THE INFORMATION SOCIETY: COMPUTOPIA, DYSTOPIA, MYOPIA

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As the twenty-first century approaches . . . the possibilities of a univerally opulent society being realised have appeared in the sense that [Adam] Smith envisioned it, and the information society that will emerge from the computer communications revolution will be a society that actually moves towards a universal society of plenty . . . this is what I mean by "Computopia" (Masuda)[1]

Our culture . . . is already committed to the proposition that the only legitimate knowledge we can gain of our world is that yielded by science. All thinking, dreaming, feeling, indeed all other sources of insight have already be delegitimated. The indoctrination of our children's minds with simplistic and uninformed computer idolatory . . . is a pandemic phenomenon (Weizenbaum)[2]

Keywords: information technology, computer systems, ideology, communication, control

One or other of the sentiments expressed in the preceding quotations is often echoed amongst the premisses of current arguments relating to many areas of policy, forecasting, management and planning: the computer — or more generally, information technology — seen as either the solution to all our problems, or on the contrary the source or exacerbation of our current ills. Those working in fields concerned with the application of IT in any way may think that they can ignore such disputes. Surely these concerns, and their possible clarification, belong in the realm of the philosopher, social scientist, historian of science or political theorist? Two arguments to counter this insularity spring immediately to mind.

The first stems from the proposition that technological advances cannot be detached from the context in which they were facilitated and in which they will be implemented, improved and superseded. This is the motivation behind many of the curriculum recommendations made since the early 1970s with regard to technology-based subjects. These have stressed the necessity to integrate the core subject matter with other aspects such as systems concepts, economics, organization and management studies.[3] In the realm of computing, there has been a gradual realization that the boundary of a computer system cannot be drawn to exclude users, organizational structures, and other aspects not encompassed by hardware or software, without prejudicing its design

and operation and related working environment. From this it would follow that whether we move toward 'computopia' or are progressively enslaved by 'diabolical' technology depends on attention to and comprehension of additional, non-technological aspects. Salvation resides in the application of extra-technological human-relations features, or perhaps in an 'alternative' culture with different scales of values and priorities.[4]

The second counter-argument goes further, refusing to allow that technology in itself has any wholly independent or determining existence. On the contrary, technological development occurs within constraints — social, political, economic — and attention must be turned towards those constraints rather than merely to the technology itself. Technical advances, while important, represent only one facet of social existence. The role played by technolgy may have changed considerably, but it would be mistaken to assume that something within the technology itself determined key social features. A critique of technology must be informed by some explicity socio-economic framework. The alternative is unquestioningly to subsume a socio-economic perspective with no regard paid to its validity or ramifications.

Those who characterize technology either as wholly good or wholly bad endow it with an independent existence. Viewpoints which acknowledge the significance of 'human-relations' share this position but assert that other influences may in some fashion temper its autonomous development. In the third perspective, the 'socio-economic' view, it is stressed that the non-technological assumptions be made explicit in any argument concerning the nature of technology. Furthermore, those working within IT related fields should at least be aware of the assumptions influencing their activities and decisions — directly or indirectly. Only then will they be in a position to decide whether such aspects of their work are acceptable or require challenging and changing. This discussion originates from within this third perspective, and seeks to contribute to just such questioning and challenging.

It is increasingly evident that the failure to deal with a least some of these extra-technological aspects has already created problems, particularly with regard to the development of computer systems. There is a growing awareness of the issues and the need to counter such misconceptions, as can be seen from the growth of work investigating or illustrating the complex relationship between organizational structure and dynamics and the introduction of computer systems into key areas of routine activity. This is also an impulse behind many of the studies concerned with the socio-economic aspects of computer technology.[5]

Increasing attention is being paid currently to aspects concerned with the effectiveness of computer systems rather than merely concentrating on their contribution to a narrowly defined concept of efficiency. The distinction between effectiveness and efficiency is often encapsulated by defining the former as a concern with 'doing the right job' and the

latter as a concern with 'doing the job right'. Questions of efficiency obscure the issues of choice amongst possible alternatives. Once technology is seen not simply as making existing activities more efficient — i.e. more productive, more profitable, less wasteful, less consuming of resources — but instead introducing new options, the necessity to consider wider social, economic, political issues becomes increasingly obvious. The problem of choosing between different value-sets or orientations are brought to the attention of those working in IT related areas. Their activities are seen to influence people's lives, and the importance of making conscious and reasoned decisions to act in particular ways is underlined.

An important attempt to raise these matters amongst IT practitioners can be found in Mumford's work, particularly her study on work, values and technology.[6] This provides an example of a concern to address some of these issues, knitting together a sociological framework borrowed from Talcott Parsons, with a complex and knowledgeable appreciation of computer systems — a rare combination. Her main motivation stems from the hypothesis that systems design owes less to the influence of the technology being implemented and more to the 'model of man' (*sic*) predominating amongst systems designers and managers. To this end she argues that the values held by systems designers must be investigated to determine if, taken as a whole, they differ from those of the systems users. As part of her study she established various measures of values and concluded that there was a significant difference, but that the split occurred between the first-hand users on the one hand and the systems designers and managers on the other. The latter shared a common value-set with middle management in particular. In general they were more in favour of the imposition of control and tightly structured jobs by management — classic exemplars of McGregor's Theory X management orientation.[7] The firstline users exhibited predominantly Theory Y characteristics, wishing to have a say in setting their own work targets, take decisions, respond to meaningful challenges. Consequently Mumford concluded that Theory X type work systems are the result, leading to gross dissatisfaction for the users.

