

Engagement, reflexive scholarship, and the learning turn within the academy

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“...the academy must become a more vigorous partner in the search for answers to our most pressing social, civic, economic and moral problems, and must affirm its historic commitment to what I call the scholarship of engagement” (Boyer 1996).

Engagement: Some historical foundations

Calls for American universities to be much more responsive to the direct needs of society, and to the lived lives of the citizenry are certainly not new. Indeed one could argue that such a concern was a primary motivation for the very establishment of the land grant institutions back in the mid nineteenth century. The foundations of these state colleges was firmly grounded in a commitment to social enhancement, with a mission, appropriate to the times, to educate “an uneducated populace that was, at the same time, the principal resource of the society and its principal challenge” (Gordon, 1992). In a very real sense, “the land grant university was christened as an agent of social change and economic development” (Schuh, 1984), acting not just through education *per se*, but also through the generation of new knowledge, through research and scholarly explanation, and its application, through extension, “to the problems of society”.

The land grant schools were to be centers of innovation in the service of society, just as they themselves were manifestations of societal innovativeness – or at least of the institutions charged with the governance of society. They would function both as a microcosm of society as well as a primary source of its transformation. Page Smith (1990) captures their essence at their foundation: “Different as they were in many ways, the emerging state universities shared with places like Johns Hopkins and Clark University the exhilarating sense of a great new venture. They also shared the vision of mind as being in the service of society, although they were also more practically oriented in terms of careers”: And their establishment was the more remarkable for the fact that the Morrill Act of 1862 that enabled the establishment of this ‘service-focused’ branch’ of the American academy, was passed at the height of the Civil War.

While the initial emphasis in the land grant colleges was on education, problem-oriented research, and subsequently extension and outreach were added to the

explicit missions of these institutions. These vital initiatives further formalized and further enhanced the notion of what has been referred to as the “ideal of public university service to community and nation” (Kellogg Commission, 1999). In stark contrast to the image of the medieval university (and its ivy league analogs of the day) as the ‘ivory tower’ in deliberate isolation from society, the land grant institutions came to assume the nature of networked institutions firmly embedded within communities dispersed across the entire area of their respective host States. The enactment of the Hatch Act in 1887 enabled the establishment of research stations at locations distant from the campus, while the Smith Lever Act in 1914, allowed the university, in close collaboration with federal, state and county agencies, to further extend their influence directly into communities, even in the most remote corners of the nation.

So, while teaching might be regarded as ‘arms length’ engagement, calling only for relatively indirect involvement in societal issues, research and extension/outreach activities were certainly much more direct. They demanded the personal engagement of professional specialists not only with the issues of the day, but also with those attempting to deal with those very issues, as aspects of their everyday lived experiences.

Perhaps at arms length too, but of great significance with respect to scholarly engagement with societal issues, was the role that American academics began to assume, by the turn of the nineteenth century, as ‘expert specialists’ in the process of public policy making (Damrosch, 1995).

It would be no exaggeration to claim that through all of these activities, the land grant universities have profoundly influenced the modernisation of agriculture and other natural resource management endeavors, both in this country and well beyond. The claim of influence could also legitimately be extended to embrace much more inclusive issues of land and other natural resource use, and, in an even broader context, to the nature of human relationships with the entire biophysical environment of ‘nature’ writ large. Indeed it could be argued with considerable justification, that the land grant academy, from its earliest establishment, has represented the very essence of modernisation and has played a profound leadership role in the evolution of the industrial, techno-scientific epoch of modernism.

Fundamental to the whole enterprise of modernity has been the acceptance by the citizenry of the logic and means of science, and the development of a trust in science-based technological innovations and in scientists as ‘experts’. Central to the cultural transformation that this has represented, yet significantly understated as foundational to it, has been the role of the academy in the development and promulgation of what might be referred to as the techno-development paradigm of modernity, and its associated techno-scientific discourse.

Shared between the academy, society and other institutions, such discourse has displayed all three of the characteristics that Fairclough (1992) has recognized as aspects of the constructive effects of discourse as the 'mode of action' that he claims it to be: (i) It has contributed to the constructions of 'social identities' for social 'subjects'; (ii) it has facilitated the development of social relationships between people, and, (iii) perhaps most significantly of all, it has "contributed to the construction of systems of knowledge and belief". This latter dimension of discourse has had a particularly profound influence on what people believe actually constitutes 'the pressing issues of the day', as well as on the most appropriate actions to take to 'deal with them'. Essentially it is these systems of knowledge and belief, that constitute the way people view the world about them, which in turn provides the epistemic perspectives that guide their actions – whether they know it or not: For how we humans see the world about us determines, in large part, what we do in it, as well as how we do what we do.

The importance of these three roles of the modernist discourse in the constitution and social structure of the state, as well as a determinant of people/environment inter-relationships within it, cannot be overestimated. In essence they represent together what might be seen as the expressions of the 'paradigms-of-the-everyday' and the reflections of the 'life-world' of citizens. They exemplify, just as they profoundly influence, the manner by which people live their everyday lives in response to those features of it that they regard as demanding of their attention. They also provide a central focus for diagnosing what might be done to facilitate the next generation of cultural change or transformation associated with the challenges of what has been referred to as the 'risk society' (Beck, 1992). The march of modernisation is not only leading to the globalization of trade, and the global flow of 'goods', but to the circulation of 'bads'; the undesirable side effects of industrial production. The challenges of the new modernity therefore must include concerns for the very process of modernisation itself, and as that has truly global dimensions, the issues transcend those of individual nation states and national cultures.

Readings (1995) presents a provocative thesis with respect to the impact that the decline of the nation state is having on the academy, which has the potential to leave "the university in ruins". He argues that as the academy has spent the past one hundred years of so serving the nation state through the promotion and protection of the national culture, so the demise of the latter will see redundancy for the former. Readings provides a further historical context to university/state relationships, to the evolution of national culture, and to the nature of the discourse that has developed in consequence; all of which he traces back to the influence of the German Idealists at the beginning of the nineteenth century. He is particularly impressed by the vision of Wilhelm von Humboldt, and his focus on the role of the academy in the development of national culture, and recognizes this as a vital influence on the American academy. Humboldt, as the rector of the University of Berlin, argued that the social mission of the university was not either thought or action, but thought as action. Under his plan, the university would

become much more than a site for contemplation, and a center for abstract thought disengaged from the issues of the day. Rather it would become an active agent in the cultural transformation of the nation state. With this momentum established, the university became “the primary institution of national culture in the modern state”. State and University would become inextricably interconnected and mutually engaged with the affairs of each other: “The university seeks to embody thought as action toward an ideal; the state must seek to realize action as thought, the idea of a nation. The state protects the action of the University; the University safeguards the thought of the state. And each strives to realize the idea of a national culture” (Readings, 1995 p69).

There are, of course, those who have argued for the opposite: That far from committing itself to the development of a national culture the academy should be as remote from society and its ‘ills’ as it possibly can be. This was certainly the view so firmly espoused by an English contemporary of Humboldt, John (Cardinal) Newman, with his ‘idea of the university’ as “a place detached from society, uncontaminated by its worldly values, and undistracted by pursuits other than the search for greater knowledge and understanding” (Bok, 1990). Such a sentiment was one that clearly resonated with the ideology in the Ivy League Schools, where still in the mid nineteenth century “...the professions of everything that related to the work-a-day nine-to-five world...(represented) ...in both word and deed, a contagious source of impurity within the sanctum” (Smith, 1986). And there is no doubt that there are those within all branches of the contemporaneous academy, who continue to commit to such an ideology: Some who, as Rowe (1990) critically suggests, still embrace the Creed that “Our role is to provide specialized, impartial, objective knowledge; what society does with it is society’s problem”. Interestingly, Rowe himself disputes such a position not by criticizing the university for abstaining from direct social action but “for neglecting intellectual activity that is oriented to social action”.

