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CRITICAL THEORY AND EMPIRICAL STUDIES IN IS RESEARCH: THEORETICAL AND PRACTICAL CONSIDERATIONS

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Abstract

This paper considers the theoretical relationship between critical theory and empirical research work; the aim being to provide a conceptual framework to assist the critical researcher in devising apposite research strategies and programmes. The paper begins by exploring the context in which IS development takes place from a critical perspective. A new paradigm for IS research – encompassing both critical and empirical facets of IS research - is then developed. It is argued that critical models of empirical studies may be developed – employing the negative dialectical strategy - to enhance the critical IS research process. These will be models produced by IS researchers, informed partly by empirical studies, who take critical subjectivity seriously. It is concluded that the development and refinement of such models - which can, again, be informed by empirical studies - is the main challenge for the critical IS researcher.

Introduction

The field of information systems (IS), and the research topics in this field are highly diversified. Therefore, it is important to note that this paper is concerned with developing research methods for applicability in the area of *IS practice*. IS practice, is (of course) a highly diversified field in its own right. One might investigate how a lone analyst programmer develops a small database, how a team develops an Ambulance control system, or how the IS strategy group of a large corporation makes decisions as to whether to outsource all (part or some) of that corporation's IS function and its associated information systems.

The main focus of the paper will be on the need to combine a critical theory approach with empirical findings. This requires an original interpretation of Adorno's approach to critical modelling. This needs to be done in such a way as to be faithful to the optimistic side of Adorno's ideas whilst being careful not to fall into the trap of using Adorno's ideas to support (or encourage) work that is insufficiently critical to ever be realistically considered to be *bona fide* critical theory research work. It will be argued that Adorno's ideas cannot be straightforwardly employed to develop IS research methods; numerous dangers would lie in store for a researcher taking such a simplistic approach, as Crook has argued, "The nature and extent of Adorno's claim to attention must always be contingent on the degree to which his work can illuminate contemporary developments in culture, polity and society... an assessment must identify core themes in Adorno's analysis which continue to merit attention and to warrant further development." (Crook, 1994, p. 18).

Therefore the paper will develop facets of Adorno's work on critical modelling so as to (attempt to) combine a genuinely critically approach with empirical approaches that would allow for a more general applicability of the findings of such (case-study) IS research.

The IS Development Context

Adorno considered (as, no doubt, do IS professionals) that the world of economic activity is very real. As Yeates, et al. argue, "Somebody pays for what analysts and designers deliver. New systems have to be justified by the benefits that they deliver. It

is easy to use terms like "the users" and "user management" ... and forget that they are subtitles for "the customer"." (Yeates, et al., 1994, p. 2). The economic activities which generate systems development projects have a key role in determining the analysts' foci of attention in the projects that they are involved with; in that what is considered to be relevant and worth "analysing" is partly determined by the economic realities inherent in a given situation. The gist of (one important aspect of) Adorno's epistemic approach can be summed up in this quotation, "While our images of perceived reality may very well be *Gestalten* [*Weltanschaunngen* - in Soft Systems Methodology jargon], the world in which we live is not; it is constituted differently than out of mere images of perception." (Adorno, 1977, p. 126).

Mark Poster summarises the "economic/epistemic" problem for IS research thus, "Since computers are useful objects to industry and government, computer "scientists" are especially sensitive to the question of the epistemological purity of their discipline. Louis Fein, writing to the *Communications of the Association for Computing Machinery*, insistently articulates his distress with the ambiguous status of his field: 'Like other sciences, our science should maintain its sole abstract purpose of advancing truth and knowledge. It is not clear to me that an organisation can play simultaneously the role of a profession, of an industry, and of a science.'." (Poster, 1990, p. 147). Although Poster is actually discussing Computer Science I would argue that these remarks also apply to IS.

