COLLABORATION OR COLONISATION?

INTRODUCTION

Nearly half a century ago, Doris Wilkinson (1968) complained about what she called Sociology's "imperialistic disposition". By this she meant the diversification ("proliferation" was the word she actually used) of sociological ideas and approaches into a range of ancillary disciplines and the promotion of sociological perspectives alongside and within those of the home discipline or disciplines. The list which she produced to exemplify this expansion ran all the way from the study of adolescence to that of war on the one hand, and from Existentialism to Sociometry on the other. No doubt, if the exercise were to be repeated today, many more topics and "sociologies" could be added.[1]

In Wilkinson's view, the reasons for Sociology's disposition to invade neighbouring and not so neighbouring territory, are likely to be complex and multiple. Some derive from a sense of inferiority and insecurity vis a vis the natural and mathematical sciences as well as those social sciences which seem to have copied the natural sciences successfully. Some derive from the proselytising tendency which exposure to sociological ideas seems to generate. And some derive from an increasing awareness on the part of Governments and other agencies (and therefore the research funding agencies which they sponsor) that successful policy intervention and management in modern society requires a great deal more understanding of the social context within which such interventions are made than was (or is?) usually the case. This combination of forces had created an ideology which served to legitimate the territorial expansionism outlined above.

Wilkinson's worry about this imperialist expansion was, first, that the forms of sociologising carried out under this rubric would lack methodological rigour, open-mindedness and intellectual curiosity. Second, she was concerned that in becoming thinly spread and consequently diffuse, Sociology would lose a sense of its own core, both in terms of sharpness of concepts and of academically-driven values.

Some time later, Phil Strong (1979) repeated the charge of sociological imperialism, this time in connection with the domain of medicine and health. Here by mounting a counter challenge to what it designated medical imperialism, Sociology had sought to reduce the predominance of medical definitions of illness in explanations of epidemiological and other health phenomena, and to complement, if not replace, them with sociological ones. Whereas Wilkinson saw expansionism as essentially an academic issue, Strong saw it as a professional one; or, rather, an extension of the urge to professionalise such issues in late Bourgeois Capitalism.

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[1] Whilst sociological approaches do move in and out of fashion, they are rarely decisively eliminated from the discipline's practice. As a consequence, many of those on Wilkinson's list will, in all likelihood, have some support today.

Another take on much the same phenomenon is offered by an equally venerable sociological analysis: Robert Merton's (1976) account of 'sociological ambivalence'. For Merton, ambivalence is a characteristic state of occupants of most social statuses. Very few statuses are governed by simple and homogeneous norms. The institutions which they comprise are typified by normative heterogeneity and hence the possibility of normative conflict. As a consequence, when faced with the need to undertake courses of action, members of these institutions routinely find themselves motivated to follow alternative, sometimes conflicting norms which would lead to different, perhaps diametrically opposing actions. In such situations, actors are pulled in different directions by norms which appear to apply to them and their own different feelings and emotions.

Merton analysed this ambivalence ('sociological' because the frameworks within which it is applied are sociological) in such diverse settings as science, modern organisations and medicine itself. Within science, Merton identified a range of patterns of differing norms. Here are just a few.

> *The scientist must be ready to make his new found knowledge available to*
> *his peers as soon as possible.*
> *But: He must avoid undue tendency to rush into print.*
>
> *The scientist should not allow himself to be victimized by intellectual fads.*
> *But: He must remain flexible, receptive to promising new ideas and avoid*
> *becoming ossified under the guise of responsibly maintaining intellectual*
> *traditions........*
>
> *The scientist must not advance claims to new knowledge until they are*
> *beyond reasonable dispute.*
> *But: He should defend his new ideas and findings, no matter how great the*
> *opposition....(Merton 1976 p. 33)*

Surprisingly, Merton did not turn his sociological eye (at least in this respect) upon Sociology itself. Had he done so, we feel he would have identified a form of ambivalence which underlies the predisposition to imperialism which Wilkinson and Strong refer to. This ambivalence is expressed in the attitudes which Sociology adopts towards other disciplines (and, more often than not, which species of Sociology adopt towards one another). Using the same format as Merton (which, incidently, he borrowed from Robert Linton) this ambivalence could be stated as follows:

> *The sociologist should be open to the ideas of different disciplines and seek*
> *to promote interdisciplinary understanding.*
>
> *But: he must not accede analytic priority to another discipline and must*
> *always promote the primordiality of sociological accounts.*

 The consequence of this attitude is a form of sociological argumentation which seeks to appropriate and recast the topics which other disciplines have specified for themselves. The net result has been the continuous expansion of the scope of the discipline bemoaned by Wilkinson and Strong. Once an area comes to Sociology's attention, the predisposition is to substitute sociological accounts for those of the local home discipline. The result is a combination of colonisation and conversion.

DISCIPLINARY RELATIONSHIPS

Colonisation and conversion are a pretty fragile basis from which to build a lasting relationship. Moreover, as with all imperialisms, they run the risk of loss of legitimation and subsequent overthrow. We would like to believe there are other ways of relating across disciplines we could aspire to, ones which are compatible with co-mingling, mutual interaction and exchange, but which do not assume that either Sociology or the relevant

discipline are automatically *improved* thereby. A *modus operandi* which had these as its values would only be possible, though, if it is regulated by a set of prescriptions governing transactions between disciplines. Such prescriptions would specify what sorts of things (eg ideas, theories, concepts, methods etc) can be moved backwards and forwards (and therefore what can't) and the protocols for doing so. It is, perhaps, just because it lacks any sense of such prescriptions that a discipline such as Sociology where ideas seem to move freely in both directions, can engage in free ranging imperialism.

To begin with, we have to recognise that the willingness to trade in the concepts, theories or methods of other disciplinary practices varies greatly from discipline to discipline. Some disciplines vigilantly maintain the internal and external integrity of their borders, as for example with Mirowski and Nik-Khah's (2007) response to Michel Callon's (2007) proposal that sociologists might help themselves to part of what is currently Economics. With others, the policing is much more lax. As we say, Sociology is among the latter. But, even where there are open borders, surely it seems reasonable to expect some controls should be in place, if only to ensure that the trade is carried on in an orderly way? Of course, it goes without saying that given the borders we have in mind are academic, these controls should be shaped on a presumption of intellectual accountability for the exchange being promoted.

Intellectual accountability is another way of talking about rigour. Those who propose cross-border infiltration, trading or expansion are accountable for the rigour with which they justify the case they make. Such rigour might be directed to demonstrating a number of things, but most importantly, what ought to be secured first and foremost are:

1. The provision of as much clarity as possible regarding the symmetry of the context of use of the concept, method, theory or whatever in its home domain with that to which it is applied. Symmetry (or any other kind of mapping) must not simply be assumed. This you might think of this as a *presumption of caution*
2. The detailed explication of how and how far the concept, theory, method will need to be adjusted or adapted for the context of its new use. Any conceptual re-badging and localisation will be made set out and explained. You might think of this as a *presumption of transparency*.

The point here is to ensure care is taken when translating ways of framing problems into the domains of other disciplines. Such translation is often carried out by enthusiasts eager to promote the benefits they imagine themselves and their approach to be bringing. We have long felt that something like the Trades Description Act should apply to academic disciplines. There is no doubt such an innovation this would have a major impact on parts of Sociology.