And that, it might be argued, includes intellectual activities related to the nature of intellectual activities themselves – the scholarship of scholarship, as it were. The call for a ‘scholarship of engagement’ then (Boyer, 1999), can be interpreted as a contribution toward an intellectual activity that is essentially oriented to social action, and where ‘engagement with’, equates to ‘participation in’! It is thus call for a profound change to a culture where all too often, “like blacksmiths, cowboys, and bookstore proprietors, university scholars tend to be in society but not really part of it” (Keller, 1983).

Thus, while there certainly are those within the academy who believe that, far from establishing further degrees of engagement with the pressing issues of the day, the academy should be retracting from community partnerships, history illustrates that the essence of such engagement has been intrinsic to American Universities for the better part of two hundred years. As indeed David Jordan, President of Stanford University claimed at the turn of the twentieth century, the entire movement of the American academy was “toward reality and practicality”

(Veysey, 1965). This was assuredly strongly reinforced intellectually by the emergence of the quintessential American philosophy of pragmatism, as articulated especially in the writings respectively of Charles Sanders Peirce, George Herbert Mead, William James, and John Dewey. Writing of the need for a new philosophy for the age emerging at the turn of that century, Dewey was to observe “better it is for philosophy to err in active participation in the living struggles and issues of its own and times than to maintain an immune monastic impeccability without relevancy and bearing in the generating of ideas of its contemporary present” (Dewey, 1908).

Re-engaging with engagement

With such a rich heritage of engagement with societal issues and cultural development, and of direct interconnectivity with the citizenry, it is perhaps difficult to reconcile the calls for change that are currently coming from various quarters. There is an historical imperative to be engaged, and so perhaps “the question is not whether universities need to concern themselves with society’s problems but whether they are discharging this responsibility as well as they should” (Bok, 1990). Or put another way, it is not a matter of ‘should they’, for the moral imperative exists, but ‘can they’: “Can America’s colleges and universities, with all the richness of their resources, be of greater service to the nation and the world?” (Boyer, 1990).

The current calls for greater responsiveness to change range from appeals to the academy to be a more ‘vigorous partner’ in the resolution of societal matters (Boyer, 1999), to change its mission to be more ‘development-focused’ (Bawden, Busch and Gagni, 1991), to ‘transform itself’ (American Council on Education, 1998), to ‘return to its roots’ (Kellogg Commission, 1999), right through to nothing less than total ‘reinvention’ as an explicitly ‘problem-focused institution’ (Sinnott and Johnson, 1996).

In the first instance then, it is not that the academy is disengaged entirely from the issues of the day, for such issues are often the themes for researchers, topics in the curriculum of students, as well as the theatre of activities for those ‘outreaching’. Rather it comes as a disengagement (decoupling) from true collaboration with those who are concerned with dealing with such issues as intimate aspects of the lived experiences of their daily lives, in worlds “brought forth in coexistence with other people” through the process of cognition and “structural coupling” (Maturana and Varela, 1987). There is also the matter of public perceptions about the low level of responsiveness of the academy which is seen all too often as “out of touch and out of date” (Kellogg Commission, 1999). The establishment of non-inclusive partnerships between universities and other institutions (including corporations in the private sector), also represent potential impediments to them coupling with the broader community, as a function of particular contractual obligations which are perceived as not necessarily being in the best public interest.

Even where significant connections do exist between the academy and the citizenry, the quality and nature of the relationships of the engagement are all too often distorted by a 'power divide' that reflect perceived differences between 'specialist' and 'lay' knowledge. Finally there is also the matter of the interests, intentions and dispositions of each of those involved in academy/community relationships and whether knowledge is being sought for its own sake, or whether it is part of a process that leads to informed, consensual action and desirable situational transformation.

Boyer's belief was that the relatively low level and quality of engagement of the academy with the 'pressing problems of the day' lay with the 'priorities of the professoriate', which in turn is dictated by a limited view of the nature of scholarship. He argued for a broader conceptualization of it, to embrace the four dimensions of discovery, teaching, integration, and application. His essential concern was the need to (re) define scholarship in ways that "respond more adequately to the urgent new realities both within the academy and beyond". Later, and just prior to his untimely death, he was to also refer to "the scholarship of engagement" (Boyer, 1999), and to associate this with the development of a "universe of human discourse", as he put it, quoting Clifford Geertz.

The theme of multiple aspects of scholarship has been pursued with some vigor since Boyer introduced the concept, and not least by Glassick and his colleagues at the Carnegie Foundation. Furthering the push to reformulate a broader conception of scholarship, these writers have paid considerable attention to the articulation of standards "that can be applied to each kind of scholarly work, that can organize the documentation of scholarly accomplishments, and can also guide a trustworthy process of faculty evaluation" (Glassick, Huber and Maeroff, 1997).

There is little doubt that incentives for faculty, grounded in a limited appreciation of scholarship as expressed essentially through research and the 'scholarship of discovery', has been an important element in constraining engagement by the academy with what Boyer, 1990) characterized as "the most pressing social, civic, economic and moral problems" of the day. But there is much more to the situation than that. Indeed to the matter of reward-driven faculty motivation, can be added at least three other key inter-related issues that seriously impact upon the extent to which the academy does 'discharge its responsibilities' with respect to 'societal problems'.

- 1) Firstly there are a number of relatively instrumental organisational and structural matters of the academy that both reflect and influence the internal cultures of universities in ways that can be construed as antithetical to engagement.

- 2) Secondly there are matters associated with the nature of the contemporary problematique, and the role of techno-science and technical control as amplifiers of it, that act to significantly discourage involvement by the academy with those who must deal with its manifestations as part of their everyday experiences.
- 3) And thirdly there are issues to do with the nature of the paradigms and perspectives that prevail within different communities, within and beyond the academy, that all together represent significant impediments to a universe of human discourse, and to the maintenance and development of 'extra-mural participatory relationships'.

The Organisation and mission of the university

The instrumental issues flow on from the brief discussion of scholarship above, and reflect the tendency over relatively recent years, for research, and the 'scholarship of discovery' to assume a very asymmetric dominance over other scholarly domains within the academy. In general terms, while there is still a strong espousal of the classical trinity of functions (of teaching, research and public service) within the academy, and especially within the land grant schools, there has been a general trend over recent decades for universities (a) to lose their primary commitment to teaching, especially of undergraduates, and (b) to increasingly eschew extra mural engagement with communities and other institutions, save for the purpose of assuring research grants, lucrative consultancies and endowments, while (c) engaging increasingly in research – which is, as Smith (1990) reports it, all too frequently “mediocre, expensive and unnecessary” and which serves not to “push back the frontiers of knowledge” but only “to get professors promoted”! While this clearly both overstates the situation and undervalues the contributions that researchers do make to society in a wide variety of ways, a primary emphasis on research does significantly influence the way that universities are organized, the mission that they assume, and, to a very significant degree, the characteristics of the culture that they self-nurture.

The 'drift to discovery' has not only meant a drift away from engaged relationships with extramural communities, save where they function as a source of research subjects, but has also resulted in a profound change in the relational aspects of life and work within the academy itself. Kerr (1994) is among those who believe that faculty have become noticeably more self-preoccupied and less committed to the common good, and the consequent loss of focus on citizenship amounts to what he sees as an ethical disintegration within the academy. The result is the growth of what Bennett (1998) refers to as “insistent individualism” as a prevailing ethos which is expressed as an internal culture that is increasingly characterized by “competition and isolation” with the inevitable “diminishment of intellectual community”.