But IS encompasses all three elements (a quasi-profession, an industry, and a sort of quasi-science), and IS practice will always be a matter of "trading-off" between these tensions. Furthermore, there is another crucially relevant factor: the IS professionals themselves. Whilst it is true that IS professionals can be considered to be *role-occupants*, they are individual people also, as "[O]ne tends to mask one's own genuine self with different masks (*personae*) and to play various roles and personalities until the mask and one's self become inseparable... But in the crucial moments that require definite and significant decisions and action, we are more capable of discerning who we genuinely are. There is no one but ourselves to condemn or appreciate our behaviour." (Golomb, 1995, pp. 24-25). Although it should be noted that Adorno (1973a) expressed strong doubts about the (critical) utility of the notion of authenticity, it has been found to be useful in understanding the actions of (e.g.) educational professionals (Cooper, 1983). IS professionals (it is conjectured) do, indeed, sometimes encounter situations in which "there is no one but themselves to condemn or appreciate their behaviour", i.e. situations which mobilise their own demands for personal authenticity. Therefore IS research needs a research method that can bring about a holistic understanding of all *four* of these aspects in a given situation, i.e.:

1. The demands of the IS profession (e.g. adherence to IS methodological precepts or ethical codes).

2. The (economic) demands of industry (e.g. the need to observe externally imposed quality methodologies, or to deliver computer systems "on time and within budget").

3. The causal effects of the scientific aspirations (or, indeed, pretensions) of the computing industry (e.g. the legitimation of undesirable social consequences on technical grounds).

4. The values and attitudes that (authentic) IS professionals themselves bring (via their personal lives) to the practice of IS.

Put simply, what is needed are techniques for analysing the actual relationships that intertwine between the *subjects* undertaking IS development projects, and the *objects* in the study (see fig. 1 below). Here, 'objects' should be understood as meaning all the various items (and impersonal "forces") that need to be analysed (or have an effect) in the organisation (the term is not used here in the sense that it is used by the advocates of "object orientation").

It has long been recognised that the interventions (made by systems analysts) themselves alter "the current system" in some way or other. What is currently lacking are the critical means to frame our understandings of these situations; owing to the tendency to adhere to a "binary-opposition" view of IS research methodologies as being "positivistic" or "interpretivistic". The problem with this "binary" view is that neither approach is adequate for *critically* analysing the actuality of IS practice, as experienced by IS professionals. The positivistic approaches do not give sufficient emphasis to the active role of the analyst-as-intervener, as the analyst is considered to be "detached" from personal concerns with the situation being analysed. The interpretivistic IS research methods have their history rooted in the "phenomenological" epistemological stance (usually associated with Edmund Husserl, see Bernet et al., 1993, for details); in which the very appearance of being immersed in a conflict-ridden situation is often reduced to being purely a matter of the IS practitioner's own internal perceptions – rather than being the result of the three other external influences in Figure 1 above, *plus* the IS practitioner's own perception of the situation. Consequently a "way out" of this impasse is clearly required. Although we are (often) totally immersed in organisational situations, nevertheless we are all (most of us – at any rate) sometimes able to see problems with the actually existing set of arrangements; i.e. we are capable of critically analysing - and capable of transcending, in thought - the current set of arrangements.

Science
(Computer Science and
Positivistic IS research)

REGULATORY

Profession
(ACM, BCS, etc.
ethical codes)

POSITIVIST

IS Practice

INTERPRETIVE

Industry
(Competitive and regulatory
realities, software products)

DEVELOPMENTAL

Personal Ethics
(authenticity)

Figure 1. IS Practice as a Multi-Conflictual Dialectical Domain

A New Paradigm for IS Research

In many aspects of IS research, it is not possible to isolate the social and technical components of the area under investigation; in any case, it is somewhat reductionistic to attempt to separate the area of investigation into two component parts (social and technical). Here, a sort of "unified theory" (of technology and society) might prove beneficial because, as Vorisek and Pour argue, "... [S]ystems development includes the development of ideas, imaginations and value systems of a company ..." (Vorisek and Pour, 1994, p. 152)

Adorno was a key member of the Frankfurt School, and although it is difficult to summarise Adorno's ideas on the technology/culture dimension easily, essentially Adorno thought that culture (generally) has become a matter to be administered, and that technology has made this possible. The relevance for IS research is that such a view would generate a new, possibly more appropriate (but inevitably more complex), theory of the role that technology plays in shaping the culture of organisations (and vice versa). As Scarbrough and Corbett note:

> "... [T]he relationship between technology and organisation is neither one of 'impacts' [of IT] nor of 'choice' [made by managers] *per se*. Rather, technology and organisation are closely intertwined through flows of knowledge and ideas which transcend the individual organisation but which find expression in, and are reinforced by, political interests and agendas at the organisational level." (Scarbrough and Corbett, 1992, p. 157)