This notion of accountability implies that those who are urged to consider and endorse some form of disciplinary exchange can assume that the approaches they are being offered observe the transparency and cautionary principles. Disciplines where the borders are rigorously policed would have strong accountability. On the other hand, in those academic principalities with relatively open or permeable borders, the transparency and cautionary principles would be less highly prized or exercised and accountability consequentially weak. In weakly accountable disciplines, ideas, methods, practices are drawn into academic practice with little or no systematic thinking through of their provenance nor of what adopting them might entail, thereby reducing the plausibility of the arguments put forth. It because Sociology is so weakly accountable in this sense that the imperialistic tendencies identified by Wilkinson and Strong are so suspect. However, it is not just that the discipline might muscle out alternatives, or lose its core. An ever expanding Sociology will also be a Sociology not worth the having. It will be a discipline lacking any sense of intellectual rigour or respect for the rigour of others and perennially in pursuit of the new.

To illustrate what we mean by this, we will examine in detail a set of proposals which were recently made for the development of a new approach to the analysis of the domain of human-computer interaction (HCI) based upon a postmodernist social theory.

HCI and Cultural Theory

A number of prominent members of the HCI community (for example, Satchell (2006 & 2008), Sengers et al (2005), Sengers, McCarthy and Dourish (2006), DiSalvo (2009)) have advocated the deployment of concepts drawn from Critical Theory, Cultural Theory, or postmodernism more generally, within HCI.[2] The intention behind this advocacy is to broaden or deepen the range of aspects of the social context of use to which designers might attend. Whilst we find this intended outcome laudable, we have considerable reservations about its potential consequences should a weak form of accountability be used its justification. In our view, unless shaped carefully, postmodernism is likely to create more of disruption than positive contribution; more distraction than focused attention.

The rest of this essay will explain the basis for this unwelcome assessment. We will begin by summarising what those who argue for the use of postmodernist concepts believe will be made available thereby. Second, we will give some detail on exactly what postmodernism says about communication and computational technologies. This will be important to gain a sense of the symmetry between postmodernism and HCI. The appreciation of the basis for these observations will require a little excavating of the recent history of certain kinds of European social philosophy and social theory. Having drawn out the conceptual background, we will then compare the uses which those who invoke postmodernist ideas have put those ideas with the requirements of that framework. The results of this analysis will allow us to take a view on how far these advocates are from satisfying the cautionary and transparency principles we have suggested. Finally, drawing on the description we have given of postmodernism and its roots, we will offer an assessment of the relative fit between HCI as a profession and an applied research discipline and postmodernism as a mode of social analysis.

What Does Postmodernism Offer?

Christine Satchell is very clear what she thinks can be gained by the introduction of postmodernist thinking. Here is her summary of the ideas being made available.

> *Cultural theory emerges from many different disciplines and philosophies including social theory, anthropology, Marxism, feminism and language theory. It produces a rich social commentary that positions phenomena in light of the complex conditions in which they are embedded. In doing so, new ways of thinking about culture and what our interactions with it means are uncovered (Satchel 2008 p. 1593).*

Further on in the same paper, she outlines exactly which elements of the above she has in mind.

> *On a more specific level, there is the use of the individual components of cultural theory within HCI such as Marxism, feminism, semiotics and hermeneutics...(ibid. p. 1594)*

For Sengers, the list is much the same.

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[2] We will use the catchall term "postmodernism" to encompass Cultural theory and Critical Theory since these two are usually set within this broad umbrella in the thinking which the advocates draw upon. The extent to which they are, in fact, simply versions of each other, we will leave to others to determine. All we would suggest at this point is that those within each camp would, in all likelihood, vehemently dispute amalgamation.

> *Our perspective on reflection is grounded in critical theory, a Western tradition of critical reflection embodied in various intellectual strands including Marxism, feminism, racial and ethnic studies, media studies and psychoanalysis. (Sengers et al. 2005 p 50)*

She goes on to clarify what these approaches have in common.

> *Critical theory argues that our everyday values, practices, perspectives, and sense of agency and self are strongly shaped by forces and agendas of which we are normally unaware, such as the politics of race, gender, and economics. Critical reflection provides a means to gain some awareness of such forces as a first step toward possible change. (ibid, p.50)*

In her view, then, the implications for HCI are of vital import.

> *HCI as an intellectual field shapes what we as practitioners believe is technically feasible and desirable, while sometimes blinding us to other possibilities. Critical reflection on the limitations of the field's methods and metaphors can help us to see the world in a new way, identifying and weighing new technical possibilities.*

> *But given critical theory's emphasis on critical reflection as an essential tool to allow people to make conscious value choices in their attitudes and practices, the value of reflection for HCI goes beyond simply opening new options for designers. It can support new awareness and freedom for users as well. We believe that, for those concerned about the social implications of the technologies we build, **reflection itself should be a core technology design outcome for HCI**. That is to say, technology design practices should support both designers and users in ongoing critical reflection about technology and its relationship to human life. (ibid p 50 emphasis in original)*

What Satchell and Sengers see, then, is both the possibility of systematic reflection on what, for shorthand, we can call "designer practice" and, related to that, a powerful contribution to technologically-mediated interventions consequential upon design.

> *.....critical reflection is **crucial to both individual freedom and our quality of life in society as a whole**, since without it, we unthinkingly adopt attitudes, practices, values, and identities we might not consciously espouse. Additionally, **reflection is not a purely cognitive activity, but is folded into all our ways of seeing and experiencing the world.** Unconsciously held assumptions are not things we rationally know; they are part of our very identity and the ways we experience the world. Similarly, critical reflection does not just provide new facts; it opens opportunities to experience the world and oneself in a fundamentally different way. Even in mundane activities such as shaving one's legs, shopping for meat products, or navigating busy urban streets, critical awareness of feminism, factory farming, or racial issues alters our perception and interpretation of what is going on around us and the implications of our actions (Sengers op.cit,, emphasis in original)*

The means by which such reflection is standardised and systematised, or so we are told, is through the use of different "analytic frameworks".

> *We describe the organized ideas as 'frameworks' to be taken as generative themes and organizing questions as opposed to prescriptive directions or definitive classifications. The primary role of frameworks in this sense is not to uncover a ground truth about some phenomenon but to spark conversation about the organic development of a body of work. As such, the value or utility of the framework is in articulating a point of view that can be debated or engaged with, that opens up discussion and prompts new ways of thinking. (DiSalvo et al 2009, p 387)*

As we will see, this perspectivalism is a key part of the postmodernist analytic armoury, as is the notion of a 'conversation' across perspectives. Clearly, then, the frameworks and their components are being deployed not just for themselves but in so far as they inform, encourage, and facilitate challenge within the practice of design.

The offering of such rich descriptions and stimulation to reflection on presuppositions might be desirable, but the specification of the steps by which one moves from in-principled starting points to detailed, grounded and rigorous descriptions of phenomena that enable strong conclusions to be drawn in specific cases needs to be set out as well. The test of a conceptual framework is the analytic results its enables not whether we feel good about the ways it allows us to talk about our phenomena.

Continually proposing fundamentally new beginnings is a characteristic of Sociology and the further line of justification suggested by DiSalvo et al, and Sengers, McCarthy & Dourish follows this pattern. Postmodernism is said to be offering a set of framing questions for the whole of design discipline of HCI rather than simply being a useful tool within any particular design activity. Their suggested framing questions are:

1. Values questions: discussion of the commitments designers do and should make in design.
2. Ontological questions: discussion of the character of research and practice in HCI.[3]
3. Questions concerning who are to be studied: in particular is user-centredness necessarily the leading term for design. How else might users feature in design?
4. Questions about the role of theory: what are the implications of adopting "theoretical lenses" from Cultural Theory, especially for the relationship between theory and practice.
5. Practical questions: how should the work be placed in relation to mainstream HCI?