Although she only quotes it as an example of a particular attitude to technical specialists, rather than as supporting or echoing her own position, the following extract from an earlier author is worth reprinting for its succinct characterization of this Theory X 'utopianism' —

> the new utopians are concerned with non-people and with people substitutes. Their planning is done with computer hardware, system procedures, functional analysis, and heuristics . . . The theoretical and practical solutions they seek call increasingly for decreases in the number and in the scope of responsibility of human beings within the operating structures of their new machine systems.[8]

Mumford's work has been enormously influential, a key element in the impetus directing attention away from a narrowly conceived view

of technology, substituting a perspective encompassing individual users, related tasks, routine activities, general working environment, and other areas influential and of consideration in the adoption and use of technology.[9] In computer science this broadening of scope can be seen in part in the development of studies into the 'human computer interface': the use of the term interface being apposite and revealing. Although the user is not plugged in to the machine, the recognition of the flow of data between user and machine, and the ways in which such flows can be improved is an important step in the progress towards better system design; although, as will be evident from the argument below, only of a limited kind.

Mumford shows that it is not possible simply to separate technical issues from others, particularly those directly concerned with the implementation of the technology itself. Her response is to propound a challenging methodology, incorporating a wider set of issues, questioning the limited model of user capabilities and motivations implied by most system designs. By concentrating upon the categories of 'user', 'systems designer', and 'manager', however, she effectively prevents the introduction of a wider social perspective which might provide some explanation of the source and impetus of such views. This is unfortunate, but understandable given her initial hypothesis and the approach used. Even so, it is noteworthy that she does pay attention to the tradition of 'rationalism', or 'positivism', and its embodiment in the narrow technicism of her paradigmatic Theory X-oriented systems designer.[10] As I hope to show it is precisely this tradition that needs to be exposed if the challenge to this restricted form of consciousness is to be in any way successful.

What I believe is happening in the 1980s is that this tradition of positivism/rationalism has found a new embodiment in the form of a technocratic rationalization and obfuscation developing in conjunction with current technological advances. The repeated appeals to the 'promise of high technology' linked to espousals of a 'free market' fostering the growth of 'small businesses', the spirit of 'free enterprise', and other sorts of pronouncement are testimoney to the pervasiveness of this ideology.[11] The many studies of the real conditions displaced and disguised by this technological euphoria are equally testimony to the contradictory and complex nature of these technicist claims.[12]

This form of technocratic faith is propounded with equal vigour by politicians arguing for the growth of the 'high technology sector' that will provide the path back to prosperity for the advanced economies, e.g., Brzezinski's 'Technetronic Society',[13] and by those commentators, academics, and theorists such as Daniel Bell[14] who suggest that we have entered the 'post-industrial' age, where knowledge provides the source of value, and where all problems can be resolved by 'intelligent' application of the wonders of technological advance.

I do not seek to counter these sorts of argument with any crude anti-technological view. Classifying technology as either wholly good or

wholly evil seems to be a prime example of a category mistake. Nor do I simply wish to point out the specific errors, and misconceptions of these sorts of argument; it has been done more than adequately eslewhere.[15] Instead I wish to concentrate on the basis upon which such technological deification and obfuscation rests.

It is important to realize that this technocratic ideology is not simply a form of disinteresed contemplation, arising out of some mysterious source to ride on the contemporary high-tech bandwagon. It has developed within, and been incorporated into, the realm of political action, informing policy-making, as well as justifying policies and decisions. In all societies the contradictions can be observed in one form or another. The rhetoric of a new challenge, new opportunities, new freedoms is espoused alongside the reality of new forms of poverty and misery, increased regulation, and centralization. Technological advances are incorporated to enhance powers of surveillance and apply further restrictions on certain categories of activity, protest and expression. The judgement at this stage must be that there has been an overall failure to deliver the supposedly widespread liberating promise of the new technology: wealth, leisure, and enhanced quality of life. On the contrary, the incorporation of the same technology into the domain of surveillance, repression and potential mass destruction has been initiated and develops apace.[16]

This ideology is, however, not unique to the 'computer age'. It may not even be unique to the twentieth century.[17] One way of understanding how and why such a phenomenon develops is to look at the 1950s and 1960s when the same narrow technicism was evident in a different guise. Although sometimes linked with the general Cold War stance of western academics and political figures,[18] the 'End of Ideology' was a distinct and analytically separate phenomenon. The particular form of technicism was advanced by Daniel Bell, most notably in his book *The End of Ideology*, and by others associated with the journal *Encounter* and the Congress for Cultural Freedom (funded in part by the CIA[19]). Many of their founding precepts became generally accepted premises for many key public statements of the period.

