

AUTOMATING INTERACTION:
ECONOMIC REASON AND SOCIAL CAPITAL IN ADDRESSABLE NETWORKS

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A Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Doctor of Philosophy in the School of Communications

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AUTOMATING INTERACTION: ECONOMIC REASON AND SOCIAL CAPITAL IN

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ABSTRACT

This interdisciplinary study demonstrates that the conceptions of economic action and economic rationality employed within orthodox economic theory are both logically and empirically inadequate for modelling the economic implications of rapid innovation and adoption of new communication and information technologies. Re-evaluation of those economic standards of rationality is therefore warranted and indicated. A ‘critical-pragmatic’ re-interpretation of the ‘Information Economy’, combining elements of traditional institutional economic theory and contemporary critical social and linguistic theory, is advanced as an alternative theoretical perspective which offers a more adequate conceptualization of economic action and reason.

The three chapters of Part I develop this communications-centred perspective. What, it asks, does communication theory tell us about economic action and reason within digital communication networks? This framework of investigation emphasizes the interdependence of economic actors, the interpretive complexity of their transactional communications, the centrality of the tacit normative dimensions of transactions to the achievement of economic coordination, the role of information technology in the rationalization of tacit transactional norms, and the contradictions which emerge in the relationship between property rights and communicative interaction in the economic process.

Applying the methodological prescriptions of critical-pragmatism (as outlined in Part I), Part II investigates the communicative presuppositions of positive economics. What, it asks, does economic theory tell us about information and communication in the economic process? Two themes are traced, in these chapters, within the theoretical discourse of mainstream economics: the role of knowledge and information as endogenous and exogenous variables in economic action; and the role of social norms and institutions as factors in economic reasoning.

Economic theory is discovered to exclude by definition any systematic account of the interdependencies inherent in the use of information and communication resources, and therefore to lack criteria for distinguishing between those communicative norms and competences that impede economic coordination, and those that contribute to it.

Part III provides an extended example of the application of these competing perspectives to the allocation of information and communication resources. Its three chapters report a policy-oriented case study of personal information control in public switched networks, which demonstrates the divergent implications of the two perspectives, especially with regard to the relation between the economic performance of digital transaction networks, and the kind and degree of their public-interest regulation.

The study concludes that where actors must choose collectively among alternative possible trajectories of technological and institutional change, and thereby among the multiple equilibria populating the frontiers of the social welfare function, social investments in regulative interaction norms and critical communicative competences yield decisive future transaction-cost efficiencies. In a context of rapid change in communications technology, this choice-set is incompatible with neoclassical economic assumptions, and with neo-liberal economic policies. It therefore suggests the necessity of substituting, for the ‘methodological individualism’ of neoclassical economics, a ‘methodological interactionism’ drawn from the critical study of transactional communication processes.

KEYWORDS: addressable networks, communicative action, economic action, economic interaction norms, economic rationality, economics of information, institutional economics, mass communication research, methodological individualism, neoclassical economics, network transactions, philosophy of social science, philosophy of technology, public choice, social capital.

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"...of course, research and development are prime examples of information-gathering with a considerable degree of uncertainty, and achievements are certainly not predictable. As a result the precisely laid-out timetables are dramatically unfulfilled..."

Kenneth Arrow, 1974, The Limits of Organization, p.54

Probably the largest part of the investment necessary to the completion of a dissertation is the sum of the efforts of friends, family, colleagues and students to endure the idiosyncracies of the candidate's thought processes, utterances and actions. I have particularly in mind the valued collaborations of Firoozeh Radjai Bokharai, Marcus Breen, Chee-Wah Cheah, Bob Everton, Rick Gruneau, Allie Hearn, Lynne Hissey, Robin Mansell, Bill Melody, Rick Pinet, Maya, Dick and Mil Ruggles, Rohan Samarajiva and Pascal Tremblay.

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This study hopes to enter, rather than end, the conversation it documents. Its author affirms the innocence of all cited sources with respect to the fallibility of the methods, data, and interpretations it contains.

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CHAPTER ONE

INTRODUCTION: RE-INTERPRETING THE INFORMATION ECONOMY

The particular person is essentially so related to other particular persons that each establishes himself and finds satisfaction by means of the others... In the course of the actual attainment of selfish ends... there is formed a system of complete interdependence, wherein the livelihood, happiness, and legal status of one man is interwoven with the livelihood, happiness, and rights of all. On this system individual happiness, etc., depend, and only in this connected system are they actualized and secured.

G.F.W. Hegel, 1967 [1820], *The Philosophy of Right*, 122-3.

In recent decades, with the increasing pace of innovation in the machinery of information collection, storage, processing and transmission, information has come to be perceived as a fundamental economic resource. This tide of technological innovation has been driven primarily by the needs of large commercial enterprises that, in globalizing the scale of their operations, experience exponential increases in the aggregate quantity, cost and strategic importance of structured information processes. Rationalization of these information processes through the application of new information technologies can equip the firm with crucial advantages of scale and scope.

Currently, global trade and investment in communication and information technologies, activities and products are surging so rapidly that by some measures this has become the largest single sector of trade and investment. Correspondingly, in the advanced industrial economies, the largest sectors of employment are now the service and knowledge sectors, which are growing while employment levels in the extractive and manufacturing sectors continue to fall. Given such massive shifts in the

valuation of resources and in the global structure of employment, investment and trade, it is not surprising that the notion of an 'information economy' has become a cliché.

These well-rehearsed facts may, however, conceal more about the contemporary conditions of economic life than they reveal. To speak so transparently of such large-scale social transformations is to assume that the meanings of key terms in the economist's vocabulary are stable and self-explanatory, and that the characteristics of an 'information economy' can be discerned unproblematically using the inherited constructs of economic theory. But what if the way economics, as a discipline, has carved up the social whole -- the way it has defined its own objects and boundaries of inquiry -- itself creates significant barriers to understanding the effects of the new communication and information technologies on patterns of human economic action?

In the following pages I develop an argument for a different understanding of the 'information economy' than that we have inherited from the mainstream of economic thought. The central categories of this critical reconstruction are the concepts of 'economic action' and 'economic rationality'. I will suggest that formal economics has failed to model the micro-structure of economic action in a manner adequate to explain the outcomes of large and growing private investments in information and communication resources, activities and products. In particular, the models of formal economics systematically disregard the rising interdependence of economic actors in the context of such a pattern of investment, and misconstrue the economic significance of associated alterations in the background norms of communicative interaction.

I will argue that in an 'information economy' characterized by ubiquitous computer-mediated transactions, the realization of gains from trade becomes positively and visibly correlated with the communicative competences of transaction partners and the normative force of shared institutional arrangements. The social capital represented by these norms and competences is seldom recognized as a cost-bearing input into the economic process, or as a factor in economic performance. Nevertheless, great investments of social capital are made, in every generation, in the micro-structures of communicative interaction. These take the institutional forms of child-rearing and family practices, formal and informal education, participation in cultural traditions, community and citizenship activities, mediation and conflict resolution processes, and many others. As Francis Fukuyama has recently observed,

Social capital is a capability that arises from the prevalence of trust in a society or in certain parts of it. It can be embodied in the most basic social group, the family, as well as the largest of all groups, the nation, and in all other groups between. Social capital differs from other forms of human capital insofar as it is usually created and transmitted through cultural mechanisms like religion, tradition, or historical habit. (Fukuyama, 1995, 26)

In the present period of rapid cultural, economic and political transformation, protecting and developing these kinds of resources may lead to significant increases in the coordinative efficiency of the economic process, by making many kinds of transactions less costly to initiate and to repeat. The degree of division of labour and the value added by units of labour, the number of transactions and transaction-partners per capita, and even rates of technical innovation and diffusion can all be positively correlated with the 'infrastructures' of social capital available in different economic spaces. In other words, more resources for sustaining and extending the scope of voluntary relationships leads to more traders exchanging more kinds of goods and services more often.

Existing cultural patterns and structures of communicative interaction can be seen from this angle of view as a treasury of tested techniques of productive and distributive coordination; thus there is “no necessary trade-off... between community and efficiency; those who pay attention to community may indeed become the most efficient of all” (Fukuyama, *ibid.*, 32).

This is counter-intuitive to the contemporary formal economist, who understands the economic actor as an ‘instrumentally-rational utility-maximizer’. The secret spring of expanded circulation at the heart of the clockwork world of *homo oeconomicus* is the emancipation of individual and opportunistic self-interest. From within this worldview, the measure of progress is the slow unwinding (or, if necessary, forcible breach) of cultural tradition and interaction norm, by which new markets are opened and old societies ‘liberated’ from their presumed irrational and stagnant past.

The new telematic technologies exemplify this process. In a general sense they are designed to act directly upon the micro-structures of human communicative interaction, substituting new, technologically rationalized forms and modes of social and economic action for the antecedent forms to which users have been tacitly enculturated. But allocating information and communication resources by universalizing the instrumental, opportunistic standards of rationality generally applied to private exchange of scarce material resources is unlikely to deliver anything close to optimal coordination outcomes. Economic reason excludes by definition any systematic account of the interdependencies inherent in the use of cultural resources, and therefore lacks criteria for distinguishing between those cultural norms and competences that impede economic coordination

processes, and those that contribute to them. Re-evaluation of those economic standards of rationality, I will argue, is therefore warranted and indicated.

Information technologies offer an exciting opportunity for communications researchers to investigate the origins, structure and comparative performance of economic interaction norms. Such a program of research can aid in specifying the conditions under which technological rationalization of these norms can contribute to economic performance. The central task of this study is to anticipate how our conceptions of economic action and economic rationality should be altered in a context of rapid adoption of new communication and information technologies. In addressing this task I hope to show that the significance of these new technologies goes beyond their role in heralding a new and distinctive 'post-industrial' organization of economic activity. Their significance also lies, to quote again Hegel's description of the market economy at its inception, in the way in which they hold up a mirror to the fundamental role of communication processes in a "system of complete interdependence".

Plan of Discussion

In the chapters that follow, I propose to develop the argument sketched above: first, by elaborating a communications-centred framework for investigating the micro-structure of economic action; and following that, through an examination of received perspectives on relevant elements of economic theory and method. A policy case-study, which compares the policy implications of each of these

approaches for one specific domain of communications technology application, forms the concluding section of the study.

The next three chapters, which together form Part I, develop the argument that the migration of economic activity into switched telecommunications network settings multiplies and intensifies the kind and degree of interdependence experienced by economic actors. This sets off a process of technological rationalization, driven by economic imperatives, by which traditional lifeworld norms and competences are systematically re-designed. Some implications of this process of rationalization are: the problematization of taken-for-granted modes of collective action; a “selective radicalization of ‘modernist’ values” by social movements (Offe, 1985); and new crises in the normative integration of all modernizing societies, where the dis-integration of traditional cultures requires the invention of new modes of normative interaction and new institutional ensembles, forged out of the materials of modernization itself. The last of the three chapters in Part I is devoted to an explication of these ideas, with specific reference to the elements of Jurgen Habermas' work that bear directly on the focus of this study.

Quite separately from the impact of communication and information *technologies* on the economic process, a variety of methodologically revisionist approaches have arisen in formal economics in recent years that deal in various ways with the general problem of modelling economic rationality and action. These centre around two intransigent analytical issues. The chapters making up Part II of this study explore these two issues, as an organizing device for the development of a more interpretive communications perspective on the economics of an ‘information society’.

The first of these intransigent issues is the elusive character — but central role — of information itself as an economic variable. In the static perspective preferred by formal economics, communication is the distribution of information; and information is an appropriable factor good, created or discovered by the application of resources, effort, and innate individual qualities of perception, memory and intelligence. This is the view of knowledge and communication at the base of pure positive economics, where preferences are assumed to be stable, and lack of knowledge is seen merely as limited possession of a good called information, which can be acquired at a cost. (Nooteboom, 1992, 286)

From within this perspective, the probability of each alternative outcome of a course of action is deemed calculable, given a sufficient investment in information acquisition. On this foundation positive economics has widely extended its claim to explain and predict human behaviour, and now increasingly guides the direction of public policy in traditionally non-economic domains such as health, education or culture.

It has become apparent that markets in which information products are traded display paradoxical features. The recognition among economists that exclusion of information resources from free public use is difficult and expensive to ensure (Braunstein, 1981) has led to contemplation of their other unusual property and exchange characteristics. Depletion is inversely correlated with use and directly correlated with *disuse*. Scarcity *or* ubiquity may lead to increases *or* decreases in value. Substitution is in many cases frictionless; and the opportunity costs of foregoing knowledge transactions are perhaps invisible by definition. A great flexibility of storage and transportation media, and extremely low replication costs, seriously disadvantage primary producers, and create

a tendency for privately-owned knowledge to 'leak' inexorably into the public domain. Questions also arise concerning the private and social costs of low-quality goods in this sector (Melody, 1987), which, because of their low replication costs and high substitutability, seem at times to pose the threat of competitive exclusion of corrective argument or criticism from large public information marketplaces.

These paradoxes spring directly from the basic assumptions of methodological individualism. Throughout mainstream economics, information has been conceptualized as an objective resource, valued for its contribution to the hypothesized utility-oriented rationality of individualistic economic actors. With respect to aggregate information processes, economists have concerned themselves primarily with defending the explanatory power of marginalist models of subjective utility in face of the problems of pervasive uncertainty accompanying social interdependence (Arrow, 1951). This took its initial form in analyses of the information-transmission characteristics of markets (Hayek, 1945), of the marginal utility of information search (Stigler, 1961), and of the information costs of market transactions (Coase, 1937). But until very recently, economists had not begun to grapple with the problem, so obvious to the historically-oriented social sciences, imbedded in this concept of information. Any definition of information as an objective resource that can be transmitted intact from one actor to another is incapable of specifying or explaining the divergent *meanings*, and therefore *value*, two objectively identical items of information may have for a receiver, depending on when, where, how, and from whom they are received. In the case of *non*-identical messages this problem is hopelessly compounded, for example, by the *order* in which they are received. If the rational utility-maximizer must continually expend economic resources in searching for information

relevant to achieving her preferences, where does she acquire the information necessary to allocating these resources and conducting these searches? The Habermasian answer is that rationality “cannot be conceived *a priori*. It cannot... be ‘normatively ascribed’; rather, it must be ‘communicatively achieved’” (Alexander, 1991, 55).

The second intransigent issue is the general difficulty of giving satisfactory positive explanations of the emergence and transformation of social institutions and institutional ensembles, despite their forceful influence on economic action. Neoclassical economists have tried to contain the normative aspects of institutional processes within their model of the economic process by asserting that the observance of norms is always itself an expression of instrumentally-rational self-interest (Becker, 1986).

In this view individuals accept normative limitations on their conduct neither because they are resigned to incursions of collective irrationality into their private lives, nor because they subscribe in an *a priori* manner to the moral legitimacy of those norms. Instead, conduct is partly norm-conformative if and when it represents for all individual actors a ‘second-best’ solution to the achievement of their private preferences, in circumstances where the outcomes of their actions depend on the actions of others, and the probable alternative outcomes fall even further away from their self-interest (Boudon, 1986; Gauthier, 1966). Thus, for example, a lawyer’s or an accountant’s calculation of the incentives and penalties to defection from honest and trustworthy professional conduct -- relatively small short-run opportunistic advantages versus potentially crippling long-run difficulty in finding profitable clients -- may eventually acquire the heuristic character of an ethical norm, and

may perhaps even be encoded in formal law. Inelasticities might accrue to the supply and demand for norms, of course -- sometimes for astounding lengths of time -- but in the long run ethical norms, too, conform to the dictates of self-interested reason.

In positive economics the instrumental rationality of self-regarding, utility-maximizing individuals is held to explain both individual economic actions, and also the emergence of social norms and institutions. One problem with these theories is that observable levels of norm-conformative conduct far exceed what these theories would predict. Another problem is that it is very difficult to explain the existence of rational utility-maximizing individuals prior to the existence of an ensemble of socializing institutions in which they might acquire these capacities. It is difficult to see how social norms are not prior and prerequisite to instrumentally-rational individuals; and it is therefore difficult to see how this approach could explain either the emergence, or the paths of transformation of norms and institutions.

Theoretical economics stands or falls on its solutions to these two sets of problems. Game theory (e.g. Schotter, 1986), search theory (e.g. Stigler, 1968), rational choice theory (e.g. Elster, 1979; 1986; Harsanyi, 1986), principal-agent theory (e.g. Alchian and Demsetz, 1972), transaction-cost economics (e.g. Langlois, 1991; 1986; Williamson, 1975) and behavioural economics (e.g. Simon, 1992) are some of the schools of thought that have attempted to specify how the dominant model can be revised to solve these two problems. In paradigmatic terms, most of them offer only grudging revisions, which preserve as far as possible the positive assumptions at the core of mainstream economics. A few other approaches, the 'new economic sociology' in particular, go further in the

direction of genuine paradigm change (e.g. Etzioni, 1988; Etzioni and Lawrence, 1991; Swedberg, 1993).

I believe, however, that the greatest single source of paradigmatic struggle in the social sciences in the present period stems, not from communities of scholarly debate (whether among economists or more widely), but from the real and profound transformation of cultural and economic processes now underway under the influence of the new technologies of information and communication. These transformations provide both compelling motive, and practical opportunity, to the effort to understand both of the problems identified above: the problem of institutional change, and the problem of information as an economic variable. Linking the study of the new communication and information technologies more systematically to theoretical approaches to communication and institutions may help advance both the methodological debate in economics, and perhaps in a small way also, the fidelity to human ends of this process of reflexive transformation of our social and economic institutions.

PART I
TECHNOLOGY, ACTION, REASON

CHAPTER TWO:

INFORMATION TECHNOLOGY AND THE LIMITS OF INSTRUMENTAL REASON

A visual metaphor of my theme is framed by my window. I live in a bustling, medium-sized North American city, and my desk enjoys a third-storey view westward from a building on a busy commercial thoroughfare cresting a north-south ridge, about three kilometres east of the downtown area. Above the downslope rooftops the office-cluster of the central business district hangs, static, at the centre of my field of vision, like the array of silicon chips on the circuit-board of some gargantuan game machine. The resemblance is deepened by the ranks and series of greater and lesser streets and buildings, projecting themselves geometrically into the distance and over the horizon in all directions.

But if I look down before me, into the busy city street, its dynamic disorder presents a dramatic contrast: drivers are stalled in tangled intersections, talking on cellular phones; bicycle couriers dodge car-doors and pedestrians; delivery people unload trucks; grocers and hair stylists and insurance agents negotiate with customers behind their windows or at their doors; pedestrians of all descriptions hold conversations, hurry to meetings, contemplate the menus of restaurants, form lines at bus-stops, or shepherd their children along the sidewalk. Both, I want to suggest, are plausible images of the economic process.

Consider the relation between these images. In the distance I have an impersonal perspective on a vast engine of equilibration of the intersecting masses and trajectories of myriad arbitrary economic particles. Its mechanisms act also upon me, whether or not I am aware of it, with a nearly-inexorable force. But in the intimate foreground I am almost an actor myself in the *mise-en-scene*: I can have no grasp on what I am viewing unless I begin to interpret the meanings, reasons, intentions and motives of the players before me, who moment by moment enact or invent the understandings and agreements by which their relationships, temporary or continuing, are structured. And just as the larger vista is composed from varied iterations of the smaller, throughout the neighbourhoods of this city, so the macroscopic view of the economy — its *social totality* — is a reading of aggregate patterns in our microscopic interactions.

The long perspective is rational and scientific, in the specific sense that it is conducive to the explanation of a sense-datum independent of the observer — an explanation which can ground its claims in a reality accessible to all observers *in the same way*. Explanation would consist, not of an account of what the urban landscape is ‘trying to do’, but of how it reached its present state. Gazing out my window I am able to imagine -- and it is not in principle impossible to count -- the large number of bus, car or bicycle trips, or cellular phone-calls, or restaurant meals, occurring in the whole conurbation each year. The establishment of such aggregates may reveal regularities in their values, along methodological lines similar to the retrospective description of the course of play on a game machine. And such an exercise may permit theoretical reconstruction of causes of and changes in these regularities, much as a faulty relay might be diagnosed in the game machine by

theorization, and the testing of theories, about the observed regularities and perturbations in its behaviour.

The close-up view is of a process which is more prospective than retrospective, more practical than theoretical. The observer's understanding of the signals by which two pedestrians agree on paths around one another, or to which bus passengers defer in the organization of ingress and egress and the allocation of seating, or from which the hair stylist designs a product that his client will, irreversibly, agree to wear upon his head, is not axiomatic and detached, but reflexive and normative. It is the immediate and prospective, rather than the past, aggregate result of such events — the participants' inventive capacity to structure their interactions *and expectations* by consensual rules — which makes their conduct coherent to one another, and to the observer. Human actors know a great deal about coordinating their actions with one another, even without the tedium of exposure to theoretical reconstructions of how and why they do so. The coordination of human action is an indisputably central term in the definition of the economic process, in either the distanced or the close-up perspective. Again comparing perspectives, we could say that “social capital — a set of obligations, expectations, information channels, norms, and effective sanctions — is built into the structure of... social relationships” (Starr and MacMillan, 1991, 176), just as other forms of capital are built into the larger landscape (see also Coleman, 1988; Lin, 1982).

But they are also different. The reality under investigation in the microscopic frame is *not* accessible to all observers in the same way as the macroscopic view, since it consists of the meaning *to one another* of the actors' behaviour, constructed in and through their interactions. If interaction events

of this sort are accessible at all to third-person observers, it is only insofar as they are able to interpret them from first- and second-person perspectives, and to find within their *own* horizons of meaningful action the possible intentions they embody. “The point about rational communication is that understanding cannot be conceived *a priori*. It cannot... be ‘normatively ascribed’; rather, it must be ‘communicatively achieved’” (Alexander, 1991, 55).

The dichotomous theoretical and methodological perspectives on the economic process which the view from my window inspires lie at the core of the problem investigated in this study. Some readers may be reminded by this metaphorical contrast, of a major debate in the period between about 1880 and 1920, when the ‘methodenstreit’ divided the social science communities of the leading capitalist countries. The ‘battle of the methods’ was a paradigmatic struggle between those who advocated historical and sociological approaches to the economic process, and those for whom economics had been severed decisively from history and sociology by the marginal utility revolution in economic thought (see e.g. Swedberg, 1991). Marginalism emerged as the dominant model of the economic process and has retained that position since the turn of the century. In recent years it has even embarked on a march of imperial conquest of the other domains of social analysis (see Becker, 1986; Udehn, 1991). However, a new ‘methodenstreit’ is gathering force in the current period, and it is in the context of this renewed paradigmatic struggle that this study is situated.

The new “battle of the methods” springs in part from within the discipline of economics, although powerful support also flows from the ‘post-positivist’ turn which has become more general in the philosophy of science. The marginalist revolution was a fully orthodox expression of the positivism

reigning in the natural sciences at the time -- was, indeed, a bid to establish economics as an objective, abstract, positive science. But if even the project of the *natural* sciences is now understood as a process of social construction of meaning and value (e.g. Bernstein, 1983; Bloor, 1976; Latour and Woolgar, 1979; Rorty, 1979), this leaves economics, itself a *social* science, with few secure grounds for its continued insistence on the separation of observed fact from normative interpretation.

Economic Explanation and Interpretation in Human-Machine Interactions

Orthodox, marginalist economics proceeds on the assumption that economic phenomena -- the ascription of value to activities and resources, the organization of society for production and exchange, the behaviour of production units, the adoption of new production techniques -- may be treated on the model of physical phenomena: as objective regularities subject to immutable laws and following known paths to calculable outcomes. From this perspective the implications of the new digital technologies for the coordination of economic activity are now becoming quite visible. Digital communication and information technologies (CIT hereafter) appear to have dynamic effects on the cost and value of other resources and activities, to lead to dramatic changes in the structure of production organizations and institutions of exchange, and to be implicated in the emergence of a global 'borderless information economy' exhibiting extremely flexible temporal and spatial characteristics.

At the same time, the broader social implications of these technologies -- for example, the implications for family life, employment, consumption, education, health and social services, government, law enforcement, or citizen access to knowledge and participation in public life -- are the subject of vigorous and ongoing debate. The new technologies raise serious concerns about decreasing privacy and increasing surveillance of individuals by governments and corporations, about growing gaps in knowledge, income and opportunity between classes, cultures and nations, about the dangers of homogenization or disappearance of traditional cultures, and about the loss of coherent communal and civic identities.

Debate and concern over their social implications often stem as much from interpretive and normative judgements about how social actors themselves understand and use the new technologies -- about the way these products and processes acquire meaning and orient social actions -- as from positive analysis of their quantifiable effects. This perspective, generally associated with critical and interpretive sociology, has exerted little influence on mainstream economic methodology. An important emphasis of interpretive sociology is on processes of creation and reproduction of symbolic meaning. Here the very possibility of fully objective knowledge is in doubt: the investigator's understanding of any social event must be understood as a subjective interpretation of observed actors' interpretations of already-interpreted materials. The practical point of such 'hermeneutic' modes of investigation is to understand how common horizons of intention and orientations of action are formed (or their formation blocked) between social actors. From this perspective,

access to the symbolically-structured object domain of social inquiry calls for procedures similar in important respects to those developed in the text-interpreting humanities. (McCarthy, 1989, vii)

The positive economic, and the interpretive sociological approaches are not divided only by their different stances toward the possibility of possessing objective social knowledge: their orientations toward the acquisition and use of knowledge express divergent perspectives on the *rationality* of actors and their statements and actions. In economics, the concept of rationality has cognitive and instrumental connotations, and retrospectively describes the orientation of individuals towards predicting and controlling or adapting to their environment in pursuit of their goals. The interpretive concept of rationality, on the other hand, is prospectively oriented to the *performance* of utterances and social acts, rather than the *representation* of objects and events, and indexes the discursive structures and strategies employed by actors in sustaining relationships and reaching understandings and agreements.

These different explanatory frameworks generate further epistemological tangles in the CIT context, where their common object of investigation is itself an array of artifacts for the generation, management and dissemination of information and knowledge. The very notion of information technology implies that information processes are quantifiable and object-like, and therefore subject to prediction and control. But while a global restructuring of allocative practices and institutions, centred functionally on information and communication sectors of activity, is indeed taking place, this does not dispose of the labyrinthine methodological problems surrounding the acquisition of social knowledge, including knowledge about patterns and structures of economic action. How is

the 'knowability' of such social phenomena affected by their technological rationalization? How are validity, reliability, or other product and performance standards secured for 'information commodities'? These technologies raise philosophical questions which cannot be resolved by observation alone,

since the way in which they are answered itself determines how the result of any observation is to be interpreted. What is in dispute in such cases is not whether, in a given set of circumstances, this or that event will happen, but rather how anything at all that happens is to be described. (Ayer, 1956, 7)

In the neoclassical description of the economic process, each economic actor is assumed to possess two central endowments. The first assumption is that each actor has a stable set of arbitrary preferences; these are considered in themselves to have origins exogenous to the economic process, but they are revealed by her resource allocations. The second assumption is that each economic actor exhibits 'instrumental rationality' -- the individual capacity to plan and to account for her actions as means to the optimization (that is, in the language of economists, maximization constrained by the costs of information search and computation) of these preferred private and exogenous ends.