If Scarbrough and Corbett are even approximately right, then it would seem *prima facie* that simplistic distinctions between "hard" and "soft" systems approaches to conducting IS research will not provide adequate forms of conceptualisation for IS developments and user-utilisation of the information made available as a result of IS - two notions which themselves may be much more intertwined than is often acknowledged (see e.g. Fitzgerald, 1990, Paul, 1995). As Gardner (et al.) argue, the need now is for "tailorable" systems to be put in place; in such systems the concepts of 'developer' and 'user' (and 'technology' and 'organisation') are increasingly blurred:

> "A computer system is tailorable if it provides a user with control over its operation. This means a user should be able to regulate or operate the system, thus providing ultimate power to direct or manipulate a system's behaviour... A control is understood to be a device or interface widget that enables a user to regulate or operate a system and provides the user with the power to direct or determine its state." (Gardner, et al., 1995, p. 187)

So, it appears that IS development should not be conceived as a once-and-for-all activity, but - rather - as an on-going, user-definable (and user-achievable) process. Such considerations from the world of IS practice have important implications for research into IS also. A "binary opposition" view of the distinction between "positivism" and "interpretivism" is surely inappropriate when the "objects" in the research area contain such "intertwinings" between technical and social aspects; the tailorability of an integrated system is surely an emergent property of the possibilities (and the constraints) created by definite technical "configurations", and the actual social arrangements, pertaining in the situation.

Adorno considers that there is a legitimate separation between the *subjects* (who carry out research) and the *objects* in the study, but generally this distinction is not made in an appropriate manner:

> "The separation of subject and object is both real and illusory. True, because in the cognitive realm it serves to express the real separation, the dichotomy of the human condition, a coercive development. False, because the resulting separation must not be hypostatised, not magically transformed into an invariant." (Adorno, 1978, pp. 498-499)

Adorno considers that "the subject" makes possible the idea of critique - of a critical interpretation of reality. But the concept of 'the subject' is an intellectual construction - an abstraction - *derived from* (and not *prior to*) actual, real, living individuals:

> "It is evident that the abstract concept of the transcendental subject - its thought forms, their unity, and the original productivity of consciousness - presupposes what it promises to bring about: actual, live individuals." (Adorno, 1978, p. 500)

It should be noted that this is a Nietzschean argument (e.g. Nietzsche, 1956, pp. 178-180), and this debt is acknowledged by Adorno (1982). Although we can treat the subject as real, or "standing in for" real, live individuals, in Adorno's view the subject does not "make the world up". The idea that the world is "made up" by individuals is often termed 'constructivism' - Adorno uses the term 'constitute' instead of 'construct':

> "While our images of perceived reality may very well be *Gestalten* [*Weltanschaunngen* - in SSM jargon], the world in which we live is not; it is constituted differently than out of mere images of perception." (Adorno, 1977, p. 126)

However, Adorno does not argue for a return to "vulgar objectivism", because this would deny the possibility of a critical interpretation of the objective circumstances. The objective world is real enough, but what we see is always *mediated* by concepts - although we may not be aware of this all of the time:

> "What must be eliminated is the illusion that ... the totality of consciousness, is the world, and not the self-contemplation of knowledge. The last thing the critique of epistemology ... is supposed to do is proclaim unmediated objectivism." (Adorno, 1982, p. 27)

In the earlier quotation (above) concerning "perceived reality", what Adorno means by 'constituted differently' is that the world is, to a large extent, determined by economic realities, which he sometimes refers to using the term 'exchange':

> "The living human individual, as he is forced to act in the role for which he has been marked internally as well, is the *homo oeconomicus* incarnate, closer to the transcendental subject than to the living individual for which he immediately cannot but take himself... What shows up in the doctrine of the transcendental subject is the priority of the relations - abstractly rational ones, detached from the human individuals and their relationships - that have their model in exchange. If the exchange form is the standard social structure, its rationality constitutes people; what they are for themselves, what they seem to be for themselves, is secondary." (Adorno, 1978, p. 501)

In fact, the IS practitioner should be seen *not* purely as some sort of enquiring transcendental subject, *but* as an economically-constituted actuality. Adorno argued that critique is only possible if some status is given to the subject who can become critically aware of these sort of circumstances. Therefore Adorno preserves a critical role for the subject, "To use the strength of the subject to break through the fallacy of constitutive subjectivity ... Stringently to transcend the official separation of pure philosophy and the substantive or formally scientific realm ..." (Adorno, 1973b, p. xx)

At the very least, the economic activities which generate systems development projects have a key determining role on the practitioners' foci of attention in IS projects; systems analysts do not generate knowledge purely in the interest of advancing science. What is needed are techniques for analysing the actual relationships that appertain between the subjects conducting the IS, and the objects in the study.