What is on offer, then, is nothing short of a disciplinary shift to be achieved through the adoption of this set of framing questions. Naturally, the result of such a shift would hardly be HCI as we know it.

What is on view, then, are two very different visions of what could result from the introduction of postmodernist thought. We will term them 'strong' and 'weak' applications of postmodernism. The strong version proposes a set of questions shaped to ensure a wholesale shift in the form and practice of HCI as a design profession. The weak version offers a set of stimulus questions to provoke reflection on working assumptions, routines, models, definitions and so forth used in the practice of design. Whilst they are clearly related and have much in common, each merits separate treatment.

THE WEAK VERSION
There is something quite attractive and refreshing about the insistence that those who design and build artefacts, products, or technologies for others to use, should think long and carefully about what they are

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[3] For ourselves, we would couch this as either a methodological or an epistemological question.

doing and seek to expose unrecognised predispositions and assumptions which might be embedded in the behaviours and patterns of use envisaged for the objects they design. In saying this, of course, no-one is saying anything as trite as ' designers should remember that not everyone is right handed', or 'designers should remember that some people are colour blind', or 'designers should remember that white middle class patterns of consumption are not universal', although these things should be remembered too. The insistence upon reflection seeks to delve much deeper. It wants to expose any unconscious reliance being placed upon the naturalness or presumed inevitability of particular forms of social organisation in the home, in the work-place, among friends and acquaintances, or in society in general.

Accepting that reflection is, or could be, a healthy practice, does not, of itself, commit us to accepting any particular basis for it. Nor does it indicate how extensive and unremitting, and thus *time consuming* such reflection is to be. That is, it does not mandate the use of a definitive set of stimulus questions. Those who wish us to ask one set of questions (and, therefore, not other questions) have to demonstrate why these questions are the most pressing, the most relevant, the most interesting. In other words, they have to show that the questions pass muster for design.

There are probably just two explicatory routes open for such demonstration. Either the questions are of particular efficacy for design because they lead to improved or better (however you choose to measure that) designs; or *sui generis* they are *omni-relevant* and hence design too must address them; or, and this is perhaps more likely, that they are both.

Those who propose the weak version do not justify why the questions they seek to ask in design are, in fact, pertinent, let alone the most pertinent ones. Without such argument, all we are left with is the assertion that certain orders of question, about the politics of race, for example, or gender, age categories, experience and the like are self-evidently relevant no matter where or what the object under discussion might be. To repeat the quotation from Sengers we used above.

> *Even in mundane activities such as shaving one's legs, shopping for meat products, or navigating busy urban streets, critical awareness of feminism, factory farming, or racial issues alters our perception and interpretation of what is going on around us and the implications of our actions. (Sengers et al op. cit. p50).*

What is happening here is the importing (smuggling?) of a specific sociological theory[4] into HCI. Accept this theory and certain questions becomee self evident and omni-relevant. Because no independent argument is made for the omni-relevance of such key issues, the weak version has to rely on the innovations it will enable in designed products for its justification. As we will see, this could well be a dicey strategy.

THE STRONG VERSION

The merit of strong postmodernism is that it does at least wear its expansionist or imperialist ambitions on its sleeve.

> *Although HCI researchers and practitioners have engaged with critical reflection on their discipline for a long time now, HCI still lacks a systematic critical agenda. Most of the social and human sciences develop a systematic critical and integrative strand as part of their research, practice and educational activities ..... So, as well as amplifying previous calls for the need for a critical-reflective stance in HCI, the main aim of this workshop will*

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[4] We prefer the term 'sociological' to 'social' here because, when teased apart, this theory turn out to be a particular causal story about how relationships, institutions, and processes are determined by certain forms of social structure.

> *be to attempt to develop a systematic agenda for a critically reflective HCI, taking what is currently a set of interesting issues explored at CHI conferences into a vibrant and coherent program. (Sengers, McCarthy & Dourish 2009, p. 1683)*

This is echoed by DiSalvo et al

> *We will now turn to considering how arts discourse can provide a useful resource to the field of HCI at a meta-level in terms of how we define ourselves as a field. As a 'meta' level, the field of HCI has been present throughout this paper thus far. To call for alternatives in design and assessment is to some extent touch on changes at a more fundamental level. However, the history of HCI, and indeed of any field, is also laden with examples of borrowing from fields outside its border in an instrumental fashion where new methods are imported but existing methodologies remain intact.... What must be articulated then is how arts discourse can enter the HCI community in a profound way. (DiSalvo et al 2004 p 392).*

What both programs will motivate, of course, is the set of re-positioning questions outlined earlier. Moreover, whilst both Sengers, McCarthy & Dourish and DiSalvo et al are explicit about the scope of their proposed programme, they are equally forthright about the challenges posed by the appropriation of conceptions from other disciplines.

> *These positions include phenomenology ..., critical theory..., the work of Bakhtin ..., and cultural-historical activity theory .... Each of these theoretical positions is dense with values and traditions accrued over their own equally contentious histories. However, as they are integrated into the work of other disciplines, there is a danger that their rich histories and the subtleties of their practices are lost. (Sengers, McCarthy & Dourish, op. cit., p. 1684)*

We could not agree more. Given the complexities of all the positions identified, let alone the interactions among them, it is a major challenge to get them framed correctly. Translation of approaches shaped for very different disciplines may not be a straightforward or, in the end, helpful matter. In addition, we would suggest there is a further and possibly more important consideration, namely how far the way that HCI is being encouraged to deploy these conceptions actually aligns with its own core theoretical frames of reference. A strong version of postmodernism is only as strong as the strength of (a) its demonstration that the translation is a helpful one; and (b) that there is a reasonable mapping between theoretical and professional questions in HCI and those of the contributing disciplinary matrix. The extent to which any modification on either side of the translation is taken to be significant is, of course, a matter for debate. To satisfy these constraints in the ways we have suggested, strong postmodernism will need to show:

1. That the concepts are consistent with or at least compatible with each other and that their deployment in HCI is consistent with use in the domain from which they are taken.
2. That the arguments in support of the modifications required to fit this domain (i.e. HCI) are persuasive.
3. That when deployed, they provide greater traction on problems faced and insights required rather than simply replacing current questions with new ones.

The third question is, of course, bears upon HCI as a design profession.

Both the weak and the strong versions are clear about their wish to draw on conceptual resources from postmodernist theory in the social sciences. However, neither actually lays out exactly what kind of social science theory, postmodernist thinking espouses, nor do they estimate the "goodness of fit" between that kind of social science theorising and the *modus operandi* of professional HCI. In one sense, this is not surprising since postmodernism is explicitly non-programmatic in character and itself has left unresolved the question of what kind of opposition to illicit authority there can be within the postmodern condition. Nonetheless, if Sengers, McCarthy & Dourish want to postmodernism to change the *modus operandi* of HCI then we would have thought they would want to set out exactly what that might mean. In the next section, we sketch the issues which would have to be addressed in making such a case. We are helped in this task by the fact that a great deal of postmodernist thinking has been devoted to the topic of the social and societal implications of technology and especially communication and computational technologies. So, it is around that theme that we will arrange our summary.

POSTMODERNISM AND TECHNOLOGY

Perhaps the most well known, or at least widely read in HCI circles, researcher who has drawn upon postmodern social science is Sherry Turkle. In her classic, *Life on the Screen*, (Turkle 1995) Turkle draws upon a number of lines of analysis prominent in postmodernist thinking. Towards the end of her discussion, she sets two of these into quite sharp relief; the issue of virtuality and the reality of virtual worlds and the issue of identity in such worlds. She ends by summarising the challenge which she felt we, as a society, were set by the technologies.