This is not (to refer back to the view from my window) a description of what takes place in the micro-activity occurring on the street, because at the very least we must include in such a description a lot of conduct which merely conforms to social rules and norms, rather than expressing calculated means to private ends; and a lot of preferences which, rather than being the pre-given utility-functions of actors, are, manifestly, formed or adjusted during the course of the observed interactions. Methodological individualism, however, is not built up out of such local observations;

instead, it should be understood as a convenient set of inferences backwards to local conditions from the description of *aggregate* economic action -- the long-range view from the window. Aggregate economic action *in a market economy* exhibits some nomothetic regularities -- for example, in some price-setting and price-taking behaviour -- which are then explained as unintended outcomes of the collision of scarcity constraints with stable individual preferences and instrumentally rational and selfish individual conduct, within a legal regime capable of enforcing a system of property rights.

The global pattern of accelerating investment in communication and information resources and activities known as the 'information economy' can be conceived as a further extension of the 'circuit-board' logic of mainstream economics and the paradigm of methodological individualism which lies behind it. From the perspective of large firms, information technology is acquired and deployed to improve the speed and accuracy of complex chains of optimizing calculations. From the perspective of orthodox economic theory, the resulting aggregate increases in the instrumental rationality of scarce resource allocations push back scarcity constraints, and thereby create economic growth.

At the micro-economic level, in the firm, information technology is integrated into existing activities and organizational structures for various tasks in monitoring and controlling complex human and mechanical processes. Arguably the most opaque and recalcitrant class of optimization problems faced by economic actors is the evaluation of other actors' intentions and the prediction of their impinging actions; and therefore a characteristic form of instrumentally rational deployment of information technology is for surveillance of other actors in production, exchange and consumption contexts.

However, while the new technologies are clearly adopted by many actors with the *intention* of increasing the rational certainty of action-outcomes in the direction of their private goals and preferences, in competition with those of other actors, much of this effect is cancelled out if other actors also become equipped with higher information-processing capabilities. Indeed, in light of the attending increases in available information, the spatial and temporal flexibility of the technology, and the ramifying patterns of interconnection among actors conferred by its use, telematic technologies may well make rational calculation more difficult, and lead to rising *uncertainty* about action-outcomes. Increasing the rate of data collection and processing increases the rate at which that data is fed back, in the form of goal-directed actions, into the environment from which it is drawn -- thereby also transforming that environment and the conduct of actors in it at an accelerating rate.

In this respect the emergence of telematic networks illustrates the inherently reflexive and interpretive character of social action, as well as that of its study in the social sciences. The reflexivity of the social sciences consists in the fact that "the knowledge claims they produce... become revised in a practical sense as they circulate in and out of the environment they describe" (Giddens, 1990, 177). Objective measurements of developments in the use of knowledge and communication resources are at the same time subjectively meaningful inputs into social practises, and these "are constantly examined and reformed in the light of incoming information about those very practises, thus constitutively altering their character" (ibid, 38).

A rapprochement between positive and interpretive approaches might be sought by examining how institutional change is related to the acceleration of processes of **commodification** of knowledge and information. An emphasis on the valorization of knowledge as an object of inquiry (an emphasis common to many recent studies of the 'information revolution' from both critical and triumphalist perspectives) allows positivists to focus on the relationship between technological systems and economic production and exchange processes. At the same time, this theme also contains room for an interpretive stress on the relationship between the production and exchange of information, the maintenance or transformation of its cultural and normative context and significance, and its implications for the structure of social power. Here both approaches share common ground in the study of the coordination of individuals' actions through shared institutional and discursive structures, and in the search for an account of reasoning and decision processes adequate to their struggle for and allocation of knowledge and communication resources to these ends.

Such a theoretical and methodological synthesis is strongly reminiscent of the Weberian approach to the problem of rationality, and invokes also his pessimistic evaluation of modernist processes of rationalization. The theme of commodification, however, does not exhaust the domain of social phenomena I wish to investigate here. Information and communication are not susceptible to complete commodification due to, among other reasons, the interdependencies (or negative and positive 'externalities', in the economist's usage) inherent in their use, as well as their propensity, even when 'internalized' in the firm, to 'leak' into the public domain. The valorization of information and communication, and equally, its critique under the sign of reification, depend

mutually upon a representational and objectifying theory of language and consciousness, and do not open up a space for the analysis of technological formations of discursive power in the same substantive manner as the concepts of action and rationality.

This study argues, instead, that the institutional transformations attending the adoption of the new CITs can best be grasped by viewing them as the result of a more general process of *rationalization of the tacit norms of communicative interaction*. I wish to explicate this view below, without attaching to it any necessarily pejorative inflection: for this study will contend that it is not rationalization *per se*, but rather the distorted *forms* of rationalization haunting the institutions of modernity and driving the design and governance of telematic networks, which is problematic in the Weberian sense. By this route I hope to foreground the immanent critique of economic reason which I believe resides in the emergence of these new technologies.

The Economics of Interdependence

The force of inherited economic reasoning and the momentum of existing economic structures indeed drive towards the continual disaggregation and valorization of all resources, including knowledge and communication resources. But this process encounters its limit conditions where it begins to take over and reconfigure **as forms of commodities**, the intersubjective norms on which the economic coordination of action itself relies. By 'intersubjective norms' I refer to the vast repertoire of communicative conventions drawn upon and reproduced in social life, by which, for

example, we initiate and repair relationships, mark authority and status, exercise persuasion, organize consent and reciprocity, or otherwise achieve any degree of mutual comprehension or effective agreement. These conventions, usually tacit, but certainly accessible to participant observation (and to imbedding in software and network design), possess appropriate economic value only to the degree to which they are widely shared within their cultural contexts.

The limit conditions under which the valorization of *these* resources becomes economically counter-productive are those conditions under which potential transaction partners are blocked in their attempts to form agreements by their inability to mobilize necessary normative resources, or by the proliferating use of sub-optimal norms. This poses a considerable set of challenges in the CIT context, where communicative rules and conventions appear not only as the staple of a variety of approaches to human interaction studies in the social sciences and humanities, but also form a complex set of technical variables in the engineering of software interfaces, architectures, protocols and standards. Precisely because the technological rationalization of communicative norms is also largely a tacit (or at best, heuristic) procedure, it often occurs at or beyond these limit conditions for the coordination of economic activity, and thereby has cascading effects on potentially all other social norms and institutions.

Initially this institutional transformation reinforces the commodification of information, since it seems by this means to open up a whole new margin of economic expansion. Indeed, examined carefully from within the inherited framework of liberal economic thought, the new technologies appear merely to accelerate a long historical process of ever-increasing power and precision in the

identification, valuation and instrumental use of information resources. The basic assumptions of the science of positive economics, strongly Cartesian in flavour, occlude mainstream economists' perceptions of anything which might be called an intersubjective 'limit condition' on the process of commodification. Their models are premised on the more-or-less complete autonomy of individuals' cognitions and preferences from the social and cultural contexts in which they are imbedded. Where social existence yields a valued amenity, it enters into the models of positive economists preferably only as a utility function of individual economic actors. If, as suggested here, the institutional force of telematic networks derives in significant part from their utilization for the rationalization of cultural and communicative norms, then in the view of positive economics this implies only that telematic networks will increase the efficiency of production and augment the range and the autonomy of private choice of such norms, as goods and services available (alongside commodified knowledge) to individual possessors of effective demand.

However, as economic actors (and without giving it much thought), we generally treat such tacit achievements as the intelligibility of propositions, the coherence of identities, the acceptance of roles, and the recognition of social rules and expectations as free public goods. But the non-exclusionary abundance of these forms of social capital is an enormously significant factor underlying the competences of actors in producing all kinds of scarcer and more excludable utilities, and in reducing the transaction costs accruing to their exchange. Absent the emollient and lubricating effects of this communicative infrastructure, the vast networks of economic coordination and exchange by which we are all linked would certainly become a great deal more risky and bewildering, and would arguably soon fall apart.

The new technologies are exactly suited to the study, design, surveillance, control, dissemination, and regulation of these kinds of 'intersubjective utilities'. At first sight, this growing technological capacity for the rationalization of interaction norms seems to confer decisive private advantages on those actors positioned to deploy telematic networks in their organizations and markets and to control their configuration. But vigorously opportunistic use of this capacity may ultimately be self-defeating, since it may contribute to the disintegration of the exchange network itself.

Alternatively, telematic networks could be harnessed to store and expand, protect and improve the social inventory of these public goods. In that case the complexity, speed and precision of economic coordination processes should steadily rise, while transaction costs fall. In such circumstances, as Giddens also observes, "market criteria can function solely as signalling devices, rather than being also the means of sustaining widespread deprivation" (Giddens, *ibid*, 165). Rather than leading inexorably to knowledge monopolies and new forms of economic domination, telematic rationalization of interaction norms may be envisaged improving both the efficiency *and* the equity of economic processes, if accompanied by a rising appreciation of the existence of ineradicable forms of interdependence, and of criteria and methods for configuring them to economic and communal advantage.

As noted, the rapid development of the new telematic networks has been driven primarily by the needs of transnational enterprises, whose far-flung operations generate continuous increases in the amount of information that must be processed and disseminated, and in the number of actors whose activities must be coordinated. As they become more extensive, programmable, and interconnected,

the new digital networks begin to function as repositories of the accumulated knowledge of the organizations which own and use them, permitting the latter to equip their agents and associates with instant and ubiquitous access to this knowledge. Additionally, as their flexibility, transparency and functionality increase, the new networks also become reflections of the forms and patterns of relationship between actors, and of the structures and functions of the organizations to which those actors belong. Multi-featured, programmable telecommunication networks become technological simulations of their users' social and organizational networks, virtual institutions which connect and record different layers and cross-sections of their users' interactions. Digital networks can also use this information to reconfigure themselves as users' modes and patterns of interaction change. Under these circumstances the really formidable design problems and technology-adoption barriers are found in the intricacies of human interaction.

Social and organizational networks which are imbedded in the digital network infrastructure are far less constrained by physical and temporal barriers between actors. The greater control of information conferred by this technology also makes it possible for enterprise managers to devote increased attention to supplier, agent and client relationships, and thereby to both deliver and obtain customized goods and services. Large-scale organizations, especially transnational enterprises, find both of these characteristics extremely valuable.

But the commercial value of this technology does not lie only in how it substitutes for proximity as a factor in economic coordination, or even in how it increases the speed and precision of information processes. More importantly, the new technologies offer a great capacity for automated management

and control of human interactions and relationships. This kind of relational control implies an institutional transformation going much deeper than changes in the extensivity of transaction networks or the organization of complex production activities. The developing capacity of telematic networks to 'remember' and simulate any aspect of their users' activities -- past, present or imaginary -- makes the detailed analysis and redesign of those activities much easier. As the digital network infrastructure and its terminal devices and resident software become the indispensable platform of actors' *relational* networks, alterations in the function and configuration of a digital network can be used -- consensually or otherwise -- to impel changes in the structures and patterns of its users' relationships. This is illustrated by the features of numerous current software releases. For example, the Canadian firm Sequel Technology offers a software product which logs all of an organization's network traffic data, and can be programmed to identify the sites users access, limit access to sites by name, type, time of access, volume of datastreams, or length of time connected, limit use of features or capabilities, and generate detailed reports on individuals' use-patterns. In a news release a company spokesperson notes the degree of control this product gives network operators "from the perspective of changing usage patterns and making employees work the way you want them to" (Rowan, 1996, B1,B4).

These technologies are, then, potent tools for altering the tacit norms and microscopic structures and strategies of human communicative interaction across the whole range of institutional settings, from the most intimate and informal, to the most anonymous and bureaucratic. From this perspective, the new technologies should transform our conception of the nature of economic value, drawing a line under the obsession of positive economics with the separation and measurement of private actors'

costs and benefits. Coordinated social action is a product of shared cognitive and relational resources. The cost and value of knowledge and the extent of its distribution -- even its validity and reliability -- are dependent on a culturally-sustained repertoire of interaction patterns and structures which characterize the various contexts of our relationships with others. The greater the role of communication and information technology in economic production and exchange, the more directly and overtly economic value itself comes to rest upon the information generated in, and more importantly, the forms of interaction sustained by, our relational networks. Given the path-dependencies inherent in our current social choices, discovering the conditions under which this transformation will have a centralizing and deterministic, or a reflexive and emancipatory influence on human interaction is an urgent task.

CHAPTER THREE

TECHNOLOGY AND ACTION

The tacit norms and rules of communicative interaction which make social actors' conduct intelligible and meaningful to one another, appear to permit them both to initiate, sustain and repair ongoing relationships, and to discern patterns of relationship which render the social world itself less risky and opaque. Consider again the close-up view of micro-economic action 'on the street', and the interactions in progress there (as introduced at the outset of the last chapter), as an aid to unpacking further aspects of their technological mediation. How are these structures of human interaction systematically altered -- how are they 'rationalized' -- by engineering new technologies for social communication and information processes?

Consider first the archetypal form of information technology: what takes place when alphabets and the printed word enter the repertoire of a traditional culture? With the transformation of oral cultures into literate cultures, *knowledge-as-performance* is transformed into *knowledge-as-representation*. As Walter Ong has argued (Ong, 1982), without a form of written language, a culture's knowledge must be stored in the *embodied* narratives (including family, craft, trade and other practices) of its members. Changes in an oral culture's stock of articulable knowledge are gradually assimilated into the oral performances of its members, in such a way that the defining themes and patterns of its way of life -- the perceptual, cognitive and expressive resources of the culture -- continue to be reproduced for interaction participants as embodied, performed kinds of knowledge.

Literacy, on the other hand, by providing a means of preserving complex thought and speech, separates much of a culture's knowledge from its members' living memories and situated performances. Given a sufficiently slow rate of change in a literate culture's use of language, its texts will *seem* to contain knowledge independently of actors' use or performance of that knowledge. With literacy, knowledge is reified.

One obvious effect of the new telematic technologies is that they even more profoundly naturalize the notion of a class of reducible 'knowledge' or 'information' objects. If an utterance or an image can be coded digitally onto a disk, and turned back into the same utterance or image by any machine which can process the code on the disk, then *there must be information on the disk*. Similarly, communication is then easily conceived as the transmission of such information-objects from one information-processor (computer, organization, human brain) to another. H.M. Collins calls this the "double-colander" model of knowledge-transfer. In a recent paper he describes the appearance of this model in a television drama, in which a brainwashed soldier is pumped full of expert knowledge

when one of those colander-shaped metal bowls is inverted on his head, and joined via wires, amplifiers, and cathode ray displays to an identical bowl on the head of some expert. (Collins, 1993, 95)

The point here is not that the 'double-colander' model is misguided in all instances. We may never have an apparatus for transferring complex motor skills instantaneously from one person to another, but I *am* writing these words at one place and time with the reasonable expectation that you, the reader, will at another place and time more-or-less understand what is intended by them. Something understood, in context, by me, has been stored as a physical object (magnetic fields on a disk),

transported, transformed into another object (ink on paper), and re-embodied in your act of reading and understanding it.

The Structure of Knowledge Networks

I want to address three implications of this fact. The first is that you and I, reader and writer, could be said to be joined by this text in a *telecommunications network*. That is to say, this text allows us to 'communicate-at-a-distance'. By doing so, it simultaneously does several other things. It maps (by its citations) the network of writers whose textual telecommunications with me (and one another) have elicited *this* performance: me, writing *these* words, *now*. It connects you, the reader, with these other actors in my network, by providing 'introductions,' citation 'addresses,' and perhaps even a few textual 'responses' to some of the questions you might pose to them. And this network may ramify further by connecting my interlocutors, through me and you, with other actors in the other oral and textual networks to which you or I belong.

The second implication is the inverse of the first. The *network* characteristics of a text underline the *interdependence* of production and reproduction of meaning for the actors joined by it -- the necessity that they share some stable elements of cultural context in which its meanings can be embodied, and the likelihood that they will reproduce the formulations which express those shared meanings. But the *separability* of the text from its readers and writers *as an object* makes it more 'appropriable' than are the embodied performances of oral communication. If the information in this

text exists in some ways independently of its readers and writers, then it can be *owned and controlled* in various ways by readers, writers, and other actors. Mediated communicative interactions can be seen as strategic resources, and the "communal oral world... split up into privately claimed freeholdings" (Ong, *ibid*, 131). Moreover, the value which resides, respectively, in the creation, the transmission, and the manipulation of this text can be disaggregated and captured by the different actors who carry out those functions.

The third implication of the 'transmissibility' of knowledge is that there may be different *kinds* of knowledge susceptible in differing degrees to fragmentation and individual control, and to intact transmission through intervening media. Clearly enough, a text can 'contain' symbolic knowledge which any reader equipped with the appropriate linguistic competences can acquire. For example, a person who has never repaired a bicycle can do so expertly, if slowly, by following the instructions in a well-designed bicycle repair-manual. But equally clearly, some knowledge cannot be imbedded and transmitted in object form, because it cannot be fully specified in advance by a set of rules.

Colloquial language is a good example: while there is nothing strange or rare about dictionaries (even colloquial and historical dictionaries), electronic spell-checkers, and the like, a text or software program capable of specifying or operationalizing a set of rules governing *changes* in colloquial usage is hard to imagine. A person cannot become a fully competent speaker of a natural language except through communicative interaction with members of that speech community. Knowledge of how to construct speech-acts which are fully meaningful in an intended manner within a specific social group is ineluctably a collective, embodied form of knowledge: the meaning and value of such

speech-acts depend on the fact that other speakers share that knowledge, and can take up the speaker's perspective in using it in colloquial ways. Over time, a native speaker without contact with the speech community will understand less and less of its usages, because knowledge of *how to transform* the language is intersubjective social knowledge. Any dictionary of the language will come to 'contain' less and less information about it, and will, for example, require revisions by acculturated speakers (see Collins, *ibid*, 99-101).

More profoundly, perhaps, the very contents of the physical world are divided up and described differently by different cultures (and by the same cultures at different times), and this kind of knowledge of *how to perceive* is also a property of the socio-cultural matrix of interaction, and cannot be transmitted to non-members merely by encoding it in a text. This has been studied extensively with regard to the social construction by scientific communities of phenomena for investigation (see e.g. Pinch and Bijker, 1987; Hughes, 1988; Crane, 1972). The categories of positive economics, for example, are grounded in just such a socially constructed agreement about the phenomenal contents of the social world, and understanding and manipulation of these categories requires a degree of enculturation within the community of economic inquiry (see eg McCloskey, 1986).

Additional forms of knowledge which cannot be fully specified in advance by a set of rules are pervasive in social and economic interaction: for example, knowledge of how to give acceptable reasons for action, gain cooperation, establish trustworthiness, or elicit disclosures. These sorts of competences -- knowledge, really, of *how to construct mutually binding rules* -- exist only in and

as the ongoing processes of a society or social group. They are emergent properties of social interaction.

Forms of Action

In the paper cited above, Collins takes up the problem of specifying these different kinds of knowledge by viewing them as the product of different kinds of *action*. Collins proposes an initial distinction between those forms of action which can be exhaustively specified by behavioural rules -- which he calls "behaviour-specific action" -- and those which cannot -- "regular action", in his nomenclature, or 'situated action' in the Heideggerian vocabulary (see Suchman, 1987).

In the course of 'regular' (or 'situated') action there is, to an observer, no "one-to-one mapping" between what the actor attempts to accomplish and her observed conduct, "no absolute correspondence between intention and behaviour" (Collins, *ibid*, 104). To continue the earlier example, an actor intent on repairing her bicycle may need to acquire a repair manual to do so, and to acquire a manual may need to take a bus to a library; but an observer who sees her standing at a bus stop will be unlikely to infer that she is engaged in the action of 'bicycle-repair'. There is no "one-to-one mapping" between her intentional action and her observed behaviour: by standing at a bus stop she may be initiating any number of different actions of this kind; and if she is engaged in 'bicycle-repair', standing at a bus stop is only one of many ways to set about it. In the course of 'regular' action, similar acts can be performed by different behaviours, and identical behaviours may

be among the elements of wholly incommensurable acts. And whether an embodied action is of the 'behaviour-specific' kind, or the 'situated' kind cannot be determined by observing its performance entirely from the outside: this interpretation depends on access to the enculturated intentions of the actor. "The coordination of apparently uncorrelated *behaviours* into concerted *acts* is what we learn as we become social beings" (ibid, 104).

In behaviour-specific action (BSA), actors *do* try to "maintain a one-to-one mapping between actions and observable behaviours" (ibid, 106). BSA is the mode of action we generate when we are attempting to maintain routines. In this mode, the concept of 'behaviour' can be substituted for that of 'action' with no loss of meaning, because the consequences of ascribing or not ascribing intention and causation to the actor are identical. To continue the same example, let us imagine that the bicycle needed repairs which included 'trueing' the wheel-rims by tightening the spokes. The action of incrementally tightening particular spokes in response to the effects of previous spoke-tightenings on the configuration of the rim, is behaviour-specific action which could be performed equally well by a human equipped with a spoke wrench, or by an elaborate powered mechanical device. For BSAs,

anyone or *anything* that can follow the set of rules describing the *behaviour* can, *in effect*, reproduce the *act*. Hence behaviour-specific acts are transmittable even across cultures and are mechanizable (ibid, 107, emphases in original).

BSA as Instrumental Action

Neoclassical economic theory models human interaction as entirely composed, at least in principle, of behaviour-specific action. In some versions, to be sure, problems of 'bounded rationality' are identified, which cast doubt on the ability of economic actors to completely rationalize their own behaviour, or to predict others' behaviour by a set of rules fully specified in advance, and these problems are sometimes admitted as partial and temporary limitations on the explanatory power of marginalist theory. But throughout formal economics, BSA is assumed to be the archetypal form of economic action; and because it is, additionally, amenable to quantitative research methods, BSA has a central and preferred role in economic explanation.

As economic resources, communication and information are treated in economic theory as appropriable instruments for the realization of instrumentally rational private ends. Since economics sees human action as destined by the penetration of market processes to an ever-more-complete rationalization on the BSA model, the economic value of communication and information technology is to be sought in its contribution to this outcome. The "double-colander" model of information technology is precisely the image of the technological mediation of human interaction which corresponds to the aggregate 'circuit-board' image of the economic landscape noted earlier.

The "double-colander" model does not, however, correspond to the close-up view of micro-economic interaction on the street. While some elements of economic transactions clearly can be reduced to BSAs, to model the entire economic process this way is to cast economic actors, in

Dewey's words, in the role of "animated tools" (Dewey, 1924). Certainly actors are sometimes observed to routinize their actions into BSAs, and also to construct technological devices to substitute in place of successfully-routinized action-complexes. But this is not the only form of action necessary to economic coordination, nor is it the only conceivable strategy -- nor even necessarily an advisable strategy -- for the application of communication and information technologies to the enhancement of economic coordination.

A Dialogical Model of Communication

A systems-theory account of the structure of interactions between computers and human actors will help reveal some initial, perplexing problems in modelling electronically mediated communication. Some thirty years ago, computer scientist Donald MacKay suggested (to a Working Session in Mathematical Biology at the RAND Corporation) that for engineers to design computers capable of anything resembling human understanding, they would need to be able to formalize speakers' interpretations of their interlocutors' intentions (MacKay, 1969; see also Watzlawick, 1967).

MacKay began by pointing out that while indicative statements (and other non-linguistic signals) can serve as BSAs in the form of representations of a 'state-of-affairs,' treatment of the utterances of others as merely representational, as simply 'symptoms' of such states-of-affairs, fails to capture the most important features of human utterance. In linguistic interaction with others we routinely ascribe intention and motive to their speech-acts. In systems terms, we expect others to use utterances as

devices or tools for accomplishing their objectives. This pragmatic aspect of linguistic understanding, MacKay says, "will be beyond any entity incapable of understanding the concept of a tool, and what it means for the expression to be used as such" (ibid, 122).

MacKay expands on the concept of intention in mechanical terms. If an agent is purposive, or goal-directed, then, he says, that agent is organized to search for feasible actions that reduce incongruence between perceived and intended states-of-affairs. Intentional utterances are actions calculated to determine some aspect of the internal organization of interlocutors who have influence over the state-of-affairs in the speaker's environment. For an interlocutor to **understand** such an utterance it must be capable of grasping the functional significance of the utterance as a tool designed to achieve such an end. "[T]his requires internal activity over and above the filling out of a 'cognitive map' in accordance with what the utterance **says**, as if it were no different from the reading of some instruments" (ibid, 124-5). *Understanding requires perception of the feedback mechanism between speaker and recipient* through which the tool-function of the utterance is made operable. Thus, understanding the use of an expression by a particular actor in particular circumstances requires the recipient's capacity to model the speaker as a goal-directed actor, and thereby to take up the speaker's point-of-view in a provisional manner.

What if the recipient is equipped in advance with complete information regarding the contextual influences and prior revealed purposes of the speaker? Can the speaker's utterances then be treated purely as representations of the state-of-affairs obtaining in its internal organization (and thus become accessible to a mechanical interlocutor's purely representational computations)? This,

MacKay says, is not impossible, but it is so static a model that it applies only to a narrow subset of BSA-type interactions. It is not in general realistic to treat a speaker's goals as fixed, because the speaker's goal strategy

will in general depend from moment to moment on the way in which the recipient responds to his utterance. We have, in short, a situation of potential **goal-conflict**. If sufficiently symmetrical, it may in principle preclude either party from acquiring a full mechanical specification of the other, since the mutual backcoupling can systematically invalidate the attempt on either side. (Ibid, 126; *emph. in text*)

Investigation of the rules and conventions which emerge in the attempt to solve such impasses, and which appear to structure interaction events generally, have led communications researchers in the social sciences to revise their models away from notions of communication as a process of imparting, exchanging or conveying of information, and towards a model of communication as deliberate and common participation in an ordered and structured sequence of actions (see eg Anderson and Meyer, 1988; Littlejohn, 1995; Duncan and Fiske, 1985). In this 'common participation' or 'dialogical' perspective, the set of rules or conventions mobilized in a particular interaction determine a great deal about the structure of the interaction as a whole **and** about the construction of individual utterances within the interaction sequence. For example, status or rank characteristics in the relationships between interaction participants affect turn-taking structure, governing features like overlap or interruption. The dialogical model is oriented to the existence or emergence of patterns in the behaviour of all interacting parties taken together, and to the function of these patterns in *sustaining the individuals in a relationship with one another*.