So not only are faculty losing connections with those in their extra-mural communities, but they are also losing connection with each other, and not just through the 'insistent individualism' induced by competition, but also through the specific characteristics of the particular 'epistemic cultures' in which they find themselves: "Those amalgams of arrangements and mechanisms - bonded through affinity, necessity and historical coincidence - which, in a given field, make up *how we know what we know*" (Knorr Cetina, 1999). The academy is characterized not by a single culture or epistemic community, but by a multitude of them with but few opportunities for integration, and this is especially so where discipline-based research is privileged over other activities.

Another outcome of the increasing primacy of research within the academy, is that researchers turn increasingly to non-traditional, often corporate, sources for research funds and contracts, and so the university starts to assume characteristics of an industrial organization itself. In this manner, "the university and segments of industry are becoming more and more alike" (Kerr, 1982) with concomitant risks to the integrity and independence of the academy, and to its role in the service of the public. Readings (1996) goes so far as to suggest that universities are actually becoming transnational corporations with a concomitant assumption of the essentially non-referential value of 'excellence', which in its expression as discourse replaces the very essence of culture.

With these changes in focus and emphasis and indeed prevailing discourse, the mission of the academy in general is becoming increasingly unclear, and thus demanding of urgent attention. As Readings (1996) suggests, "[i]t is no longer clear what the role of the university is within society nor what the exact nature of that society is, and the changing institutional form of the University is something that intellectuals cannot afford to ignore". This loss of clarity of mission is particularly evident in the land grant universities where there is clear public perception that these institutions "are not well organized to bring them to bear on local problems in a coherent way" (Kellogg Commission, 1999), despite the resources and expertise available on their campuses. Accordingly there is a strong sense, from at least some within the institutions themselves, that "[w]e in the Land Grant Universities have lost our way" (Schuh, 1984).

There are further implications to the industrialization of the academy that relate to the reinforcement of fragmented and atomistic organisational structures (the disciplinary silos), to the increasing emphasis on hierarchical administrative control, and to the impact of issues like the ownership of intellectual property, that impede the free unfettered flow of information and knowledge. What a paradox that is as we enter the epoch of the knowledge society and the growing societal appreciation of learning as a characterizing feature of communities, organizations, societies, and even nations!

At risk here is the very issue of academic freedom itself and the potential loss of hard-won principles and practices of demographic governance. The loss of

institutional democracy within the academy would be a particularly damning blow at a time when concerns are being voiced about the erosion of the ability of the “American public to participate in political decisions that affect their lives” (Yankelovich 1991). If indeed the fateful decisions are being made ‘in Washington, in corporate boardrooms, on Wall Street, in state legislatures, and in city halls’ as Yankelovich claims, then, with the loss of democracy within the academy, who will be left to encourage public judgment and self-governance?

There is further irony, and indeed tragedy, in this regard, that is associated with the nature of the changing relationships between ‘specialist experts’, who are often from the academy, and the citizenry. Giddens (1991) argues that individuals within society have come to rely on knowledge and information generated by specialists, which they routinely interpret and act upon as they live through their everyday experiences. As the academy has been traditionally regarded by many in society, as the primary source of ‘specialist expertise’, so it has been drawn into situations where engagement invites conflict rather than consensus. For, as Yankelovich (1991) observes, in America over the years, the nature of the relationship between experts and public “has grown adversarial rather than mutually supportive”, with the progressive development of a very significant “gap that separates the public from the experts”. The distance between the ‘world of expert policy-making’ and the ‘world of public opinion’ is growing ever greater with each passing year and the result is a continuing decline in the quality of public participation in their own affairs, and the consequent erosion of self-governance. Yankelovich is certainly not alone in expressing concerns about the expert/lay divide, particularly with respect to knowledge, and its impact on governance. Exploring many studies of interactions “between scientific expertise and lay publics”, Wynne (1996) identifies six features that seem common to all and which emphasize the distorting effects of the scientific discourse, which both neglects and denigrates lay knowledge, while remaining blindly unreflexive to the “culturally problematic and inadequate models of the human” that science itself typically embraces. Defining lay resistance to scientific expert opinion as ignorance or irrationality (understandably) alienates the public, while further reinforcing “tacit public ambivalence about being dependent upon social actors (experts) who engender such alienation, and social control” (Wynne, 1996).

Fuller (1988) applies a vital epistemological perspective on issues pertaining to the expert/lay knowledge divide including what he refers to as the ‘problem of cognitive authoritarianism’ His explorations into the ‘lures and avoidance’ of this phenomenon, reveal some of the paradoxes in situations when the ‘layman’ refuses to defer to the ‘expert’ even when this apparently justified, and alternatively, does defer under circumstances where it is clearly not warranted. There are, he suggests, rational epistemological explanations behind these apparent irrationalities that provide not only explanations for them but also provide “considerations against adopting a general policy of deferring to the authority of experts”. Issues of significance here include differences between the

'epistemic goals' of the 'layman' and the 'expert', lay perceptions about the 'reliability' of expert knowledge and the epistemic significance of 'reliability thresholds', and differences in the context for which knowledge is being sought.

With the danger of 'cognitive authoritarianism' ever-present, we in the academy all too often find ourselves caught in a "paradoxical and unhealthy double bind: at once imagining ourselves as alienated exiles from society at large and yet also continually trying to recreate society in our image" Damrosch (1995). And this leads, he posits, to the situation where the university "persistently embodies a profound ambivalence toward society" paradoxically reproducing many of the organisational and cultural features of society which, at the same time, "it most wishes to oppose".

It can be argued that the opposite situation is equally true, and equally problematic for the academy and civil society alike. While the trend within the academy is the ever-greater disciplinary fragmentation and associated epistemic isolation of 'specialists', with its concomitant loss of community and collegiality, the trend in society is for greater communal collaboration in the face of ever-more complex risks and hazards that demand collective, consensual action.

Reflexive modernisation and the contemporary problematique

A growing preoccupation with risk and hazard is seen to now characterize the emergence of a new modernity – a 'risk society' – entry into which "occurs at the moment when the hazards which are now decided and consequently produced by society *undermine and/or cancel the established safety systems of the provident existing state's risk calculations*" (Beck, 1996 emphasis in the original). A major contributor to this emerging epoch has been the unintended, but nonetheless ubiquitous side effects of industrial production: The unanticipated negative consequences of actions that were designed are beneficial. Technological modernisation has rarely been without its degrading consequences, and the paradox is that much of the risk that this represents to the citizenry can only be identified by the very techno-scientific expertise that was in many ways responsible for its occurrence in the first place. Meanwhile that same techno-science is limited in its response by its own logic, and paradigmatic limitations. This demands that the agenda of technical development must change: "We are concerned no longer exclusively with making nature useful, or with releasing mankind from traditional constraints, but also and essentially with problems of techno-development itself. Modernisation is itself becoming reflexive; it is becoming its own theme" (Beck 1992): And by reflexive here, he means both self-reference and critical self-confrontation, expressing what Charles Sanders Peirce defined as the 'pragmatic maxim'. Translated by Ulrich (2001) into the language of research, "[T]he pragmatic maxim requires from us as researchers, a comprehensive effort to bring to the surface and question the implications, the actual or potential consequences that our research may have for the domain of

practice under study”. A similar interpretation is, of course, entirely apposite to ‘engagement activities’.