> *People can get lost in virtual worlds. Some are tempted to think of life in cyberspace as insignificant, as escape or meaningless diversion. It is not. Our experiences there are serious play. We belittle them at our risk. We must understand the dynamics of virtual experience both to forsee who might be in danger and to put these experiences to best use. Without a deep understanding of the many selves we express in the virtual we cannot use our experiences there to enrich the real. (Turkle, 1995 pp 268-69).*

More recently she has returned to these issues. Her book *Simulation and its Discontents* (Turkle 2009) explores the concerns that practising scientists (physicists and biologists) and designers (architects) now have over the use of model-based simulations in their disciplines. In doing so, she compares the original introduction through Project Athena of computational technologies at MIT to the current position there and elsewhere. Nowadays it is impossible to conceive of the disciplines mentioned being pursued without computational tools. Her conclusion is that the original worries expressed over Project Athena by "conservatives" are being realised. Or, rather, the same worries are being raised by professionals, this time based upon their experience with teaching successive cohorts of students to use such technologies.

What were these fears? In brief, they are:

1. Sets of skills required to carry on bench science or studio design are being lost.
2. Sets of values associated with the engineering of the models and simulations are replacing the values associated with the specific disciplines themselves.

Turkle claims that the scientists and designers she interviewed believe the use of simulation as *the* way of practising science and design has led practitioners (and not just students) to become unable to determine the difference between the simulation and 'reality'. The distinction between the simulated and the real has been elided.

We have seen what simulation seems to want— through our immersion, to propose itself as proxy for the real. The architecture faculty who designed Project Athena's Garden dreamed of transparent understanding of design process; today scientists are reconciled to opacity and seeing only a CAVE's shadows. Over the past twenty years, simulation has introduced its dazzling environments and we have been witness to our own seduction.

When simulation pretends to the real, buildings look finished before they have been fully designed and scientists find no fault in "impossible" molecules that could only exist on a screen. Computer precision is wrongly taken for perfection. The fantasy, visceral in nature, is that computers serve as a guarantor, a "correction machine." (Turkle, 2009 p 80)

For us, the importance of Turkle's account lies primarily in the way that the cases she discusses appear to offer corroboration for the sociological analysis and prognostications expounded by postmodernist thinkers such as Jean Baudrillard. In her low key and decidedly undogmatic way, Turkle appears to confirm Baudrillard's claim that the introduction and widespread deployment of computational technologies, not just in science and other professional disciplines but in all walks of life, has undermined our grip on reality and inured us to a *hyperreality* in which, ironically, anything outside the realm of digital processing has been lost. This condition is the core of the consciousness required to enable the continuing reproduction of post capitalist modes of production which underpin consumer society. Although Baudrillard is mentioned only in passing in *Simulation and its Discontents*, it is clear from the title alone, never mind the analytic focus, that Baudrillard's post modernist sociological analysis has been an important inspiration for that book's approach.

There is a second reason for wanting to focus on Turkle. Her contribution, and particularly its tone, has been well received and widely endorsed. As a consequence, it has become a model for a style of analysis in HCI and elsewhere. And yet the unchallenging and easy to assimilate nature of Turkle's work should not lead us to adopt postmodernism inadvertently. Within the social and cultural sciences postmodernism is, in Douglas Adams' classic phrase, mostly harmless. It sits alongside other similarly apocalyptic narratives of recent and not so recent history and is treated as just another such. In the jejune world of the social and cultural sciences where almost anything goes, then postmodernism is as good as anything else.[5] Not surprisingly, this sociological appreciation of the claims of postmodernism as a form of Sociology does not exist within the computational sciences. Although promoters of the framework may gesture at its potential role as one kind of resource which could be drawn in from the social sciences, they do not provide the balanced audit which one should be able to derive from Sociology itself. Such an audit would identify *the limits* to postmodernism as a way of doing social science and so draw out the analytic choices thereby being made.

We will try to rectify this omission. First We will explain the origins of postmodernism as an intellectual movement in the social sciences. Second, we will offer some considerations relevant to that history which bear upon its deployment as a form of social analysis within the computational sciences. Third, we will draw upon the *genealogy* offered and the *implications* sketched to project some potential difficulties which this line of thinking might pose computational disciplines and HCI in particular. Our conclusion will be that HCI should think very carefully before it tries to absorb postmodernist concepts and frameworks since their implications and consequences might not be what the profession is actually seeking or likely to be comfortable with.

JEAN BAUDRILLARD

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[5] This is a disciplinary statement not a political one. As a political matter, that is as a matter of authority, control, promotion, and publication, postmodernism with its emphasis on the importance of (gender, racial, and ethnic) *difference* and its promotion of minority culture(s) probably is the dominant modality.

Perhaps surprisingly, and certainly somewhat unlike their colleagues in Philosophy, sociologists are usually uncomfortable with the role of 'public intellectual'. This is not to say that they don't have opinions and views on public life which they are happy to publicise, but it is rare for a sociologist to become installed as a prominent media commentator on all aspects of social and cultural life. It is rare; but it does happen, especially in France. Towards the end of his life, Jean Baudrillard came to occupy just such a position among the French intelligentsia and, from that position, became well known and influential (well, certainly talked about a lot) in related fields in the Anglo-Saxon world. What made Baudrillard distinctive was not so much the baroque ways in which obviously complex phenomena were set out (all public intellectuals seem to revel in complicating the complex) as the tone which he came to adopt: a tone which was declamatory, aphoristic and increasingly millenarian. In the end, the style (almost) overwhelmed the thoughts which were being conveyed.

For example, three of his most widely read pieces on the conduct of the first Gulf war unrepentantly have the titles: "The Gulf War will not Take Place"; "The Gulf War is not Taking Place"; and "The Gulf War did not Take Place" (Baudrillard 1995). Elsewhere, in one of texts which is central to the development of his thought, he claims

> *"The Universe, and all of us, have entered live (sic) into simulation*
> *.....nihilism has been entirely realised no longer through destruction, but*
> *through simulation and deterrence." (Baudrillard 1994 p.159).*

Our target here is to explain how Baudrillard can come to this apparently bizarre conclusion. How can he deny the facticity of world events and argue that now we cannot tell the real from the non-real. We will do this by setting out the developing structure of thought underlying Baudrillard's pronouncements. This structure involves the rejection (or at least the serious revision) of two strands of social thought, Marxism and structuralism, which while prominent in French, and especially Parisian, social theory have not had a similar place in Anglo-Saxon social science. Thus, against Marx he wants to argue for a new theory of value based upon consumption not production. We live in an economy of mass consumption whose main engines include the communications industries. Against structuralism, he wants to argue for a change in the nature of signs and symbols and their relationship to that which they represent. It is the merging of these lines of thinking together with his penchant for the (over)dramatic which shapes Baudrillard's style. Finally, once we have a clear view of what Baudrillard and other post modernist thinkers are driving at, we will be able appraise postmodernism's relevance for systems design. Our strategy will be as follows. First, we will trace the logic that Baudrillard follows from a fairly conventional semiology of cultural forms to the extreme positions identified above. We will then locate that logic in a broader stream of thought concerned with the implications of techno-rationalist thinking and technology more generally which draws upon Heidegger on the one hand and Marx on the other. With this understanding in hand, we will be able to assess the extent to which the intent of postmodern social analysis, first, is symmetric with that of HCI and, second, what value it might offer.