Thus, interaction is viewed here as a joint product of participants' actions. The rules and norms which structure them are evolved solutions to coordination problems, which require the collaborative effort of multiple actors. Not only do earlier actions influence later ones, but whole interaction sequences are guided by commonly-held conventions linked to context and theme. Each participant influences others' actions on a *continuous* basis (in *addition* to the sequential influence thematized in BSA-type approaches). Each action and inaction of each participant affects the evolution of each action of every other participant. Therefore, **as an auditor**, each participant has a role in the construction of the **speaker's** message.

Communications researchers, then, **cannot regard a participant's action as exclusively her own**. This error, which Duncan and Fiske call "pseudo-unilaterality" (ibid, 1985, Chapter 1), generates errors in the discrimination of interaction variables, the analysis of the data, and the interpretation of the results. A participant's actions are conditioned by interlocutors' preceding and simultaneous actions, and thus are not solely the outcome of her own plans and intentions. A completed interaction sequence, and its results in terms of achieved understandings and agreements between the parties, will often only distantly resemble the interaction or outcome intended by any participant. Under these conditions it is at least as accurate to regard actors as products of interactions, as to regard interactions as the product of actors (see e.g. Beije and Groenewegen, 1992, 95).

The Absent Interlocutor

A key characteristic of communication networks not yet discussed is the feature of 'addressivity'.

This can be introduced in the context of postal networks, with reference to the literary theory of Mikhail Bakhtin. Analyzing the epistolary form of Dostoevsky's first novel, *Poor Folk*, Bakhtin asserts that:

A characteristic feature of the letter is an acute awareness of the interlocutor, the addressee to whom it is directed. The letter, like a rejoinder in a dialogue, is addressed to a specific person, and it takes into account the other's possible reactions, the other's possible reply. This reckoning with an absent interlocutor can be more or less intensive. In Dostoevsky it is extremely intense. (Bakhtin, 1984 [1929], 205)

Indeed, says Bakhtin, in all of Dostoevsky's novels "the hero's words about himself are structured under the continuous influence of someone else's words about him" (ibid, 207). This style of speech marked most of the utterances of his central literary characters, and not only their letters to one another.

The definition of a style of speech in terms of the speaker's anticipation of the thoughts and words of others illustrates a 'meta-linguistic' phenomenon which Bakhtin calls 'addressivity.' The addressivity of a speech-act is the way it **takes account** of its audience; but more than that, it is the way it mobilizes norms and conventions to organize its audience, and to structure the **exchange of speaking turn**. Speech and text **take account** of their audiences in part through establishing a relationship between theme and audience. Speakers and writers take advantage of what they have reason to expect their listeners and readers already to know, and of their constant efforts to perceive

or imagine what is being said before the utterance is completed. By redundancy, negation and other compositional tactics, speakers establish for listeners how what listeners think they know **differs** from what the speaker wishes to say. (In Austinian theory this is known as 'implicature': see Grice, 1989; Leech, 1980.)

Exchange of speaking turn, in Bakhtin's view, is structured by the length of the utterance; the manner in which its end is anticipated and marked and respondents signalled that the speaker is finished; the kinds of roles and response-styles indicated to respondents; and by the way potential respondents are ratified or excluded. All of the ways in which an utterance implies, refers to, and addresses an interlocutor and anticipates the response, constitute its addressivity:

Addressivity, the quality of turning to someone, is a constitutive feature of the utterance; without it the utterance does not and cannot exist. The various typical forms this addressivity assumes and the various concepts of the addressee are constitutive, definitive features of various speech genres. (Bakhtin, 1986, 99.)

This study is more concerned with tracing the consequences of addressivity in real telecommunication networks, than in Dostoevsky's fictionalized postal systems. And the 'absent interlocutor' in this setting refers not only to the obvious fact that telecommunication systems permit people to interact at a distance, but also to the general and striking absence of an interactional concept of the communication process among researchers in telecommunication economics and policy. The next section suggests some implications of the foregoing micro-level accounts of communicative interaction for the evolution of the economic process in addressable telematic networks.

Addressable Transactions

Interactive media applications are becoming pervasive across numerous organizational settings. These developments are driven by the economic opportunities presented by the new communication and information technologies for restructuring organizations, reducing costs, finding new transaction partners, and entering new markets. Thus, the economic process is, in many ways and at many levels, becoming more visibly and inextricably bound up with social processes of communication and knowledge-creation.

In this section I want to suggest that the intensification of the communicative elements of micro-economic processes poses a great challenge to the 'rational utility-maximizer' (RUM) model of the economic actor. And as will be seen in later chapters, revisions of the RUM model in the direction of realism (for example, the behavioural economist's 'boundedly-rational opportunistic satisficer' -- see Chapter Six) do not meet this challenge either. The purveyors of the latter model -- the transaction-costs theorists -- claim to put the transaction at the centre of economic analysis. This seems appropriate from a communication perspective, because a transaction is, after all, a communicative interaction. But the account of economic interactions proffered by the transaction-costs perspective closely resembles an earlier 'interpersonal influence' model, rather than a dialogical model of communication: a cognitive model of individuals with intact separable goals calculating the risks and incentives of their rising interdependencies.

The transaction-costs view, which sees economic cooperation as a grudging means of economizing on bounded rationality, fails to consider the possibility that cooperation could have its **own rationality**, which could be attenuated or expanded, depending on the communicative skills participants bring to their interactions. This communicative rationality would emerge as a superior economic choice for individual actors under conditions where they must in any case experience significant and unavoidable economic interdependence. I want to suggest that an economy in which increasing proportions of transactions occur through communication networks, is moving in the direction of those conditions. Networks are composed of interactions and their transmission apparatus, and, as we have seen, interactions define actors.

Addressivity, connectivity and interdependence are properties typical of any form of network. Connectivity indicates more than the obvious fact that any entities belonging to a network are connected by it: additionally, the fact that an increase in the number of entities connected by a network generates an **exponential** increase in the number of possible paths of connection, has broad implications for the economics of networks. On both the supply and the demand side of transactions, the resulting "logarithmic cost law of networks" (von Weizacker, 1993) creates incentives to join networks. Interdependence is most dramatically explicated by reference to the methodological premise in systems theory (discussed above) that the performance of networked entities can only be understood fully when these performances are seen as products of the interactions in the network, rather than exclusively generated by the properties of the individual entities.

Many large-scale industrial networks, such as water, gas and electrical supply systems, as well as telecommunication systems, exhibit the additional property of 'addressivity' (see especially Hayashi, 1992, 195-215; Cheah, 1992). The interpretive implications of this property (as discussed above with reference to Bakhtin's work) will be dealt with more extensively in the following chapter. At this point it is sufficient to make a few concrete observations. In an industrial network infrastructure, the network operator, besides being in many instances the only provider of that utility for a given location, is normally a party to continuous transactions with the consumer for goods and services distributed over the network, and these utilities are delivered through an installed plant which physically connects the operator's, vendor's, and consumer's premises. Each consumer, in addition to consuming provided utilities on a recurring basis and having premises physically connected to the network operator and one or more vendors, has a customer code which is the operator's identifier for metering and billing consumption (eg gas or electricity subscription number, telephone number). The utility network customer code constitutes a kind of address which is always used in executing transactions. In the case of telecommunication networks, the subscriber code is used not only for addressing transactions between network operator and subscriber/consumer, but also those between subscribers (vendors or consumers). This capacity for selectively routing streams of data between subscribers is the defining feature of a *switched* network. The users of these networks are therefore identifiable to one another, and their transactions are by definition recurrent, rather than anonymous and singular.

To the degree that new applications stimulate a migration of economic transactions into network environments, this feature of 'addressivity' becomes part of a network-driven transformation of the

intrinsic characteristics of transactions themselves. The description of a market transaction in neo-classical economic theory is that it consists of the offer and acceptance of an exchange between **anonymous** parties of **standardized** goods, with **no presumption of its recurrence**. When these theoretical assumptions are relaxed the analysis departs from the model of pure market competition, in which fully substitutable goods and transaction-partners exist for each transaction, and prices give complete decision-making information. The matching description of an addressable network transaction is that it consists of parties **who have significant (and growing) knowledge of one another** completing an agreement for the exchange of increasingly **differentiated and non-standardized** goods and services as one event in a **continuing sequence** of transactions recurring between them.

The continuity of this relationship, the patterns of interaction that arise between the parties, and the fuller knowledge they acquire of one another's needs, values and intentions mean that alternative transaction-partners are only imperfectly substitutable, and that repeat transactions within the relationship can be processed at lower cost. Goods and services are more readily customized. And for both parties, information about new transaction-partners, and their prior transactions and current relationships with existing transaction-partners, become factors in decision-making.

This is a description of the kind of transaction now becoming common in electronic network settings in the mature industrial societies. Its features are not new: transactions in some sectors -- think of medical practitioners' services -- have always conformed to this pattern of personalized, recurrent and specialized interaction. What is novel is the pervasiveness and intensity of the contemporary

shift toward this pattern of transaction, and the extensivity and complexity of the networks of coordination required in the production and marketing of each economic good.

The new technologies therefore generate a rise in the value and importance of interaction skills. A teleological concept of economic action -- where successful pursuit of goals is a product of cognitive skills at gathering information and calculating risks and benefits -- is fairly well suited to anonymous exchanges of standard goods. But in addressable transactions, mutual understanding, trust, agreement and cooperation pay a premium (for examples from the fields of urban and health service planning, see Forester, 1989). These outcomes are not solely the product of internal calculation and planning: they are, rather, emergent properties of skilled interaction in the direction of reasoned mutual goal-adjustment.

Norm-Conformative Action

In order to summarize a picture of these additional, co-operatively oriented interaction competences, I want to conclude this chapter by returning to the question raised earlier in reference to Collins' work, where it was asked what distinct forms of action could be discerned in the process of the transfer of knowledge. The provisional answer offered here is that knowledge transfer in the context of economic coordination entails at least two more forms of action (both collapsed together in Collins' category of 'regular' action) additional to the instrumental 'BSA' kind of action described in that earlier section (and see Habermas, 1984, 84-101).

The first of these I will label, following Habermas, 'norm-conformative' action. For all those transactions which are not about highly standardized goods, where price information alone may be adequate to private decision-making, economic decisions will require more information, both about the goods and services in question, and more importantly, about the transaction partners themselves. (See Part III for case-study illustration of this perspective.) Actors on both sides of any non-standardized transaction (where their actions are by definition not BSAs and even setting or interpreting a price requires a hermeneutic procedure), are confronted with the large number of alternative ways in which the intentions behind one another's behaviour (including language behaviour) may be interpreted. Coordinating their actions therefore engages them in constructing interaction sequences which permit them to understand one another's intentions, to establish that their own intentions are understood by the other, and perhaps also to adjust their individual intentions -- and be understood to have done so -- in the direction of a mutually-perceived economy of effort.

Simply requesting or offering 'first-order' information respecting the goods or services in question does not accomplish all this. Achieving an economy of effort by the coordination of their actions often requires supplementary 'second-order' information *about the relationship between* the actors. In exchanging this information they must in general have recourse to established social norms of interaction. The actors exchange this information about their relationship, not as the manifest content of their interaction, but *in and through the characteristics of their performance* of the interaction sequence: by their use, that is, of culturally-specific verbal and non-verbal markers of interest, sincerity, comprehension, trust, respect, and so on. Knowledge of how to structure and

communicate this kind of information is a largely tacit competence, and most of the spontaneous elements of interactions, including such features as the grammatical modality of utterances (e.g. request, command, offer, announcement, assertion, etc.), carry relationship information of this kind.

The kind of action entailed in competent interaction sequences, and particularly in the construction of coordination plans with other actors, is not reducible to instrumental, behaviour-specific action. It exhibits a procedural, rather than an instrumental rationality. Because the rules for sustaining interaction are quite likely to change during the interaction sequence -- and especially in response to efforts to predict and control it -- we cannot formulate in advance a complete set of rules for an interaction. And "because we cannot formulate the rules, we cannot self-consciously know what we are doing" (Collins, *op. cit.*, 110). This kind of action cannot be fully mechanized, since although it is rule-governed, the choice of conventions to employ are specified, and some of the rules themselves invented, in and through the interaction. At a minimum, the imbedding of already-learned norms and conventions within technologically-mediated interactions requires an intentional effort to represent the available choices in the technology's design and configuration.

Communicative Action

Of course, even possessing common interaction competences, and the contextual means to employ them, actors may fail to agree on a course of coordinated action for any number of reasons. But initial failure to establish a route to coordination gives rise in many cases to the need for 'third-order'

information, in the form of a consensual process of rational argumentation **about** the norms and rules of interaction. This occurs when the usual course of tacit, norm-conformative action, or the expected outcomes of instrumental action, are problematized. The form of action entailed in settling disputes and reaching agreements on the basis of *offering and criticizing reasons* for social actions is different from the forms of action discussed above. Performative consistency in the *justification of a claim* to the normative 'rightness' of an action, requires more than a dramaturgical display of learned interaction skills: it requires competences at moral and evaluative argumentation, together with an ability for recognition of the force of the better argument (Apel, 1987; Jay, 1992). Thus rational argumentation, in which consensus on the justification of both instrumental and norm-conformative actions is sought, is a reflexive form of action distinct from both. Jurgen Habermas labels this form of action 'communicative action'.

In the communicative act of 'reaching understanding', in this specialized sense, subjects learn to distance themselves hypothetically from their own beliefs, roles, and strategic intentions, by alternating in holding the perspectives of speaker, listener, and observer. This "corresponds to the system of personal pronouns. Whoever has been trained in this system has learned how, in the performative attitude, to take up and transform into one another the perspectives of the first, second, and third persons" (Habermas, 1987, 296). With this role-distanciation, the possibility arises of the actor's intention shifting away from the achievement of merely instrumental or procedural goals, and into the generation of understanding and agreement *as her goal*. Here an 'as-if' opening is created to the divergent goals of others, a contingent agreement to alter individual goals as required by the force of the better argument. Probably the most significant and controversial condition of this goal-

adjustment process is that *it can only reliably be sustained within an institutional structure which prevents the exercise of illegitimate advantage or co-ercive power between the interaction partners.*

The crucial economic advantage of generalized competence at, and institutional support for this form of action is that it increases the capacity of actors to find decentralized and voluntary means of cooperation. Societies which find stable equilibria containing high levels of cooperation outperform those in which the equilibrium state is a pattern of mutual rivalry and suspicion (Fukuyama, 1995, *op. cit.*; Gambetti, 1988; Pagden, 1988; Putnam, 1993). Individuals in such societies have a greater range of economic opportunities, because the incentives are present, and the risks reduced, for mutually beneficial economic exchanges among larger numbers of potential transaction partners, and for the spread of productive knowledge, techniques and skills. Such gains arising from increases in the comprehensibility and trustworthiness of interaction partners, the rational force of agreements and rules, the range of exchangeable services, and the number of potential transaction partners can be understood as "economies of total effort" (MacKay, 1969, *op. cit.*), or 'network economies'.

Communication and information technologies may have a large contribution to make to generating new 'economies of total effort' -- if they are designed for the preservation and extension of procedural and communicative action competences, alongside the extension of instrumental efficiency. But if CITs are devoted instead to dismantling the lifeworld structures underlying these subtler forms of action, and replacing them systematically with BSA-engineered social processes, the more likely results are enormous centralization of economic power and decision-making, the monopolization of knowledge and other social capital, and deterioration of the exchange network.

The next chapter explores ways in which Habermas' theoretical work contributes to the critique of methodological individualism in the economics of communication networks.

CHAPTER FOUR

A 'FORMAL-PRAGMATIC' APPROACH TO ECONOMIC REASON

Normative Rationality and the Social Sciences

In its theoretical assumptions, mainstream economics dissolves norm- and rule- governed modes of social action into forms of self-regarding, instrumentally rational, interest-maximizing behaviour, and in so doing, explains them away as forms of 'proto-economic' phenomena. By contrast in this and previous chapters, I am interested in reconstructing the immanent **intersubjective** logic of the economic process. Later chapters will explore the foundational status of methodological individualism in the economics of information, and then develop the implications of these contrasting methodological positions for modelling the economic role and impact of communication and information technologies.

In this process of theoretical reconstruction advocated I am guided by Jurgen Habermas' *Theory of Communicative Action* (1984; 1987), as well as some of his previous, and some of his more recent work. The chapter at hand evaluates, in broad outline, Habermas' "formal-pragmatist" synthesis of critical social and linguistic theory, in order to demonstrate the applicability of a communications-centred approach to the micro-economics of communications networks.

In his work of the last decade, Habermas identifies the effort to ground the rationality of thought, speech and action -- "reason's experience of itself" (1984, *ibid*, 1) -- as the core problem by which the philosophical tradition of modernity has been ordered. The migration of economic institutions into electronic network settings, brings the problem of the rationality of tacit normative and evaluative processes into the foreground. In this context I want to begin by taking up the question of how the social sciences -- economics, policy science, and sociology in particular -- address the rationality of **normative** thought, speech, and action.

Political economy traditionally had normative as well as positive concerns. It indeed "held fast at the start to... questions of how the dynamic of the economic system affected the orders through which society was normatively integrated" (*ibid*, 3-4). But in its subsequent career as a positive science, as discussed earlier, economics has clearly repudiated normative concerns.

Political science is a different case. A recent arrival as a distinct discipline, political science has "a topic, but no particular approach," and is therefore "easily subjected to the influence of neighbouring disciplines" (Udehn, 1992, 245). While positive approaches in sociology and economics have served in turn as political science's predominant theoretical and methodological inspiration, normative currents in these other disciplines have not had a warm reception. Habermas explains this as originating in political science's rejection of the natural-law foundations of political *philosophy*. It therefore "had to free itself from rational natural law" at the outset:

In opposition to natural-law normativism it excluded moral-practical questions of legitimacy from scientific consideration [and] thereby broke off relations to the rationality problematic..." (Habermas, 1984, *op. cit.*, 6)

By contrast, sociology, from its origins, took as its objects of investigation just those problems ignored by politics and economics as they set about becoming positive sciences. Sociology "arose as the theory of bourgeois society; to it fell the task of explaining the course of the capitalist modernization of traditional societies and its anomic side effects." (ibid, 5) Thus,

on a **metatheoretical** level it chose basic concepts that were tailored to the growth of rationality in the modern lifeworld. On a **methodological** level... understanding rational orientations of action became the reference point for understanding all action orientations. (ibid, 6)

The need to connect positive and normative approaches in sociology in order to grapple with the problem of rationality in modernizing societies was visible in the work of many of the foundational figures in sociology, including Durkheim, Simmel and Weber. Habermas' approach also takes up the "problem of societal rationalization," (ibid, 7) at both theoretical and methodological levels, by analyzing the linguistic conditions of rationality of differently-oriented communicative acts.

Habermas' starting point is found in "the dialogical qualities of human interaction in which speaker and hearer are necessarily oriented to the task of reciprocal understanding" (Harvey, 1989, 52). Drawing on Austin's 'ordinary language' theory (Austin, 1962), he conceives the representational use of language as a specialized function, derived from and semantically grounded in its performative use in sustaining dialogical inter-subjective relations. Habermas argues that

corresponding to **theoretical discourse**, in which we seek to validate claims to **theoretical truth**, there is a cognitive form of **practical discourse**, in which we seek argumentatively to redeem claims to **normative validity or rightness**. (Bernstein, 1983, 184, emph. in orig.)

In Habermas' approach, the rationality mobilized in the justification of speakers' propositional truth claims is an epiphenomenal form of rationality which is dependent on -- and can be distinguished from -- the performative rationality necessary to their justification of claims of legitimacy or sincerity.

The central point is that the relationships created between interlocutors by the normative dimensions of their utterances, condition the interpretation of propositional contents. This primary orientation to reciprocal understanding between interlocutors -- **to another reasoning subject's intentions as the object of knowledge** -- is as fundamental to specifically economic interactions as to other forms and contexts of social interaction. And therefore an adequate account of the rationality of **economic** action calls for a theoretical stance which takes a **sociological** approach.

Habermas' Critique of Positivism in the Social Sciences

Habermas claims to offer a reconstruction of historical materialism, seeing as his central task the reunification of theory and practise in the 20th-century world. Marx's conception of the unity of theory and practise is inadequate, to Habermas, because of its philosophical limitations. Marx clearly intended historical materialism to acquire the status of a positive science. Habermas extensively critiques the study of human social life as a science on a par with the natural sciences, on two grounds (Habermas, 1989): a) it underestimates the competences of human beings at understanding and explaining their own reasons, motives and actions; and b) it overestimates the role of positive science in generating valid knowledge about the social world.

For Marxism, considered as a positive science, these philosophical limitations lead to a dilemma: if changes in capitalist society follow deterministic laws of development (as also assumed in nomothetic programs of research like positivist economics), how can humans possibly 'make their own history'? Marxism **as a science** offers only an attenuated account of the reflexive capacities of human agents, and the properties consequently emergent in social action. If our reflections on our own histories render us capable of intentional interventions in their present paths, social sciences modelled on positive approaches in the natural sciences will fail to capture this teleonomic feature of human social activity.

This critique has long been associated with the hermeneutic tradition, in which human action is comprehended essentially through interpretation of its **meaning** to the actor. Human conduct is, in this perspective, not inescapably governed by objective causal laws (the natural science model) but is oriented in important ways to the subjective **intentions and reasons** informing that conduct.

Habermas is not championing hermeneutic idealism, but attempting rather to reconcile hermeneutics and positivism: in some circumstances social forces indeed resemble forces of nature, and social life is conditioned by these factors in ways often invisible to human actors. In this respect advocates of the natural science model are correct. But these forces are not immutable, nor are they permanently screened from understanding. The more human beings share understandings of the origins of their own conduct, and about the social institutions in which that conduct arises, the more they escape the causal force and constraint of those institutions. The identity of subject and object within social-scientific investigation invokes a different relation between knowledge and its object than that

obtaining in the natural sciences. The object of social investigation is the interpretation of human interpretations of intentionally-created frameworks of meaning, and ultimately requires different -- historical and hermeneutic -- methods of analysis. As Habermas puts it:

A concept of reaching understanding... is basic [to] the coordination of action and... interpretive access to the object domain [in both social existence and social science]. Processes of reaching understanding are aimed at a consensus that depends on the intersubjective recognition of validity claims; and these claims can be reciprocally raised and fundamentally criticized by participants in communication. (Habermas, 1984, 136)

Thus "communicative actions always require an interpretation that is rational in approach" (ibid, 106). That is, in order to coordinate their actions through understanding and agreement (as opposed to eg coercive force), it is necessary for social actors to grant rationality to one other -- to be willing to hear and to criticize one another's **reasons** for the views they hold, and **intentions** in advancing them in argumentation. Because positivist-empiricist methods of social analysis inherently tend to downplay the relevance of the subjective reasons and intentions of observed human actors, their generalization to situations of symbolic interaction (and **especially** to situations of moral and political argumentation) results in what Habermas calls **distorted** communication. Exclusive use of the natural-science model for generating knowledge-claims about social processes itself blocks rational action-coordination, compelling default to coordination by the use of deception and coercive power.

Validity Claims

Undistorted communication, in Habermas' usage, is language-use in which speakers have opportunity to defend four kinds of validity-claims which a speaker implicitly or explicitly makes in and by producing any utterance. These four validity-claims are:

- i) **meaningfulness or intelligibility** - the claim that the rules of language have been obeyed and an intelligible proposition generated;
- ii) **truth** - the claim that the propositional content or factual assertion about the objective world made by the speaker is warranted;
- iii) **normative rightness or justification** - the claim that the utterance is socially warranted: that operating norms and values permit the speaker to make it or that the speaker's role justifies her in making it (eg by education or profession);
- iv) **sincerity or truthfulness** - the claim that the speaker does not intend to deceive the listener; that her claim about her own intentions is warranted.

Validity-claims ii) and iii) can be defended **in** discourse or 'discursively redeemed' (by means of the speaker elaborating verbally upon the truth or justification of a claim), but i) and iv) cannot: defense of an utterance's meaningfulness ultimately requires that hearers in fact find it meaningful, and sincerity can only be demonstrated in action (eg fulfilling promises, honouring commitments, etc).

Habermas' theory of truth (following Peirce, 1957; Strawson, 1974; and Toulmin, 1980), the second validity-claim, can be summarized in these terms: neo-positivist language theory asserts a 'redundancy' theory of truth. This asserts that the term is superfluous because its use in a proposition adds nothing to the factual content. Habermas agrees that in ordinary usage this appears to be true,

but this is only because the validity-claim of truth is implicit in all utterances, and is only made explicit when challenged. Its meaning is derived from its **performative** function within intersubjective processes of argumentation concerning particular kinds of claims.

"Truth" is a term brought into play in factual disputes or debates, and the concept of truth can only be properly understood in relation to such processes of argumentation. When we say something is true we mean we can back up what we say with factual evidence and logical argument -- that a claim can be warranted. Truth refers to agreement or consensus reached by such warrants. A statement is "true" if any disputant faced by those warrants would concede its validity. **Truth is the promise of a rational consensus.** (Giddens, 1985)

His deployment of the concept imbedded in the third form of validity-claim, the claim of justification or normative rightness, is Habermas' warrant for his own (truth) claims. Claims of normative rightness give rise to practical discourse explicitly about the kinds of relationships speakers take up with one another, and about the different ways they can generate rights, obligations, and reasons for action through their speech acts. Further, the "practical discourses imaginable in controversial cases can bear on both the right application of presumably legitimate norms and the legitimacy of those norms themselves" (Wellmer, 1992, 197).

All four validity-claims are to be understood as tacit elements present in all speech-acts, but not as explicitly intended elements distinguished by speakers in their utterances. Each speech-act, however, implicitly thematizes one (or more) of these claims. When interlocutors, in the attempt to repair disagreement or misunderstanding, engage in argumentation, it is the thematized validity-claim that is criticized and that must be discursively redeemed. For truth-claims, this occurs by means of reference to factual evidence (or by argumentation about standards of factual evidence) about objective states-of-affairs. For claims of normative rightness, the fundamental standard of evidence

is the demonstration of the existence (or possibility) of uncoerced intersubjective agreement regarding contested norms of social interaction. A truth-claim about the objective occurrence of such norms is to be distinguished from the claim that such norms are justified and legitimate; the latter is what is thematized in normative rightness claims, and this calls for a hermeneutic procedure for uncovering the conditions under which intersubjective agreements are generated. This issue will be taken up in greater detail below.

Speech Acts and Communicative Action

Habermas' distinction between positivist-empirical forms of knowledge oriented to prediction and control, and historical-hermeneutic forms of knowledge oriented to human interaction and rational agreement, has been a constant theme in his work. In his earlier publications (1971; 1979), working in the tradition of ideology-critique, he characterized these as separate 'knowledge-constitutive interests'. In his recent work (1984; 1987; 1990), acknowledging the necessarily transcendental character of the project of ideology-critique, his terminology correspondingly shifts to the description of separable forms of **action**. At least for the purposes of this discussion, his central categories of strategic and communicative action should be taken as co-extensive respectively with the categories of positive and hermeneutic forms of knowledge.