Critical Theory and Empirical Research

Much (and probably most) IS research takes the form of empirical studies; whilst a reasonable number of "interpretivist" studies are now extant. It has already been argued that neither of these methods can adequately capture the essence of an IS development situation. Now, Adorno's approach to this (general) research problem will be developed specifically for IS research.

Anti-Positivism

Although much IS research has been carried out in this tradition, Adorno is acutely aware of the limitations of this approach (generally). Space does not permit a thorough analysis of the epistemological arguments for Adorno's rejection of positivism, so I will focus on two of the methodological arguments for its rejection. Firstly, it is an *uncritical* method and secondly, it methodologically prevents genuine thought and reflection on the actual situations being investigated.

Positivism as Uncritical

Positivism is modelled on the natural sciences, and the natural sciences are concerned with "the facts" which are always (supposedly) value-free. In positivism's claim to discover facts lies its strongest appeal. However, the facts about how (e.g.) a virus does its damage to people cannot be connected to any *intention* on the part of the virus to cause human suffering. Whereas, in the social sphere (which I am taking IS development as residing in), deliberate human actions occur. Deliberate human actions arise from intentions – good, bad or indifferent. E.G. a medical intervention on a diseased patient arises from an intention to cure the patient. These intentions and the society in which they are both acted out and shaped by is clearly not a value-free arena. Positivism's claim to discover the "value-free facts" (which is also its appeal) has to be methodologically grounded in a sort-of feigned ignorance of the social issues - the power struggles, the ideological elements, and so on that are actually present in the situations under study.

> "In societal and concrete terms, both political apathy and the much-praised scientific neutrality prove to be political facts. Ever since Pareto, positivistic scepticism has come to terms with the specific existing power, even that of Mussolini. Since every social theory is interwoven with real society, every social theory can certainly be misused ideologically or operationalized in a distorted manner. Positivism, however, specifically lends itself, in keeping with the entire nominalist-sceptical tradition, to ideological abuse by virtue of its material indeterminacy, its classificatory method and, finally, its preference for correctness rather than truth." (Adorno, 1976, p. 30).

However, this argument is not entirely decisive. *Feigned* ignorance (of the value-aspects) does not necessarily imply *genuine* ignorance. Put simply, many researchers in the positivist tradition would manifestly *not* be sympathetic to fascism. However, Adorno's methodological point is entirely apposite in IS research (in my view); much of which makes great use of the "freedom" allowed by positivism to completely ignore the social issues in IS development - implementation and use, for that matter. However, as Adorno indicates above, although it "lends itself" to so-doing (or "so-ignoring") it need not necessarily do so.

Positivism as a "Prohibition on Thinking"

The entire positivist tradition rests on its claim to be able to prove things; what cannot be proved, cannot be known - a true positivist would / should argue. However, a great many of the social aspects in IS are simply not amenable to being proved in this way. Rhetoric, exaggeration, phoney justifications and face-saving excuses for failure are part and parcel of the IS development world. Few experienced practitioners would deny this, but positivism-as-methodology has no (or very little) *access* to these features. Methodologically, because such aspects are difficult to *prove* they must be literally *denied* by positivists:

> "Especially in the Anglo-Saxon countries logical positivism, originally inaugurated by the Vienna circle, has gained ground to the point of becoming a virtual monopoly. Many consider it modern in the sense of being the most rigorous faculty of enlightenment, adequate to the so-called technical-scientific age. Whatever does not conform to it is relegated to the status of residual metaphysics, its own unrecognised mythology or, in the terminology of those who know nothing of art, art." (Adorno, 1998, p. 8)

As Adorno argues, that which does not produce fact is (often) not considered to be a *bona fide* research method - by many people at any rate. However, although to actually define critical awareness is extremely difficult to do in anything resembling a "scientific" manner, it is clearly vital in IS research. This is partly (but not entirely) because of the economic context, and the praise/blame, reward/punishment, associated with success or failure in the actual business environment in which IS development takes place. With positivism, "[T]hinking becomes a necessary evil and is broadly discredited. Thinking loses its element of independence. The autonomy of reason vanishes: the part of reason that exceeds the subordinate reflection upon and adjustment

to pre-given data. With it, however, goes the conception of freedom and, potentially, the self-determination of human society." (Adorno, 1998, p. 9)

