fittingly, this reaches its apex in the closing passages (emphasis added): 'What we can and must do…is to bring to these difficult and pressing issues *the very best selves that we can'* (2010, p. 187); and finally '*The ends are both to do with moving on personally while, at the same time, engaging in acts of cooperation, grace and purpose whenever and wherever they are needed*…just what global warming will mean for the world depends on how serious we become in confronting it—*and ourselves*' (2010, p. 188).

The picture I have painted, in which coupled descent in energy availability and socio-political complexity has adverse implications both for the prevalence of late-stage psychological functioning, and for a society's degree of technological sophistication, may appear in some respects to present diminished prospects for future human wellbeing. In Slaughter's closing remarks, a kernel of opportunity for moving beyond such apparent intractability is offered to us. Laying down as-yet unknown pathways that embody the qualities he outlines presents a highly credible basis for conserving our adaptation in such worlds, and hence for constructing viable societies. The task presently before us is to learn such pathways into existence, together.

References

Diamond, J. (2005), *Collapse: How Societies Choose to Fail or Survive*, Allen Lane, Camberwell.

Fischer, K. W., Hand, H. H. & Russell, S. (1984), "The development of abstractions in adolescence and adulthood", In Commons, M. L., Richards, F. A. & Armon, C. (Eds.), *Beyond Formal Operations: Late Adolescent and Adult Cognitive Development*, Praeger, New York, pp. 43-73.

Fisher, F. (2008), "Obsession with car sending us way of the DODO: Perverse incentives keep Melburnians away from more efficient transport", in *The Age*, 8 May, p. 12, viewed 28 July 2011 at http://www.theage.com.au/business/obsession-with-car-sending-us-way-of-the-dodo-20080507-2c1f.html.

Floyd, J. (2012), "Responding to the Millennium Project's Energy Challenge: A futurist's perspective", *Journal of Futures Studies*, Vol. 16 No. 4, pp. 21-32.

Greer, J. M. (2008), *The Long Descent: A User's Guide to the End of the Industrial Age*, New Society Publishers, Gabriola Island, Canada.

Habermas, J. (1979), *Communication and the Evolution of Society*, Beacon Press, Boston.

Kegan, R. (1997), *In over our heads: The mental demands of modern life*, Harvard University Press, Cambridge.

Kyabgon, T. (2003), *Mind at Ease: Self-Liberation through Mahamudra Meditation*, Shambhala, Boston.

Lee, R. B. (1979), *The !Kung San : Men, women, and work in a foraging society*, Cambridge University Press, Cambridge.

Maturana, H. R. & Varela, F. J. (1988), *Tree of Knowledge: the Biological Roots of Human Understanding*, New Science Library, Boston.

Meadows, D., Randers, J. & Meadows, D. (2005), *Limits to Growth: the 30-Year Update*, Earthscan, London.

Mumford, L. (1966), *The Myth of the Machine: Technics and Human Development*, Harcourt Brace, New York.

Murray, T. (2009), "Intuiting the Cognitive Line in Developmental Assessment: Do Heart and Ego Develop Through Hierarchical Integration?", *Integral Review*, Vol. 5 No. 2, pp. 343-354.

Sahlins, M. (1972), *Stone Age Economics*, Aldine, Chicago.

Schumacher, E. F. (1973), *Small is Beautiful: Economics as if People Mattered*, Blond and Briggs, London.

Slaughter, R. A. (2010), *The Biggest Wake up Call in History*, Foresight International, Indooroopilly, Queensland.

Smil, V. (2010a), *Energy Transitions: History, Requirements, Prospects*, Praeger, Santa Barbara.

Smil, V. (2010b), "Science, energy, ethics, and civilization", In Chiao, R. Y., Cohen, M. L., Leggett, A. J., Phillips, W. D. & Harper jr., C. (Eds.), *Visions of Discovery: New Light on Physics, Cosmology, and Consciousness*, Cambridge University Press, Cambridge, pp. 709-729.

Stein, Z. (2010), "On the uses of the term *Integral*", Integral Theory Conference 2010, July 29-August 1, Pleasant Hill, California, USA, SUNY Press (forthcoming), viewed 31 October 2012 at http://integralthinkers.com/wp-content/uploads/On-the-Use-of-the-Term-Integral-Stein.pdf.

Tainter, J. A. (1988), *The Collapse of Complex Societies,* Cambridge University Press, Cambridge.

Tainter, J. A. (2000), "Problem solving: Complexity, history, sustainability", *Population and Environment: A Journal of Interdisciplinary Studies,* Vol. 22 No. 1, pp. 3-41.

Tainter, J. A. (2006a), "Archaeology of overshoot and collapse", *Annual Review of Anthropology,* Vol. 35 No., pp. 59-74.

Tainter, J. A. (2006b), "Social complexity and sustainability", *Ecological Complexity,* Vol. 3 No. 2, pp. 91-103.

Tainter, J. A. (2011), "Energy, complexity, and sustainability: A historical perspective", *Environmental Innovations and Societal Transitions,* Vol. 1 No. 1, pp. 89-95.

Thompson, E. (2007), *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*, Harvard University Press, Cambridge, Massachusetts.

Wilber, K. (2000), *Integral psychology: Consciousness, spirit, psychology, therapy*, Shambhala, Boston.