Habermas' recent use of the categories of strategic action and communicative action distinguishes the **attitude or intention** of participants in a social action: either towards achieving their own

purposes, with others in the position of potential instruments for those purposes; or towards reaching understanding and rational agreement with others. This is not intended as a purely analytic distinction: the attitude of participants in a social action are concrete and identifiable differences in the action *per se*. He illustrates this by showing that communicative action (action oriented to reaching understanding and agreement with another) is the 'original mode' of language use, the **a priori** of strategic action in general and of the instrumental use of language in particular.

Habermas' demonstration rests upon his use of Anglo-American speech-act theory from the 'Oxford (or ordinary language) School'. This group of disenchanted positivists, which included Wittgenstein and Austin, abandoned the 'Vienna School's' neo-positivist focus on the relation between linguistic and mathematical logic, and decided instead to focus on the relation between language and **action**. In particular Habermas relies on Austin's 'theory of illocutionary forces' to make his argument for the *a priori* status of communicative action.

Austin's inquiry began with a distinction between what he at that point termed 'constative' and 'performative' speech acts. 'Constative' utterances tend only to **describe** events and objects; they can be roughly categorized as those statements which are, in neo-positivist terminology, either true or false. 'Performative' utterances bring in the element of orientation to an interlocutor: in addition to description of external objects, they also describe a present activity of the speaker -- **and** they also accomplish it.

For example, "I am writing in English" is constative. "I assure you that I am writing in English" is performative: the statement is part of the **act** that it describes, and not merely a report of it. Part of the meaning of such an expression is the action ('assurance') that it tries to accomplish. This property of the expression is independent from any representation of its contents: no pure description of this sentence can accomplish the same act. Therefore the meaning of such expressions is at least partly derived from their use and cannot be fully established by grammatical analysis. They **semantically** require an interpersonal relationship, such as that established between you and me by this text.

Much of Austin's work was devoted to analyzing how various kinds of linguistic expression share this property of performatives (for obvious examples consider interrogatives and imperatives). Austin's analysis of linguistic expressions eventually identified three distinct categories of speech act accomplished by **any** utterance, which (replacing the earlier typology) he labelled:

- the **locutionary** act,
- the **illocutionary** act, and
- the **perlocutionary** act.

The **locutionary** act (roughly, the constative element of any utterance), is the competent production of a phonologically and syntactically correct and meaningful expression. The **illocutionary** act (a performative element) is the act accomplished by the locutionary act: that is, the relationship it produces between interlocutors. (The illocutionary act is approximately equivalent to the 'relationship' level of meaning identified in the systems-theory approach to human communication:

see Watzlawick, 1967). The illocutionary act is not a necessary implication of the content of the utterance, nor is it a subsequent outcome of speech; it is a simultaneous, internal property of the speech of a particular actor in a particular social context. The **perlocutionary** act is the intended or unintended consequence of speaking, something accomplished **through**, rather than **in** the utterance. Thus, in performing the **locutionary** act of saying that this discussion will prove relevant to my argument, I am performing an **illocutionary** act such as hinting, promising, insisting (or other performance not yet clarified by dialogue). And by whatever illocutionary act I turn out to have performed I may succeed in the **perlocutionary** act of inducing you to read it.

Habermas argues that the speech act *per se* is constituted by the locutionary and the illocutionary acts taken together; that the speaker "always performs [them] with a communicative intent"; and that the perlocutionary act is external to, and bears no necessary reference to, these other components of the speech act:

By means of an illocutionary act a speaker lets a hearer know that she wants what she says to be understood as a greeting, command, warning, explanation, and so forth. Her communicative intent does not go beyond wanting the hearer to understand the manifest content of the speech act. By contrast, the perlocutionary aim of a speaker, like the ends pursued with goal-directed actions generally, does not follow from the manifest content of the speech act; this aim can be identified only through the agent's intention. A hearer who understands a request directed to her can just as little know what **else** the speaker has in view in uttering it as an observer who sees an acquaintance hurrying along the street can know why she is in a hurry. (1984, 290)

While the meaningfulness of the locution is necessary to the illocutionary act (my 'assurance' is an assurance **about** something), the perlocutionary act (getting you to read, to ask me a question, etc.) is normally either an **unintended** consequence of the speech act, or an **intended** consequence

concealed within a speech act **apparently** oriented to reaching understanding. Thus, says Habermas, strategic action **includes** "the use of language with an orientation to consequences", and this "is not an original use of language but the subsumption of speech acts that serve illocutionary aims under conditions of action oriented to success". In contrast, he labels

the type of interaction in which **all** participants harmonize their individual plans of action with one another and thus pursue their illocutionary aims **without reservation** 'communicative action'. (Habermas, 1984)

Normative Rationality and Cultural Relativism

Habermas' claim to ground ethics in the communicative rationality of practical discourse, and his reliance on the European philosophical tradition as both source and antagonist of this perspective, have attracted much criticism. He is typically characterized by post-modernist critics as taking a Euro-centric position, and as producing a totalizing 'grand narrative' which expresses his own intellectualized will to power (rather than uncovering the formal conditions for uncoerced formation of collective will, as he claims). One such critic, who may stand in for the others, is David Harvey (1989, op. cit.). Harvey characterizes Habermas as, in effect, clinging in intellectual desperation to the possibility of grounding rational consensus in a dialogical theory of the speech act, as a strategy for coping with the epistemological and moral incoherence of a postmodern world. To Harvey, in attempting to continue the philosophical project of modernity, Habermas may unconsciously be supporting the "logic that hides behind Enlightenment rationality... a logic of domination and

oppression" (Harvey, *ibid*, 13). Although this study is not designed to address these criticisms in detail, I would like here to sketch a response to them as further clarification of Habermas' position.

Habermas has repeatedly indicated that by asserting the **procedural** universality of a rationally-grounded discourse ethic, he intends to assert also his own "emancipatory interest" in helping to expose "the deformed realization of reason in history" (1984). His attention to the European tradition he explains as an outcome of his own situatedness in that intellectual culture: "a person engaged in developing a theory of moral argumentation cannot adopt a standpoint outside the situation defined by the fact that he is taking part in a process of argumentation... with a skeptic who is following his every move like a shadow" (Habermas, 1990, 81). He thereby makes no claim for the superiority of the intellectual culture of European modernism, nor does he in any other way propose to defend the 'rightness' of European culture's many forms of domination. Rather, in light of that domination he calls for a philosophical reconstruction of the history of modernism's self-understanding, and for the deployment of modernism's own universalizing rationality to make its self-formative processes self-reflexive.

Habermas himself asserts that "the claim to universality raised by ethical cognitivists [ie neo-Kantians] on behalf of the moral principle they happen to favour is based on an ethnocentric fallacy." (Habermas, 1990, 78) In his theory of discourse ethics, universality is instead "intended to compel the **universal exchange of roles** that G.H. Mead called 'ideal role-taking' or 'universal discourse'" (*ibid*, 65. *emph. in orig.*, quoting Mead, 1934, 379).

Within this entirely **procedural** form of ethical universality, Habermas differentiates the 'moral' and 'evaluative' contents of practical discourse. Evaluative questions "are accessible to rational discussion only **within** the unproblematic horizon of a concrete historical form of life" (1990, *ibid*, 108, *emph. in orig.*). Evaluative questions require culturally situated judgements concerning the 'good life', judgements which can only be made from within the unreflexive horizon of a given **way** of life. But common processes for deciding moral questions can themselves "be decided rationally, in terms of **justice** or the generalizability of interests" (*ibid*, *emph. in orig.*). These are reflexive questions about the communicative context of practical action -- that is, about the communicative **procedures** by which evaluative questions are to be settled *in situ*.

It is important here to avoid confusion of the (moral) **form** of a normative claim with its (evaluative) **content** in practical discourse. These have a double relation that does not exist for the relation between an object and its representation. Because "normative claims to validity **mediate a mutual dependence** of language and the social world that does not exist for the relation of language to the objective world" (1990, *ibid*, 61, *emph. in orig.*), the formal recognition of a normative claim is easily confused with acceptance of its content. Acceptance of a role in an interaction can signify either subjective acceptance of the **validity** of the relevant norms by which it is structured, **or** merely recognition of their objective **existence** -- their cultural occurrence and force.

But the fact that normative institutions exercise force and act upon us as objective constraints does not obliterate all claims of reason in practical discourse. The achievement of reciprocal understanding and consensual action through normative contexts depends, in Habermas' view, on

how cultural norms structure the exchange of communicative roles. Immanent standards of rationality for such interaction structures can be demonstrated by analyzing their comparative capacity to generate reciprocal understanding and consensual action. In this way,

theory can locate a gentle, but obstinate, a never silent although seldom redeemed claim to reason, a claim that must be recognized *de facto* whenever and wherever there is to be consensual action." (Habermas, 1984, op. cit.)

A concurring observation, relevant to the question of ethnocentricity raised by any discussion of the universalizing tendencies of European thought, is offered by Anthony Giddens. He suggests two analytically separable dimensions of this process: the institutional dimension of the globalization of the European nation-state and capitalist process of production; and the discursive dimension of European modernity's reflexive break with tradition. The globalizing tendencies of the institutional dimension can no longer be understood as inherently Euro-centric, he believes, because "emergent forms of world interdependence... inevitably involve conceptions and strategies derived from non-Western settings" (Giddens, 1990, 175). But the discursive dimension, in his view, attempts to universalize a distinctively Western form of reflexivity which, rather than reproducing the norms of traditional societies, drives continuously toward their critique and dissolution. Giddens accepts that the globalization of European institutional forms rests on the exercise of power rather than reason. "Yet power does not inevitably **settle** issues that arise as a result of the spread of the reflexivity of modernity, especially insofar as [its] modes of discursive argumentation become widely accepted and respected."

Discursive argumentation, including that which is constitutive of natural science, involves criteria that override cultural differentiations. There is nothing 'Western' about this if the commitment to such argumentation, as a means of resolving disputes, is forthcoming. (ibid, 176, *emph. in orig.*)

The `Counter-Discourse of Modernity'

In this study I want to apply Habermas' reconceptualization of the `project of modernity' to the specific domain of its own economic logic. In this regard this study also (perhaps paradoxically), joins its interlocutor, positive economics, in repudiation of many of the epistemological relativisms now current in social theory. It will not take up, against positive economics and its uses in policy analysis, any of the other interpretive positions gathered under the rubrics of postmodernism and post-structuralism. The view that we are merely spoken by signifying systems or enacted by our sedimented practises is exaggerated, and mostly a continued reflection of cartesian anxiety. The Nietzschean aestheticization of judgement is not a convincing proof of the impossibility of ethical grounding, but merely a reminder of its enormous practical difficulty within the cultural dislocations of a rapidly integrating global economy and society. And however intricately interleaved the exercise of power and reason, it is unreasonable to believe that reason can justify suspicion towards reason itself, or the abandonment of reason succeed in holding power to account.

I therefore find compelling the defense of the `project of modernity' advanced by Habermas in his claims that intersubjectively rational understanding and action are possible in principle, that their practical realization is related to the development and diffusion of more complex and finely-differentiated forms of democratic procedure, and that the normative basis of such democratic procedures can be grounded in a science of universal communicative competences. The

contemporary migration of economic institutions into electronic communication networks provides a uniquely apposite context in which to consider these claims.

What Habermas refers to as the 'project of modernity' originated in the utopian social and scientific discourses of the European Enlightenment. The central intellectual current of the Enlightenment was the expectation that human progress could be assured, not only through the scientific domination of nature, but also through the scientific planning of society, economy, and law. The emancipation which the methods of objective science seemed to promise -- from scarcity and poverty, from religion and superstition, and even from the arbitrary exercise of power -- emanated directly from a philosophy of the subject (or of self-referential consciousness) preoccupied with the cognitive autonomy and rationality of the individual subject, and the development of that subject's ability to apprehend and manipulate the surrounding object field.

The tenets of positive science erected a rigid partition between observed facts and their theoretical interpretation, and became increasingly obsessed with the reduction and isolation of the elements of the object field, and with the purification of natural language and the development of formal symbol systems as instruments for their observation, reference and control. The deterministic inflections emergent in this model stand in paradoxical relation to the original emancipatory promise of the scientific project; and we might then say that the counterpart of this insistent empiricism has been the assignment of consciousness, intentionality and reason to a metaphysicalized subjective domain. Positive economics must be counted among the most orthodox expressions of this paradigm.

We can, however, agree with Habermas that "the paradigm of the philosophy of consciousness is exhausted" (1987b, 296) without abandoning the emancipatory elements of the project of modernity, if we retrace the concurrent development of what he calls the "counterdiscourse of modernity" (ibid, 295). This refers to his demonstration that a dialogical account of the origins of reflexive action, and a procedural ethics founded on the analysis of communicative competences, have been available throughout the contradictory development of subject-centred philosophy. The restless tacking back and forth between empirical and metaphysical modes of analysis (so characteristic of the methodology of positive economics) is, to Habermas, a symptom of the exhaustion of the philosophy of the subject, and should disappear with a transition to the "paradigm of mutual understanding" which he proposes.

Habermas began in the 1960's to advance a vigorous challenge to the hegemony of empirical-analytical methodologies in the social sciences. But at the same time he imbedded in that challenge, with remarkable prescience, a "critique-in-advance of the absolutizing of interpretive approaches" (McCarthy, 1989, viii). His recent work continues his argument with hermeneutic idealism. In showing that modernism contains its own 'counter-discourse', he counterposes this also against postmodernism.

To Habermas, postmodernism reveals its covert reliance on a place-holder for the metaphysical subject. For example, if the self-referential subject is negated in Foucault's work, this is only to replace it, he asserts, with the new metaphysical constant of **power**. The effort within postmodernism to drive out subjectivity can, however, "give no account of the normative foundations

of its own rhetoric" (Habermas, 1987b, op. cit., 294). That is, it is performatively self-contradictory (and see Habermas, 1990, op. cit., 98-102). Despite the achievements of Foucault's analysis of the shortcomings of the philosophy of consciousness, his theory of power is then no more than a "sentimental presupposition of metaphysical homelessness" (1987b, op. cit., 294). His critique of post-modernism returns Habermas to the "crossroads" where, in his view, alternative paths became available in philosophy: to Hegel, and to the responses to Hegel made by Marx, Heidegger and Pierce. At each of these places, to avoid a relapse into the philosophy of the subject, "the paradigm of the knowledge of objects has to be replaced by the paradigm of mutual understanding between subjects capable of speech and action" (ibid, 295-6).

The 'Paradigm of Mutual Understanding'

The paradigm of mutual understanding is based on analysis of the performative dimensions of the communicative interactions of subjects. The propositional description of the object domain forms only one of these dimensions (the locutionary dimension) of communicative action. Each communicative act also embodies (following Austin, as discussed above) an illocutionary and a perlocutionary dimension, through which normative and intentional understanding are respectively sought. Only an institutional structure guaranteeing explicit argumentation in all three dimensions can ensure the possibility of human interaction performed with communicative intention, and regulated only by the force of reason.

The development of our capacity to form understandings and agreements rests on the culturally-specific characteristics of the **illocutionary** dimension of intersubjective role-taking. Instrumental and strategic forms of rationality can be seen as derivative forms, which presuppose the formation of coherent identity in norm-governed role interaction. These "contexts of communicative action represent an order for which there is no substitute."

Individuals acquire and sustain their identity by appropriating traditions, belonging to social groups, and taking part in socializing interactions... They do not have the option of a long-term absence from contexts of action oriented to reaching an understanding. That would mean regressing to the monadic isolation of strategic action, or schizophrenia and suicide. (Habermas, 1990, op. cit., 101-2)

In 'reaching understanding,' in Habermas' specialized sense, subjects learn to distance themselves hypothetically from their own beliefs, roles and strategic intentions, by alternating in holding the perspectives of speaker, listener, and observer. This "corresponds to the system of personal pronouns. Whoever has been trained in this system has learned how, in the performative attitude, to take up and to transform into one another the perspectives of the first, second, and third persons."

Now this attitude of participants in linguistically mediated interaction makes possible a **different** relationship of the subject to itself from the sort of objectifying attitude that an observer assumes towards entities in the external world. Only if the [latter kind of] relation to self is... unavoidable... does the subject have to view itself as the dominating counterpart to the world as a whole or as an entity appearing within it. (Habermas, 1987, op. cit., 296-7, emph. in original)

The instrumental, cognitivist model of rationality characteristic of positive science collapses all three performative dimensions into the single objectifying dimension of propositional logic. There is an inherent capacity for domination in this repudiation of the possibility of a rationally-grounded ethical discourse. The argument developed in these chapters relies on Habermas' distinction between this

subject-centred, cognitivist model of instrumental rationality, which has so deeply marked the experience of modernity, and the intersubjective model of communicative rationality which he locates as a hidden counter-discourse **within** modernism's philosophical tradition.

With this distinction, the manichaeian choice between resistance or capitulation to instrumental reason is rendered unnecessary: an alternative stance is foregrounded which stresses the generative status of communicative rationality, the repertoire of communicative norms and competences acquired in socialization processes, and the personal and social pathologies which attend the aggrandizement of instrumental reason. For only if reason "shows itself to be essentially narcissistic -- a power bent upon self-assertion, subjugating everything around it as an object -- can the other of reason be thought for its part as a spontaneous creative power... no longer illumined by any spark of reason."

The dialectic of enlightenment... can only function if reason cannot produce anything from itself except that naked power to which it actually hopes to provide an alternative, namely the unforced force of a better insight. (ibid, 305)

Communicative Rationality and Economic Action

The relevance of Habermas' project to the regulation of the new communication technologies is readily apparent from the issues discussed above. Habermas makes three claims: 1) rational understanding and action are possible in principle; 2) their practical realization is related to the development of manifold new forms of democratic institutional governance; and 3) the necessary

democratic procedures can be normatively grounded in a science of communicative competence. These claims and their accompanying arguments suggest an alternative micro-economic model for electronic communication networks, in at least the following ways.

First, since our communicative competences at understanding others' intentions and forming consensual agreements with them lies at the core of the process of coordination of action which defines the economic process, and underpins all legitimate transactions, it may be argued that among the most valuable and efficient allocations of communication resources are those which augment the communicative competences of transaction partners. Secondly, the amount of investment flowing into the design, fabrication, roll-out and operation of new, technologically-mediated organizational forms suggests that the communicative limitations of our institutional processes are among the most stubborn and costly economic barriers we face. This, in turn, suggests that a deeper comprehension of human communicative interaction than is usually exhibited in the mainstream economics of information or in the communication network planning process is needed to make best use of these new technologies. Finally, Habermas' approach suggests that the performance of a networked economy depends crucially on the development of consensual standards of communicative interaction:

If practical questions, which involve the adoption of standards, are withdrawn from rational discussion, then only the instrumentalist values of efficiency participate in what is left of rationality... Every new thrust of technological capacity that intrudes in an unregulated manner into the old forms of life-praxis intensifies the conflict between the results of a strained rationality and traditions that have been overridden... Thus the problem arises how the practical application of technological knowledge in the context of an historical situation can be rationally determined, how technological knowledge can be legitimately transformed into practical consciousness. (Habermas, 1989, op. cit., 20)

PART II
INFORMATION, TRANSACTIONS, MARKETS

CHAPTER FIVE

METHODOLOGICAL INDIVIDUALISM AND THE INFORMATIONAL FOUNDATIONS OF MARKET EXCHANGE

If goods are defined ultimately by the subjective evaluations of participants in social interaction, qualities of these `goods' must surely include moral attributes of the processes of acquisition. (Buchanan, 1994, 135)

Neoclassicists' notions of `market', `price', `value', `commodity', `demand', `supply', and `exchange' are but specialized instances of broader communicatory phenomena. (Babe, 1994, 42)

Given a core set of political and legal conditions -- notably equal rights to the protection of property and due process of law -- competitive market exchange is claimed by its many advocates to permit highly decentralized and efficient allocative decision-making via rapid adjustment of myriad individual production and consumption decisions to one another. As a result, a continual market-clearing equilibrium of supply and demand is said to be generated across the entire economy, maximizing production and consumption according to the expressed needs of consumers, and minimizing wasteful allocations of resources. All of this takes place without planning from any central point. Moreover, this remarkable mechanism works precisely because and only if individuals are guaranteed a sphere of activity, consisting of their self-regarding use of their own property and inherent capacities, in which they do not have to justify themselves to others or to the State. Contractual exchange, the micro-structure of the market mechanism, is theorized as an extension of this individual sphere of liberty to the voluntary relations between two or more persons so situated.

Markets are of course not only theoretical abstractions: they are actual institutions, and (whether considered as public or private institutions) their own operations transform and use up significant quantities of resources, in the form of skilled labour-power, variously combined with technical means of transport and storage, brokerage and finance, data-processing and telecommunication, advertising and sales. Market adjustment is therefore not a costless process, although many theoretical models fail to account for these costs (eg Jevons, 1965; Sraffa, 1960; Walras, 1954; for contrasting transaction-cost approaches see Coase, 1988; Williamson, 1979; 1986).

A great proportion of the costs of operating markets, as the given examples show, are explicitly information and communications costs. When analysis of the role of information and communication in the economic process is extended to consideration of the **implicit** informational structure of markets -- both in macroscopic terms, as large-scale integrated information systems, and in microscopic terms, as structured processes of communicative interaction -- some fundamental questions arise. Notable among such questions are those concerning the default status of methodological individualism in economics. The presumed pre-social origins of relations of property and contract, the exogenous derivation of market actors' goals and preferences, the market's endogenous provision of all information necessary to their rational pursuit of those goals, and the adequacy of instrumental rationality itself to their effective participation in the economic process, are among the core assumptions of positive economic science which become problematic when viewed through this lens. (Examples of information policy and economics sharing the neo-classical perspective include Dordick, Bradley and Nanus, 1981; Ganley, 1986; Gersuny and Rosengren, 1973; Jonscher, 1982; de Sola Pool, 1983; Spero, 1982.) Indeed, from the communication-centred

perspective advocated in this study, a system of market exchange itself appears to be constituted in and through intersubjective processes at its very foundation, and to express an irreducibly collective logic of action.

The three main sections of this chapter develop some elements of this perspective historically: first, through an introductory investigation of the origins of knowledge and information as categories in economic thought; and then by unpacking, in turn, the institutions of `contract' and `property' with a view to their implicit informational and communicative dimensions.

SOCIAL WELFARE AND THE ORIGINS OF THE ECONOMICS OF KNOWLEDGE

In the early modern period, knowledge and information as economic variables are not the subject of systematic inquiry in themselves. The topic arises instead largely as a tangential concern within practical, policy-oriented discussion and debate about the bases of civil and national prosperity, and the relation between private commercial prosperity and national political power. The classical starting point of these framework social welfare debates is the civic republican argument regarding the relationship between private wealth and public virtue (see Skinner, 1978).

If the needs and desires of citizens for material goods are limited and constrained, so this argument runs, only a small proportion of citizens will be required in civilian productive labour to meet these needs. The other citizens are then available for military service, adding to the strength and power of the state. Luxury saps the strength of the state because increasing material desires lead to increasing employment meeting them, leading to decreasing availability of and skills among citizens for military service. The historical evidence adduced in early modern Europe for these views looked to Rome and to Sparta (see eg Pocock, 1983, 248-9). The general implications of this classical republican model of a national economy for knowledge resources are threefold: 1) that the degree of division of labour will be tightly constrained; 2) that most fields of knowledge will change and develop slowly as a result; and 3) that investment in all kinds of innovations will therefore be scarce, at least outside the military and agricultural sectors.

The early eighteenth-century essayist Bernard Mandeville was among the first modern political thinkers to systematically critique the civic republican model of national economic welfare. The concept of a classically virtuous society, based on the readiness of its citizens (themselves an elite) to participate in its political affairs, spring armed to its defense, and abstain from the cultivation of sensual pleasure and luxurious living was, in Mandeville's view, anachronistic and romantic. He saw public virtue as literally incompatible with commercial prosperity; and a clear choice between wealth and virtue as therefore necessary (see Hont and Ignatieff, 1983; Horne, 1978). Mandeville's choice was clear: he prescribed wealth, luxury, and an efflorescence of material goods. To Mandeville, modern political power was mainly a consequence of national commercial prosperity, and the "moral virtues" from which the safety of a classical republic in theory depends are merely "the political offspring which flattery begot upon pride" (cited in Horne, *ibid*, 76).

Mandeville offered in support of his point of view the following two arguments. First, he pointed out that all apparently virtuous actions in which the potential for selfish gratifications could also be identified, must rest under the suspicion that they in fact have selfish, and not virtuous motives, and that they therefore contribute no evidence for the possibility of an authentically virtuous society. It is therefore not worth pursuing virtue for its own sake. To believe that the classical republics had functioned on the basis of a selfless regard for the public interest was to misunderstand the circumstances which rendered that behaviour self-interested.

Second, he suggested that a serious contradiction existed between the motivational requirements of a large and law-governed market society of competing, atomistic individual producers, and those of

a series of small and warlike tribal solidarities -- the classical republics -- and that to attempt to govern the former kind of society by the principles of the latter was a disastrous policy.

In the effort to defeat Mandeville's arguments, some attempts were made by ecclesiastical commentators to show that a specifically Christian morality and commercial prosperity were compatible. Other critics, for example Archibald Campbell and Francis Hutcheson, relocated the criteria of virtue itself away from Christian self-denial, and towards a sort of proto-utilitarian calculus of the public interest. But the most powerful (and sympathetic) rebuttal was provided by David Hume. In Hume's argument the economic dimensions of knowledge creation and dissemination emerge as a central theme for the first time.

Hume argued, with great originality, that commerce actively promotes virtue, in the process depicting the growth of knowledge as one of the beneficial and virtuous outcomes of commercial morality. He also set out to complete Mandeville's case by showing explicitly how commercial prosperity formed the basis of both the power of the state and the happiness of its subjects (Hume, 1904, 259-275).

Hume agreed with the civic republicans that luxury saps the strength of the state -- in respect to earlier societies. But he pointed out (and in more telling detail than Mandeville) that conditions -- the average and relative size of states, the degree of exposure to luxury goods, the frequency of armed conflict, the predominant worldviews of citizens -- had changed in Europe by the 18th century. As a result, the idealistic tradition of civic republicanism could now be seen as conflicting

with the rational governance of an emerging commercial society. In particular, the notion of increasing the grandiosity of the state by institutionalizing individual abstemiousness as a moral or political principle, had become archaic and struck Hume as "violent" (Hume, *ibid*, 266). The austere public virtues of classical citizenship were too difficult to recreate in the modern age, and did not provide sufficient motives for the conduct sought by governments. Instead the **private** desires of citizens had to be harnessed to public purpose: "it is requisite to govern men by other passions, and animate them with a spirit of avarice and industry, art, and luxury" (*ibid*, 269; see also Hirschmann, 1978).