To many, this shift towards ‘reflexivity’ is coming too late to avoid a growing skepticism within the ‘lay public’ resulting both from the perceived lack of sensitivity to the consequences of their innovations by ‘specialist experts’, and their apparent reticence to respond to the concerns of the citizenry once the extent of the hazards have been revealed. By their very nature however, the issues that attract attention are essentially non-amenable to the classical approaches of techno-science through their sheer complexity, multi-dimensionality, and unpredictability. Typically they can be neither limited in time or place, nor be accountable according to the established rules of causality (Beck, 1996). But of course this does not silence the critics of those institutions that are perceived to be those which should be responsive – including, and especially, the academy – nor does it excuse their lack of responsiveness.

Of particular poignancy here, given its heritage of a philosophy of pragmatism, is the apparent lack of concern, within the techno-scientific juggernaut of modernisation, for the consequences of actions. As Dewey asserted, one of the essential differences between pragmatism and the historical empiricism from which it was extended was that “it does not insist upon antecedent phenomena but on consequent phenomena; not upon the precedents but upon the possibilities for action” (Dewey, 1922).

An example with respect to land grant universities is apposite: Such was the level of complaint at the lack of responsiveness of these institutions to negative social and environmental impacts of agricultural technologies that were seen to both develop and promulgate that it reached what Bonnen (1983) described as a veritable “Greek chorus of criticism”. The foci of the criticisms that he identified included concerns about: the extrusion of smaller family farms from agriculture; environmental degradation; concerns for animal welfare, and for impacts on health and safety of farmers, agricultural workers and consumers; adverse nutritional effects of production and processing technologies; the erosion of rural communities and the concentration of agricultural production and economic wealth; inadequate attention to conservation and commercial exploitation of fragile lands that should not be in cultivation. Here are vibrant examples of the rise of the ‘risk society’ as all of these issues reflect the fundamental claim of Beck (1992), that “in the course of the exponentially growing forces of the modernisation process, hazards and potential threats have been unleashed to an extent previously unknown”. This has led to “conflicts over the distribution of ‘bads’ produced by the risk society are superimposed on the conflicts over the distribution of societal ‘goods’ (income, jobs, social security), which constituted the fundamental conflict of industrial society and led to attempts to solution in appropriate institutions”.

While there have certainly been significant and commendable attempts within land grant universities to address many of the issues of the risk society, often in concert with appropriate citizen stakeholders and under a rubric of 'sustainability' or 'sustainable development', it would be true to state that most continue to prevail in one form or another. Moreover, with the passage of time since the 'Bonnen critique', a whole new generation of highly contentious systemic issues has been added to the agenda, particularly associated with the introduction and application of bio-technologies that involve genetically modified organisms (GMOs). The development of GMO technologies finds strong support among many who are involved within agriculture both within and beyond the academy, for the list of potential benefits seem almost without limit. Yet as many others see, so too are the potential risks! Theoretically, transgenic technologies could literally revolutionize agriculture and transform the agri-food industry in ways that are almost utopian in their possibilities. The potential for bio-engineered crop plants ranges everywhere from endowing them with innate resistance to pests and pathogens, to producing them with specifically tailored dietary nutrient or pharmaceutical profiles, and on through to designing them in ways that their reliance on inputs such as fertilizer and water, are markedly diminished. An equally impressive range of possibilities also extends to livestock animals.

Notwithstanding all of these advantages that, it can be argued, accord attention to all three elements of the so-called 'triple bottom line' of people, planet and profits (Elkington, 1997), grave concerns persist within the citizenry and academy alike, about the potential risks that technologies based on "altered genes" represent (Hindmarsh and Lawrence, 2001). And again the spectrum of the concerns is broad and eclectic, ranging from concerns about possible impacts of bio-engineered food on human health, through to threats to the diversity of life forms on the planet – and indeed to the entire nature of nature as we now encounter it: "Genetic engineering confronts us with a new medium by which to imagine a future nature, one very different to the nature we have known for millennia" (Hindmarsh and Lawrence, 2001). Here then we have a novel situation, with 'culture' suddenly assuming the ability to transform 'nature' using technologies, most especially those of recombinant DNA (rDNA), which themselves represent culturally- transformed nature.

The challenges here are profoundly systemic; both in the sense of being globally pervasive and also by being characterized by complex and often dynamically unpredictable interconnections between the whole of 'culture' and of 'nature'. A further novel aspect of the biotechnologies, is that many of the concerns being voiced about them are in prospect rather than retrospect, with appeals to the academy to contribute to debates that are in large part conjectural and also set within a democratic context of 'public judgment'. This represents a very significant issue, for "in present-day America, few institutions are devoted to helping the public to form considered judgments, and the public is discouraged from doing the necessary hard work because there is little incentive to do so"

(Yankelovich, 1991). And this is surely not confined to America, for similar situations are to be found at locations across the entire globe.

Indeed all of these matters bring into stark relief, the truly global scale of the challenges and risks of technological modernisation, as well as the interconnectedness across different domains of human endeavor. What happens in agriculture as it is increasingly industrialized, not only mirrors the universal impacts of industrialization, but plays a very significant amplifying effect within it: Agrarian and industrial life are essentially inseparable, and changes in agriculture “are rarely, if ever, isolated from other cultural happenings” (Krimsky, 1995). The agricultural example provides poignant reinforcement of the broad claim that “the transformation of the unseen side-effects of industrial production into global ecological trouble spots is therefore not at all a problem of the world surrounding us – not the so-called ‘environmental problem’ – but a far reaching institutional crisis of industrial society itself” (Beck, 1996). An important point to be reinforced here is that this crisis does transcend national borders, and that adds enormously to the complexity of the situation, not least because of the mutual relationships between the local and the global where environmental issues are concerned. Witness the case of global climate change and the complex inter-connections between the use of hydrocarbon fuels by individuals as they go about their daily lives, and the impact that emissions from such fuels have on the accumulation of the ‘greenhouse gases’. What happens locally has the potential to seriously impact globally, and vice versa. And this raises exceptionally difficult challenges with respect to judgments across the entire spectrum from individuals through to global institutions.

As these examples illustrate, the great majority of ‘the most pressing problems’ in today’s society are indeed amazingly complex and ‘multidisciplinary. Latour (1993) refers to them as ‘hybrids’, describing them as, “imbroglios of science, politics, economy, law, religion, technology, and fiction” representing lived experiences of ‘mixed-up affairs’. Such is the level of this mixing that “all of culture and all of nature get churned up again every day” in stark contrast to the situation within the academy where culture and nature are conventionally held far apart from each other as two profoundly different intellectual domains. The university, with its ‘silo-ed’ compartmentalisation of the scientific disciplines and the associated maintenance of distinct epistemic cultures, has not traditionally been well organized to deal with these hybrid, systemic issues, or even to sensibly respond to concerns from the citizenry about them. With that said however, it should be noted that multi-disciplinary and inter-disciplinary approaches to matters such as environment management and policy, are on the increase within the academy.

Even as these ‘trans-epistemic’ initiatives begin to burgeon however, they remain, all too often, prisoners of a dominant paradigm that privileges the ways of scientific inquiry over all other ways of knowing, and of scientific knowledge over all other forms of knowledge. Yet the challenges are truly paradigmatic as

illustrated by the submission by Grove-White (1996, p281), that modern environmentalism has evolved “not simply in response to damaging impacts of specific industrial and social practices, but also, more fundamentally as a social expression of cultural tensions surrounding the underlying ontologies and epistemologies which have led to such trajectories in modern societies”.