FROM INTERIOR DESIGN TO HYPERREALITY

It was Roland Barthes (1968, 1972) who applied Ferdinand de Saussure's structural analysis of language, and in particular the distinction between *la langue* (the language system) and *la parole* (speech) to cultural forms in general. Since the rationale for some of the key moves in postmodernist theory involves modifying Saussure's ideas, it is worth laying out the detail of some of his thinking and in particular his views on the nature of 'the sign'. For Saussure, the sign was made up of two elements, one physical, the other mental. There was the element of sound (strictly, though this does not matter for this discussion, the sound image) and the element of thought, the idea associated with that sound. The sound counted as 'the signifier', the image associated with it, 'the signified'. Think, for example, of the word 'tree' and the idea of a tree associated with it.

For Saussure, all languages are equivalently structured systems of signs or tokens. The character of each sign is arbitrary. There is no intrinsic reason why the sound continuum should be divided up into the units that are words, or why the continuum of thoughts should be divided into the signifieds (effectively meanings) associated with those sounds. Different languages, after all, have different sounds for the same thought (signified), and the words in different languages that are relatively closely related can nonetheless have somewhat different meanings. The nature of signifier and signified is therefore arbitrary, and there is nothing in the nature of the sound or the thought that explains their identity. The identity of the signifier and signified is to be understood as a product of their relationship to other signs, in fact to all the other signs in the language. A language is a closed system with fixed relations between the units making it up. Since the units in the system are all defined relative to each other, then what makes any one unit what it is, must be the ways in which it differs from or contrasts with other units. Language, then, is entirely a system of contrasts.

Saussure's approach to language was meant to break with those approaches to language (such as those of empiricists) which thought that the meaning of words was determined by their association with things outside language. In its simplest form, this is the idea that words are the names of or stand for things; that is, words have referents. Obviously, Saussure does not accept that view. For him, the nature of words is fixed within the language system. Of course, he does not deny that words can have referents, but given the nature of the language system, any connection between words and referents must be entirely conventional. What sign is used for what thing has nothing to do with the intrinsic nature of that thing. It is this core idea which helps explain why postmodernists find the idea of language being able to capture the intrinsic character of an external reality implausible. Noting the difference between signifier, signified and referent may also clarify the logic of postmodernists' subsequent dissent from Saussure's basic doctrines. Jacques Derrida, for example, rejects the idea that there is any need for a 'mental' element to the sign. Signs are just signifiers, they don't need a signifier. He also rejects the idea that the interrelationships between signs determine any given sign's identity because, on his view, the actual relationships are too loose to do so. Jean Baudrillard thinks that the fact that representation is taking an increasingly digitised form does away with the distinction between signs and their referents.   At the same time, whilst postmodernists are prepared to reconsider Saussure's fundamental idea, they are no less resolute in their insistence that language is an entirely conventional (and therefore cultural) affair. For them, this means that there can be nothing essential about any connection between signs and what they are used to talk about.

Barthes generalised Sausurre's approach from language to culture. Cultural artefacts could be analysed in terms of the structural rules by which signs and signifiers, denotation and connotation, were used. In so doing, Barthes opened up an avenue for structural anthropology based upon what came to be called semiology. Semiology aimed to be a general science of signs, not just of linguistic ones. Apart for its use in the analysis of ethnographic materials (for example Levi Strauss 1969 and 1988), possibly the most contentious use of semiology was in architecture and in particular the critique of what was thought of as "modernist" urban planning. Design of urban spaces and buildings was found to follow a grammar of use and meaning. Barthes himself intended these schemes to be used to criticise all contemporary French bourgeois culture. Often this critique is couched in unwittingly romantic terms and hence slips into nostalgia.

> *'Most sociological explorations of mass culture, especially those undertaken*
> *within a Marxist or critical theory perspective tend to be elitist in their*
> *cultural and political assumptions' ... (Stauth & Turner 1988, p 509)*

Baudrillard picks up this debate and in his early writing, *The System of Objects*, applies it to the transformation of interior design in the mid 20th century. He bases his analysis in a contrast between the organisation of furniture and furnishings in a traditional French household with that of the contemporary era. This contrast is based upon the degree to which the traditional household design reflects the moral order of bourgeois capitalism. Contemporary design, or so Baudrillard asserts, has broken away from that order. Instead, objects,

furnishings, furniture, space and colour are deployed to engineer what he calls a functional "atmosphere". The home is not just a place in which to live. It has become a deliberately designed expression of cultural meanings dictated by the rules of 'interior design'. Objects are now chosen both for the functionality they perform **and** the required repertoire of meaning designed into them. Objects have the shapes and colours they have not because that is the best form factor but because the "style" connotes the way of life with which the owner wishes to be associated.

Using this as his starting point, Baudrillard goes on to analyse the fashion for 'period' houses and 'distressed' furniture, the display of antiques, and, perhaps most interestingly from our perspective, the popularity of "automatism"; what he calls "gadgets" and "gismos". The more automated a machine is the more perfect it is taken as being. Function has been overtaken by automation and has led to a fascination with functional aberrations such as gadgets and gismos.

For Baudrillard, the driving force behind this transformation is the mass production of culturally high status objects (what he refers to as the move from "models" to "series"). Where once Chippendale chairs were made as unique pieces, now anyone can have a Chippendale 'lookalike'. The meaning of such objects is not given by its denotative function but by the style of life it connotes. The need to generate, facilitate, and extend new styles of life, has led to the need constantly to invent new modalities of consumption through fashion and advertising and to support them by new market arrangements such as financial credit and branding. This has created the remorseless demand for endless consumption. Here, Baudrillard applies the move which Saussure also used to ground his analysis of language, namely the detachment of the sign from its referents. Baudrillard claims that the modern system of production has broken with the convention that ties referents (the reality) to the sign. Objects, rather than being things that signs refer to, have become signs themselves. Objects are purchased for their meaning as signs of social prestige, of good taste, of high intelligence, of sexual attractiveness and so on. It is their meaning which is consumed. What drives mass consumption is the consumption of such signs. Consumption is no longer a means to live; it is a reason for living. Modern capitalist production is the production of consumable "sign-objects".

Baudrillard sees this transformation of capitalism as one in a number of historical stages through which the consumption of value has passed. There have been, he asserts

> *...a natural stage (use-value), a commodity stage (exchange-value), and a structural stage (sign-value)......The first of these stages had a natural referent, and use-value developed on the basis of natural use of the world. The second was founded on general equivalence, and value developed by reference to a logic of the commodity. The third is governed by a code, and value develops here by reference to a set of models. (1993 p 5)*

The transition between the second and third stage is what is described in *The System of Objects*. However, he now sees a further stage, the fractal stage where

> *....there is no point of reference at all, and value radiates in all directions, occupying all interstices, without reference to anything whatsoever, by virtue of pure contiguity.....Indeed, we should really no longer speak of 'value' at all, for this kind of propagation or chain reaction makes all valuation impossible....it is as impossible to make estimations between beautiful and ugly, true and false, or good and evil, as it is simultaneously to calculate a particle's speed and position (ibid p 81)*

This fractal stage is the one Baudrillard claims we are in now. The fractal stage passes from the basing of meaning and value in simulation to its basis in simulacra. Critical to this has been the deployment computational and communicational technologies. Whereas in the third stage, objects reproduced (simulated) the real - the lookalike Chippendale simulates the real Chippendale, now the objects, products, services we consume are based in something that lacks reality, a simulacrum. For Baudrillard, this was first typified by the creation of Disneyland as a tourist destination. Whilst Disneyland does reproduce aspects of American life in microcosm, it is not based on reality. It is, to use his phrase, an "imaginary" which can be neither true nor false. Our experience of imaginaries is of the sign/symbol alone. As these experiences are described, referred to, and otherwise circulated through the media and elsewhere, the world of our experience becomes *hyperreal.* Further, more and more of our experience is itself mediated: mediated, that is, by computational and communication technologies. More and more, the media through which we experience reality shape, form, and produce the reality we experience. This, or so it is asserted, is as true of the news and documentaries we watch as it is of adverts and movies; as true of the scientific simulations we run as of the massively multi-user on-line games we play or, to bring the examples up to date, the social networking sites we use and the 'friendships' we form thereby. Reality is rendered, shaped, formed, and controlled for us to experience. This is the context in which Baudrillard can say that the Gulf War did not happen. The war was fought on and through the media, by and with screen-based technologies. Despite the body bags, the burned out buildings and the displaced people, in essence it was an electronic not a real war. Bombs were not dropped on targets on the ground but targets on the navigator's screen. Rounds were not fired at Iraqi soldiers but at images on head-mounted displays, and so on.