Hume, however, also argued that this strategy of appealing to private motives such as greed, vanity and luxury could enlarge and strengthen the political state precisely because it led to the enhanced skill and industry of the population. (Hume actually speaks of strengthening 'civil society', but an anachronism is avoided by substituting 'political state' as cognate in that period: see Tully, 1980; Tuck, 1979.) Improvements in production and transportation techniques and machinery were to be applied first to increasing the productivity of agricultural labour and thus the profitability of agricultural trade, freeing the population for manufacturing labour and driving a relocation to urban areas. This transplanted agricultural population was available for military conscription when necessary, and when this occurred the agricultural surplus would be sufficient to feed it:

The more labour that is employed beyond mere necessities the more powerful is any state; since the persons engaged in that labour may easily be converted to the public service. (Hume, *op. cit.*, 268)

Beginning from this strikingly prescient foundation, Hume develops his view of the process of the growth of useful knowledge in an argument reconciling virtue and commerce (Hume, 1904, *ibid*, 275-289). He proceeds from a distinction between harmless and harmful gratification of the senses: only "indulgences... pursued at the expense of some virtue" (*ibid*, 275) are harmful. But precisely those periods in which gratifications flourish and the pursuit of sensory refinement and luxury is widespread are, he suggests, "the happiest and most virtuous" (*ibid*, 276). Hume expounds this hypothesis by means of a social theory of knowledge generation and dissemination: improvements in engineering and production techniques and improvements in the humanities and expressive arts coincided with one another, he writes, in periods when "the minds of men being once roused from their lethargy, and put into fermentation, turn themselves on all sides and carry improvements into every art and science" (*ibid*, 278). The new knowledge created by this increased activity permits increases in the efficiency and social control exercised by governments, and thus higher degrees of social order also coincide with periods of trade expansion -- all driven by the desire for luxuries.

To Hume, then, the efforts of individual actors, actors liberated -- by market relations of property and contract -- from either feudal relations of estate and fealty, or republican relations of civic virtue, uncover new methods of production and trade, while also increasing the cognitive and expressive powers of their societies. The urbanization which accompanies rising agricultural productivity increases the frequency and intensity of interpersonal contact, and thus the opportunities to "receive and communicate knowledge."

[F]rom the very habit of convening together, and contributing to each others' pleasures and entertainment... industry, knowledge and humanity are linked together by an indissoluble chain, and are found, from experience as well as reason, to be peculiar to the more polished and... luxurious ages. (ibid, 278)

The 'classical' period of development of the new science of society -- political economy -- was the late eighteenth and early nineteenth centuries. In both its application of scientific reason to the study of social practises, and its contribution to rolling back the institutional and ideological dominance of religious authority, political economy was a quintessentially Enlightenment project (see Hont and Ignatieff, 1983). In this period the focus of theoretical and practical effort in the nascent social sciences "centred almost exclusively on liberation from an antiquated system of control" (Knight, 1994, 117). Among the objects, and products, of that liberation was the emergence of a concept of the modern, rational, autonomous individual in scientific, legal, and popular discourse and understanding (regarding the feudal logic of coordination and cooperation this displaced see Schneewind, 1984).

The first categories and earliest assumptions of political economy, while shaped by the interests and concerns of the context in which the field emerged, also gave ample play to the study of information resources and communicative practises. For example, Adam Smith's *Theory of Moral Sentiments*, in his own account his major work, consisted of a detailed analysis of the dialogical properties of symbolic interaction between actors in a commercial society which explain its characteristically individualist ethic (Smith, 1759). In his economics, Smith recognizes the centrality of knowledge resources in the division of labour. He correspondingly treats technological stocks of producers'

capital goods as species of 'frozen knowledge', giving exemplary accounts of the economic value of present skills and imbedded expertise in the fixtures and practises of various industries.

The classical view also "emphasized how a complete price system would require individuals to know very little about the economy other than their own private domain of production and consumption" (Arrow, 1986, S391). Smith's formulation of this in *The Wealth of Nations* extends Mandeville's and Hume's intuitions about the welfare implications of competitive markets through the metaphor of an 'invisible hand' providing social benefit through individual pursuit of self-interest. Smith maintained that the provision of goods and services in society ought to be done by private buyers and sellers of property, contracting in competitive markets, each an individual who "intends only his own gain, and in this ...is led by an invisible hand to promote an end which was no part of his intention" (Smith, 1776, Book IV). This strikingly captures the implicit problem of the cost of information in the economic process, even while idealizing the market as a solution. The invisible hand of Smithian perfect competition, guaranteed by the "protective legal umbrella" (Buchanan, 1986) of state policy, acts through the information contained in prices. In this view, state action limited to the creation and maintainance of competitive markets (for example, through the development of liberal contract and property law) generates institutional arrangements which **economize on actors' coordination costs**. The information freely and ubiquitously available through the price system equips the economic actor to exercise the **instrumental rationality** which "renders the annual revenue of society" (Smith, 1776) as large as possible.

Ricardo contributed to the foundations of the economics of knowledge implicit in Smith by asserting explicitly the axiomatic status of the rational economic actor's "perfect knowledge" of available goods and their prices in competitive markets: "To build a model Ricardo (like everyone else since) had to abstract from reality and introduce simplifying assumptions. And the most significant of these was his postulate of complete and perfect knowledge" (Katzner, 1991). As Hutchison puts it,

This postulate has probably been the most pervasive and important single simplification, bearing more logical weight than any other, in the whole range of economic theorizing, analysis, or model-building." (1977, 79)

Smith and Ricardo (together with Bentham) paved the way for J.S. Mill's classical synthesis of political economic methodology, in which Mill makes the conventional character of its assumptions clear. Mill argued that in fact, social norm and custom actually govern most economic activity, rather than competition (and the instrumental reason and action supposedly generalized through a competitive price system). But he insists that political economy "is concerned solely with [the social actor] as a being who desires to possess wealth, and *who is capable of judging of the comparative efficacy of means for obtaining that end*".

It makes entire abstraction of every other human passion... Not that any political economist was ever so absurd as to suppose that mankind are really thus constituted, but *because this is the mode in which science must necessarily proceed*... With respect to those parts of human conduct of which wealth is not even the principal object, to these Political Economy does not pretend that its conclusions are applicable. But there are also certain departments of human affairs, in which the acquisition of wealth is the main and acknowledged end. It is only of these that Political Economy takes notice. (Mill, 1994 [1836], 52-4, *emph. added*)

Information Resource Paradoxes in Classical Economics:

The assumption of instrumental rationality is a direct entailment of the other assumptions of classical economic theory regarding opportunistic actors' supposed access to free, perfect, ubiquitous information via the price system of a perfectly competitive market. In the first place, the assumption of perfect competition and the corollary assumption of automatic equilibration of the market through the price system "means that all information is not only available but it can also be relied upon" (Ansari, 1991, 109). From here it is a short step to the assumption that aggregate exchange outcomes may be predicted by making further simple assumptions about the kinds of uses -- "the acquisition of wealth" -- to which self-interested actors will put this free and perfect information. The economist's definition of rationality may be roughly stated in the following terms: it is the complete utilization of available information in pursuit of self-interest, which is correspondingly understood to reveal the maximization of preferences by its internal consistency and transitivity of choice. Note that this definition is prescriptive rather than descriptive (and therefore constitutes a residual normative core in economic theory). As Harsanyi observes, the concept of rational behaviour in economics

deals with the question of how each player *should* act in order to promote his own interests most effectively... and not with the question of how he (or persons like him) *will* actually act... (Harsanyi, 1977, 16)

Some of the implications of these assumptions about information and economic rationality are summed up by Melody: "Traditional economic theories and models that purport to explain corporate decisions and government policies", he says, "do not recognize the characteristics of information as factors to be incorporated in decision-making".

The state of information and knowledge is assumed to be given. All information necessary for the functioning of economic systems and the taking of optimal decisions is assumed to be available, accurate, and costless. In fact, the decision-maker is assumed to be omniscient, with perfect knowledge not only of his or her own future, but also that of everyone else. Thus, the problems and implications relating to information are effectively assumed away. (Melody, 1977, C7-5)

Two widely-discussed observations from the economics literature illustrate the difficulties that economic actors may have in acting effectively on these assumptions. First, even in very competitive markets, the rationality postulate imposes significant requirements on all individual actors, in terms of the knowledge of prices and the ability to perform optimizing calculations with which they must be equipped. But as Arrow points out, under normal states of imperfect competition, these requirements become exponentially greater. For example, sellers must know "not only prices but demand curves..."

Measuring a demand curve is usually thought of as a job for an econometrician. We have the curious situation that scientific analysis imputes scientific behaviour to its subjects". (Arrow, 1986, op. cit., S391)

Secondly, the assumption of perfect, costless, ubiquitous information violates a fundamental condition necessary for market exchange to exist at all: actors must have different information for exchange to occur. If individuals have the same (perfect) information and the same (self-interested) motives, their choices will be identical, and they will have no motive to trade. Moreover, if, merely, all actors are rational (in the economic sense), and are commonly known to be so -- **but differences in information are allowed** -- then merely making an offer to buy or sell something will convey the information that the offerer has private information not available to the other party, and "that the

offerer is expecting an advantage to himself or herself and therefore a loss to the other party". Arrow concludes that "no transaction will take place" (ibid, S396-7).

Arrow asserts that "rationality and the knowledge of rationality is a social and not only an individual phenomenon" (1986, ibid, S392). The conduct of actors in their environment and towards one another provides much necessary information germane to rational economic planning and action: this may include others' reasons and motives for action, the information (and mis-information) they are acting on, the conventions they follow, the meanings they share with, and possibly even the intentions towards them of other actors. The instrumentally-rational decision-maker will need a large supply of this kind of information if she is going to maximize realization of her preferences, even in the most price-driven markets. The problem is that the information can only be obtained through communicative social interaction -- but the information actually obtained will be in large part dependent on characteristics of the interaction which are partly under her control. Moreover, the new shared meanings and other collective 'information goods' that are created in interaction acquire some independence from their authors, reproducing themselves through actors into other social contexts when they can be used to solve other communication and coordination problems. A relatively simple example is forecasting or prediction. If making a prediction (eg a futures contract) can lead other actors to choose to alter their conduct, making the prediction can alter the probability of its own accuracy.

If behaviour varied continuously with forecasts and the future realization were a continuous function of behaviour, there would exist a forecast that would cause itself to become true. (Arrow, ibid, 1986, S394, citing Merton, 1957, Grunberg and Modigliani, 1954, Simon, 1957)

The image raised here by the economic concept of rationality, of populations of actors systematically collecting and processing information about the effects of their own and others' communications on the actions of others **as surveillance-data about a domain of objective events**, fails to capture their participation in those interactions, and the way their participation helps shape the outcomes. Since the instrumentally-rational strategy for deriving advantage from personal information would be to make minimal revelations about oneself while learning as much as possible about others, an economy populated by instrumentally-rational actors would evolve towards a theatre of universal motionless watchfulness. Clearly, however, economic actors derive much more useful information from their abilities to participate in interaction with performative uses of language and other communicative resources -- first- and second-person usages -- rather than only the constative, third-person competences constitutive of instrumental rationality.

In the effort to make economic activity quantifiable and predictable, economics has chosen simplifying assumptions which exclude the normative elements inevitably raised by fuller consideration of the actual social costs, distributions, and utilizations of information. "The usual postulates of rational behaviour (even after taking into account the preferences of others) yields a situation that is inferior for all" (Sen, 1974, 77) because the choices they permit are only the most advantageous if the superior pay-offs which might be realizeable in some circumstances, through collectively-binding decisions, are ignored.

Thus the concept of individual rationality becomes very difficult to define and an attempt to escape from this problem through the use of the notion of collective -- as opposed to individual -- rationality would involve ideas that relate to the concept of morality... If all pursued dictates of morality rather than rationally pursuing their own self-interests, all would [be] better off. (Sen, 1974, *ibid*, 75)

Adam Smith believed that commercial society would prove to be a nurturing environment for most of the civic virtues Mandeville's critics had sought to preserve. Stated as a welfare argument, the notion of the 'invisible hand' suggests that there exists, in principle, a way to derive from some aggregative calculation of the instrumentally-rational interests and conduct of individuals, the common interests and most beneficial arrangements for society. Smith and his successors can therefore be seen as devoted to the solution of normative problems of collective action, by reference only to the instrumental reasons of opportunistic individuals. And as Mill makes clear, the justification of this strategy is simply that it offers a way of avoiding the problems of acquiring and processing information, faced by economists!

CONTRACT

"If we are so disposed that each, to gain some personal profit, will defraud or injure his neighbour, then those bonds of human society which are most in accord with nature's laws will necessarily be broken. . . . *To allow a client to be hasty in completing his purchase, and through misinformed judgement to incur a serious loss, is not equivalent to refusing directions to a traveller: it is to lead him deliberately astray. . . .* Be that as it may, if both pretence and concealment constitute criminal fraud, there are very few transactions into which criminal fraud does not enter. . . . In trusteeships and partnerships, in trusts and commissions, in buying and selling, hiring and letting, in all the transactions on which the social relations of daily life depend, it requires a very good judge (especially since counter-claims are admissible in most cases) to decide the extent of each individual's obligation to the other."

Marcus Tullius Cicero, 42BC, De Officiis, Book Three

Cicero's final work, his treatise "On Moral Obligation" (written as a long letter of advice to his profligate son, then pursuing his studies in Athens), has been one of the springs at the source of the civil and common law vocabulary of the European States and their colonies throughout its development. In Cicero we find that at the death of the Roman Republic, complex, precise concepts, practises and institutions of commercial law are already recognizable.

The significant ethical problems, for Cicero, are those associated with commercial transactions. His central moral theme, and the framework within which he raises these problems, is the struggle within the polity between individual and civic will (the 'respublica'); or, within the citizen, between expediency and virtue. Libertarian and egalitarian positions in contemporary liberal political theory are still oriented to the equivalent conceptual polestars of private and public interest. But for Cicero

the core of this struggle is really revealed only when he arrives, toward the end of his `letter', at the recondite topic of duties of disclosure in commercial transactions. The extent of the citizen's obligations to the commonwealth was already understood, two thousand years ago, as a question of information entitlement and the procedural rationality of communication in the marketplace.

Cicero's remarks about the ubiquity of "pretense and concealment" ("simulatio et dissimulatio") offer an interesting angle of incidence on the allocation of knowledge and communication rights. He invites us to examine this area in terms of the private interactions of property rights-holders during a transfer of some of their rights, implying that in this kind of interaction each party depends implicitly on the existence, in the background, of a set of shared public norms governing the creation of an enforceable agreement, and thereby binding the other party to the agreed private actions. This normative background, according to some legal scholars, allows us -- and in the view of some, requires us -- to conceptualize contract law as an instrument of distributive justice. Many statutory provisions are designed to rewrite existing rules of contract, and thereby perform a redistributive function: examples include usury laws, quality control requirements, food and drug labelling regulations, minimum wage laws, and rent control laws. All of these provisions in statute law shift resources from one group to another by setting terms and limits on permissible contracts (see Kennedy, 1976; Michelman, 1978, 1016-37; Ackerman, 1973).

Contractual Voluntariness and Advantage-Taking

In the following discussion, as well as carrying forward some threads of the public welfare theme, I want to trace an argument developed by Anthony Kronman which converges upon Cicero's information policy topic of contractual disclosure obligations (Kronman, 1978; 1980a; 1980b). Through an examination of the concepts of 'voluntariness' and 'advantage-taking', Kronman has refined the philosophical underpinnings of contract law as an instrument of distributive justice, in the process providing much insight into the axiomatic status of methodological individualism in economic thought. His argument offers a critique of the neo-classical libertarian position on contract, which can be summarized in the following style: "libertarians deny that the State is ever justified in forcibly redistributing wealth from one individual or group to another" (Kronman, 1980a, *ibid*, 473; see also Nozick, 1974; Hayek, 1961). The libertarian theory of contract, based upon a core ethical notion of individual autonomy as the enabling condition of personal integrity, holds that individuals may make any voluntary agreements for exchange of their own property providing they not violate the rights of third parties. Libertarians would require the State's enforcement of any contracts fulfilling this condition. Libertarian political theory can be seen as a normative counterpart to positive economics, articulating an ethical underpinning for liberal individualism and thereby clearing a space in ethics for the methodologically individualist assumptions of positive economics.

The libertarian conception of contractual exchange is historical, in the specific sense that it is concerned only with the process by which agreements are made -- the legitimacy of the 'chain of title' -- but not with their distributive consequences. This position is not to be confused with pure

proceduralism: libertarians require not only compliance with a procedure, but a particular **form** of compliance: **voluntary** compliance. The claim of libertarianism to be a theory of justice in exchange relationships, and, therefore, a moral theory underpinning individual economic freedom, requires this distinction between legitimacy as the product of a correct procedure, and as the product of authentic consent. **Consent** to one's agreement implies something beyond proceduralism: the libertarian "touchstone of liability" (Epstein, 1975, 293) is the voluntariness of agreements, and mere procedural correctness must be ignored if these diverge.

Of course, it is far from true that the whole corpus of positive economics has been indifferent to the distributional outcomes of a system of market exchange -- indeed the program of research known as welfare economics has been devoted, since Adam Smith, to demonstrating the possibility of combining equitable distributions with the productive efficiencies of free markets. This is Kronman's position, though he also aims his argument against the many welfare liberals who oppose the use of contract law for redistributive purposes (for example, on the argument that taxation is always a better instrument than "the detailed regulation of individual transactions": see Rawls, 1971, 274-9). Although their normative principles differ profoundly, libertarians and welfare liberals often defend similar doctrines of contract law: both agree on the role of contract law in reducing transaction costs; both "emphasize the importance of protecting those engaged in the process against threats of physical violence and other unacceptable forms of coercion" (Kronman, *ibid*, 474); and both agree that redistributive regulation of voluntary exchange should at least not obliterate state recognition of a sphere of individual liberty.

Kronman's argument turns upon the central idea of the legal concept of the contract, **voluntary agreement**: this, he says, "cannot be understood except as a distributional concept" (ibid). Agreements are taken to be involuntary if certain forms of advantage-taking are present (for example, taking advantage of greater size and strength to coerce agreement). But the notion of individual autonomy, as Cicero noted, offers no guidance as to where to draw the line between forms of advantage-taking which render contracts involuntary, and therefore unenforceable, and forms of advantage-taking which are permissible.

When is an agreement voluntary? A decision to believe a threat, and therefore to enter a contract not otherwise desired, is both rational and intentional; but if this all that is required to make it voluntary, perhaps only agreement under hypnosis is 'involuntary'! It is not enough to find that a conscious decision was made -- the circumstances of the decision are highly relevant. For a judge, drawing the line between voluntary and involuntary exchange requires specification of the conditions which must be present before an agreement can be considered to have been voluntarily concluded; and this is where the analysis of permissible and impermissible 'advantage-taking' is relevant.

In the neoclassical view, all contracts necessarily entail 'advantage-taking' in some senses (ideally by all parties): having something valuable to exchange is the advantage both parties exercise to enter a contract; and the greater value to them of their new goods than their old, the gains-from-trade advantage they realize in concluding it. But to attempt to invalidate a contract a promisor might invoke a number of different conditions of **disadvantage**, as demonstrations of the requisite involuntariness: for example, mental incapacity to comprehend the consequences, insanity, threat,

deceit, or ignorance of relevant information. The question Kronman raises in examining such claims of disadvantage is: "Which of the many forms of advantage-taking possible in exchange relationships are compatible with the libertarian conception of individual freedom?" (Kronman, *ibid*, 480). In each of the above circumstances the promisee enjoys an advantage -- mental acuity, education, superior health, or physical strength -- and the question becomes when these advantages may be exploited, and when their exploitation will deprive promisors of the individual freedom necessary to make the promise voluntary and binding, in the libertarian sense.

Broad social agreement exists that direct coercive violence and threat are objectionable, state-interdicted forms of advantage-taking, if only through a shared Hobbesian understanding that the risks of alternative arrangements are unacceptable (and for an interpretation of Hobbes as a theorist of communicative rationality see Zimmerman, 1988). What about overt lies? Or unvoiced and covert deception ("*simulatio et dissimulatio*"), such as simply failing to mention important known facts about products? Many commentators (and cases) draw the line after explicit misrepresentation: coercion and fraud are illegitimate and render contracts involuntary. But why, then, are not true but misleading statements also included? Why not all instances of relevant non-disclosure (eg product-testing data, research and development activities, etc.)? If it is argued that the promisee must take more care -- '*caveat emptor*' -- why does this not apply to the case of physical coercion as well (for example, by hiring a bodyguard)?

Libertarians believe that distinguishing allowable advantage-taking is quite simple: it is to be permitted unless it infringes the rights of another party (the '*principle of liberty*'). For example this

is, in relation to **informational** advantage-taking, the position of Richard Posner (1981). Posner suggests that all communication rights are mere qualifications of a more fundamental right to **not** communicate. He argues that "the development of civilization" can be viewed as the growth of opportunities for privacy, secrecy and concealment (ibid, 246-7); that concealment increases the efficiency of information processes; that legal protection of privacy and secrecy rights functions as a surrogate for the creation of new property rights in information, which in turn creates a socially beneficial incentive to investment in the creation of useful information; and that, therefore, "the case for protection of business privacy is stronger than that for individual privacy (ibid, 249).

The libertarian approach is, however, somewhat question-begging, since it doesn't tell us what rights (informational or otherwise) people actually do or should have, only that rights established by prior means must not be violated. We have to know, on this argument, what peoples' rights are, and how they are justified, to know when complaints are valid; but this is not an obvious matter, because rights-claims are themselves established by successful argumentation in justification of a **theory** of rights. Kronman makes this point rather briefly, by reference to the notion of "essentially contested concepts" (ibid, 483-4; Connolly, 1983, also develops this concept). Although this is not the place for a full treatment of the communicative presuppositions of normative theories, a few remarks seem in order. First of all, the obtrusive fact that disputes **can** be 'resolved', in some meaningful sense, by coercion unaccompanied by reasons, and that such 'resolutions' are not experienced as 'just', suggests that we 'give justice' by giving good reasons for the use of power -- reasons that are accepted by those affected. This process of legitimation, and its inner limits in the concept of 'essentially contested concepts' point to 'justice' and its cognates (and related or derivative concepts)

as descriptive of a complex class of `regulative' or normative **speech acts** arising within structured, interactive processes of discovery and evaluation of the reasons, intentions, motives and meanings of human actions. Paul Ricoeur describes this action-theory perspective:

the juridical procedures by which a judge or a tribunal validates a decision concerning a contract... terminate a careful refutation of the excuses and defenses which could `defeat' the claim or the accusation... Saying that human actions are fundamentally `defeatable' and that juridical reasoning is an argumentative process which comes to grips with the different ways of `defeating' a claim or an accusation... pave[s] the way for a general theory of validation in which juridical reasoning would be the fundamental link between validation in literary criticism and validation in the social sciences. (Ricoeur, 1971, 529)

The First Fundamental Theorem of Welfare Economics

Kronman offers, for purposes of argument, three alternative positions that could be taken to distinguish acceptable and unacceptable advantage-taking:

- i) a Nietzschean `theory of natural superiority,' by which differences in personal qualities are argued to confer on some the right to exploit others in particular ways;
- ii) a utilitarian theory, which justifies particular forms of exploitation on the grounds that they thereby increase the total amount of some general `utility' (eg happiness);
- iii) a theory invoking the interests of disadvantaged parties themselves: advantage-taking is permitted only when the welfare of the disadvantaged party is thereby increased. (Some advantage-taking arguably confers benefits on the exploited party in the long-run, greater than those conferred by its prohibition).

Kronman points out that each theory permits intelligible discrimination between permissible and impermissible forms of advantage-taking, but with different results. Only the third, he says, is

logically consistent with the moral claims of libertarianism. The natural superiority theory is incompatible because libertarianism is strongly attached to a notion of equal possession of rights, and of freedom from the interference of others (unlike theory i). Utilitarianism (theory ii) is incompatible because libertarianism is profoundly concerned with the autonomy of the individual, and respect for individual "moral boundaries" and choices, regardless of the possibility of producing more of some utility by ignoring these values (unlike utilitarianism, which treats individuals as means to the end of maximizing utility). Only the third option is compatible: it is neither anti-egalitarian, nor anti-individualistic. Kronman believes that a method of explaining why some forms of advantage-taking are, or are not allowed, matching the third position, is provided by the **pareto principle**.

Paretian theory is an important innovation in the way the economists who continued the work begun by the classical theorists chose to calculate social welfare. Where Smith, for example, simply equated social welfare with maximization of GNP, 'Pareto optimality' is a more complex and contemporary economic definition of the common good as a state where "there is no re-allocation of factors that can be made to produce a different bundle of final commodities so as to make one person better-off without at the same time making another person worse-off" (Heap, 1989, 42). Pareto's work expressed a means of comparing the summed utilities of consumers in an economy under different exchange outcomes, setting out a mathematical proof that that re-allocation of goods to new uses achieved by perfectly competitive markets of self-interested rational utility-maximizers will necessarily make all parties better-off. **relative to the given initial distribution of resources** (see Pareto, 1971). This formalism, sometimes known as the 'First Fundamental Theorem of Welfare Economics', is a

key part of modern neoclassical general equilibrium theory, itself "the apex of achievement, as far as applications of instrumental rationality are concerned" (Heap, 1989, *ibid*, 42).

The modern form that welfare economics has taken after Smith has then been to demonstrate, via ever-more-elaborate mathematical models, that an equilibrium of supply and demand in a perfectly competitive market is by definition Pareto optimal; and that government intervention in the economy should be limited to generating Pareto-optimal states by ensuring that markets are competitive. For acknowledged instances of market failure, approximations to Pareto-optimality are offered by neoclassical economic theory through analytical devices such as 'Pigovian taxes' (see Pigou, 1920), or through changes in property rights regimes (see Coase, 1988, *op. cit.*). The First Fundamental Theorem was not able to be fully operationalized until after the 'marginalist revolution' in economic thought, bringing the crucial insight of neoclassical theorists such as Jevons (1865) or Walras (1874) that demand for any one good is influenced by the demand for all others, and therefore that the possibility of an equilibrium of supply and demand across an entire economy is a function of the interdependence of whole demand schedules. This of course opened up a century of intensive mathematical endeavor, devoted to equipping theorists and decision-makers with the tools to calculate all of the permutations stemming from variations in initial assumptions regarding demand schedules, scale of output, etc.. What Pareto contributed to this new scientific edifice was, in effect, a way to preserve within it the notion of unintended beneficial social consequences attributed by Smith to individual selfish action.