Although there were several strands to the End of Ideology position, the major one can be stated simply in terms that in modern industrial economies all the factors necessary for promoting the good and just society are present. Therefore the only goals for which it is legitimate to strive are the better organization and greater efficiency of society — i.e., high growth measured in terms of GDP/GNP or similar. As far as Bell and the others were concerned, traditional political ideas were 'exhausted' and inapplicable: worse, they had become irrational. Political arguments concerned with inequalities, concentrations of power, and so on were no longer necessary. Everything could be considered and resolved in purely 'empirical' terms. There was no longer the necessity or requirement for political ideas and values:

> a utopia has to specify where one wants to go, how to get there, the costs of the enterprise, and some realisation of, and justification for the determination of who is to pay.[20]

All utopianism had to be 'empirical'.Political ideologies,using the term in Bell's pejorative sense, (first and foremost marxism) had to give place to the rationality of technological advance: in essence itself an ideology based on an unquestioning belief in gradualism and greater efficiency, the means now justifying the end. The End of Ideology is one distinctive example of the 'actual structural subordination of technical rationality to managerial power and economic interests.'[21]

Although bound up with the start of the Cold War, the End of Ideology actually bridged the Cold War divide. 'Good' societies were not necessarily anti-communist or non-communist; they were simply those which allowed full sway for non-ideological technocrats. In some of his writings in this period, Bell claimed to detect similar developments in the USSR following the death of Stalin.[22] Ironically C. Wright Mills detected Soviet versions of the End of Ideology and related views in visits there between 1959-1960: recording observations such as 'this man talks in a style just like Arthur Schlesinger Jr' and 'surely this fellow is the counterpart of Daniel Bell'.[23] As one commentator on the period described the phenomenon, it was based on the axiom of increased efficiency and organization of advanced societies, leading to higher living standards and a converging of life styles, thereby blurring traditional class differences. This was also equated with the growth of a science-based middle class increasingly defined with respect to life style rather than access to power —

> in particular, as ideologies have declined and government has expanded its functions, legislative arenas have steadily lost ground to administrative arenas as sites of political decision making within the modern democratic state.[24]

Rather than looking back in anger because there were no causes worth fighting for, the proponents of the End of Ideology looked forward thankfully and hopefully to an era without grand causes. Their overall tone was one of profound optimism. Thus Lipset could state candidly that in 1960 'the good society already exists' (the USA), and that 'the fundamental political problems of the industrial revolution have been solved.' Ideologies, apart from that implicit in the End of Ideology itself, were anachronistic and obstructive to the progress of the good society.

In the realm of economics Andrew Shonfield, J.K. Galbraith and Tony Crosland all embodied the tenets of the End of Ideology in their major writings of the 1950s and 1960s.[25] Steady economic growth was assured, emanating from the rapid expansion of the productive capacity through innovation and the incorporation of technological advances into the economy, all of which would lead inevitably to the rational diffusion of these benefits. Interestingly all three eschewed appeals to the 'free market', instead firmly stating that the only guarantee of such

developments lay in a planned economy. Shonfield took as his model the French 'Etatist' tradition, but with the planning done by 'non-political' technocrats. Galbraith preferred to talk of the 'technostructure', a stratum of society which brings 'specialized knowledge, talent or experience to group decision-making'; moreover this form of society had to rise above the 'ebb and flow of market demand', 'it is the essence of planning that public behaviour be made predictable — that it be subject to control'.

Shonfield argued that what he termed 'neo-capitalism' was a better social environment in which the economic sector could be increasingly brought under the control of non-economic factors — government policy and technology being the most notable and important. There was a uniform trend towards economic planning, with plans and options being drawn up by 'non-political' experts. The French had successfully adopted this as the basis of their National Plan, effectively overriding parliament and the orthodox political arena, this in contrast with the 'old-style amateurism' of British politics and administration.

Crosland, particularly in *The Future of Socialism*, echoed precisely these points, but from the perspective of the position that the inefficiency of Toryism should be replaced by the dynamic efficiency of new-style socialism. A contrast with the position of the 1970s and 1980s when the Toryism of Thatcher is marketed as above all the new model of efficient administration.[26]

What all the proponents of the End of Ideology had in common was the belief that industrial societies can only be fully and efficiently developed if they follow the inherent logic of organization concomitant with large-scale industrialization — in some forms this has also been termed the 'convergence thesis'. The argument is that regardless of initial political and social distinctions, all industrial societies will converge to a standard form of organization, stratification and administration. The main differences among the End of Ideologists stemmed from distinctions between those for whom ideology was already on the wane, those who simply desired an end to ideology, and those for whom it was of primary importance actively to combat ideology in all its forms. Many simply confused all three aspects in their writings.

The selection of authors mentioned above is by no means an artificially selected group. On the contrary they are a representative cross-section of opinions of the period. The admixture of ideas associated with the End of Ideology were common to many debates and analyses of the period. It is not sufficient at this juncture to point out that such arguments were totally misplaced factually as well as in terms of their proponents' faith and assumptions. The documentation about the poverty and inequality in the period, and since that time, is readily available, and some of it was available at the time.[27] The key factor for our purposes concerns the observation that the arguments, and even some of the same figures, are still propagating a narrow technicism in the 1980s. It is therefore crucially important to disentangle the bases

of such positions in order to comprehend the argument and counter it in whatever form it takes. The arguments are all too familiar to those with knowledge of the 1950s and 1960s; although the assumption of continued, steady growth is no longer a component of the position, but instead a state which has to be regained after the 'deviations' of the 1960s and 1970s.[28]