The hegemony of the dominant paradigm

As Kuhn (1962) defined them, paradigms are “constellations of beliefs, values, techniques and so on, shared by the members of a given community”. They can be formally characterized by reference to the four key criteria of epistemology, ontology, methodology, and human nature (Burrell and Morgan, 1979), or axiology (Guba and Lincoln, 1994). They are thus the reflections of multidimensional worldviews or perspectives with profound philosophical foundations, that are held and expressed collectively by groups of people who, following a logic established by Wenger (1998), might be termed ‘communities of practice’ or, borrowing from Norgaard (1989), ‘epistemic communities’. Whatever the label, the notion is of distinct groups of people essentially behaving in ways that are direct expressions of shared assumptions and values that they hold about the world as they experience it – their ‘life worlds’ as it were. Because they do reflect profoundly held, although often unappreciated, assumptions with philosophical foundations, they are typically embraced with what amounts to ferocious loyalty, and any changes in them are tantamount, as Kuhn portrayed it, to ‘revolutions’. That said, paradigmatic revolutions do occur from time to time, triggered by recognition that prevailing worldviews are inadequate in the face of what appear to be anomalies that somehow violate “paradigm-induced expectations”. Kuhn’s concern and focus, was science itself and as he presented it, “scientific revolutions are inaugurated by a growing sense...often restricted to a narrow subdivision of the scientific community, that an existing paradigm has ceased to function adequately in the exploration of an aspect of nature to which that paradigm had previously held sway – the sense of malfunction that can lead to crises is prerequisite to revolution” (Kuhn, 1962).

Characteristic of such crises is that which manifests itself in the ontological / epistemological tensions that lie between objectivism and relativism, with the former representing the classical position within ‘normal’ science, and the latter threatening to usurp that position. Further exacerbating the tensions due to differences between the belief positions here is an added dimension concerning growing doubts about the whole matter of the foundations of any beliefs about the nature of nature and the nature of knowledge about it! As Bernstein (1983) opines, “[t]he primary reason why the *agōn* between objectivists and relativists has become so intense today is the growing apprehension that there may be nothing – not God, reason, philosophy, science, or poetry – that answers to and satisfies our longing for ultimate constraints, for a stable rock upon which we can secure our thought and action”. (P19) But for all that, paradigmatic changes have occurred within science, often with the new and the old persisting side by

side, but at considerable distance from, and invariably in energetic opposition to, each other.

To extend the paradigmatic concept beyond science, we can generalize that any particular collective of people therefore can and sometimes will change the worldview that has previously prevailed among them as a collective. And this in turn can, and sometimes does lead to changes in the way things are done collectively. Communities of practice, or epistemic communities, can assume fresh new world-views perspectives - fresh new ontological/epistemological/axiological positions - that will suggest and support the adoption of fresh new methodological practices. Such shifts however will certainly not be without the angst that comes with both personal transformation and the social conflict of paradigmatic disagreement.

Actually the notion of *communities of praxis* is perhaps a more appropriate focus than either communities of practice or epistemic communities. The notion of informed practical action implicit in praxis is of intentional, informed, reflective action as a dialectical 'way of being' in the world that transcends the mere application of "science to technical tasks", that as Gadamer (1975) argues, "degrades practical reason to technical control". Freire (1970) captures well the dialectic nature of the concept when he posits that "the action of men (*sic*) without objectives whether the objectives are right or wrong, mythical or demythologized, naïve or critical, is not praxis, though it may be orientation in the world...it is action ignorant of its own process and of its aim".

Jurgens Habermas has written extensively on matters that are pivotal to understanding the nature of praxis and of its significance to democracy and to discourse related to the consensual judgment upon which it depends. One of his key insights has been to argue that knowledge is always linked to purpose and thus, the need for a variety of different ways of knowing in order that different purposes can be accommodated. Initially he described three different categories of knowledge – technical, practical and emancipatory (Habermas, 1971). After reorienting his ideas from purpose to notions concerning language and consensual action, he later synthesized these into two – 'instrumental rationality' and 'communicative action' (Habermas, 1981a, 1981b). From an initial concern with the individual searching to understand the world of 'nature,' Habermas shifted his starting point to "the social act of language, the dialogue of people attempting through language to communicate with one another to achieve mutual understanding" (Yankelovich 1991) and consensual action.

This should indeed be precisely the objective of the quest for public judgment, thus representing a noble goal for engagement with the citizenry in seeking responsible actions for dealing with the pressing systemic, hybrid issues of the day. The issue of separation of knowledge and ways of knowing draws attention to a second aspect of the dominant techno-scientific paradigm, reductionism, which is certainly of equal paradigmatic significance to the objectivism that

continues to prevail. The foundations of reductionism can clearly be ascribed to Descartes who, with the second and third of his four rules of logic, posited the need “to divide each problem or difficulty into as many parts as possible” and to “commence my reflections with objects which were the simplest and easiest to understand, and rise thence, little by little, to knowledge of the most complex” (Bronowski and Mazlish, 1960). He was also, of course, the source of the separation of ‘mind from matter’; the ‘Cartesian split’ that has subsequently been associated, justifiably or otherwise, with so many different ‘divides’, including nature from culture, the objective from the subjective, the empirical from the normative, science from ethics, and rationality from emotions. It is ‘divides’ like these that pose such potent barriers to attempts to deal with Latour’s ‘hybrid issues’ and that reinforce the need for a synthesis of ‘ways of knowing’ that can get beyond the dichotomies and contribute to ‘situation improvement’ within complex problematiques.

The challenge of change here should not be underestimated, for these again are nothing less than paradigmatic matters, and positional shifts are only achieved after considerable resistance and then are rarely complete in the sense of universal adoption. Indeed, by definition, universality is undesirable, for what is sought in a world of multi-dimensional issues, is a multiplicity of perspectives and practices. Maturity, it has been claimed, is a function of the ability of individuals to hold different worldview perspectives at one and the same time (Churchman, 1971). The key to mutual understanding as the basis for dealing with problematic situations in lived experiences lies with a profound appreciation of the benefits of paradigmatic pluralism. And perhaps a vital way forward is to move ‘beyond the divides’, as Bernstein (1983) indeed argues with respect to what he refers to as the ‘Cartesian Anxiety’ that is expressed, for instance, in the paradigmatic clash between objectivism and relativism, which he argues is a “misleading and distortive” dichotomy. “It is itself parasitic upon an acceptance of the Cartesian persuasion that needs to be questioned, exposed and overcome. We need to *exorcise* the Cartesian Anxiety and liberate ourselves from its seductive appeal”. Bernstein goes on to support the appeals of Habermas and others, to view knowledge and action from perspectives beyond those of conventional paradigms.

Yet in a somewhat paradoxical way, Habermas is himself guilty of persisting with the Cartesian divide between nature and culture, in the face of circumstances where nature and culture not only get ‘churned up everyday’, but also become increasingly embedded within each other, and essentially impossible to sensibly separate. ‘Communicative action’ has as its purpose the search for mutual, rational understanding in order to realize common goals that embrace the values and intuitions and assumptions that might be seen to concern ‘culture’. On the other hand, ‘instrumental rationality’, with its objectivist, scientific foundations, has the understanding of ‘nature’ as the basis for its control, as its fundamental purpose. In public dialogue, the latter discourse is likely to singularly distort the

former, and thus assure the maintenance of the hegemony of 'technical control' and the objectivist/reductionist paradigm at its foundations.

Public debates around issues related to the intentions, processes and outcomes of bio-technologies in agriculture, provide powerful examples of this dilemma, and indeed can be seen to add further dimensions to the expert/lay divide expressed in the form of a growing loss of trust by the lay public in the expertise of the specialists, for a variety of different reasons. In the first place, the 'instrumental rationality' upon which the public has been so reliant in their responses to 'the pressing issues of the day' over past generations, is clearly beginning to show its inadequacies. It is becoming increasingly obvious, for instance, that "[b]iotechnology is not just a scientific issue, raising questions of interest only to scientists. It is a subject capable of generating considerable controversy and has the potential to throw up a host of what are often referred to as 'moral and ethical concerns', about which it seems difficult if not impossible to reach any substantial degree of consensus" (Straughan, 1995). Furthermore, by their very nature, technologies like recombinant DNA, present potential risks that are virtually incalculable at this time, and that may ultimately prove to be essentially unknowable.