There are a number of recognized **problems** with the Paretian solution, which have furnished much additional work for marginalists. Some of these problems are:

1) The model is static, assuming unchanging technology and stable exogenous preferences, and ignoring, for example, the effects of technological innovation on resource scarcities, on the supply side, or of advertising on demand. Technological change and the influence of non-price information on demand are easily demonstrated, but cannot be brought inside the model.

2) It assumes perfectly competitive markets, with all actors as price-takers, all prices trending towards marginal cost, and no shortages or over-supplies which are not cleared up more-or-less instantly by price-adjustment. If the economy actually contains monopolists and oligopolists (which it plainly does), paths by which Pareto-optimal equilibria will arise become opaque to prediction.

3) It assumes the non-existence of externalities which make one actor's experienced utility dependent on another actor's consumption (pollution is a widely-cited example). It likewise assumes the non-existence of public goods: those which are either **non-rivalrous**, like information (one actors' use does not preclude another's), or **non-excludable**, like street-lighting (too expensive to recover costs on the basis of use). In a laissez-faire economy, where all goods are privately produced, goods with these characteristics will be produced sub-optimally.

4) It offers no answer to questions of distribution. It may be mathematically true that perfectly competitive equilibria produce Pareto optima, but for any case of incomplete markets (all real cases) there are many possible equilibria with associated Pareto-optimal outcomes, and each has different implications for changes in the distribution of resources among economic actors. Calculated from any given initial distribution of resources, the pursuit of Pareto outcomes is indifferent as to whether it follows a path towards or away from equity.

If we take up only, say, the second of these problems, the actual existence of oligopoly and monopoly, we can see that the general equilibrium framework fails to solve the informational problems of economic decision-makers. Monopolists and oligopolists are able to set prices to some degree, rather than only receive them (as in perfectly competitive markets). However, to know where to set their prices requires them to know what shift in demand for **other** goods, and therefore

what change in the monopolist's price for their factor goods, will be caused by their **own** change in prices. Monopolists and oligopolists, it turns out, need a complete model of all markets, real and imaginary, with the vast knowledge requirements this indicates, to know how to set their prices.

Indeed, as Arrow observes,

under these knowledge conditions, the superiority of the market over central planning disappears. Each individual agent is in effect using as much information as would be required for a central planner. (Arrow, 1986, op. cit., S392)

Information Disclosure and Social Welfare

In application of paretianism to permissible advantage in contract law, Kronman, like Cicero, considers the really difficult, and therefore **defining** cases to lie in the area of information disclosure. Disclosure obligations in contract law closely parallel that area of constitutional 'free speech' law concerned with the 'right to know'. The notion of a constitutional 'right to know' is relevant, for example, to judicial review of government freedom of information legislation, e.g. regarding the extent to which litigants can use the courts to force expanded rights of access to government information. North American constitutional courts have not enunciated any general constitutional 'right to know' (see O'Brien, 1980). But the disclosure obligations which arise within contract law may reach adjudication as constitutional free speech issues, for example, in the context of advertising, considered as the promissory element of an implied contract (see Farber, 1979).

But to return to Kronman's narrower issue of **private** disclosure obligations between parties to a contract, consider, for example, whether the buyer of mineral rights to a property who has deliberately acquired information about that property which is unknown to the seller (eg, by Landsat imaging) should be permitted to exploit that advantage without revealing what they know. Kronman argues that preventing the buyer from exploiting deliberately searched-for information (by imposing a duty of disclosure) will in general discourage others from making such investments in generating useful information, that less information will therefore be produced, that this will impair the allocation of resources to their best uses, and that, therefore, those at a disadvantage in such transactions would in fact be harmed more in the long-run by imposing such a duty of disclosure (for example from higher commodity prices resulting from inferior allocations of resources). Kronman therefore supports the creation of common-law and/or statutory property rights in all productive information deliberately acquired, on the grounds that this is a necessary incentive to the social production of improved knowledge of all kinds.

This Paretian argument is, of course, the same rationale which underlies statutory intellectual property law. It should be noted that by this theory, the paretian benefits of perfectly competitive market equilibria are to be obtained by internalizing the positive public-goods externalities of information resources through state creation of temporary **monopolies**. Little or no empirical work has been done to demonstrate the actual relationship between levels of monopoly incentive, and levels of investment in and outcomes from information discovery activities (see MacLaren, 1983). A great deal of confusion currently surrounds the legal issues connected to information considered as property, not least because of the uncertain implications of combining existing law with new

information technologies, for changing the ownership of information resources previously in the public domain; the ambiguities surrounding the control of electronic forms of information (such as hypertext); and the central relevance of such ambiguities and uncertainties to the assessment of investment risks in the rapidly expanding software, on-line news and market database, and on-line transaction services industries. The courts have been ambiguous in their rulings, on the one hand drastically extending the range of forms of knowledge and expression in which exclusivity of use will be enforced by the State, and on the other hand, asserting that there is no form of property in information per se to which the Criminal Code can be applied (R. v Stewart, 1988; on common-law information property rights, see especially Samarajiwa, 1985; on public interest reservations against information property rights see Patry, 1985).

Kronman suggests that non-disclosure of relevant information regarding the allocation of productive resources **accidentally or casually** acquired, should be distinguished from the withholding of **deliberately** acquired information. A requirement to disclose casually-acquired information will not, he says, have significant effects on the social production of such information, will reduce search costs for the other party, and thus, in general and in the long run, will yield social welfare gains in excess of losses. He also shows (Kronman, 1978) that **this distinction is precisely the outcome in the case law** (though without any similar dictum attached). Productive information acquired by investment for that purpose appears to be systematically exempted from disclosure requirements; casually-acquired product information which is not disclosed to buyers, on the other hand, routinely creates breach of contract.

Kronman clearly intends to draw the line dividing information property rights from information disclosure obligations so as to encourage society-wide pareto-optimal distributions of information resources, together with clear and consistent rules concerning permissible advantage-taking in the formation of individual contractual agreements. But it's not clear that he has achieved the former (or, therefore, justified his version of the latter). The assertion that producers allocate or consumers acquire other resources more efficiently and equitably, individually or collectively, when their disclosure obligations or learning opportunities are lessened, is not indisputable. The Pareto principle does not require, even in an environment of explosive growth of information resources, that market allocations must result in **more** information in the hands of the least-advantaged: merely that the least-advantaged not end up with a smaller overall basket of monetized goods than they began with.

The information property rights he advocates may, for example, create incentives to invest in the production of information only in order to evade disclosure obligations, since, clearly, they could not **require** its use as a production input. Effective productive and distributive coordination in a context of expanding and intensifying market structures and rapidly changing technologies in any case requires exponentially increasing information inputs. If these increasing information inputs also form an increasing proportion of the continuous, long-run, decreasing cost of goods assumed by neoclassical models, rising transaction costs and distorted market structures created by new information property rights may offset any social welfare advantages accruing from technically better allocations, by generating highly stratified distributions (see Braman, 1989). Kronman's perspective on the creation of information property rights during the course and within the process of contractual

interaction ignores this contradiction between incentives to endogenous market production of information as an economic good, and exogenous informational efficiency and equity of market coordination.

To state this another way, consider that the Pareto-optimal equilibrium models on which Kronman's arguments rest, are based upon the classical assumptions of perfect competition, and rational, self-interested actors fulfilling exogenous preferences by utilizing the perfect, costless, ubiquitous information this is theorized to generate. But Kronman is now using this framework to suggest that certain classes of existing information should be made **unavailable** to some decision-makers, through temporary monopolies, in order to achieve the claimed welfare results. The underlying economic theory assumes that decision-makers will have access to market-generated information which its own application to the allocation of information rights within contractual interaction now suggests they cannot have. The empirical relationship between levels of incentive and rates of new discovery in various industries, and specification of the aggregate costs to disadvantaged parties, and of the thresholds at which social returns on investments in property-rights incentives fall off, are notoriously under-researched. Further, even those discoveries which would in fact be foregone in the absence of such a regime of property rights cannot be expected to generate constant social opportunity costs, since the gains attributed at the margin will be inflated by the value to large organizations of the ability to use their information monopolies to prevent the use of new discoveries for competitive purposes.

Thus the ongoing privatization of the 'information commons' which results from the argument traced above may have an unintended effect quite different from the optimization of social welfare by the competitive interaction of self-regarding actors. The hallmark of a valid contract is its voluntary character, and a central criterion of voluntariness is, as Cicero noted, the sharing of relevant information. The creation and growth, through contract adjudication, of new forms of private property rights in information may therefore be suspected, at least in some range of circumstances, of seriously attenuating the conditions under which individual transactions will be perceived and experienced as valid and, consequently, undertaken at all. Additionally, the demonstrated circularity of neoclassical reasoning about information in markets suggests that the claimed welfare efficiencies of aggregate exchange activity under such a property-rights regime are also suspect. Property rights, and the informational dimensions of their development, furnish the theme of the last section of the chapter.

PROPERTY

To the extent that markets work, there is no need for the state. Markets allow persons to interact, one with another, in a regime that combines freedom and order, provided only that the state supply the protective legal umbrella. (Buchanan, 1986; 268)

Property and law are born together and die together. Before laws were made there was no property; take away law and property ceases. (Bentham, 1967)

A widely, and indeed intuitively understood concept of private property among its participants is prerequisite to the operation of a market. But lawyers' and economists' professional deployment of the concept of property is in fact widely divergent from the non-professional's notion of 'things that are owned by persons'. In common usage the notion of property invokes images of persons enjoying exclusive powers to use, alienate, ignore or destroy the things which they own, in a presumed pre- or extra-social mode of relation between person and thing. Restraints on these individuated powers are seen as departures from an ideal conception of full ownership. (Good discussions of the legal concept of property are provided in Philbrick, 1938; Ackerman, 1977; Grey, 1980; and Macpherson, 1987.)

This latter idea of property is not so much a misconception as an anachronism: it was, indeed, a concept central to classical liberal jurisprudence, political philosophy, and political economy. The 'thing-ownership' notion of property served a clearly useful ideological function at the time of its emergence in modern European law as part of the conceptual armory of liberalism. The 17th-century attack on feudal tenure and its rigid social estates and role-obligations was very much couched in

terms of the personal autonomy which ownership as absolute control over a portion of nature expressed. The classical liberal conceptions of property and contract were at the core of the anti-feudal ideologies of 17th and 18th century Europe. Colin Sumner calls this the "hermeneutic of a consensual culture":

Each ideology has its own natural milieu -- that of its origin. 'Reality' is instantly recognizable within this milieu. There is an identity between appearance and perceiving ideology which guarantees the social psychological phenomenon of 'recognition'. (Sumner, 1979, 287)

The notions of property and justice are historically intertwined in modern European thought.

The continental legal systems were the direct inheritors (and English common-law, especially through Selden and Locke, the indirect inheritors) of the Roman vocabulary of rights ('ius') and its Thomistic 'natural rights' interpretation. (The seventeenth-century development of natural rights doctrines within common-law jurisprudence are covered in Tuck, 1979, and Tully, 1980.) In the original Roman tradition of civil jurisprudence "ius takes its departure from a myriad starting points in the possession, distribution and administration of things" (Pocock, 1983, 248; see also Durkheim, 1983). Rights demanded or recognized in or from one person by another refer back to the things which are "the medium of contact between the persons and the grounds of the rights which they recognize in one another" (Pocock, *ibid*, 249). Thus the civil jurisprudence tradition "has been from its historic beginnings the fundamental expression of possessive individualism, in which the individual and his social and moral world are defined in terms of the property transactions in which he is engaged" (*ibid*). By the onset of the industrial revolution the leading English legal authority concurred in defining property as "that sole and despotic dominion which one man claims and exercises over the external things of

the world, in total exclusion of the right of any other individual in the universe" (Blackstone, 1791, cited in Grey, *op. cit.*, 74, n16).

In contrast to this inherited view, twentieth-century specialists' theories of property dissolve both the notion of ownership, and the connection between property and material objects (see Grey, 1980, *op. cit.*; Philbrick, 1938, *op. cit.*; Furubotn and Pejovich, 1972; Simmel, 1991). These transformations are fundamental to explaining the central and expanding role of information processes in a market economy (see Wunderlich, 1974; Hirschleifer, 1971). The following two subsections detail characteristics and examples of the disintegration of ownership and the ephemeralization of property which occur in the process of economic modernization.

Disintegration and Ephemeralization of Property

A) The disintegration of ownership:

Disintegration is illustrated first of all by the fact that it is now perfectly routine for a chattel to be jointly owned by more than one person. In such cases ownership is defined by the particular limited rights (and responsibilities) held by each joint owner. Secondly, the right to do as one wishes with one's property implies the power to dispose of particular aspects of one's control, by selling off rights to certain uses. These discrete aspects of control can be disposed of at, and for, different periods of time (an obvious example is literary copyright). Increasing division of labour and the growing

complexity and volume of economic activity resulting from it has, as a necessary corollary, just such a process of disintegration of property.

Thirdly, in this process ownership rights can be, not only subdivided, but also "made to disappear as if by magic" (Grey, op. cit.). Grey gives the example of an incorporated trust: the prior state of ownership gave owner A the right to leave the property idle; but its conveyance into trust, where B manages the property for the benefit of C, removes this right and creates a fiduciary duty of economically prudent administration.

Fourth, the logic of productive coordination, viewed from within a liberal system of adjudicative concepts regarding the control of resources, leads to the development of **corporate** forms of ownership which assign discrete non-market roles, obligations and claims in relation to jointly-held property among various kinds of stakeholders (see especially Schneewind, 1984). And finally, corporate entities themselves acquire rights and obligations as owners which are legally distinct from those of their human agents. Corporate rights of ownership include the capacity to buy their own stock, thus reducing, or even (theoretically) **eliminating** human ownership. Dan-Cohen (1986) critiques the concept of 'legal personhood' on this basis. The individual human being, he says, has been the "paradigmatic legal actor, in whose image the law is shaped and then applied to corporations and other collective entities" (ibid, 13). The philosophical grounds of the 'corporation as person' metaphor is part of a longstanding and fairly heated debate over the nature of collective entities... "marked by a perennial dispute between the holistic and atomistic views..."

roughly between the view that fully acknowledges the reality of collective entities and denies the possibility of completely reducing that reality to a description of individuals and their interrelations, and the view that collective entities are constituted and therefore reducible without loss into individuals and their interrelations. (ibid, 15; for a comparison of Marx and Weber on this point see Calhoun, 1991)

The normative implications of both views, however, are strikingly similar: either (on the holistic view) corporations are enough like persons to warrant possession of at least some personal rights, or (on the atomistic view) it is really individual natural persons (eg shareholders) who own the rights, but the corporation nevertheless exercises them as their agent. Dan-Cohen proposes that the 'corporation as person' metaphor be replaced with a metaphor of the 'corporation as intelligent machine,' as a starting point for a distinct set of methods and principles for a divergent course of legal regulation.

B) The ephemeralization of property:

The ephemeralization of property can be illustrated, first, by considering the proportion of property which is intangible. As Philbrick observed in 1938,

the total value under our law today of proprietary rights which have no material object is probably enormously greater than the value of such rights in all land and tangible chattels. This modern incorporeal property includes, particularly, promissory notes, bills of exchange, patent rights, and shares of corporate stock" (Philbrick, op. cit., 692).

To his list we could add stock options, futures contracts, bonds, tax credits, bank accounts, insurance policies, trademarks, copyrights, franchises, licenses, mailing lists, and so on. And if he was correct that intangible property was already predominant in the U.S. economy in 1938, its proportion is now overwhelming in all industrial economies.

Secondly, in the acquisition or exchange of intangible property we are not dealing with utilities which have a direct use, but merely creating a complex set of abstract claims against an abstract legal institution: "we think of our share of stock... as part ownership in a factory, but really the board of directors could sell the factory and go into another line of business and we would still have the same claims on the same abstract business corporation" (Grey, *op. cit.*). Third, such abstract proprietary rights cannot easily be distinguished from personal, political or civil rights. For example, in the context of privacy rights, "information about a person can as well be a property object as information about a machine, a parcel of land, or a literary composition" (Wunderlich, 1974, *op. cit.*, 93; generally see also MacPherson, 1987, *op. cit.*).

Fourth, property is ephemeralized as the inextricability of interdependent uses of property grows. This can be seen clearly in the context of environmental regulation, in terms of the impossibility of confining one's effects on air and water resources to the boundaries of a particular parcel of real estate. Sax (1971) develops a concept of 'public property rights' which serve to agglomerate large numbers of individually small interests in **others' use of their own property**. Contemporary proposals for public auction of state-created 'pollution rights' illustrate the same point.

Institutional Development of Property Relations

Fragmentation and ephemeralization make the use of the concept of property as much subject to informal conventions of interaction, and to micro-social processes of institutional change, as to

codification and development through formal state institutions. On the formal side, specialists employ the concept of a 'bundle of rights,' rather than the colloquial unitary conception of property. The 'bundle-of-rights' concept, a staple of legal realist thinking regarding the arbitrariness of the private/public distinction, originates in the work of Wesley Hohfeld (see Hohfeld, 1913; Noyes, 1936; Philbrick, op.cit.). Under the lens of the 'bundle of rights' concept a series of discontinuous specialized usages of the term 'property' can be discerned. Property is, first of all, a body of law concerned with the bundle of rights pertaining to any parcel of land: concerned, that is, with doctrines of estate; with title registration, transfer and financing; with landlord/tenant relations, zoning laws, and environmental regulation; and so on.

But even with respect to real estate the distinction between property and contract -- between rights 'in rem' (transferable and good against the world), as distinct from rights 'in personam' (non-transferable and good only against particular persons) -- is increasingly unclear: "in personam contract rights shade into property rights as they become freely assignable, and assumable, and as interference with contractual relations is recognized as a tort" (Grey, op. cit.; see also Cohen, 1954). (Other forms of property remain distinguishable from contractual liabilities -- enforceable only by market-valuation damage awards -- in being enforceable by criminal sanctions.) Finally, even public law entitlements (welfare, social security, healthcare, education) are considered by some legal theorists as a "new property" (see Reich, 1963).

The concept of property has, clearly, evolved far from its earlier central and unambiguously norm-generating place in political economy and legal theory to this more or less incoherent contemporary

notion. Property can now be seen to entail as much a process of normative and procedural rationalization of forms of relationship between persons, as it does an instrumental rationalization of objective resources by utility-maximizing preference-holders. "The collapse of the idea of property" as Grey puts it, is "a process internal to the development of capitalism itself" (op. cit., 74; and note the contrast with Macpherson's suggestion that the narrower, 'thing-oriented' conception of property is primarily a product of the development of capitalist social relations: 1987, op. cit.). The development of an industrial market economy entails increasing division of labour and economies of scale. In pursuit of competitive advantage and optimal allocation of resources, market actors (buyers, sellers **and** market-makers) can readily be imagined subdividing and recombining the bundles of rights of which their ownership is composed, "creating by private agreement the complex of elaborate and abstract economic institutions and claims characteristic of industrial capitalism," without theorizing the State in any other than its "classically liberal, neutral, facilitative role" (Grey, op. cit.).

In this perspective the historical development of property rights "takes place in response to the desires of interacting persons for adjustments to new benefit-cost possibilities" (Demsetz, 1967, 350). Lachmann offers a Weberian account of this process, observing that "the undesigned institutions which evolve gradually as the unintended and unforeseeable result of the pursuit of individual interests accumulate in the *interstices* of the legal order".

The interstices have been planned, though the sediments accumulating in them have not and could not have been. In a society of this type we might distinguish between the *external* institutions which constitute, as it were, the outer framework of society, the legal order, and the *internal* institutions which gradually evolve as a result of market processes and other forms of spontaneous individual action. (Lachmann, 1971, 81, *emph. in original*)

Grey asserts that virtually all of the structure of an industrial capitalist economy could be created in the "internal institutions", under a regime of voluntary contract; moreover "the specialists who design and manipulate the legal structures of the advanced capitalist economies could easily do so without using the term 'property' at all" (Grey, 73).

Assuming the capacity on the part of entrepreneurs to take imaginative advantage of the division of labour and to create economies of scale by freeing themselves from limiting conceptions of *en bloc* ownership and concrete property, the institutions of law would eventually have to follow suit by developing the 'bundle-of-rights' formulation of property which they have in fact arrived at. All of these developments -- economic structures, legal forms, new doctrines -- can be theorized as entirely **internal** to the capitalist market system. From this perspective, the shifting web of property relationships is empirically constituted, at a normative and collective level of the social process, as an information system of "instructions or guidelines for behaviour. These property messages reduce the possible options for - hence, uncertainty about -- claims on or uses of a property object" (Wunderlich, 1974, op. cit., 82).

Renner's critical description of the ideology of liberal jurisprudence helps capture the role of the older unitary concept of property in the normative integration of the individualistic social order emergent in capitalism. The inner logic of capitalist law, in his formulation, consists of the interaction of two notional elements -- ownership and personal liberty. The first defines relations between persons and nature, consisting of individual control of separate parcels of nature; the second

defines relations between persons, consisting of an independent equality in which each person is free to do as she likes, consistent with respect for the identical rights of others. Interaction of these two elements creates a two-dimensional structure of rights and obligations: `vertical' relations of domination respecting the things one owns, and `horizontal' relations of equality to other individuals. The only legal relations among individuals are those created by their voluntary agreements (see Renner, 1949).

This widely accepted view of the structure of civil law of course disguises some significant social and political consequences: viewed from within this ideology, only the **public** law role of the State -- its attempts to set and pursue policies in the public interest -- can threaten liberty. Its perceived neutral enforcement of **private** relations of ownership and contract -- its private law role -- appears to express only the legitimate and pre-social relation of domination between persons and their things. But the disintegration and ephemeralization of property gives rise to a breakdown of this schematic separation of positive, object-oriented elements, and normative, intersubjective elements, in the relationship between ownership, exchange, and personal liberty. It also foregrounds, therefore, the expanding role of the State in the creation, administration and enforcement of property rights. The `bundle-of-rights' conception patently requires increasingly frequent adjudicative intervention merely to untangle the complex and often counter-intuitive webs of interlocking claims of which property is now composed.

While the image of capitalism as the guarantor of unitary versions of property right mobilizes allegiance through its claims thereby to be protective of personal liberty, in the view of Grey and

others, the dissolution of the unitary conception of property into a mere information system "erodes the moral basis of capitalism" (Grey, op. cit.). Schumpeter elaborates this idea:

The capitalist process, by substituting a mere parcel of shares for the walls of and the machines in a factory, takes the life out of the idea of property. It loosens the grip that once was so strong -- the grip in the sense of the legal right and the actual ability to do as one pleases with one's own... this evaporation of what we may term the material substance of property -- its visible and touchable reality -- affects not only the attitude of holders, but also that of the workmen and the public in general. Dematerialized, defunctionalized and absentee ownership does not impress and call forth moral allegiance as the vital form of property did. (Schumpeter, 1976, 142)

Tangible property, which **appears** to rest in the first place upon the individual's act of appropriation and use, and only in contested cases upon the State's sanction of such acts, generates a relatively smooth course of property rights enforcement directed largely against **deliberate** violations of more or less **obvious** claims of ownership. But legal forms of ephemeralized property, such as information, involve the State in its design and creation, its protection against intentional **and** unintentional trespass, its transfer, and its further division. As the development of the 'bundle-of-rights' conception of property dissolves the connection between capitalism and 'thing-ownership,'

mature capitalist property [is] seen as a web of state-enforced relations of entitlement and duty **between persons**, some assumed voluntarily and some not... The neutrality of the State as enforcer of private law evaporates; State protection of property rights is more easily seen as the use of collective force on behalf of the haves against the have-nots. (Grey, op. cit., 79)

Some Implications for the 'Information Economy'

The disintegration of the classical unitary concept of property is manifestly accelerated by information technology, both through the many new forms of ephemeral property these technologies

generate (the growth of property at its *extensive* margin), and also through the cascading opportunities they open up for dividing and controlling the use of ever more fragmented and finely-grained 'bundles' of rights (the growth of property at its *intensive* margin). This disintegration is at the same time the evolution of the legal and social conditions in which a large range of both tacit and documentary public knowledge and communication resources and activities can be transformed into exclusionary property rights. Morris-Suzuki has described in detail how the massive valorization of information and communication resources associated with the early stages of global economic restructuring in the 1980s rested in large part on a process of cyclical commodification of the pre-existing knowledge and communication resource 'commons' (Morris-Suzuki, 1986).

The ephemeralization of property and the commodification of knowledge and communication are correlative tendencies, in the sense that both developments emphasize the conventional nature and underlying intersubjective basis of economic valuation. Not only does the institution of private property function as a social communication system about legitimate uses of resources (Hirschleifer, *ibid*, 1971) -- but communicational events also become the objects of a system of private property. Searches for solutions to information problems arising within market exchange generate new forms of information property, as Kronman demonstrates in his investigation of contractual disclosure. This process of commodification of information, however, drives the economic process even further away from the neoclassical model of market exchange, since it provides incentives for the information resources generated by exchange to be internalized within firms, and therefore unavailable to solve the information problems of market actors except as an endogenous production or transaction cost. And since a key form of commodified information in a computerized economy

is personal information about transaction partners and their transaction histories and habits, even the core methodological assumption of neoclassical economics that consumer preferences are exogenous to the market process, is seriously weakened.

The fragmentation and ephemeralization of property makes it possible and obvious to treat communicative interactions themselves as private property, in the form of recorded information about persons and their transactions. Indeed, Kronman's findings regarding caselaw patterns for contractual disclosure obligations are continuous into the personal information domain. Personal data intentionally collected through the expenditure of time, effort and resources are the property of the collector -- **not the data subject!**

If a communicative interaction can be treated as a bundle of property rights, the practical point of this is to be able to **unbundle** it: to sell or contract out the use or usufruct or asset value of elements of the interaction, separately. Property rights overcome problems of indivisibility, and of reliance on public goods. But the indivisibility of communicative interactions is related to the way in which they are **constitutive** of publicness, privateness, knowledge, individual preferences, and much else besides. To unbundle communicative interaction into forms of private property is to dismantle some rather important and taken-for-granted forms of social capital. We can see, in the cascading institutional changes associated with the new communications technologies, how the commodification of transaction and other economic data alters the distribution of all other resources, and how indeterminate the welfare implications of these changes are. As Oscar Gandy notes, electronic **surveillance** has become the cornerstone of economic growth, because it is the key to the

instrumental rationalization of a system of fragmented production of ephemeralized goods and services for trade. "The growing importance of computer-based information systems does not rest in the technology itself, but in the continually changing interactions among technologies, the economic and social conditions that characterize their primary uses, and the cultural practises -- including the systems of laws, regulations, and regulatory institutions -- that govern us..."