One of the most coherent and sustained critiques of 'technocratic consciousness' in all its forms can be found in the early work of Jurgen Habermas. In 1963 in a paper entitled 'Dogmatism, Reason and Decision',[29] Habermas presented the argument that in the period from the 18th century to the present, the overtly critical insight embodied in the enlightenment had been lost with the progressive scientization of reason. Whereas the initial force behind 'Reason' was to demystify and shatter dogmatism, this force for enlightenment had become gradually replaced by 'instruction in control over objective or objectified processes'. A new form of dogmatism and mystification had developed, subverting the initial impulse behind the rise of reason. This was not an argument against anything inherent within science or technology themselves. Instead it indicates a breakdown between the technical and practical aspects of power,[30] a segmentation of reason found most obviously in the form of the nineteenth century doctrine of 'positivism' in which there is a strict division between meaningful and 'objective' statements about the world in the form of science, and meaningless, 'subjective' ones. Moreover, such segmentation facilitates the incorporation of science and technology into the productive process. Following Max Weber, but diverging from him in several important respects, Habermas terms this permeating process 'rationalization'. He distinguishes four levels. The most fundamental level is the employment of 'techniques placed at our disposal by science for the realization of goals'. The second applies to the selection between actions of equal technical aptness, and relies upon the tenets of decision theory with its schemes of preference rules and procedures. Both of these first two levels exclude normative elements from scientific analysis, the decisionistic models apply to the form but not the content of the decisions being made. This is a restatement of the Weberian view of a strict demarcation between value-free science and value-laden domains of existence: although it needs to be stressed that, unlike the positivist position, Weber did not relegate the non-scientific realm to one of meaninglessness, but on the contrary stressed the ineluctability, if irrationality, of values of human existence.

For Habermas the termination of rationalization at this level is untenable, since it is premised on the ultimate irrationality of pursuing any particular end or value. For Weber the choice of one particular value or objective was not open to rational investigation, but once a choice had been made rational decisions could be taken for reaching that goal. Habermas demonstrates that the process of rationalization extends to two further levels transcending the simple decisionistic form. The third

level supports a technocratic model which deals not only with selection amonst values, but with their formation. Values are then rated in terms of their suitability with respect to some more fundamental value — e.g., survival or risk avoidance. The fourth level introduces the concept of feedback, rationalising decision making itself as part of a self-regulating system.

The overall conclusion is that problems and objectives within the realm of interaction are conceived in terms of technical problems amenable to instrumental solutions. Ultimately this leads to a situation of a 'negative utopia' concealing a philosophy of history 'based on the questionable thesis that human beings control their destinies rationally to the degree to which social techniques are applied, and that human destiny is capable of being rationally guided in proportion to the extent of cybernetic control and the application of techniques'. This sort of argument has its corollary in the dissatisfaction caused by the (unsuccessful) attempts in the 1960s and 1970s to apply the techniques of systems engineering and RAND-style systems analysis to social and political issues. The works of Churchman,[31] Checkland[32] and others are good examples of critical accounts of such efforts, together with possible alternatives. Habermas' debates with Nikolas Luhmann on the use of systems theory and system techniques emanates from a similar concern.

The arguments of those, such as Checkland, denying the possibility of such programs often focus on the postulated distinction between the normal domain of such methods and the socio-political realm. Habermas goes further in his argument, stating that the 'scientization of politics' is a two-fold process. The first aspect concerns the restriction to the sphere of 'experts' of the assessment and discussion of the capacity for control produced by the advance of technology. The second states that the realm of political discussion declines in importance as matters are deemed resolvable on purely technical grounds, resulting in a force for mass depoliticization. In other words an increasing number of issues are restricted to the relevant 'experts' deemed to have the requisite abilities and qualifications to resolve them. The realm of general public debate is consequently narrowed, since participants do not have access to the technical expertise necessary for decisions to be reached; either through lack of expertise, or restricted access to the relevant skills or know-how. This results in scientific knowledge being transmitted to individuals engaged in technical manipulation for purposes of control. They in turn can then direct the impetus for innovation in particular directions congruent with that interest. The primary aim of politics as unfettered discussion in the public domain is thwarted, and the path to political rationalization in the full sense of the term is blocked.

Habermas develops this argument in later work.[33] He introduces the distinction between 'work' and 'interaction': the former defined as 'either instrumental action or rational choice or their conjunction'. This has also been given the term 'purposive rational action'. There are two possible senses of the term, in the narrow sense it refers to the orientation

towards technical control over objectified processes, in the wider it refers to strategic action bounded by consensual norms. Interaction by comparison is concerned with communicative action and symbolic interaction. It is grounded not in terms of validity but in terms of intersubjective recognition of norms and obligations. One does not fail at interaction through incompetence, one deviates through lack of or change in motivation.

Habermas argues that traditionally the institutional framework of society limited the development of subsystems of purposive rational action; areas of life, belief, tradition, and so forth were simply not open to technical control or rational choice. The opening of these subsystems has broken the power of traditional forms of justification and authority. But they have been replaced by forms of authority and power based on restricted and incomplete ideological forms of 'expertise'. The encroachment of technical rationality into areas of life during the twentieth century has been accomplished by the institutionalization of innovation accompanied by the extension of subsystems of purposive rational action. Older forms of legitimation and legitimacy have been shattered, and more apposite forms articulated in terms of means-ends rationality. Science and technology have themselves become part of the process of legitimation, fulfilling the dual role of forces of production and ideology. The latter role is the target of Habermas' critique.