At the heart of the issue lie concerns about the risks to safety that bio-engineered agriculture represents: to the consumer of its products, to the users of the field applications, to the general citizenry, and to the 'environment' at large. There are two sources of these concerns as illustrated by two different perspectives on safety (a) that associated with the probability of any insult or injury that may follow from any action or practice, and (b) that related to feelings of confidence or well-being about one's situation, activities and outlook (Thompson, 1995). Put another way, as Sandman (1992) has, risk is a function both of hazard (the probability of insult and/or injury) and outrage (the challenge to the sense of well-being). Where instrumental rationality is entirely appropriate for dealing with the former, it is equally inappropriate for dealing with the latter; and indeed 'outrage' can all too easily be fueled under circumstances where this distinction is lost. A lack of public trust in existing techno-scientific rationality is perfectly justified under circumstances where "moral judgment has seemingly been eliminated from prevailing concepts of rationality as far as they are actually manifest in the scientific and systems paradigms that currently prevail" (Ulrich, 1988). Within science, and hence within the prevailing techno-scientific discourse of modernisation, the normative has been overwhelmed by the empirical, triggering calls for profound changes in paradigmatic emphasis within the academy. As Wilshire (1990) submits, "we have powerful means of altering the earth and ourselves, but only a fix on goodness could give our means their aim, support and meaning". Bio-technological interventions, as aspects of the risk society, in presenting ethical and aesthetic challenges as well as instrumental ones, provide substance to the call for 'fixes on goodness': The embrace of moral judgments thus becomes an imperative for a paradigmatic reform within science itself, marked by a synthesis of the normative with the empirical, as two different by

complementary 'cognitive interests', into what has been referred to as a 'systems science' (Alroe and Kristensen, 2002).

Where scientific discourse has an essential role to play in the establishment of the probabilities of risk associated with, for example, the use of rDNA technologies in the production and processing of food products from agriculture, it is to moral discourse that we must turn in relation to exploring the ethical implications of their use. These are difficult and complex challenges, for in addition to ethical concerns about the potential harmful consequences of such technologies on a wide range of 'stakeholders' (including nature itself), there also is the matter of the rights and privileges of an equally broad spectrum of characters (again including nature itself). Recent initiatives by the Danish government illustrate this complexity with its support of attempts to develop a code of practice with regard to any bio-technological interventions based on the four ethical principles of autonomy, dignity, integrity, and vulnerability (Kemp, 2000). While it is not too difficult conceptually to accord all four of these features to human beings, it is much more conjectural to apply them to other living beings, or to 'nature' as a whole.

This matter provides another powerful illustration of the interdependencies between agriculture and the rest of society: "Moral discourse is essential to agriculture insofar as people's willingness to recognize morally valid rights, privileges, and constraints shapes agricultural practices, and agriculture is essential to moral discourse to the extent that practices for producing and consuming food are sources of conflict, interest and loyalty" (Thompson 1998).

Included here, as a potential source of conflict, is the increasing involvement by the academy itself in bio-technological research and development, often in association with corporate interests and with its own financial interests as paramount. This has the capacity to diminish both the integrity and indeed dignity of the academy, while increasing its vulnerability to public scrutiny. With respect to community engagement, there are therefore serious sources of potential conflict here between private gain and the public good. The issues of 'truth' and 'trust' and integrity are highlighted, for there are times when the 'authority of expert knowledge' is greatly dented not only by assurances from different expert sources of different 'facts of the matter', but also by the misrepresentation of factual reports from some experts, by others.

A poignant illustration of the latter is provided by Jones (2000) following his searching review of the machinations of a Senate public hearing instituted by the Canadian government into the application by a transnational corporation to import into that country a product of recombinant technology (Bovine Somatotrophin rBST) for use in the dairy industry, that was already freely available commercially in the United States. The spectrum of issues invoked ranged from concerns about human health, animal health, and environmental residues, through to the concentration of wealth, and differential distribution of

economic gains. The hearings were characterized throughout by conflicting responses to a host of different issues of concern from different, yet appropriately qualified, professionals. Each claim about benefit, or safety, or ecological benignity made by expert specialists, was met by counter claims to the opposite effect by other, equally qualified specialist. Such differences in the 'truth' were seriously disturbing to many involved in the hearings, and beyond. Even more seriously, evidence began to surface that suggested that certain evidence was being suppressed by particular professional scientists who were being less than honest with respect to what they knew about the nature and scale of the risks involved with the importation of rBST into Canada.

Concerns about the apparent inability of the specialists to agree about the 'truths' of the matter with respect to the potential risks to people and nature alike, were therefore further exacerbated by concerns about the 'truthfulness' and integrity of the specialists who provided evidence through their 'expert' submissions. Implicitly, all four of the 'claims for validity' that Habermas (1979) attached to communicative action, were invoked, and indeed, could be shown to have been violated: (i) much of what was said was not mutually comprehensible, (ii) with such differences in the dispositions, some of what was said was clearly not empirically true, or at least not accurate, (iii) some of those who testified, were less than truthful and thus morally suspect, and (iv) some of what was said was not stated sincerely.

It was little wonder that as the hearings progressed, the level of public outrage became such that it inflicted considerable damage on the reputations of many 'expert specialists'. By extension, this also invoked doubts about the trustworthiness of the entire techno-scientific 'enterprise' and its foundational 'paradigm'. Under these circumstances of both potential hazard and potent outrage, the Canadian government, acting both as the guardian of public interest and as the essential decision maker, had no honorable alternative but to reject the application. It enacted legislation that not only disallowed the importation of the particular product in question, but also placed a five-year ban on the importation of any commercial product that was an analog of it.

While highly specific in nature, this particular bio-technological case situation reflects all of the key elements of the contemporary problematique in general, and indeed of the nature of the discourses that increasingly prevails around it. The issue was certainly hybrid and systemic in its character, and complex in the sense of the multi-dimensionality both of the matter itself (with nature and culture truly 'churned up' to a high level of embeddedness) and of the constituency of the interests of the various stakeholders who were involved in the 'communicative action'. It was also characterized by a number of different discourses that had the potential to be very asymmetric between the lay public and the experts, and which required significant appeal to validity claims. Furthermore, it certainly aroused considerable public passions in its demands for ethical and aesthetic appreciation in addition to techno-scientific and economic rationales. The case

itself was perhaps somewhat atypical in that it dealt with risks in prospect rather than in retrospect and had a clear objective or focus, with parameters for improvement that could be identified and evaluated. An orientation to potential future risks set within a broad global objective, is however, becoming an increasingly significant facet of the 'new modernity' as is well expressed, for instance, in the discourse on environmental sustainability and development. As evidence, the most commonly accepted definition of sustainable development, drawn from the report of the first international World Commission on Environment and Development (Brundtland, 1987) is 'development that meets the needs of today without compromising the needs of tomorrow'.