[T]he transformation of the industrial economies into 'information economies' is primarily a reflection of their increased need to rationalize complex, interdependent systems, rather than a decision to produce information rather than some other material goods. Surveillance and rationalization also imply an increase in the ability of capitalists to exercise control over individuals in their roles as employees, consumers, and citizens. Their control is increased to the extent that the initiative, independence, and autonomy of the individual is reduced or transferred to other people. Surveillance provides the information necessary for greater control. (Gandy, 1990, 166-7)

CHAPTER SIX: INFORMATION, UNCERTAINTY, AND SOCIAL CHOICE

To the doctrine ...that commercial exchange would bring about such an interdependence that harmony would automatically result, Rousseau ...pointed out that interdependence provides just the situation which makes it possible and worth while for the stronger and abler to exploit others for their own ends, to keep others in a state of subjection where they can be utilized as animated tools.

John Dewey, 1927, The Public and its Problems.

At earlier points in this study it has been suggested that the lifeworld of economic interaction discovered (and prescribed) by the dominant stream of capitalist economic theory is a normatively impoverished one. In summary, it was found in the last chapter that pareto-optimal efficiency of economic growth constitutes the chief explicit normative justification of the public policy prescriptions — *the model of collective action* — generated by neoclassical theory. The stance of this study is that it is possible and useful — not least to the theoretical project of economics itself — to augment this ‘thin’ description of the economic lifeworld, and that in doing so, alternative choices for collective action emerge.

An argument for a more developed account of the interaction of economic and normative orders of social action was offered in earlier chapters, suggesting some directions for a methodological revision in economic theory that shifts its ideal-typical assumptions towards a communicative model of economic action and reason. The previous chapter developed this strategy by a critical investigation in discovery of three postulates which can now be enunciated as follows:

1) Economic structures and events are imbedded in a normatively integrated social context, with information and communication processes among the most basic materials and techniques of both;

2) Market institutions may fail to perform as pure market theory dictates when the normative entailments of information and communication processes are under-theorized in economics, as unanticipated information asymmetries distort the behaviour of the models and the real terms of trade; and

3) The ubiquity of an instrumental logic of communicative interaction in the marketplace, and policy prescriptions that ratify its use, may constrain social choice of other economically beneficial institutional arrangements.

This investigation of the manner in which core economic categories are derived from and imbedded within the justificatory legal and political discourses of capitalism, provided both a 'thicker' sense of the implicit normative dimensions of economic action, and specification of some normative determinants of information processes in the economy. This was the case both at the microscopic level, in filling out a communicative description of relations of property and contract; and at the aggregative level at which information policy discovers its national welfare implications. At the policy level, a number of criticisms of Paretian welfare economics were raised in passing, but not discussed in detail. The various sections of this chapter develop these criticisms. The general equilibrium model of economic welfare can be accused of abstracting unsatisfactorily away from the following considerations:

- its 'ideal-typical' model is a complete set of perfectly competitive markets populated by self-created, autonomous persons, where the real world's incomplete markets are full of monopolists and oligopolists, and the interpersonal exercise of economic power compels, constrains, and reproduces important elements of each economic actor's choice set;
- in this model insufficient notice is taken of the endogenous causes and consequences of technological change;

- it unrealistically assumes the stability, and exogenous derivation, of individuals' consumer preferences;
- it fails to predict in its theory, to account internally for, the many forms of positive and negative externalities which can arise when one actor's utility is affected by other actors' production or consumption activities;
- in particular the model occludes from view — by its thin description of actors and interactions — the external communication and information costs and benefits of a large range of possible forms of economic transactions;
- it perceives no means of collective choice between the multiplicity of pareto-optimal equilibria — possible states which satisfy its sole *internal* normative injunction — and therefore of ensuring any distributional equity in outcomes (examples: unearned endowments, overproduction for better-endowed groups);
- the model itself predicts, but offers no dispositive solutions, for the sub-optimal production of public goods in a laissez-faire system of private production.

This chapter thematizes these welfare issues in the course of a survey of some pertinent renovations to the theoretical structure of economics, undertaken mostly in the post-war period. Much of this material suggests that economists' responses to the theoretical problems inherent in purging information and communication processes of their normative dimensions have been largely defensive, offering grudging reconsideration of some details of their models, but preserving as far as possible the positive assumptions of methodological individualism. Systematic integration of interpretive approaches in the social sciences -- materials providing insight into the norm-generating characteristics of transactional communication processes -- has not occurred.

A peculiar indeterminacy results when the normatively purged models of mainstream economics are applied to information and communications resources. From the point of view of methodological individualism, information is an objective and appropriable resource which exists independently of

the social conditions of its use; and communication is simply the transmission of existing information from a supplier (source) to a consumer (receiver). All normative questions are referred back to idealized models of pure market competition, with market efficiency the only regulative economic value governing information resource production and trade. The failure of information to behave in the marketplace like other valuable resources may justify such state actions as internalization of these utilities by the creation and assignment of new property rights, but is certainly not a cause for wholesale paradigmatic change in economics.

But from an interpretive perspective, the meaning and value of information is generated within contexts of normatively-binding interaction, by reference to features of the relationships obtaining between actors within the transaction, and in its surrounding social context. Much economically relevant information, such as actor preferences, is here the *a posteriori* product, as much or more than it is the *a priori* content, of transactional communication processes. The potential gains from alternative allocations of information and communications resources, when their future value is partly a function of how the relationships between actors will be reconfigured by such allocations, are radically indeterminate: more information will not make such predictions more calculable, unless information **about** economic actors' use of shared norms for action-coordination is admitted.

The reified concept of information as a positive datum independent of social interaction emerges, in this chapter, as a constant throughout modern economic thought. Economic theory is now increasingly focused upon problems of resource allocation under conditions of uncertainty (defined, consistent with methodological individualism, as 'missing information'), and on finding solutions

to these problems in systematic rationalization of the production and use of knowledge resources in economic decisionmaking. But at the same time its reductionist model of economic action occludes the way information and communication processes are themselves constitutive of the goals and choices of actors. In a world in which “institutions are important ingredients in the explanation of what agents actually do” (Mansell and Jenkins, 1992, 37), excluding their normative dimensions from analysis of the value of information and communication resources in existing institutions, generates a radical form of economic indeterminacy. The intertemporal consequences of economic policies and strategies must become increasingly opaque as the institutions through which actors have learned to coordinate and adjust their voluntary choices and actions are technologically rationalized by investment in information technology, since the instrumental rationality guiding the design of the technology is not by itself a reliable guide to the designer’s reconstruction of these tacit coordinative achievements.

The remainder of this chapter, concluding this part of the study, is organized into three major sections. The first reviews three areas of practical concern that have brought information and communication decisively to the center of contemporary economic research: the characteristics of information as a marketable commodity; the contribution of information activities to the restructuring of employment; and the role of telecommunication systems in economic development. The second section examines several underlying theoretical approaches, focusing on the strategies by which they explicitly theorize information and communication as economic variables. The third section discusses some broad policy implications for public switched networks. The three chapters of the following, final part of this work offer a case study of one new transactional technology,

comparing positive and interpretive perspectives on the design and performance of economic institutions in the context of electronic communication.

I. INFORMATION, COMMUNICATION SYSTEMS, AND MARKET DEVELOPMENT

The Characteristics of Information as a Commodity:

Economists report that, considered as a commodity for exchange in competitive markets, information displays peculiar properties. Three abstract characteristics in particular pose special difficulties for information suppliers, consumers, and markets. The first — the *supplier's* problem — is the high and often uninsurable risk of stranded investment in the profitable production and supply of valuable new information. Another way of putting this is that the relation between productive expenditure and new information discovery and appropriation may be quite uncertain (see Arrow, 1962).

The classic case is basic science research, e.g. into novel physical or chemical properties. A host of risks and uncertainties attend this activity: scientific researchers by definition do not know exactly what they will discover; the research process is extremely time-consuming and completion schedules routinely unmet; it normally requires very costly inputs of materials, equipment and highly skilled personnel; problems of adverse selection and moral hazard abound in determining the best personnel in which to invest; the value of the information discovered will depend in any case on derived demand in unforeseeable applications; and the institutionalized importance, in the scientific community, of early and complete public disclosure for purposes of corrigibility and establishment of priority of discovery, means that appropriating private economic rents from scientific discoveries is difficult in principle. As a result, according to Arrow (1962, *ibid*) a perfectly competitive market economy will underinvest in basic research, despite its enormous and fundamental economic value.

This form of market failure provides the usual rationale for public subsidies of scientific research and the training of researchers.

Because of these non-market characteristics of its activities, the scientific community is institutionally oriented towards furthering the growth of the stock of knowledge as a public consumption good, rather than as a private capital good, as is the case in the technology R&D community (Dasguptha and David, 1985, 5). Indeed, Dasguptha and David maintain that the distinction between science and technology is essentially cultural, and can be traced to differences in their institutional arrangements for information disclosure, rather than systematic differences in the discovery process itself (ibid).

The basic problem of stranded investment, however, applies in various degrees well beyond the case of pure scientific research. For the firm there may be, for example, no predictable rate of return on investment in any single technological innovation, regardless of the property rights regime in which it occurs. For society as a whole, the intellectual property rights regime itself, which may be viewed as a device intended to restore the function of the market in determining the value of useful new information, “works in a way that elicits too much expenditure of resources in the races among rival research groups to obtain patent-properties” and generates “excessive duplication of research effort” (David and Dasguptha, 1985, *ibid*, 22; see also Dasguptha and Stiglitz, 1980). Moreover, the social welfare implications of information property regimes for technological innovation may be adverse in a more basic and contradictory way, since

In a free enterprise economy, inventive activity is supported by using the invention to create property rights; precisely to the extent that it is successful, there is an underutilization of the information. (Arrow, 1962, *ibid*, 617)

The second peculiar characteristic of information as a commodity is its invisible opportunity costs for *consumers*. Since consumers cannot assess accurately the value of information they have not yet acquired, they are not in a position to evaluate the magnitude of benefits foregone in available alternative allocations of their resources. And to the extent they *are* in a position to evaluate the information, they may already know enough of it to reduce or eliminate any incentive to pay for it (Arrow, 1962, *ibid*).

For an example, consider university students choosing among courses for which to register and pay tuition for the next semester. Viewed either in terms of their intellectual interests (their exogenous consumption preferences) or their career strategies (their endogenous or derived demand for inputs into the production of their own skilled labour as a market commodity), the expected utility of these alternative goods will be largely indeterminate in advance. Reputation and 'product description' may furnish some guidance in making initial choices, but the value of a course to a student — either in furthering understanding or in advancing her position in the labour market — may well be knowable only through undertaking the transaction and only after (often long after) it is completed. Nor are warranties or refunds normally available for courses which may fail to work as advertised in generating a desired outcome. Assessing the value of the course by reading the required texts and consulting with the instructor may well reduce or eliminate the incentives to pay again for the

information by registering in the course, unless the utility of the purchase is derived only from being required for a sought-after professional certification, and not from actual intellectual or professional formation — the purchase not of new information, but of a professional character reference. Often enough, students do conclude after taking particular courses or sequences of courses that they would have been better served by different choices, or even the same choices in a different order, but since these opportunity costs were invisible — since they could not accurately assess the value of information they had not yet acquired — they were not in a position to evaluate the magnitude of benefits of alternative allocations of tuition and study resources until after the resources had already been committed.

A serious implication of the invisible opportunity costs of information consumption is that it conduces to ‘frictionless substitutability’ in information markets. If buyers are initially unsure what information they need, they may accept imperfect or even misleading information as a substitute, and if they lack knowledge of the existence of better-quality information goods, they may well fail to bargain for price discounts (the ‘frictionless’ element). Only later acquisition of better information will permit them even to realize that substitution has taken place. Low-quality information is far cheaper to produce than high-quality information, and therefore the frictionless substitutability of information creates a tendency for many information markets to become flooded with low-quality products (Melody, 1977). Of course, this effect is partially offset by differentiation of high-end and low-end information markets (see Melody, 1993). But a clear example of this form of information market failure is provided by the economics of chain newspaper ownership, where the large efficiencies publishers can realize by acquiring new titles, bundling their audiences for advertisers,

and recycling editorial materials across the chain of titles permits them later, when this strategy has driven non-chain competitors out of their local advertising markets, to take advantage of the susceptibility of daily newspaper readers to frictionless substitution of lower-quality news reports by reducing research, reporting, and editorial staffing levels (see Winter, 1988; D. Schiller, 1982).

The third peculiar characteristic of information commodities is the difficulty of “excluding nonpayers from the benefits of consuming or possessing the information” (Braunstein, 1981). This, of course, is a general problem for the effective operation of information markets *tout court*, and constitutes a third and massive form of market failure. The reasons for this characteristic of information commodities are, in brief:

- **non-depletability:** Using information doesn't use it up — it doesn't become *more* scarce as a result of use, but in fact, *less* scarce. This is the contradiction at the core of the concept of information as a commodity. Once information has become widely known, it requires something like an irruption of mass collective amnesia to restore its scarcity and economic appropriability in markets.
- **low replication costs:** In many media, replication costs are very low, in some cases approaching zero. The centrality of information to all economic processes has driven investment in this area into successive waves of development of technological artifacts and infrastructures that decrease the replication costs and increase the storage and speed of copying as well as the translatability of copies across different media forms, *despite* the costly problems of appropriating rents from the information itself. This creates a significant divergence between marginal and first-copy costs of information goods, and thus a large incentive to copy rather than create, if the needed information already exists somewhere. As a result, the rents that can be appropriated from new information are disproportionately distributed between the proprietors of replication and transmission networks and the information creators.
- **portability:** The same innovations that reduce replication costs also increase the portability of information in many media, and both of these factors intensify the non-depletability of information by speeding its low-cost distribution.

- **permeability:** All of these factors create a tendency for information to ‘leak’ inexorably into the public domain. This process can be retarded where non-disclosure of the information is sufficiently important to its possessor, but preventing this leakage problem inevitably imposes high additional costs. The major methods of prophylaxis, which may be used singly or in combination, are: investment in protective technological innovation (itself a risk-laden enterprise, as discussed above); investment in favourable legal protection (also a high-cost and risky strategy, due to the degree of autonomy of the judicial institutions and the internal character of their criteria — see Hutter, 1986); and investment in rigid bureaucratic routines and controls (which are costly in themselves, and may have further costly implications for organizational coordination, adaptation, and choice of corporate cultures — see Alvesson and Lundkvist, 1993).

It is worth noting here that these difficulties in operationalizing a definition of information *per se* as a private good, exchangeable in commodity markets, have not escaped the notice of the courts.

The Supreme Court of Canada, deciding the appeal of a case concerning an alleged theft of proprietary information by means of surreptitiously memorizing it (Stewart, 1988), made the problem of non-excludability even more confounding by refusing to recognize common-law property rights in information at all for purposes of protecting it under the Criminal Code (except insofar as it is embodied in a physical medium). Their reasoning was that if ‘pure’ information could be privately owned, then unauthorized ‘knowers’ of such information who cannot show clear chain of title to it, are subject to charges of possession of stolen property, and possible prison terms, for every day that they are unable to forget what they know!

For all these reasons information has traditionally been treated as a public good, and state creation and enforcement of private property rights in information justified, not by ‘natural justice’ notions of the codification of historical claims of use and voluntary exchange of title, but by paretian arguments about the public interest in providing property rights incentives for investment in

discovery and creation of useful new knowledge, in the form of state enforcement of temporary monopolies in their use. This increasingly means that the key productive resources in a capitalist 'Information Society' lie within the "web of state-enforced relations of entitlement and duty between persons" (Grey, Chapter 5 op.cit., 79) of which information property is composed. It also means that, from an orthodox economic perspective, the stability of that economic structure depends crucially on reconfiguring the legal relations governing the communication of information between persons to enforce, in large domains of such communication, registration of and payment for the information property exchanged.

Defining the 'Information Economy':

It is often observed — and usually with little appreciation of the fundamental characteristics of information resources in commodity markets, as described in the last section — that the global market economy is undergoing a reconfiguration in which the information-related components of any activity are coming to compose the greater part of its value, and significantly to determine the price of its product. Many economists contend that these processes of contemporary development feature, therefore, a shift in the focus of economic activity from the making of goods towards the commodity production of knowledge. According to Morris-Suzuki (1986, 85) this takes place in three ways:

- i) through the introduction of cybernetic machinery and process controls in production, workforces are concentrated into the areas of planning, management, research and design, continually developing new information for use, for example in manufacturing. The enterprise doesn't sell this information as a commodity, but it does use information to increase the value of final products;

- ii) enterprises begin to specialize in the production and sale of commodified production information for use by other enterprises in their production, marketing, and management processes (e.g. software, product designs, specialized databases);
- iii) expansion occurs (perhaps in search of scale economies under ii)) in the production of 'consumer information': books and periodicals, broadcast programming, film and videos, home-computer software, etc.

Documentation of these trends is difficult because of disagreement in the definition of sectors and sub-sectors, as well as because of difficulties acquiring the data. Measured in terms of the composition of the labour force, though, it is clear that employment involving the formalized processing of information (the quaternary sector) is growing much faster than employment in the resource-harvesting (primary), manufacturing (secondary), or non-information services (tertiary) sectors. This is the approach used by Marc Porat in his definitive study (1977). Porat found that by the early 1970's the quaternary (or information) sector of the U.S. economy accounted for almost 50% of employment. (For long-run comparative data on employment by sector in four advanced industrial economies plus inventory of information employment categories see: Lamberton, 1982.) The emergence of these data buttressed Daniel Bell's argument (1976) that a distinctive 'post-industrial' form of society was emerging, and contributed to the current ubiquity of that opinion (for a recent critique of Bell's argument, and of the ambiguities attending its definitions and measurements, see Webster, 1995).

A different approach from Porat's was taken by Fritz Machlup, who studied the organization of production in what he termed 'knowledge industry' after the 1960's. Machlup defines the knowledge

industry as the sum of those activities by which contributions to the 'capital stock' of knowledge are developed: R&D, engineering and design, education, publishing and broadcasting (Machlup, 1980).

By subtracting Machlup's knowledge industry sub-sector from Porat's quaternary sector, Charles Jonscher distinguishes a sub-sector concerned primarily with the coordination and management of economic activity: management, accounting, purchasing and sales, brokerage, and clerical activities (Jonscher, 1982, 60). Jonscher claims that growth in the amount of coordination and management work accounts for most of the growth in the quaternary sector. But Morris Suzuki (op. cit.) and others have produced contrary results in research on the Japanese economy, showing knowledge-creating employment increasing as a proportion of total quaternary employment, especially in the private sector. She notes that the ratio of coordination and management work to production work **within** the knowledge industry sub-sector is particularly high, and that this sub-sector therefore generates a considerable proportion of the growth in coordination and management activities.

The work of these researchers is representative of the affirmative contribution of economists to the announced arrival of the 'Information Society'. But it is not necessary to subscribe to the view, originating with Bell, that the economy of an 'Information Society' is radically discontinuous in its organizational features with the industrial societies that preceded it, to nevertheless agree that explicit investment and employment in information-related activities and resources have become enormously more important in recent decades. Nor is it necessary to attribute this development solely to the commercial opportunities inhering in the commodification of information, as Morris-Suzuki argues, since rapid growth at the intensive and extensive margins of *other* commodity

markets may itself impel, as Jonscher argues, a stepped-up level of investment in information gathering and processing systems, simply in order to manage and control that growth (see also Gandy, 1990b).

But even assuming both views are correct — rapid commodification of information as a utility for exchange *and* growing strategic stakes in the appropriation of information for surveillance of other markets — the notion of an ‘Information Economy’ and the literature which investigates it seem to imply that in at least one underlying aspect, the process of market exchange itself is being qualitatively transformed by these developments. The pareto benefits of competitive market exchange are in theory delivered as the continually lower real costs experienced by consumers for comparable baskets of final goods. However, while the average unit costs of these goods-bundles trend downwards in competitive markets *as a long-term outcome of technological advance* (Melody, 1975, 18-19), the proportion of those costs attributable to information and communication processes grows continually larger, at both intensive and extensive market margins. This is the case especially in respect to inter-cultural translation and coordination costs, in their widest sense. From this general equilibrium perspective a very significant barrier to the continuing realization of paretian benefits by consumers, particularly in the region in which the opposing slopes of these two curves (unit costs and information component of costs) begin to meet, is to be found in the persistence of the institutional arrangements of traditional cultures and sub-cultures, and in the costs of substituting new institutional arrangements within which information and communication processes can be better rationalized.

Telecommunications: The Armature of the Information Economy:

Marc Porat's discussion of the place of telecommunications systems planning in national economic development policy explains very directly their contemporary centrality (Porat, 1982). The starting point is Porat's explanation of the "role of communications in national development" (ibid, 75). 'Communications' here means both the technical infrastructure, and the flows of information through it. 'National development' means "the mobilization of presumably idle or underutilized resources -- labour, capital, and natural resources" (ibid). Porat's starting premise is that the "division of labour... enhances the mobilization and utilization of resources" (ibid). Increasing the division of labour means first, that a product or service will pass through many hands in the course of its production; and second, that "the people who are involved in this elongated chain of production are somehow communicating with each other" (ibid, 76).

Taking in turn these two observations about increasing the division of labour, the implications of the first are: that more investment will take place in capital goods and production sites; that more labour and natural resources will be mobilized; that more people will participate in the monetary economy; and that more value will be added to each good, and therefore to the social product (the GNP). The division of labour increases the volume and velocity of monetary flows, because in a wage-system, expenditure of earned currency substitutes increasingly (and in a highly portable and frictionless manner) for other productive and distributive arrangements; and because the number of currency transactions involved in the production of each good or service rises with the rising complexity of the economy.

The main implication of the second point is that since more people are involved in the production of each good or service, more production coordination is required. For example, the division of labour within a single family as a productive unit (involved in eg subsistence-oriented farming) entails little or no cost to coordination and communication. Immediate verbal communication is generalized (not specialized) activity, and therefore no production costs are assigned to production coordination. Contrast this with the division of labour, and associated coordination costs, within a small village. Porat gives the example of a village specializing in ceramics production; and this situation can be seen to require the exchange of a great deal of coordinative information. Consider only the communication necessary between, for example, 'throwers' and 'glazers' regarding inventory, production schedules, supply sources and costs, demand, quality control, billing and invoicing, etc. This level of coordination may be achieved through meetings between representatives of throwers and glazers, or by running messages back and forth – but reliable, low-cost, specialized communication channels and protocols are clearly needed.

In modern national economies of tens or hundreds of millions of productive workers, the amount of coordinative communication necessary to adjust everyone's productive and allocative activities to one another becomes staggeringly large. The information and communication requirements do not simply grow arithmetically, but exponentially, since not only the scale, but also the **complexity** of the productive system continues to increase. On this view, information infrastructures are highly important as tools of national development. The ability of the economy to deliver income growth and meet development goals is influenced by the degree of division of labour. It is also influenced by the existence and maintenance of a complex of institutions related to the production and

distribution of economic goods, minimally including stock exchanges, customs unions, banking and insurance industries, and so on. The effectiveness in this regard of the price system and associated market institutions is “a function of private transaction and coordination costs, as experienced by each economic agent”: the lower these costs, “the greater the likelihood that coordinative types of transactions will take place” (ibid, 79).

Development policy decisions should lead, Porat says, to allocation of resources to both the traditional productive sectors and to the emerging information sectors that expand alongside the growth of the former. Resources allocated to the information sector diminish transaction costs and increase the quantity of transactions. The division of labour and the complexity of the economy rise, increasing output and reducing unit costs in the production system. On this basis of assuring the lowest possible production and transaction costs for all buyers and sellers of other (non-information) goods, and thus the ability of the economy to deliver income growth to the least advantaged groups in a population, Porat concludes that the point-to-point communications infrastructure of a market society **must be publicly owned**:

The instrument used to reduce the private costs of information and communication, used for these coordinative functions, should be a social externality that comes directly out of social investment in the information and communication sector... [This sector] minimizes the private costs of coordination, hence increases division of labour and productive velocity” (ibid).

Thomas Crocker offers a complementary framework for thinking about the "social disruptions" and normative discontinuities arising from foreign telecommunications network investment in less developed areas. He suggests that changes in the distribution of income *between social classes* are

“partially dependent upon differences across classes in the costs of participation in transactions networks specialized in the exchange of particular kinds of goods and services” (Crocker, 1978). Foreign investment directed towards promoting economic growth also alters the choices people make in the use of a variety of public goods, including transaction networks.

The sanctions and customs which define the reciprocal relations between the members of any society, together with the communication and transportation infrastructures in place, “define feasible market and non-market transactions possibilities” (ibid, 224; useful framework discussions of this perspective include: Granovetter, 1985; Perrow, 1986; Alvesson and Lundkvist, 1993). Since, he says, the reciprocity which binds a social system together is fundamentally inclusive rather than exclusive, and since the use of a transaction network by one person often has little or no effect on its availability to others, “a transactions network can legitimately be viewed as having public good features” (the *locus classicus* of public goods theory is Samuelson, 1954).

Crocker compares two ideal-typical forms of transaction network: those typical of societies organized into large extended families, and those typical of societies organized into small nuclear families. Extended family societies tend to make frequent and voluntary transfer-payments among proximate individuals, to refrain from activities that detract from those other individuals' available resources, to settle disputes by informal negotiation and compromise, and to produce ongoing relations among the same individuals in a variety of roles over long periods of time. Nuclear family societies replace the transfer-payment incentive structure of the extended family with the dynamic opportunism characterizing individualized property ownership and explicit contractual exchange of

property rights, and use markets and prices as the dominant information systems. Disputes tend to be settled by binary adjudication employing specialized agents, and trade exchanges become more anonymous, substitutable over wider geographical areas, and therefore less easily enforced by customary sanctions. The differences in these two kinds of transaction network are related to differences in the “feasible set of trading partners arising from advantages in endowments of communication and transportation facilities” (ibid, 226).

The introduction of new communications and transportation technologies and resources increases the costs of using traditional extended family networks, and decreases the value of traditional goods, relative to modern nuclear-family market networks and the industrial goods available in them. Thus those who specialize in the use of the new networks find their incomes increasing relative to those who specialize in the traditional networks; this in turn accelerates the substitution of modernist for traditionalist social rule-systems, as well as migration from rural to urban areas:

In effect, a foreign private or governmental investment has brought about a substitution of one network for another and therefore a substitution of one public good for another. Moreover, to the extent that some measure describing the general distribution of income enters individuals' utility functions, this foreign-induced substitution of public goods has influenced the character of another public good, income distribution... [T]he network substitution could affect the society's supply decisions for other public goods... [and] alter the observable traits of individuals and therefore the form of the culture of the country... (ibid)

Those who specialize early in the new type of network may be in a position to shape the rules of the network so as to perpetuate their initial advantage. Crocker's analysis gives some concrete specificity to the ubiquitous trope concerning the stratification of an Information Society into the 'information-rich' and the 'information-poor', and may permit researchers in this area to benefit

from convergent research in the anthropology of consumption. For example, in Mary Douglas' work in this area (Douglas and Isherwood, 1978), poverty is defined "not in terms simply of lack of possessions, but lack of... links of all kinds into the existing cultural information system... A family without such links will find itself without food and shelter as well" (Marvin, 1987, 56). Unless all segments of a society have access to the trade opportunities presented by new communication networks, they may serve only to transfer wealth from disadvantaged to advantaged groups, and this provides further justification for public control of the network infrastructure.