Unlike those such as Marcuse,[34] and Ellul,[35] who write of such technocractic society as though it were an established reality, Habermas is clear that such a view is no more than a 'negative utopia' far from realization. Indeed one of the central tenets of Habermas' position is that such a social form could never be established. The vision of such a society, however, forms a cornerstone of the predominating ideology — a masking of real interests. In serving as an ideology, this 'dystopia' supports certain social tendencies:

> socio-psychologically the era is typified less by the authoritarian personality than by the destructuring of the superego.[36]

Social control is no longer to be based upon the imposition of authority, but relies instead on the subverting of rational choice amongst alternatives. The absolutism of the despot is replaced by the masked dictatorship of the nanny — 'there is no alternative, nanny knows best'. The social actor is reduced to the role of dependent infant.

Some commentators have pointed out that Habermas' entire work can be seen as an argument against identifying political emancipation with technical progress. To do this he attempts to draw out the distinction between two forms of rationalization. At a quasi-transcendental level the theory of cognitive interests distinguishes the technical interest in prediction and control of objectified processes from the practical interest in maintaining a distortion-free communication. At the sociological level, subsystems of purposive rational action are distinguished from the institutional framework in which they are enclosed. At the level of social

evolution the growth of productive forces and technological capacity is distinguished from the extension of interaction free from domination.[37]

In developing this perspective Habermas moves from the two-fold schema of work and interaction to a three-fold one of work-language-power. These correspond to three cognitive interests, respectively technical, practical, emancipatory. The first two are defined as follows —

> deep-seated interests, which direct our knowledge and have quasi-transcendental status . . . they result from the imperatives of a socio-cultural life-form dependent on labour and language — they are not regulators of cognition which have to be eliminated for the sake of objectivity of knowledge; instead they themselves determine the aspect under which reality is objectified, and can thus be made accessible to experience to begin with.[38]

The emancipatory interest does not arise in the same way, it is not grounded in deeply-rooted structures of action and experience. It arises from distortions within the realm of interaction. The emancipatory interest guarantees the connection between theoretical knowledge and the 'object domain' of practical life which comes into existence as a result of systematically distorted communication and thinly legitimated repression. The encroachment of instrumental rationality beyond the realm of technical interests represents one of the major causes of such distortion. This distortion is systematic: not something which occurs as a result of random activities. Habermas seeks to illustrate the sources of such distortion through an understanding of his theoretical position with regard to cognitive interests and the extension of Weber's concept of rationalization. At this point I do not wish to go into further details regarding the bases of this argument, suffice it to say that he relates the growth of instrumental rationality to the development of advanced industrial societies.

> For as our civilization has becoming increasingly scientific, the dimension within which theory was once directed to practice has become correspondingly constructed. The laws of self-reproduction demand of an industrially advanced society that it look after its survival on the escalating scale of a continually technical control over nature and a continually refined administration of human beings and their relations to each other by means of social organization. In this system science, technology, industry and administration interlock in a circular process. In this process the relationship of theory to practice can now only assert itself as the purposive-rational application of techniques assured by empirical science.[39]

The interest in prediction and control is a legitimate and welcome one, but Habermas argues that it must not encroach into areas of purposive rational action or interaction. In advanced societies the incorporation of technicism into the prevailing structures of legitimation, the assumption that all problems can be solved by the application of 'expertise', undermine the will to achieve what Habermas terms 'Mundigkeit': autonomy and responsibility. In essence the competence to act and interact on the basis of an understanding of the effects of one's actions on others; taking (the actions of) others into account. This

human interest in autonomy and responsibility is not mere fancy, for Habermas argues that it can be apprehended 'a priori'. Our ability to express ourselves and understand others through our language and other forms of communication is crucial to our social existence. The supposition behind every act of communication is that we make claims to be understood, to receive information, and to deal with any responses in certain ways.

These are themselves part of our social existence, literally a competence to communicate, and to deal with the communications of others:

> — what raises us out of nature is the only thing whose nature we can know: language: through its structure autonomy and responsibility are posited for us;[40]

This concept of a 'general competence' is crucial for many of those concerned with developments within the realm of IT.[41] As Habermas, and many others, have pointed out communication using ordinary language has a 'double structure'. In any act of communication speaker and hearer — sender and receiver — must communicate simultaneously at two levels:

> a) the level of inter-subjectivity on which speaker and hearer, through illocutionary acts, establish the relations that permit them to come to an understanding with one another; and b) the level of experiences and states-of-affairs about which they want to reach an understanding in the communicative function determined by (a).[42]

In other words any act of communication, if it is to be completed successfully, must accomplish not merely the passing of information, but also the establishing and maintenance of a relationship between the parties concerned. This latter, illocutionary, role occurs simultaneously with the 'propositional' one. The concept of establishing and maintaining a dialogue is then an ineluctable facet of any act of communication.