This is where the *sotto voce* account of Turkle intersects with the frenetic hyperventilation of Baudrillard. Both see the ungluing of our fix on reality as experience is increasingly channelled through computationally driven media. We will no longer be able to tell simulacra from reality and so be prey to the manipulation of our understanding of reality by the unscrupulous and/or the powerful. What the foreboding about the supposed loss of reality comes to, then, is a worry about the unavailability of 'authentic' experience and our increasing satisfaction with 'inauthentic' experience without awareness that it is inauthentic.

Before stepping back to locate this line of thinking, let us briefly summarise where we are. For Baudrillard:

1. We are in the midst of a transition to a new set of relationships between production and consumption. This new form is 'driven' by the universal adoption of information and communication technologies.
2. This transition is one to where "sign-value" is created and consumed.
3. As this new form of production/consumption comes to dominate, we are seeing the substitution of hyperreality for reality (or, perhaps better, hyperrealities for realities) as the basis of experience. Such hyperrealities are built upon simulations and simulacra developed though the increasing use of digital forms and the computational models underpinning information and communication technology. Progressive digitisation of the means of communication allows for increasing transformation from one digital form into another which in turn means that conventional social categories cannot maintain their application because digital transformations need not abide by them. Thus politics can be presented as entertainment, entertainment can become politics; news can become entertainment and so on.
4. At the level of socio-cultural consciousness, the outcome of this substitution is a loss of certainty resulting from the shifting of traditional distinctions and a descent into nihilism where nothing is absolute and knowledge only is a matter of convention. One can no longer separate truth and fiction. Ethical standards have become a matter of personal choice.

MARTIN HEIDEGGER, JACQUES DERRIDA AND JEAN-FRANÇOIS LYOTARD

Whilst the Baudrillardian version might appear overdrawn and certainly over-excited, it is closely related to a tendency in Philosophy which was being developed at much the same time: a tendency which sought to challenge the idea of securing knowledge through context-free position from which to survey philosophical problems. According to this line of thinking, we are inevitably embroiled in a context, a perspective, and hence de-contextualised knowledge, a perspective free of perspectives, is impossible. This tendency is taken to its extreme with postmodernism.

From 'Enframing' to the 'Deconstruction' of Knowledge

Although it comes at the cost of considerable simplification (but not we think *oversimplification*), Richard Rorty's separation of Western philosophy since the end of the High Renaissance into two broad groups is a useful place to start (Rorty 1980).[6] One, marching behind the banners of Descartes, Hume, and particularly Kant, sees the role of Philosophy to ground what John Locke called "right reason". That is, Philosophy's task is the determination and elucidation of the structure of thought. Thus it seeks to fix what the right relationships should be between subject and object; reality and appearance; the grounding of knowledge in truth; and so on. Its model is the mathematical sciences and its approach is to argue from secured proposition to secured proposition. The second marches behind the banners of Hegel, Schopenhauer, Dilthey, and Nietzsche. Here, the concern is with tracing the development of thought through history, not as an empirically based historiography, but as the expression of how we represent the world to ourselves. There can be no sense of defining "right reason" or of fixing the relationship between subjectivity and objectivity since the notion of reason and the definitions of the subject and the object are historically located. As such, the mathematical sciences are of interest first as one form of knowledge alongside other cultural forms, and second as an historically located species of knowledge which is itself in permanent flux. All forms of thinking, be they scientific or other emerge from earlier forms through an endless process of confrontation and fission. To reverse Marx's reversing of Hegel, the history of all hitherto existing societies has been the history of emerging Mind. The key element here is the way in which the notions of ideology and alienation have been shifted from the content of thought to the frameworks which shape the possibilities of thought. For postmodernists that makes any fundamental change in the modalities of thought that much more intractable, a consequence which give us pause if, as with Sengers, Mccarthy and Dourish (2006), we want to use postmodernism to drive changes ways of professional thinking.

The philosophic framework underpinning postmodern analysis is firmly in Rorty's second camp and has its origins in a reading Jacques Derrida (1978, 1989) provided of the later writings of Martin Heidegger. Heidegger had begun his work by seeking to re-position Philosophy not in 'historicism' but directly in experience, and in particular in human direct and unmediated experience of the world. The primary apodictic categories which underpin thinking are, then *being and time.* Against not just Descartes, Kant, Hegel, and his own teacher Husserl, but the whole of Western Philosophy since Plato, Heidegger saw, not reflective thought, but unmediated experience as the primordial ground from which Philosophy had to begin. The essence of our being, *Being*, was to be found in unmediated experience when we are 'thrown into' and immersed in a world of objects and wholly engaged with them as, for example, when we 'thoughtlessly' ride a bicycle or hammer a nail. In this unmediated engagement, Being reveals itself to us as what Heidegger calls "presencing".

It was the basis of this break with previous Philosophy that Heidegger attempted to initiate in *Being and Time* (1962), a project that he continued to work on but was left unfinished. In the second half of his life, Heidegger became more and more concerned about the consequences of certain forms of thought were having for Being and for the forms of presencing that it was taking.[7] In particular, drawing upon the *schadenfreude* of 19th century Romanticism, he began to believe that the forms of rationality associated with modern technologies

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[6] We *know* this *is* a simplification and not everyone fits neatly into it. Some, like the Pragmatists, appear to straddle both (Peirce in one camp, James in the other), whilst the later Wittgenstein probably falls outside both.
[7] See Heidegger (1977) and Pattison (2000)

were perverting Being. The general name he gave to these rationalities has been translated as "En-framing" and modern technology is their primary expression. The essential characteristic of En-framing is that it "challenges forth" the world as "standing reserve". By these terms, Heidegger tries to capture, first, the way that instrumental rationalism (that is, the calculation of means-end relationships against a standard of efficiency) has permeated all social and cultural forms. We are en-framed by instrumental reason and cannot think outside it. For Heidegger, the nadir of En-framing is the professionalisation of Philosophy as a research career, an agenda of research projects rather than a personal journey of engagement and enlightenment on which, hopefully, the philosopher is accompanied by others.