The Canadian rBST case might also seem somewhat unusual in that a 'single' decision maker, in the form of the government, could be clearly identified, yet this too represents a key realization of 'reflexive modernisation'. It is increasingly apparent that aspects of the modern problematic that have the potential for global implications, and that clearly includes the many potential environmental impacts of modern technologies, "call for decisive political interventions" (Hajer, 1996). Which is not to accept that governments, or other institutions of governance, always act in the best interests of the citizenry in the face of risks to public safety, even while apparently acting to facilitate the necessary interactions between the discourses of 'experts', and 'lay citizenry'. There is much to understand yet about the necessary synthesis between the empirical and the normative and how it might be achieved, and if it is any institution, it should be the academy that takes the lead in addressing such an epistemic challenge, not institutions of governance. The point to be established is that the challenge of the risk society is one for the citizenry, the academy, and other institutions alike, with the need for transformation across the entire cultural spectrum particularly in the face of what has been suggested represents entire "crises of legitimacy of modern economic, scientific-technical and political institutions" (Wynne, 1996). The 'new modernity' thus emphasizes the need for institutional transformation of the most profound order.

Consideration of the Canadian example, allows the identification of the key elements that characterize what ought to be present at the 'engagement interface' (Fear et al, 2001) between the citizenry, the academy, and other socio-cultural institutions, if such fundamental transformations are to be achieved. Five such characteristics suggest themselves: (i) a cast of appropriate stakeholders that includes citizens, experts, decisions makers, witnesses and, 'actors' or 'enabling agents', (ii) a clear indication of the objectives being pursued in the name of 'improvements', (iii) an articulation of the worldviews that provide the support for the objectives as 'improvements', (iv) a critical discourse that is minimally distorted by the influence of power and where claims to validity are transparent and intrinsic, and (v) an appreciation of the nature and dynamics of the environmental conditions that surround the situation – both natural and cultural – and of the range of such environmental conditions that can be considered plausible in the future!

As envisaged, the engagement interface is most essentially a milieu for transformative learning, which is a perspective that is often missed elsewhere when and where the emphasis is on speech acts and discourse. And if the only sensible way to deal with the 'modern problematic' within the context of the sustainability of life on earth, is to 'learn our way out', as Milbraith (1989) has posited, then that learning must itself be self-reflexive and adaptive in order to accommodate the new complexity.

The promise of the learning turn

If the citizenry is to become competent at dealing with issues that are complex and 'messily unpredictable', and to learn its way to Milbraith's vision of a "sustainable society", considerable attention will need to be paid to the issue of learning how to learn. In particular, the systemic nature of the issues of concern, dictate the need for systemic ways of learning and knowing. An important primary focus on such learning will therefore be on the features, dynamics and designs of innovative systems of learning, or inquiring systems (Churchman, 1971) that represent, at the very least, powerful and relevant conceptual frameworks. Such framework perspectives allow the classification and exploration of different modes, levels, orders, and methods of learning, in 'systems terms'.

Ironic though it may seem, the case now needs to be made in support of a 'learning turn' within the academy if it is to respond appropriately and innovatively to the Boyerian call for it to be "of greater service to the nation and the world" (Boyer, 1990) in an age of reflexive modernisation, and societal sustainability. The submission here is that new, critically reflexive learning systems need to be designed to meet the challenges of the new modernity, and that these become the foundations for extending a scholarship of engagement into a critical systemic discourse of engagement.

It is perhaps more than provocative to suggest that there should be learning turn by the academy. From the time of its very establishment in medieval Europe, the university has claimed, with some considerable justification, to be the quintessential seat of learning, with "an historical background of reflection that goes back at least to Socrates" (Gaita, 1997). The university, by its very name and traditional nature, is the one institution that has historically been dedicated to the pursuit of the 'truth' for its own sake, and for the generation and conservation of knowledge as truth, through the ages.

However, preoccupations with research, teaching, and 'extension/outreach' and on the academy as a center of higher education has all too frequently deflected attention from learning as the foundation of all of the activities of the academy. And this is the height of irony given the primacy, identified earlier that is now being publicly accorded to the image of the learning society and to learning

communities and organizations and even to learning nations. Witness too the pervasiveness of learning as the theme of a number of national and international studies of education/higher education conducted, over recent years, from beyond the academy while being about it: “Higher Education in the Learning Society” – Report of the National Committee into Higher Education in the United Kingdom (The Dearing Report 1997), “Learning for Life” – Report of the West Committee into Higher Education in Australia (1998), and “Learning: The Treasure Within” – The Delors Report to UNESCO of the International Commission on Education for the Twenty First Century (1995). Yet even in the face of such language for reform, and even while the populist management literature has been dominated over recent years by concepts of organisational learning and the learning organization (Unnikrishan Nair, 2001), evidence continues to suggest that the academy itself has not changed significantly since Simon (1967) charged that “[we] do not in our colleges today, make use of any learning principles in a considered, systematic, professional way”.

There are some very legitimate concerns here that such a lack of emphasis on learning *per se* within the academy, in spite of the growing predominance of a learning-focus across the socio-cultural environments in which it operates, is a prime illustration of its self-centeredness and isolation. This lack of learning focus then becomes a primary locus for criticisms about the academy’s apparent unwillingness to engage in the ‘hybrid’ contemporary situations that demand ‘learning as the way forward’. It is also becomes a context for criticism of the prevailing approach to educational where students might be taught a lot of knowledge, but where they rarely learn much about the ways by which knowledge is generated and shared beyond telling and/or showing! Neither do they learn much about dealing with the messy problematics of everyday existences, and how to deal with them, collectively and comprehensively. The criticisms can be further extended to include the frequent neglect, in conventional approaches to higher education, of the epistemological nature of knowledge, or about other sets of paradigmatic assumptions and beliefs. This pedagogical neglect is further fueled by the pervasiveness of a techno-scientific paradigm that, by its very nature, is not only un-self-reflective but also aggressively resistant to external critique: “Scientists tend to develop very strong opinions about the validity of their own methods, as every critic and adviser soon discovers” (Churchman, 1971).

Within the academy we scholars might well be ‘reflective’ in the sense that we transform both observations and thoughts into knowledge, but we seem to be far less committed to being ‘reflexive’ in Beck’s sense of being critically ‘self-confrontational’. As indeed evidenced by the manifestations of the risk society, we have been reluctant to address the issues of both the consequences of what we know and also of the ways, means and perspectives, through which we have come to know it.

Most of our scholarly critical competence has conventionally been applied to what we observe of natural phenomena and socio-cultural events and experiences, and to the theories that inform our interpretations and explanations of those observations, rather than on the very processes of observation and interpretations. Yet for all the knowledge that has been generated over the eons, for all that has been learned and for all that is now known, there are those who argue persuasively, that “the core of all the troubles we face today is our very ignorance of knowing” (Maturana and Varela, 1988). By extension it can be argued that that is equally true for learning, the cognitive foundations of which still remain a mystery to the majority of those within academia who teach, research and/or reach out – and to those who would engage!

Applying a theory of cognitive processing proposed by Kitchener (1982), it can be posited that we academics focus most of our attention on ‘first level’ cognition which deals with knowing about the matter to hand. We seem to exhibit but passing interests in either the ‘second level’ (meta-cognition, which deals with knowing about knowing) or ‘third level’ (epistemic-cognition, which deals with knowing about the nature of knowledge). Yet it is through these ‘higher order’ levels of knowing that we come to know how best we can transform our ways of knowing, as well as how we can challenge and change the assumptions that we hold about knowing and knowledge, and learning. In other words, as Salner (1986) submits “[E]pistemic cognition is Kitchener’s term for the capacity to think epistemologically...and evaluate the foundations of thought itself”. As these foundations find their expressions in the paradigms that we live by, epistemic challenge is equivalent to paradigmatic challenge, or, as Mezirow (1975) prefers to argue, to ‘meaning perspectives’, which he defines as “habits of expectation” that are essentially “rule systems governing perceptions and cognition”. Mezirow presents the view that ‘meaning perspectives’, like paradigms, are open to challenge and change, arguing that the transformation of such perspectives is one of four distinctly different “forms in which adult learning can occur”. The others that he identifies, in what might be identified loosely as a ‘descending order’ in a hierarchy of different ‘levels’ of learning somewhat akin to Kitchener’s hierarchical schema for cognitive processing, are (a) learning through transformation of meaning schemes, (b) learning new meaning schemes, and (c) learning through meaning schemes. This classification of distinct forms of learning represents the essentials of what Mezirow (1975, 1991) identifies as “a transformation theory of adult learning” to which, as he acknowledges, the work of both Bateson (1972) and Cell (1984) provide key contributions. Both of these latter workers also interpret learning as involving four different levels or categories of change.