Anti-"Interpretivsm"

However, "interpretivism" *à la* Checkland (1981), Stowell, (1993) (and many, many others) is not seen as some sort of panacea to positivism by Adorno. Albeit for entirely different reasons, it is seen as equally misguided, as the following quotation makes plain:

> "Sociology is only peripherally concerned with the ends-mean relation subjectively carried out by actors. It is more concerned with the laws realized through and against such intentions. *Interpretation is the opposite of the subjective meaning endowment on the part of the knowing subject or of the social actor.* The concept of such meaning endowment leads to an affirmative fallacy that the social process and social order are reconciled with the subject and justified as something intelligible by the subject or belonging to the subject. A dialectical concept of meaning would not be a correlate of Weber's meaningful understanding but rather the societal essence which shapes appearances, appears in them and conceals itself in them." (Adorno, 1976. p. 37 [emphases added).

There may well be many "viewpoints" on any given social situation. Whilst many of these may be entirely reasonable, some of these may well be riddled with racism, fascism and so on. To passively just accept any viewpoint as "valid" or "interesting" (or whatnot) misses the point entirely; often it is not the *viewpoint* that matters but the social forces that generate that viewpoint which need to be understood. Most people are aware of the kinds of viewpoints expressed by Adolf Hitler and his supporters. These are not in themselves particularly "interesting" or "informative" (or whatnot). What will be interesting and informative are precisely the specific social and psychological circumstances and affectations which led to the manifestations of such viewpoints – with all their dire consequences when these become "operationalised". The critical researcher needs to be critical rather than passive about the viewpoints expressed in (e.g.) action research-style IS case studies; whereas a kind of feigned *detachment* is advocated and effected in interpretivism - namely that the researcher should be *indifferent* to the views expressed by the actors in the study. The critical researcher is, however, encouraged to both be alarmed at certain viewpoints and encouraged to develop theories concerning the circumstances which have led to their generation. Put bluntly, viewpoints are not just there to be neatly transcribed and/or accommodated – they are both the *raw material* of critical analysis and real expressions (or intentions) which *will* have consequences if they were allowed to be carried forward into prescriptions for practice; consequences which may or not be critically desirable. To deny this would be to deny one's interests in the world – and whilst this may be possible in practice, in principle it is either disingenuous or dangerously apathetic. It is important to note that such viewpoints that may cause genuine concern need not be nearly as extreme as the examples given above; the principle remains the true.

Can anything be gained from such (interpretive) studies that is of value to the critical IS researcher? This must be admitted to be a question for further research by the author, however a proposal will be made along these lines. The author has (over the years) been closely connected with a number of interpretive studies in UK industry. What is remarkable is *not* the divergence of viewpoints expressed in very different situations *but* their similarities. There seems to be an emerging pattern of role-playing in such studies. Concerning information issues, one can usually detect intense frustration among the majority of the actors in the studies. Blame-transference (for information-related problems) is usually rife, whilst any notion of problem ownership is almost entirely absent. In psychological terms very few actors of the actors express any feelings that the *locus of control* is within themselves. More work would be needed to collate and synthesise data from these various studies, but an initial hypothesis would be that the action researcher has a primarily cathartic effect in these situations – confirming the real powerlessness of the majority of the actors studies; *despite* all the claims – often made by action researchers (such as Checkland and Scholes, 1990) - that such actors have been increasingly *empowered* since the 1970s. However, it will now be argued that apposite critical theories can, in fact, arise from (reflections upon) positivistic research work.

Informative Empirical Studies

Adorno makes the following comments concerning some important empirical research:

> "The "Child Study" used the fundamental categories of *The Authoritarian Personality*. It gave rise to completely unexpected results. They refined the notion of the connection between conventionalism and the

authoritarian attitude. Precisely the 'good', that is, conventional children, were more free from aggression, one of the most essential aspects of the authoritarian personality and vice versa. This can be explained plausibly in retrospect but not a priori. This aspect of the "Child Study" made me aware for the first time of something Robert Merton independently discerns as one of the most important justifications for empirical investigations: that more or less all findings, as soon as they are available, can be explained theoretically, but so also can their contrary. *Rarely have I so palpably experienced the legitimacy and necessity of empirical research that answers theoretical questions*." (Adorno, 1998, pp. 236-237 [emphases added])