Recognition of this wider aspect is then a necessary element to be incorporated into the design of effective working environments, particularly those encompassing IT in some form. Mumford's work now appears in a different, critical light. The movement to extend the system boundary beyond the hardware and software, to include individuated users with differing attitudes, was important but not sufficient. In some respects it merely adds a 'human relations' aspect to the advance of instrumental rationality. Habermas' argument takes us considerably further, and in doing so sheds more light on the distinction between the concepts of 'efficiency' and 'effectiveness'.[43]

The assumption behind any act of communication is what can be termed 'ideal speech': that utterances are comprehensible, that the propositional contents are true, that the speaker's claims are truthful, that the speech action is appropriate or correct in the context. Although this may sound somewhat similar to certain 'fictional' assumptions in

say the physical sciences — the frictionless surface is an example — it is far more than just a theoretical precept. The postulate of ideal speech is 'an unavoidable supposition reciprocally made in discourse'; a major task is to uncover the processes which systematically distort communication, thereby undermining the postulates of ideal speech. For Habermas this argument extends to the concept of the 'ideal speech community', a constitutive illusion which is at the same time the appearance of a form of life. All communication takes place premised upon the assumption of an ideal speech community, a community of speakers and listeners who raise just these sorts of claims, and have those claims satisfied or contested, in every communicative act. Moreover they find justification and support for most of those claims, otherwise the supposition of ideal speech would not be upheld as easily and automatically in everyday interaction.[44]

To summarize Habermas' position as sketched for the present purposes, the distinction between the technical and the practical realms, between work and interaction, has become increasingly blurred as a result of the process of rationalization which has as its ultimate, if unrealizable, goal the complete encroachment of instrumental rationality upon all aspects of knowledge. This development has been fostered in the growth of advanced industrial societies as they have sought increasing control over and the capacity to predict social action. The growth of technical knowledge and the use of technology have been accompanied by the growth of an ideology which identifies reason entirely with instrumental rationality. The aim, partially successful, is mass depoliticization, and the diminution of the realm of public debate. In developing these ideas, Habermas grounds the concepts of work and interaction in the theory of cognitive interests, adding a third one concerned with emancipation. This emancipatory interest develops from the distortions within the realm of practical action, and is itself based in part upon the concept of a universal competence which is systematically distorted or constrained.

The major point to note is that Habermas' work draws attention to two related aspects which directly affect the context within which those concerned with technological growth and progress and its ramifications are working. First, the tendency to subsume all problems as available for technical solution. Second, the complex activities necessary for the successful transfer and reception of information, for communication. The recognition that the realm of technology is limited, and that technical solutions cannot address many essential facets of social activity is a first step towards increased effectiveness in the incorporation of IT — in all its many and varied forms — into everyday existence. Those, such as Mumford, who have sought to widen the concerns of IT professionals by expanding the view of the system boundary have initiated a process whose ramifications stretch far beyond the conventional 'human relations' and 'user involvement' conclusions. If the 'effectiveness' of technology is really the concern, then it is legitimate

to ask what limitations there might be to the realm of instrumental rationality which underlies technical advance. In addition, given the centrality of information and communication to IT in particular, specific questions ought to arise with regard to the bases of the relevant underlying processes: whether or not they are wholly, immediately or intrinsically amenable to technical consideration.

The Habermasian framework offers a perspective within which such matters can be raised, and from which the views of those such as Bell, Masuda and others can be understood and undermined. It will then be recognized that the potential of IT does not reside within the technology itself, its realization is determined and constrained by wider socio-economic factors. Implementation of IT is bound to be ineffective — in the sense of 'delivering the goods' — if it is treated as an autonomous factor, ignoring the realms of interaction and communication. Without discussion and comprehension of these factors, the direction of development,implementation and incorporation will go by default. Computopia and Dystopia may be unrealizable fictions, but the structures and processes they obscure and enhance will only be exposed, comprehended, and challenged if the current myopia of the IT professional community is replaced by a growing recognition of the true and complex nature of technological advance, and the limitations of the underlying instrumental rationality.

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1. Y. Masuda, part of an Extract from *The Information Society as Post-Industrial Society,* World Future Society, Bethesda, MD, 1981 and 1983. Extract published as "Computopia" in T. Forester (ed.), *The Information Technology Revolution,* Blackwell, Oxford, 1985, p. 626.
2. Joseph Weizenbaum, *Computer Power and Human Reason,* Penguin Books, Harmondsworth, Middlesex, 1984, p.xviii.
3. Thus the ACM (Association of Computing Machinery) Curriculum Committee on Information Systems, 1985, stressed the importance of developing curricula which widened the scope of computing-based and computer-related courses. Earlier reports in the 1970s had made similar recommendations.
4. The work of Roszak is one of the most notable examples of an attempt to express the ramifications of the counter culture, and particularly alludes to the role of technology. A more recent discussion, still echoing similar concerns, can be found in Athanasiou. See Theodore Roszak, *The Making of a Counter Culture,* Faber, London, 1970; T. Athanasiou, 'High-tech alternativism: The case of the Community Memory Project', *Making Waves, Radical Science,* 16, Free Association Books, London, 1985.
5. There are several useful collections of articles in this area. See A. Burns (ed.), *The New Information Technology,* Ellis Horwood, Chichester, Sussex, 1985; T. Forester (ed.), *The Microelectronics Revolution,* Blackwell, Oxford, 1980; Forester, 1985, *op. cit.*; M. Shallis, *The Silicon Idol: The Micro Revolution and Its Social Implications,* Oxford University Press, London, 1984; C. Evans, *The Mighty Micro,* Coronet, Kent, 1979; Tony Solomonides and Les Levidow (eds), *Compulsive Technology: Computers as Culture, Radical Science,* 18, Free Association Books, London, 1985; and R.J.