Modern technology is the highest expression of instrumental reason and treats the world as a set of resources to be exploited or deployed. Here, Heidegger takes determining the essence of technology as a central philosophical problem. In this he departs from the usual approach which focuses on the consequences of technology and technological change. The essence of modern technology is a stark contrast to earlier technologies (Heidegger is fond of contrasting the windmill and the turbine). In the windmill, the wind is used simply to move the sails and through mechanical energy directly turn the mill wheels. With the turbine, what is created is a product, electricity, which can then be transformed into a commodity. Modern technologies are both the consequence of En-framing and the means by which that outlook is promulgated. The danger which Heidegger sees consequent on the invasion of all spheres of life by En-framing has been and will be a loss of authentic experience — what Heidegger refers to as "homeliness". In common with 19th century Romanticism, he sees this as the loss of the rural way of life and community together with the craft knowledge they are associated with. Our homes now are not places where our horizons focus in to be with each other but where, because of our use of television and other modern media, we are elsewhere but together. Television allows us to be not as one at home but jointly on safari at a distance, separately watching sport rather than immersed in and at one with the crowd, and so on.

Heidegger, having started out attempting to re-ground Philosophy anew, ends with a romantic nostalgia for declining ways of life, a rejection of "modernist" ways of thinking, and a fear for the consequences of modern technologies. As we have seen, these are themes which were the object of Baudrillard's contumely. The bridge from Heidegger to Baudrillard is the philosophy of Jacques Derrida, and in particular the notion of the "deconstruction" of texts and, by extension, all cultural artefacts.

Derrida followed Heidegger in setting himself the task of developing a reflexive Philosophy; one which would ground itself by according due weight to the fact that Philosophy is a discipline of texts. Since Philosophy aims to uncover the foundational assumptions of particular forms of discourse (to use that term for the moment) then what Derrida wants to do is reveal the foundational assumptions of writing and reading built into Philosophy itself. The challenge he faces in *his* philosophical analyses, as he acknowledges, is to free himself of such textual assumptions.[8] He chooses to do this through a *deconstructive* reading of the classical canon from Plato to the modern day. For Derrida, the most important figures in this canon are Plato himself, Kant, Hegel, Nietzsche, Husserl, Heidegger and the structuralism of Saussure. In Derrida's view, each of these thinkers tried and failed to "close" philosophical thinking by overcoming the constraints of writing philosophically as these were set by the institutionalised practice of the Philosophy of their time. Such a closed account would be self-sealed and, thereby, provide an end to Philosophy. For Derrida, each failed because they failed to overcome the limits of metaphysics. The philosophies present themselves as achieving closure, but reflexive analysis of them as texts reveals the pre-suppositions on which they have been grounded. Heidegger's failure took the form of a continuing commitment to attempting to overcome writing through writing. That is, an attempt to end Philosophy through the provision of a text. However, since such texts are themselves cultural artefacts, they are systems of signs. In assuming some such system could, once and for all, depict how things are is to

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[8] There is a clear echo of Heidegger in this in that Heidegger constantly refers to the genealogy of our concepts in Latin and Greek and traces these links through to the modern idiom.

reproduce the Kantian fallacy. As a thoroughgoing materialist, Derrida dispenses with Saussure's separation of signifier and signified and accepts only that language consists of signifiers. There is no need to assume that a mental component, the signified, is needed to fix the meaning of signs. At the same time, he also abandons the idea that meaning is definitively fixed by the internal relations of the language system. He insists there is 'play' (in the sense of loose fit) in the system, so that it cannot foreclose the possibilities of meaning. He uses this to point to the importance of '*differance*' underpinning the meaning of texts. Just as the meaning of a world is given by its place in the system of signs so the meaning of philosophical claims are given by their place in the system of the text, The philosophical implication of the fracture of sign from both signified and referent is that there can be no definitive, absolute relation of language to anything outside itself and so no truth: truth, that is, with a capital "T". In its place we have the possibility of infinitely many constellations of sign and signifier, symbol and referent, claim and truth. The meaning of texts cannot be uniquely fixed because there is plenty of 'play' in the meaning system. The idea of a final, definitive reading for any text, including those of philosophy, has to be given up. The challenge for any philosophical reading of a text, therefore, is to deconstruct its claims to truth by revealing the mechanisms by which symbol and referent, concept and reality are glued together. but because, for the reasons just given, meaning cannot be fixed as tightly as Saussure imagined, efforts to set out a fully definite account of anything must fail, inevitably allowing in aporia concerning inconsistencies and ambiguities. For Derrida, there can be no first philosophy, no absolutely firm foundation of the sort for which Philosophy has always striven. All we can ever hope for is yet another text in the stream of texts. What he provides is the method for undermining predecessor texts by bringing out their indeterminacies.

From Heidegger, we have gathered the primordiality of experience and how that is being degraded in the modern world. From Derrida, we have a form of philosophical analysis which breaks the tie between appearance and reality, thought and object, and denies the possibility of absolute truths, the universality of meaning, and the end of Philosophy. There is just one more element to be added before the conceptual framework upon which postmodernism relies is complete. That is the analysis of the implications of the rapid development of information technologies for knowledge itself as a cultural form. These implications were developed by Jean-François Lyotard.

Lyotard (1984, 1991) begins from the presumption that we live in a post-industrial age and postmodernity is the culture associated with this age. For Lyotard, postmodernism adopts, "incredulity with regard to meta-narratives" both philosophical and scientific. All are just "discourses" - a theme which resonates strongly with Derrida. What characterises post-industrialism is the extension of economic value beyond mass production of goods to mass production of information. This extension has occurred because of computational technologies. For Lyotard, the critical question is how knowledge is to be legitimated when, as information, it is widely available from huge on-line stores of data (not his term) and promulgated through the universal availability of computational technology. Today, there is no cadre of those who know, who have first hand access to knowledge and who can, therefore have the authority to assess claims to knowledge. Moreover, developments both in the sciences themselves and in our understanding of the history of the sciences have led us away from the acceptance that science progresses towards certainty and "the Truth". Rather, what we see in science's history is the succession of alternative "paradigms". Science has lost its authority because it has associated itself with meta-narratives about the role of scientific knowledge in social progress and about the progress of science toward final understanding of everything which have become unconvincing because the promised progress is manifestly absent. For Lyotard, because the institutionalised independence of science as the "owner" of truth has been lost, the authority of knowledge, and hence its claims to truth, will be given to those who own and control the information stores and the means of sharing that information. Their ownership of the means of information production will confer authority on the knowledge they disseminate. We will have no criteria for judging fact, truth, meaning other than those they give us. In essence, this is the same argument as that of Baudrillard and Turkle.

SUMMARY

The dystopian view of modern computational and communication technologies which Baudrillard expounds may be on the extreme wing of postmodernism and cast to be deliberatively provocative and offensive, nonetheless it shares an intellectual heritage which is rooted in a long standing tradition within European Philosophy. Along with Lyotard, Baudrillard sees the legitimation of knowledge (our conception of factuality, reality and the real) as the crucial issue. For Baudrillard, legitimation is now achieved by founding reality in simulacra which are purveyed by computational and communication technologies. The issue of legitimation arises because, following the reinterpretation of the structuralist account of meaning and particularly its use by Derrida, the tie between sign and signifier has been broken. Philosophically, there is no place to ground meaning other than in the welter of language itself. And within language, nothing is fixed. Derrida arrived at this position from a consideration of the European philosophic tradition and especially Hegel, Husserl and Heidegger. The nostalgia which the last named felt for traditional ways of life increasingly threatened by the En-framing of modern technology resonates strongly with the vision which Baudrillard describes.