Empirical studies can provide important questions and help inform theories in critical IS research. Indeed, without empirical studies it would be quite impossible to even have a basic idea as to what was currently taking place in the IS world. Consider Business Process Re-engineering. Whatever the merits of this "programme" the critical researcher can draw critical inferences from its "rise and fall". Fads and fashion are well-known phenomena in IS developments in the world of business - and the public sector. But the extent of take-up of such phenomena *will* need to be informed by empirical studies; therefore to deny the importance of empirical studies would be to make the same sort of "category mistake" as is made by both positivists and interpretivists – to deny the importance of a crucial aspect of actual IS research. The critical theorist cannot hope to provide a critical interpretation of (e.g.) dot-com euphoria (and dot-com despair) without a fair statistical understanding of the actual situation - which obviously changes over time. One cannot just armchair-theorise the actual situations in which IS developments take place. However, there is another – possibly more compelling argument – for the critical theorist being receptive to positivistic studies.

Information Systems in a Critical Context

Concerning "the culture industry"; the "industry" that we probably refer to as "light entertainment", which includes such diverse things as manufactured pop bands and astrology columns in newspapers, Adorno writes:

> "One of the justifications of quantitative methods is that the very products of the culture industry are, as it were, planned from a statistical viewpoint. Quantitative analysis measures them by their own standard. For instance, differences in the frequency with which particular tricks recur derive in turn from a quasi-scientific calculation of the effect on the part of the astrologer, who in many respects resembles the demagogue and the agitator…" (Adorno, 1998, p. 238)

Earlier in this paper, it was argued that IS can be considered as a sort of amalgam of quasi-science / industry / quasi-profession. Positivistic studies are, probably, the most influential studies in informing IS industry developments. They also seem to have an (undue?) influence on professional bodies – and on Government-sponsored research initiatives - in Europe at any rate. It must be said at once that a great deal of this informing-work is positivistic-in-nature, rather than genuine empirical research – e.g. rash predictions about the volume of business that will be conducted electronically in a given number of years time. It would, possibly, make for an interesting research proposal to investigate the extent to which Government, industry and the IS professions are actually influenced by such positivistic research (*bona fide* or otherwise), but - intuitively at any rate – its influence seems to be significant. Positivist research which, e.g., investigates the number of businesses which intend to develop websites can help the critical researcher to develop critical research strategies along the lines of investigating the casual influences (rational or irrational) that lead to such IS developments.

Conclusion

Research on IS should be able to link the cultural aspects of organisations (theoretically) with the real economic pressures felt by the managers of those organisations. This is because we are all (often) totally immersed in organisational situations; nevertheless we are all sometimes able to see problems with the actually existing set of arrangements. We may well be able to generate innovative solutions to those problems, if the organisational culture and the technical infrastructure, allows us to - and if the technical personnel can enable us to. Therefore, whilst technical considerations remain essentially important to successful IS development, understanding the vague and yet undeniable tensions between the cultural and economic aspects of organisations is clearly crucial to developing an understanding of the necessary conditions for critical IS research to be carried out:

> "People-intensive integrative mechanisms are limited in what they can accommodate. Accessible, well-defined data and a transparent network are therefore the keys to effective development in the coming years. Developing

these resources, however, is not easy. Justifying organisation-spanning networks whose benefits are uncertain and will occur in the future, and whose costs cannot be attributed clearly to any specific suborganisation, is in part an act of faith. Developing common coding systems and data definitions is a Herculean job... although IT may enable the technical infrastructure to connect people and information together more effectively in the networked firm, to realise the benefits we are looking for we need also to have - or to develop - a favourable cultural setting for innovation and change." (Rockart and Short, 1991, p. 215)

This paper has argued the case for combining a critical theory approach with empirical findings in such a way as to be faithful to the optimistic side of Adorno's ideas whilst being careful not to fall into the trap of using Adorno's ideas to support (or encourage) work that is insufficiently critical to ever be realistically considered to be *bona fide* critical theory research work. The aim should be to produce what can be termed *critical models* of IS practice. Critical models are, "[S]pecific analyses that tactically employ the negative dialectical strategy…" (Pickford, 1998, p. ix); they are models produced by IS researchers, informed partly by empirical studies, who take critical subjectivity seriously (informed by e.g. Adorno, 1973b). The development and refinement of such models (which can, again be informed by empirical studies) is, I conclude, the challenge for the critical IS researcher.

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