Boland and R.A. Hirscheim, *Critical Issues in Information Systems Research,* J. Wiley, Chichester, Sussex, 1987.

6. Enid Mumford, *Values, Technology and Work,* Martinus Nijhoff, The Hague, 1981.
7. D. McGregor, *The Human Side of Enterprise,* McGraw-Hill, New York, 1960.
8. The quote is taken from R. Boguslaw, *The New Utopians,* Prentice Hall, Englewood Cliffs, 1965; quoted in Mumford, *op. cit.,* p. 61.
9. This influence has made itself felt both with academics and practitioners. The current trend towards adoption of standard forms of development methodologies for computer systems, including large mandatory elements of user consultation and involvement, is a result of the movement in which Mumford was and remains influential.
10. Mumford, *op. cit.,* pp. 4-8.
11. Ideology can be defined as a masking of interests that is in some sense rational. Ideologies are systems of representation and as such part of the human material social process. For further elucidation of the concept see R. Williams, *Marxism and Literature,* Oxford University Press, London, 1977.
12. The collection of S. Macdonald, D. Lamberton and T. Mandeville (eds), *The Trouble with Technology,* Frances Pinter, London, 1983, covers many of the central issues, as do the articles in Solomonides and Levidow, *op. cit.* J. Becker, *Information Technology and a New International Order,* Chartwell Bratt, 1985 gives a geo-political slant.
13. See Solomonides and Levidow, *op. cit.,* pp. 126-38.
14. Bell is credited with popluarising the term 'post industrial society' in his book *The Coming of Post-Industrial Society,* Heinemann, 1974. Although extensive reference is made to the work of Bell in this article, I am not seeking specifically to confront his work; but he has managed to convey a consistently held view, characterizing the technicism/instrumentalism which I seek to expose.
15. See, for example, D. Lamberton (ed.), *Economics of Information and Knowledge,* Penguin Books, Harmondsworth, Middlesex, 1971; S. Macdonald, 'Controlling the flow of high-technology information from the United States to the Soviet Union', *Minerva,* 24, 1, 1986.
16. A recent publication concerned with some of these issues is Duncan Campbell and Steve Connor, *On The Record,* Joseph, London, 1986. See also BSSRS, *TechnoCop New Police Technologies,*. Free Association Books, London, 1985.
17. The article by Rosenbrook *et al.*, describes several similar sentiments with regard to the Industrial Revolution in Britain in the 18th and 19th centuries. See Forester, 1985, *op. cit.,* pp. 635-47.
18. C. Lasch, 'The Cultural Cold War', reprinted in Lasch, *The Agony of the American Left,* Penguin Books, Harmondsworth, Middlesex, 1973.
19. See Lasch, *op. cit.;* A. Bryant, *The New Left in Britain,* PhD Thesis, London University, 1980.
20. D. Bell, *The End of Ideology: Essays on the Exhaustion of Political Ideas,* Free Press, Glencoe, 1961, p. 408. Compare this with the quote from Boguslaw above. The latter would almost certainly have had the proponents of the end of ideology in mind when writing the book. The main target is, however, the related position that social problems are amenable to solutions in a fashion similar to that used by engineers to solve physical problems. The texts by Churchman and Checkland address these issues specifically: see C.W. Churchman, *The Design of Inquiring Systems,* Basic Books, New York, 1971; P.B. Checkland, *Systems Thinking Systems Practice,* J. Wiley, Chichester, Sussex, 1981.
21. A. Gouldner, *The Dialectic of Ideology and Technology,* Macmillan, London, 1976, p. 254. Thus even in its own terms, the End of Ideology was an ideology, let alone in the senses of the term analysed by Williams, *op. cit.,* and others. See Gouldner, *op. cit.*; G. DiPalma, *The Study of Conlict in Western Society,* Morristown, 1973; and Bryant, *op. cit.*
22. D. Bell, 'The "End of Ideology" in the Soviet Union?', in M.M. Drachkovitch (ed.), *Marxist Ideology in the Contemporary World,* 1966.
23. C. W. Mills, 'Letter to the New Left', *New Left Review,* September-October, 1960, reprinted in I.L. Horowitz (ed.), *Power, Politics and People: The Writings of C. Wright*