POSTMODERNISM AND HCI

With this understanding of the roots and the main influences on postmodernism, what now should we want to say about the proposal to draw it into HCI? Is the deployment of postmodernism in social science symmetric with how it might be used in HCI? Will the translation will be relatively unproblematic and, therefore, all the more likely to be successful? For us, the response to these questions must be very qualified. In the first place, neither the weak nor the strong versions of the proposal actually try to assess in detail just how and where postmodernism would fit within the professional and research models of HCI, though, to be fair, proponents of the strong version do acknowledge its particularities and peculiarities as a mode of theorising. Nonetheless, neither group of proponents offer any extended evidence for goodness of fit.

Second, and actually more important, any balanced review of the postmodernist theorising and analysis is likely to find innumerable points at which it and HCI will be out of kilter.[9] Any serious proposal for broadening the academic resources on which HCI can draw would have to address these. That is, it would have to offer ways in which such difficulties and infelicities could be overcome without overly distorting either the analytic ground of postmodernism or the professional endeavour of HCI. We think this is an extremely tall order and are not surprised that neither the strong nor the weak version has attempted it. In part this mismatch comes about because HCI is an *applied* discipline seeking to facilitate the improved design of computational artefacts. As we have seen, Sociology, and especially postmodernism, are congenitally *abstracted* (we won't say "pure"). Their motivation is reflection, analysis and commentary, not intervention. Reflection is about opening up possibilities, options and questions. Intervention is about reducing them. These different motivations lead to very different orientations and frameworks. Sociology is at home with the general and conceptual. Studies are undertaken and data collected in the service of refining general statements and conceptual distinctions. HCI is at home in the concrete and the specific. For it, studies and data serve to elucidate and refine specifications for particular designs.

Of itself, such a mismatch might be enough to prevent any serious attempt by HCI to absorb postmodernism.[10] This conclusion is reinforced by a number of other disjunctures which are equally telling. By way of final summary, we will draw attention to three potential fracture points which emerge from the account of postmodernism we have just given.

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[9] This, of course, could be the point of the proposal. But if so, then it is not a serious contribution to the development of HCI as a discipline, merely a provocative jape.

[10] This isn't the place to go into it, but strong circumstantial evidence (almost a trout in the milk) can be seen from the fact that despite a fairly long drawn out campaign that was met with considerable good will in HCI, attempts to introduce rigorous sociological thinking and ethnographic methods have pretty much failed. Sociological thinking and ethnographic methods have transmogrified into market research.

PROBLEMATISING AS A MODUS OPERANDI.

The philosophic impulses of postmodernism are towards endless problematising. No issue, no standpoint, no pre-supposition can be taken to have been secured. It is always possible to adopt an alternative standpoint from which to offer critique or deconstruction. There are no secured foundations. In particular, this is true of the mode of reasoning being deployed. In postmodernist debates, mutual deconstruction is an honoured sport. Within HCI, the mode of reasoning is convergent and instrumental. It assumes that there are 'facts of the matter' which can be fixed and elaborated and the move from facts to generalisations made. In addition, it is assumed certain empirical methodologies enable such facts to be obtained. These encourage the idea that HCI could and should aspire to be cumulative and prescriptive (see for example Card and Newell (1985)). Ultimately, it is hoped this accumulation will result in standards which guarantee real improvement in designs. For postmodernism, no academic discipline can claim to be cumulative let alone prescriptive. Postmodernism insists that the appearance of development and accumulation is simply a reflection of cumulative institutional agreement about what is to count as facts and the prescriptions to be derived from them. What postmodernism seeks is restless, endless problematising and problem creation. Introducing this mode of theorising into HCI is almost certain to create tension.[11]

A PREFERENCE FOR THE CONCEPTUAL IONOSPHERE

HCI is directed to intervening in the world. It is concerned with our interaction with systems and devices and how such interaction might be best facilitated. Postmodernism is concerned with teasing out the significance that ways of thinking about such activity might have. As a consequence, its discussion tends to focus on what Ian Hacking calls "elevator words" (Hacking 1999) and to take place at the most abstracted and generalised level. Discussion is couched in terms of a rupture between experience and reality in general terms. The fact that most of us cannot tell handmade chocolate from the massed produced variety is presented as an elision between representation and reality and the emergence of the hyperreal. Ordinary features of contemporary social life such watching sport or the news on television are promoted as having world historical, socio-cultural significance and as testimony to the power which computational technology and the broadcast media that deploy them now have. The consequence of this power is that we can no long tell the real from the virtual world.

A second aspect of this conceptual ballooning is the result of failing to pay close attention to just what the word 'real' actually does in our ordinary language and hence in the language of HCI. As John Austin pointed out (Austin 1962), in many ways it functions as a substance hungry word (as an "adjuster word", as a "trouser word", as a "dimension word"). It is only in the peculiar discussions of philosophers and social theorists that ordinary objects are held to share the common property of 'being real' and hence, as a totality, to make up something called 'reality'. The assumption that objects do have this common property and do, in the aggregate, comprise reality is what allows the suggestion that virtuality has replaced reality. Outside this rarefied discourse, though, it looks more than a little fishy (as John Austin might have put it) to propose that because we can't tell cask ale from real ale, or a real news item from a spoof one, that somehow experience has become unglued from reality.

A PREFERENCE FOR STRETCHED ANALOGIES

Whilst metaphors are widely used to guide design decisions in HCI, they are deliberately framed and restricted. The windows or desk top metaphors, for example, are used in very specific ways in very restricted domains. For postmodernism, imagery and analogy are the stuff of analysis and allowed complete free rein. This can be seen very clearly in the way Derrida's insistence that philosophising is a response to texts whose

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[11] One observation to be made is that although what was called "the turn to the social" in HCI was justified in terms of the possible consequences for design, the main consequence seems to have been the engendering of yet more academic debate, with the associated explication of approaches, controversies about where boundaries lie, debates with what are held to be 'rival' approaches, generalised critiques of design as an instance of 'modernist culture', and so on.

reading is from a point of view and in a context, has been taken up. Derrida insists texts are never closed for the reader but permanently open. The text, in that sense, is as much a reading as it is a writing. As a hermeneutic this is a perfectly understandable, although not exactly uncontentious. However, to generalise the notion of textual reading to the analysis of all cultural objects, so that all aspects of culture no matter what can be treated as set in and hence to be read off from their 'mode of discourse' is a particularly unconstrained way of speaking. To then suggest, as Lyotard does, that such models of discourse express the ideology and interests of particular social strata and particularly the dominant social stratum which, by definition, must control the means of (symbolic) production, places almost no bounds at all upon the use of the analogy.

The precision with which metaphors, analogies and other tropes are used in HCI contrasts starkly with the unbridled usage of postmodern theorising. Where, for one party, they function positively as analytic frames offering possible resources to be drawn upon in designing the use of a technology, for the other they are key tools in a rhetoric of revelation and serve to dramatise the usually negative inferences being drawn.

Conclusion

We admit that in selecting the proposal to introduce postmodernism into HCI we chose an example that was well fitted to the case we wanted to make. The wilder reaches of the former as just about as far as it is possible to get from the prosaic, engineering orientation of the latter. And the example does serve us well. Because it is so obviously ill thought out and because when thinking through what it would mean to do what it is proposed to do, so many fundamental difficulties are thrown up, it provides an excellent case to support the principles for managing disciplinary border crossing we set out at the beginning. In both the strong and the weak versions of postmodernism in HCI, neither our cautionary nor our transparency principle were followed. Other examples of social science imperialism are not so clear cut nor so obviously misguided. The saving grace of the case of postmodernism and HCI is, in fact, that the proposal has met with few, if any, takers within the 'real world' of professional HCI. Perhaps that why, after a short period of enthusiastic promulgation, the proponents of both the strong and the weak versions appear to have dropped the idea altogether and have turned their attention to other matters.