Drawing key ideas from the ‘Theory of Logical Types’ (Whitehead and Russell, 1910–1913), as well as from the science of cybernetics, Bateson (1964) emphasizes the significance of ‘difference’ as either a stimulus or response for learning. He is especially interested in differences in ‘context’ that reflect

particular sets of premises and expectations which frame the learning at different levels. He presents a hierarchy of logical types of learning from Zero Learning to Learning III (and indeed beyond, to a hypothetically possible Learning IV which “probably does not occur in any adult living organism on this earth”. The series reflects the following logic: “Stimulus is an elementary signal, internal or external. Context of stimulus is a *metamessage*, which classifies the elementary signal. Context of context of stimulus is a meta-metamessage, which classifies the metamessage. And so on” (Bateson, 1964). In this manner, each ‘level of learning’ in the hierarchy represents a change in the process of the level that precedes it – which is a notion that is also clearly reflected in Mezirow’s scheme. It can also be seen to be apparent in the scheme of Cell (1984), who in also discriminating between four levels of change involving learning, recognizes, response learning, situation learning, transsituation learning and transcendent learning.

It is this logic of different ‘levels’ and/or logical types of learning’ and of a nested hierarchy of embedded levels of cognitive processing, that provide the beginnings of a systemic framework for what we can call scholarly engagement (Fear et al 2000) with the process of learning itself. This is of considerable significance for the argument that it is learning that lies at the heart of transformational change (a) of self, (b) of collectives of collaborating selves, and (c) of the relationships between self and selves and the world of everyday experiences. The image that we wish to convey here is of learning as a critical, self-interrogating, embedded process, where learners (acting both as individuals and as collectives) consciously pursue the nature and consequences of their knowledge at, and across, different levels of cognitive processing. As knowledge is generated in the context of each specific level, it has the capacity to trigger changes at that level, which then, following systemic premises of interconnectedness, also has the capacity to trigger changes at other levels.

In this manner we are illustrating a scholarly response to the self-confrontational imperative of ‘reflexive modernisation’ and the pragmatic maxim that undergirds it. Thus, for example, it is through scholarly engagement with meta-cognitive concerns, that we can best explore what it means to learn how to learn in terms of cognitive processing that includes critical reflections on the impacts of how we know on what we know. In similar vein, it is through such engagement with epistemic-cognitive concerns that we can best learn about the nature of knowledge in terms of epistemic processing that includes critical reflections on the impacts of our paradigmatic assumptions on both how we know and what we know – and most poignantly, on what we do with what we know in terms of our actions in the world about us.

Given the significance that has been attributed to the concept of praxis earlier, it is important to emphasize the commitment here to the synthesis between knowing and doing, and indeed to illustrate how this particular dichotomy can also be overcome. From their position as biologists concerned with the biological

foundations of cognition, Maturana and Varela (1988) submit, “all doing is knowing and all knowing is doing”. To these writers, the everyday world that each of us experiences is a world that we ourselves ‘bring forth’ through the process of living itself. In a glorious circularity, the world that we come to know through personal experience is the world that we personally create (bring forth) through our knowledge! Language is absolutely central to this identity between cognition and action, because we don’t simply use language to communicate, we are immersed in it, and we build relationships through the process of what they refer to as ‘*linguaging*’: “Our ever-changing present reality consists of how we describe our experiences to ourselves and one another and we are always explaining and reporting our experience. Furthermore, we act according to our current view of the world” (Fell and Russell, 2000). What we do in this world reflects how we see it, and how we see the world reflects what we do in it. Crucially, Maturana and Varela include emotions as elements of this process of ‘*seeing*’ and ‘*doing*’, and indeed Maturana (1988) has presented the idea that ‘*emotioning*’ is a ‘*bodily predisposition to action*’

These are matters of great significance to the way people act together – and thus to the issue of engagement with others in issues of mutual concern. They also are born of an intellectual tradition that challenges conventional views of the biology of cognition, as well as the conventional paradigm that frames them.

The research of Perry (1968) into forms of ethical and intellectual development of liberal arts undergraduate students was an important foundation for Kitchener’s work. From his observations on students, Perry postulated that there appeared to be a sequential developmental pattern over time, in the manner by which they addressed themselves to challenges. While identifying nine such phases, the essence of his findings was that students passed from an initial developmental state of epistemological *dualism*, through a state of *multiplicity*, to eventually reach a state of *contextual relativism*. Simply stated, this sequence, which in his opinion does not occur without considerable challenge in the learning environment, represented, in Perry’s opinion, one of the major accomplishments of undergraduate students. Kitchener (1986) extended these ideas on epistemological development within a broader context of ‘*reflective judgment*’ for she identified seven developmental stages, submitting that the structure of each level of development “appears to underlie some superficially unrelated beliefs, including the validity of authorities’ claims, the way beliefs can be justified as better or worse, and understanding of bias and interpretations”. The general movement that she proposed for reflective judgment was from dogmatism, through skepticism toward rationality, closely mirroring Perry’s epistemological schema of dualism, through multiplicity toward contextual relativism.

Drawing on both Kitchener and Perry, Salner provides a vital insight which she draws from her experiences with her own graduate students who were studying general systems theory: “It is the combination of a contextualizing sensibility with flexibility in epistemic strategies that characterize systems competence” (Salner, 1986). In other words, until and unless people reach a stage of epistemic

development equivalent to an epistemological position of 'contextual relativism' and 'reflective judgment of rationality', they are unlikely to be able to develop praxis appropriate to the sort of 'systems science' that Alroe and Kristensen (2002) promote or the systemic approaches to learning and development for which Bawden (1992) has appealed. When restated 'the other way around', these notions of epistemic development and systems competence (and the epistemic/systemic nexus), provide crucial indications of the type of reflexive discourse that can be regarded as essential for addressing the contemporary problematique, and for bringing forth better worlds together.

In order to more successfully come to public judgment about what needs to be done to better deal with the complex hybrid issues with which they must increasingly deal as intrinsic to their everyday lived experiences, citizens need to develop systemic competences. In order to develop such competencies, they need to learn how to confront, challenge and transform the paradigmatic assumptions that provide the perspectives for how they view the world (meaning perspectives) and what they do in it. And to do this, they must appreciate the significance of needing to learn how to learn including how to learn how to learn about the nature of their own paradigmatic assumptions.

The essential promise of the learning turn at the engagement interface, is the development of a critical, self-confrontational, discourse that promotes both meta and epistemic learning, and the transformation of both in ways that lead to the emergence of collective systemic competencies. And this represents a profound and urgent focus for the academy that seeks to engage both with the citizenry and with other institutions in the pursuit of a universe of human discourse that is both appropriate to the 'risk society' and reflective of the processes of 'reflexive modernisation'. It will be a discourse with foundations in both 'instrumental rationality' and 'communicative action'. It will be transformative in intent, democratic in nature, and multi-leveled in organization and conduct.

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