Mills, Oxford University Press, Oxford, 1967, p. 219.
24. Di Palma, *op. cit.*, p. 3.
25. The key texts are C.A.R. Crosland, *The Future of Socialism,* Cape, London, 1956; J.K. Galbraith, *The New Industrial State,* Penguin Books, Harmondsworth, Middlesex, 2nd ed., 1979; and A. Shonfield, *Modern Capitalism,* Oxford University Press, London, 1965.
26. An administration, moreover, whose 'success' is always to be paraded in statistical terms; a form of justification whose limitations are only now being widely exposed — after more than 8 years.
27. See, for example, K. Coates and R. Silburn, *Poverty: The Forgotten Englishmen,* Penguin Books, Harmondsworth, Middlesex, 1970; B. Abel-Smith and P. Townsend, *The Poor and the Poorest,* Bell, London, 1965.
28. The use of terms such as rationality and utopia has been replaced by 'free market', 'privatisation', 'free enterprise' among others. The tenor is, however, similar, as is the contradiction between 'freedom of choice', the market on the one hand, and the increasingly centralized and dominant role of the state on the other. Galbraith's arguments about private affluence and public squalor as stated in *The Affluent Society* seem possibly more applicable to the 1980s than they might have been to the 1950s and 1960s. His book is certainly well worth (re)reading in this context.
29. Originally published in 1963, the English translation appeared as a chapter in J. Habermas, *Theory and Practice,* Heinemann, London, 1974.
30. Practical power for Habermas concerns the choice between alternatives, technical power being concerned with efficiency: note that Habermas' definition of practical power concerns "securing and expanding possibilities of mutual and self-understanding in the conduct of life" — see T. McCarthy, *The Critical Theory of Jurgen Habermas,* Hutchinson, London, 1978. This argument predates the current concern with effectiveness rather than merely efficiency. It also considerably extends the limited form of the distinction as it is stated above.
31. Churchman, *op. cit.*.
32. Checkland, *op. cit.*.
33. Habermas, *Toward a Rational Society,* Heinemann, London, 1971; *Knowledge and Human Interests,* Heinemann, London, 1972; and *Theory and Practice,* Heinemann, London, 1974.
34. H. Marcuse, *One Dimensional Man,* Routledge & Kegan Paul, London, 1964; *Negations,* Penguin Books, Harmondsworth, Middlesex, 1972.
35. J. Ellul, *The Technological Society,* Knopf, New York, 1964.
36. Habermas, 1971, p. 107. Similar sentiments can be found in the preface to the UK edition of Weizenbaum, *op. cit.* In this case the destructuring of the superego is characterised by the mentality engendered by a generation who have compulsively consumed computer/video games and their ilk. See pages xiii-xix — 'Unsinn, Bloedsinn, Wahnsinn, . . . nonsense, stupidity, and insanity'.
37. McCarthy, *op. cit.*, p. 23.
38. Habermas, 1974, pp. 8-9.
39. *Ibid.*, p. 254.
40. Habermas, 1972, p. 314.
41. This is relevant even to what might be thought of as the straightforward technical realm. In communications for instance the 7 layer OSI model of communication can be seen as a representation of the objectified process of establishing and maintaining a link between source and destination; allowing a degree of prediction and control within the confines of those aspects of the communication act covered by the model. On the other hand, any implementation of such a link relies on aspects of communication which are not amenable to technical control, but instead rely upon a complex set of assumptions, inferences, and interpretations which can only be fully understood in the light of interpersonal and social factors relevant to the communication act itself. A concern with the former aspect is valid in itself until it encroaches upon facets of communication encompassed by the realm of interaction. It then becomes crucial in a practical sense (for successful, effective communication

between people) as well as in a philosophical sense, that the distinction between 'work' (technical control) and 'interaction' (interpretation, convention, deviation) is recognised. The positions of Mumford and Habermas converge on this conclusion, albeit from different perspectives and with different aims.

42. Habermas, 'What is universal pragmatics', quoted in McCarthy, *op. cit.*, p. 282.
43. For Habermas the overall task is to provide an account of communication that is both theoretical and normative: to show that a universal pragmatic competence exists which assumes undistorted communication, but which is not maintained or even achieved as a result of the distortions emanating from the practical realm. Moreover, anyone acting communicatively must, in performing any speech action, raise universal validity claims and suppose that they be vindicated or redeemed. These claims include those of comprehensibility, veridicality and applicability amongst others.

    A significant tension exists in the design and specification of computer systems, and it reflects these sorts of issues: comprehensibility, validity, completeness, veridicality, and so on. The term specification covers a wide range of activity and resulting documentation in the design process. It includes the original specification of the system requirements, possibly produced by users who are not computer-literate; also the term covers the detailed output presented to the programmers to transform into computer code in a specific language. There are, therefore, several steps involved in transforming the initial user requirements into the final software: each step involving the high probability of omission, or the introduction of misunderstanding, contradiction, and false assumption. The history of software design has been one of the production of systems which do not work, or do not fulfil user requirements, or are more cumbersome than the manual systems they were designed to replace. In order to respond to these sorts of problem, there have been moves in recent years to introduce more formal approaches to the design of software. One trend has been to introduce formal notations into the realm of specification in order that steps from one form of specification to another can be executed more rigorously with less chance of error and possibly detecting inconsistencies. These sorts of notation are based upon elements derived from discrete mathematics, particularly set theory, functions, boolean algebra. Unfortunately such notations are incomprehensible to almost all users, and indeed to most computer professionals; as such they require additional techniques to fulfil the requirements of comprehensibility, adequacy and applicability. Those who argue that rigorous formal notations are sufficient for the entire design process will merely propagate systems which are technically 'correct' and 'verified', but have no guarantee of fulfilling the functions required by the user community.
44. In certain contexts such suppositions may not be upheld, and in this case there is a move into what Habermas terms 'discourse'. This move into discourse represents a break with the normal context of interaction. The validity claims that are unavoidably, if implicitly, raised with every act of communication and which are unavoidably accepted in ordinary interaction, are regarded as hypothetical and explicitly thematized. There is a willingness to suspend judgement, and to participate in the aim of reaching a 'rational consensus'. Something akin to this occurs when a systems designer is introduced to a client organization. The designer, in attempting to understand the present system and requirements for a future system, must constantly seek far deeper levels of claim to validity for statements made by the organization's participants. This will then contribute to a greater depth of understanding of the key activities by both the designer as an outsider, and by the participants who may have taken a great deal for granted until forced to justify their activities in this way.