Rita Cruise O'Brien and G.K. Helleiner discuss the way existing patterns of development of telecommunication systems promote concentration of transnational corporate (TNC) power, mainly as a consequence of the informational *failure* of markets. They stress the interplay between the economics of information and international relations:

The literature on international politics and the relevant social science literature on information still examine the **effects** of increased communication and information flow as if they were simply accelerating the creation of global 'interdependence', without considering the implications of unequal informational access either for the efficiency and equity of international market functioning or for the creation of new forms of asymmetry in international bargaining capacity. (O'Brien and Helleiner, 1982, 101)

These authors were early in noting the evolution of international political and economic systems from a "collection of closed hierarchical [colonial] systems" to a new, more complex and interdependent structure. In this post-colonial context, countries in the economic South attempting to pursue policies based on their own interests have large requirements for new information, expertise, and information systems. Often their aspirations, and therefore their perceived information needs, include means of creating and managing effective "arms-length systems of

exchange" in the form of competitive, low-entry-barrier, consumer demand-driven markets. This market-making information is not clearly separable from the knowledge of underlying technical systems. These aspects of information economics, they say, are important bargaining issues:

In no part of the current debate over global political and economic problems is the importance of information more dramatically evident than in the search for new forms of mutually agreeable relations -- new contracts -- between transnational corporations and developing countries. (Ibid, 102)

These problems of macro-economic management and coordination faced by less-developed countries (LDCs) are (given the comparable size of the smaller LDCs and the larger TNCs) not utterly different from the problems of micro-economic management and coordination faced by TNCs. And indeed, most contemporary treatments of the problems of large-scale business organization are concerned with "a variety of informationally constrained resource allocation problems and institutional responses that characterize firms..." (O'Brien and Helleiner, 1982, 104, citing Spence, 1975). In the TNC, rather than the efficient, well-informed decision-maker, one in fact finds "the uncertain decision maker acting under severely restricted conditions of information imbedded within a communications system upon which he (sic) is becoming increasingly dependent" (O'Brien and Helleiner, 1982, 103, citing Shubik, 1971).

Micro-economic theories of the firm and theories of decision-making, especially as applied to international corporations, employ a number of assumptions about the production, management and use of production-related knowledge. O'Brien and Helleiner summarize this literature as follows:

If one traces the principal elements of power of major TNCs, key recognition must be awarded to the availability and quality of information. The structure of the modern TNC is in fact information-dependent; its appropriability [effective access] of information being

perhaps as important as its R&D capacity and the control it exercises over markets and technology. (O'Brien and Helleiner, *ibid*, 103-4; see also Malmgren, 1961; Marschak, 1971)

Micro-economic analysis is based especially on two propositions regarding the cost and quality of information processing:

- 1) "bounded rationality" describes situations of complexity and uncertainty of such a degree that serious miscalculations are caused for the firm. This leads to the internalization within the firm of what would otherwise be market transactions.
- 2) internalization of information sources is also adaptive where competition among multiple potential transactors for the TNC to deal with is absent; or where difficulties in ascertaining the specifications of contracts, performances, etc. recur; or where other reasons exist to doubt information sources (eg contradictory sources, coupled with geographical and cultural distance).

The TNC's decentralized international production and marketing structure tends toward "a situation in which anonymous agents deal with an impersonal market [and] is not conducive to efficiency with imperfect information" (Spence, *op. cit.*, 171). The rational response for TNC's is to *dispense with the market*, through internalization of information sources, since markets are full of 'cognitive imperfections'. Cartel arrangements with TNC competitors, and merger and acquisition takeover of smaller raw materials and equipment suppliers, distributors, retailers, and so forth, who are involved in their production, distribution and marketing operations in all of the countries in which they do business, *are solutions made possible by the development of enhanced telecommunications systems*; and these, rather than market signals, provide the remedy for their *information* problems:

The replacement of the market through integration or merger takes place... in consequence of transnational failures in markets, failures traceable primarily to problems in the processing of information. (O'Brien and Helleiner, *ibid*, 104, *emph. added*)

I attributed to Jonscher (in the last subsection) a distinction between 'the production of information as a marketable good, and the economic significance of information as the key factor in all processes of market coordination and adjustment'. O'Brien and Helleiner suggest that the complexity and velocity of coordination and adjustment processes in global markets, combined with profitable opportunities in the production of information commodities, indicate a corporate strategy of internalizing regions of the market inside the firm. And this is a particularly apt description of the role of *telecommunications* firms and of the meaning of policies of telecommunications deregulation and market liberalization: we could say that what they now produce and sell to their corporate clients are substitutes for markets themselves.

Gerhard Rosegger provides a useful summary of the strategic implications of the telecommunications infrastructure which raises, in the contemporary context of the new digital network technologies, a number of themes from the foregoing discussions of this chapter (Rosegger, 1991). Like O'Brien and Helleiner, Rosegger understands the accelerating pace of merger and acquisition activity among TNC competitors to reflect business solutions made possible by the development of enhanced telecommunications systems. Deeper integration of the materials and equipment suppliers, distributors, retailers, and so forth, who are involved in their production, distribution and marketing operations in all of the countries in which they do business, rather than market signals, provide the remedy for TNC *information* problems. Rosegger approaches this topic primarily through the narrower lens of the technology innovation process within large firms.

The developmental history of communications technologies reveals the persistent reciprocal influence of existing institutional arrangements and new technical innovations (c.f. Crocker, *supra*). Rosegger takes up this theme by directing our attention to “the concern of actors that their ability to appropriate new knowledge, as well as to hold on to old knowledge, may be threatened by innovations in the transmission of information” (Rosegger, *ibid*, 3). New telecommunications technologies hold obvious significance for how the exchange of information between firms is managed. Proprietary knowledge imbedded in production processes has long been viewed as a key production asset because of its role in creating the firm’s competitive advantage; and to Rosegger and many other analysts, the firm’s concomitant protective stance towards its proprietary information now stands in complex contradiction to the organizational demands posed by new network opportunities for inter-firm coordination (see Beije and Groenewegen, 1992; Brouseau, 1990; for discussion of how this contradiction is expressed in the regime of international communications governance, see Mansell 1996, chapter 7).

Clearly, firms compete by possessing production and market knowledge that differs from that of their rivals. Rosegger discerns four determinants of the rate of a firm’s acquisition of production and market knowledge:

- 1. Internal arrangements inside the firm:** For production-related knowledge this encompasses information produced within the research, development, design, and engineering activities of the firm, as well as knowledge generated directly by its organizational routines (detailed discussion of these factors can be found in Nelson and Winter, 1982). For market-related knowledge, product demand, customer data, technical requirements of clients, and other valuable information are all generated as a byproduct of its marketing efforts.

2. Acquisition of public-goods knowledge from the firm's environment: Public goods sources of knowledge, such as technical and academic publications, public information databases and networks (eg Internet), government organizations, patent offices, professional associations and meetings, are of growing importance to the firm; indeed "there can be little doubt that modern information technology has enabled firms to draw on public-goods knowledge to an unprecedented extent" (Rosegger, *ibid*, 6; see also Morris-Suzuki, 1986).

3. Private acquisition of other firms' proprietary knowledge: This may take the form of technology-transfer agreements and licenses, reverse engineering, recruitment of other firms' key personnel, or direct exchange of information among employees of separate firms (eg in the course of collaborative projects, or through professional associations and meetings). Rosegger notes that inter-firm exchange between professionally specialized personnel is more likely than between same-firm employees in different professional roles.

4. Generation of new technical knowledge jointly with other firms: Increasingly, and most significantly for this discussion, large firms are sharing the costs and risks of developing generic technical knowledge, in the process often obtaining national government subsidies. "The last decade has seen a rapid growth of bilateral, cooperative arrangements in procurement, production, and marketing. Whether organized as formal joint ventures or in other ways, these arrangements generally have been based on the exploitation of asymmetries in the knowledge of firms". (Rosegger, *ibid*, 7; see also Beije and Groenewegen, 1992; Brouseau, 1990; Gray, 1990; Hagstrom, 1990; Lorenz, 1988; Tang and Mansell, 1993)

The last three of these four determinants of a firm's rate of acquisition of new knowledge, and especially the fourth, are strongly dependent on telecommunications network development. Cooperative arrangements such as are described by the fourth point also quickly give rise to conflicts between firms over the appropriation of results. The growing electronic interdependence of large firms creates a need to balance these four sources of new knowledge. Rosegger suggests that shifts in corporate strategies for acquiring new knowledge display regularities that are connected to technology 'life-cycles': "the evolution of a basic technology is characterized by reductions in *technical uncertainty*, and subsequently in *commercial uncertainty*, while at the same time there occurs a steady increase in the technology's *complexity*." (Rosegger, *ibid*, 10) As each of these three

phases of uncertainty in a technology's development becomes dominant, the criteria which inform any strategic trade-off between pursuing stand-alone in-house R&D efforts, and undertaking cooperative inter-firm arrangements, shift.

For example, in the first phase of technical uncertainty, high expectations of patentability, existing related know-how and R&D capacity, and/or important lead time advantages would dictate a stand-alone information acquisition effort; low expectations and less-developed resources here would, on the other hand, promote reliance on inter-firm cooperation. In the commercial uncertainty phase, complementarities between new and existing product lines and existing marketing and distribution advantages must be weighed against gains available from standardization and from government support. And in the third phase, where the acquisition of new information is driven by increases in the complexity of a new technology (stemming both from the "proliferation of technical features specific to the new device or process", and from the "increasing specificity of the socio-technical systems evolving around an innovation" - Rosegger, *ibid*, 10-11), stand-alone R&D efforts may enable better product differentiation, but inter-firm collaboration yield better economies of scale and scope.

Rosegger emphasizes that across many industries, these strategies are guided "not by 'objective' facts but by managerial *perceptions* about the current and likely future states of a technology", and that such perceptions may become self-fulfilling prophecies (Rosegger, *ibid*, 12). And in his view, the new network technologies have had a further, *reflexive* impact on information acquisition activities, influencing corporate perceptions about the risks, costs, and benefits of alternative

information strategies themselves, and accelerating a trend toward strategies of inter-firm cooperation.

Thus the new network technologies are changing the strategic rules of the game for large firms across broad industrial sectors, according to Rosegger, in at least the following ways:

1. Multi-firm *R&D* consortia have become dependent on advancements in the technological infrastructure for continuous exchange of information;
2. Joint ventures in *manufacturing and assembly*, carried out in widely dispersed locations, similarly depend on new infrastructures for continuous exchange of information;
3. New network technologies have stimulated the emergence of *permanent subcontracting networks* characterized by long-term relationships with principal contractors, and growing subcontractor involvement in the research, design and engineering phases of new product development (see also Lorenz, 1988);
4. *Outsourcing* of manufacturing service functions has also surged as a result of new network capacities for continuous exchange of information between principals and agents;
5. Joint *distribution* undertakings are becoming common, also because of strategic opportunities presented by the new technologies of information and communication, accelerating product entry into new markets;
6. Ongoing interaction with *customers* at all phases of new product introduction is transforming the relationships between suppliers and consumers, using the new network technologies.

These shifts, stimulated by and in turn reinforcing an ever more-rapid process of technological innovation in communication technology, downgrade the long-run strategic importance to the firm of shielding its collections of unique technical knowledge, and therefore cause the firm “to place less emphasis on appropriability, and more on cooperatively-generated knowledge” (Rosegger, *ibid*, 16).

If business decision-makers increasingly regard the globe as their proper playing field, competitiveness defined in purely national terms is bound to lose significance as a guide to

policy and strategy. In the end this may turn out to be the most important transformation wrought by the information revolution.” (Rosegger, *ibid*, 19)

Significant questions are raised at the heart of economic theory by the advent of the new telecommunications technologies. Exploding investment in technical infrastructures for communicative interaction between economic actors appears to generate new modes of economic rationality, better suited to creating and sustaining *cooperative* relationships, in the economic coordination process. And the generalization of such new modes of communicative rationality across vertical stages and industrial sectors of the global economy would suggest that the theoretical primacy of methodological individualism itself, and therefore also the role of atomistic competition as the central criterion of economic policy and strategy, are threatened.

II. THEORETICAL APPROACHES TO THE ECONOMICS OF INFORMATION

Neoclassical Approaches:

The rising importance of information-related activities in the overall composition of advanced industrial societies' labour sectors, and the corollary rise in the informational composition of final costs of goods, can be interpreted within the vocabulary of mainstream economics as symptoms of incomplete and imperfect markets. Markets deliver price information, and in most cases (since futures markets are available for only a small subset of commodities) only the present prices which existing demand has generated for available quantities of utilities, and not the prices which alternative demand schedules for those utilities would yield. New substitutes for those utilities, made available in many cases through technological change, further alter the future scarcity of resources and the prices of factor goods in ways opaque to the static analysis of general equilibrium theory. Under realistic conditions of imperfect competition, where many producers are price-givers, rational economic decision-making requires expenditures on good substitutes for the information which is absent from an incomplete system of markets. *Information* markets, moreover, are among the most incomplete. Under these circumstances marginal utility analysis of information acquisition expenditures may have limited meaning, and continuous increases in the volume of information gathering and processing activity, and in the level of investment in information technology, become necessary and predictable for successful economic actors.

In some senses, and notwithstanding their formalizations concerning the perfect information to be found in perfectly competitive markets, the acquisition of knowledge has been implicitly recognized by economists since Smith as a costly process in the real world. But in recent decades information became much more richly and explicitly thematized in economic thought, as neoclassical economists attempted to defend the explanatory power of marginalist models of subjective economic utility in face of growing evidence of information-related problems of pervasive uncertainty. This took its initial form in analyses of the information-transmission characteristics of markets (Hayek, 1939, 1945), the economics of information search (Stigler, 1951, 1968), and the information costs of market transactions (Coase, 1937). More recently the 'rational expectations' perspective has made a vigorous attempt to rehabilitate methodological individualism as a realistic model of economic action by elevating the ignorance of actors, the unlikelihood of effective communication and the impossibility of reliable trust and cooperation into theoretical principles for the analysis of economic decisions under uncertainty (see Alchian and Demsetz, 1972).

The abstractions of general equilibrium theory and the image of synchronic perfection it finds in the market process have been revised to an extent by these efforts. More historical perspectives, arising even within the mainstream discipline, have partly re-conceptualized the market as a fallible process of collective discovery and learning. In this view the notion that markets — or any other human institutions — deliver perfect, costless, ubiquitous, instantaneous information to all actors, is considered untenable on grounds of realism. Clearly markets deliver some kinds of valuable information to some actors, and provide incentives to some kinds of economically beneficial communicative conduct, in some circumstances — and fail to do so, or are substituted by alternative

institutions, in other circumstances. However, while these more informationally nuanced approaches abandon the assumption of perfect information, they “still assume agents can determine the expected benefits and costs needed to decide how much information to obtain... agents are assumed to be perfectly reliable in deciding when and how long to engage in search activities” (Heiner, 1986).

One of the earliest sustained inquiries of this type was developed by Friedrich von Hayek, who can be seen as attempting to recuperate the institutional elements of Adam Smith’s vision of the economic process. In Hayek’s approach, the superiority of a system of competitive markets is understood to stem from its advantages in permitting complex economic coordination among myriads of actors possessing different information — and steadily specializing their information — without all actors incurring either the risks of delegating the coordinative function to a central planner, or the costs of acquiring and processing all information themselves. In this approach markets are theorized to perform this function by generating and distributing highly compressed second-order information in the form of prices.

While Hayek and his colleagues and predecessors in the Austrian School were intellectually (and politically) committed to demonstrating the superiority of laissez-faire markets over other systems of resource allocation, they viewed the efficiencies of market exchange more as the historical product of evolving human institutions, than as the expression of any absolute economic ‘laws of motion’. The general equilibrium model, in which competitive supply and demand of any utility is theorized costlessly to produce a price which clears the market and moves resources to their highest-valued uses, seemed, to the Austrians, to neglect the fact that the market-making function (providing

information about the supply and demand of products to vendors and consumers and clearing, financing and insuring transactions, for example) itself uses up resources. Previous economists had not given much thought to how the information necessary to the consistent achievement of supply-demand equilibrium was generated. Hayek, and later, his Chicago School colleague George Stigler, began to consider the issues of market adjustment and price formation from this angle.

Hayek asserts that a "rational economic order" is not simply a problem of calculating optimal resource allocations, because the data from which the calculus starts are never and could never be in fact available to any single decision-maker: this is a "problem of the utilization of knowledge not given to anyone in its totality" (Hayek, 1945, *ibid*, 520). He asserts that, taking into account not only the present cost and availability of production inputs, but also the effects of natural conditions such as weather, of the preferences of consumers, of the future responses of producers to changes in these preferences, and of the non-simultaneous relationships between all these data, economic organization and decision-making is more a problem of coordinating dispersed individuals' use of the necessarily partial information they possess, than of gathering sufficiently complete data sets for the generation of perfectly rational answers to allocation questions.

All economic activity, he says, is 'planning', in the sense that it depends on the communication of necessary information to decision-makers (all producers and consumers): "The various ways in which the knowledge on which people base their plans is communicated to them is the central problem for any theory explaining the economic process" (*ibid*, 520). Planning may be done centrally by the State, or divided among large numbers of autonomous decision-makers

(competition), or delegated to industry-specific organizations (monopoly, oligopoly). The relative efficiency of these planning systems will be a function of their ability to make use of existing knowledge, which in turn depends on the relative effectiveness of configuration of their indigenous communication systems.

Different kinds of knowledge, he suggests, are most efficiently deployed by different planning systems (he gives the example of scientific knowledge, which he claims is best utilized through a system of delegation to experts: ie, monopoly). Regarding "knowledge of circumstances of time and place" (specialized market information in the form of personal contacts, knowledge of local conditions, alternative sources of supply, etc.), he says that every individual possesses some unique information and therefore some decision-making advantage — *if* she is able to participate in a relevant way in the allocative decision-process (obvious examples of casually-acquired informational advantage occur in the real estate, freight forwarding, and arbitrage industries.) The stability of statistical aggregates in economic measurement is a result, he says, of "constant deliberate adjustments by new dispositions made every day in the light of circumstances not known the day before" (ibid, 524), and therefore allocative information should be deployed in the most decentralized planning system available: through competition for resources.

Hayek in fact derides those economists in whose models "all such knowledge is supposed to be 'given'." The problem is, precisely, how sufficient information can be distributed widely enough to permit rational allocation on a highly decentralized basis. Decision inputs by context-sensitive, 'on-the-spot' persons is necessary, but inadequate, absent "such further information as he needs to

fit his decisions into the whole pattern of changes of the larger economic system." The solution is the *price system*: "By constructing and constantly using rates of equivalence... by attaching to each kind of scarce resource a numerical index which cannot be derived from any property possessed by that particular thing..." decentralized planning becomes feasible, because it eliminates the need for reconstructing "all the relations between ends and means" which every small adjustment in the allocation of resources would otherwise entail (ibid, 525). A 'price' is therefore a datum that condenses the current significance of a quantity of a resource "in view of the whole means-ends structure" of the economic system (ibid, 525), and thus permits the efficient communication of relevant knowledge in a decentralized (competitive) planning system.

In conclusion he asserts that the price system is both a necessary condition for any extensive and continuing division of labour, and that it is literally a *form of telecommunications system*. The effect of a change in price "will spread rapidly throughout the whole economic system and influence not only all the uses of [a given resource], but also those of its substitutes and the substitutes of these substitutes, the supply of all things made of [the resource], and their substitutes, and so on, and all this without the great majority of those instrumental in bringing about these substitutions knowing anything at all about the original cause of these changes".

The whole acts as one market, not because any of its members survey the whole field, but because their limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all. The mere fact that there is one price for any commodity -- or rather that local prices are connected in a manner determined by the cost of transport, etc. -- brings about the solution which (it is just conceptually possible) might have been arrived at by one single mind possessing all the information which is in fact dispersed among all the people involved in the process... [W]ithout an order being issued, without more than perhaps a handful of people knowing the

cause, tens of thousands of people whose identity could not be ascertained by months of investigation are made to use the material or its products more sparingly. (Ibid, 526-7.)

Hayek built on this work to pioneer the investigation of market 'intertemporalities' — differences in 'who knows what when' — seeking to explain phenomena such as the effects of asymmetries and time-lags in information on coordination between sectors with different supply elasticities (and seeking solutions to these intemporal problems in strict monetary policy). As a related matter he also studied the accuracy of price signals, attempting to determine the conditions under which actors know how to interpret them correctly. Against the marginalist fiction that markets are 'frictionless' mechanisms, Hayek and those other neo-classical economists who have attended to the issues recognize that price information is a resource, has a cost, and must be analyzed in terms of what gives it value, how it is produced, and how it is distributed — indeed a specifically Ricardian set of questions. Hayek's description of how the price system radically reduces some of those costs is suggestive in terms of the way in which market coordination occurs. However, the standardized commodity markets he takes as exemplary — and indeed, prescriptive for policy — are arguably special cases. A large and growing proportion of transactions involve non-standardized goods and services exchanged across very costly cultural barriers where, as we shall see, the information generated by the price system falls far short of the requirements of decision-makers. Hayek's account therefore doesn't really come to terms with the question of how the costs of determining and interpreting price information in more complex and realistic exchange processes are allocated — the problem, so to speak, of the 'prices of prices'.

George Stigler's approach to the economics of knowledge enters part of the way into this area of investigation. It also provides a graphic illustration of the narrowing assumptions of the neo-classical view of persons in markets. In summary form, Stigler assumes that the only information which information-consumers can rationally seek is that which costs less to acquire than it will yield in increased income or reduced expenses, and likewise, that the only information which rational knowledge-producers will produce is knowledge they can sell for more than it cost to produce. Thus:

The value of information is the amount by which it reduces the expected cost to the buyer of his purchases. (Stigler, 1968, op. cit., 183-4.)

Stigler employs a model which considers information search during the ascertainment of market price, as an instructive perspective on the market process in general, and on the phenomenon of advertising, in particular. Price dispersion (variance) is "the measure... of ignorance in the market." The relation of the cost of search to the degree of price dispersion determines the marginal utility of market information investment. No standard hypothesis is advanced as to the *structure* of frequency distributions of asking and offering prices; but Stigler suggests, reasonably enough, that buyers (and sellers) who continue to invest in any given price (bid) information-search, experience diminishing returns (in terms of discovered unit price decreases (increases)) and, normally, constant marginal search costs, as the search is lengthened. He offers a calculus for determining the rate of decrease in marginal returns from price search, in aid of optimizing search decisions (finding the point at which buyers' expected decreases in costs (or increases in receipts, for sellers), will no longer exceed the costs of repeating the search routine).

Applying this model to advertising, Stigler suggests that the latter is "an immensely powerful instrument for the elimination of ignorance" (ibid, 182) because of the economies of scale achieved in search. For this reason, he says, the inclusion of advertising with editorial content in mass media *increases* the value of the media product to the consumer. Stigler's reason why, despite this consumer value-enhancement, advertising costs are normally charged to the seller/advertiser rather than the buyer/searcher is simply "that it would be difficult to ration space" if advertisers had no price incentive to limit and tailor the information to match consumer/searcher needs more precisely. (This theory of the economics of advertising can be usefully compared with two alternative models which are complementary to one another: Galbraith's demand-management model, and Smythe's theory of the audience-commodity: see Galbraith, 1967; Smythe, 1981.) Regarding "the use of entertainment to attract buyers to commercial information" Stigler's opinion is that:

"The assimilation of information is not an easy or pleasant task for most people, and they may well be willing to pay more for the information when supplied in an enjoyable form. In principle, this complementary demand for information and entertainment is exactly analogous to the complementary demand of consumers for commodities and delivery service or air-conditioned stores." (Stigler, ibid, 185.)

Stigler and Hayek are realistic enough to begin by assuming imperfect markets, imperfect information, fallible actors and institutions, intertemporalities, path-determinacies, externalities, and other evidentiary flaws in the general equilibrium framework. But for both, methodological individualism remains the best-warranted ideal-typical stance for analysis of the economy of a modern industrial society. The economic actor searching for price information in Stigler's theoretical world is endowed only with strategically self-interested rationality, extra-social and exogenous preferences and competences, and an opportunistic propensity to maximize those

preferences — precisely the impoverished assumptions that methodological individualism makes about economic actors and interactions.

A theory of property rights is implicit in Stigler's model. The price-search process Stigler describes is an exact analogue of the acquisition of information property rights in Kronman's discussion of contractual disclosure (Chapter Five). Common-law property rights in information were seen to adhere when the information was acquired by a search that had a cost and was deliberate, and when the information had a derived demand in another production process. The cost of price-information, created by a deliberate investment in search, is here assumed by the buyer as the price of her quasi-property right. However, to the extent that non-owners were excluded from the use of price information by such a doctrine, the price system would be unable to perform the role Hayek has assigned it, as a universal 'telecommunications system' for efficient, decentralized economic planning.

An important issue is how well Stigler's model applies to *non-price* types of information which are also the product of deliberate search. Are there forms of information whose value is not given by their contribution to reducing "the expected cost to the buyer of his purchases"? In the post-war period Stigler's model has been standard for analysis of massive investments in scientific and technological research and design, led by the communication and information technology sectors (on the history of industrial applications of information-processing science and technology see Beniger, 1986; on the relation of technical innovation to market structure see Morris-Suzuki, 1984; Freeman, 1986; Rosegger, *ibid*, 1991.) Scientific and technological research and development, now touted as

the motor of economic development, have played an enormous role in the global restructuring of production, finance and distribution of public consumption and private capital goods alike. The information searches of science and technology researchers in many fields are central to this transformation, generating knowledge crucially different in its qualities, in an increasing flow of technical innovations into the firms in the production system, which come increasingly to rely on innovation itself as a key strategy for competitive advantage. How well does the model of rational self-interest describe the social organization of these sites of information search?

The process of scientific discovery is plainly and emphatically not a market process: markets organize *preferences*; but neither science nor technology researchers expect that what they will learn in their investigations will have any necessary relation to what they might *prefer* to be true, nor do scientists, at least, decide what is worth knowing purely on the basis of the cost of learning it, but rather, on the basis of its logical necessity or coherence. (In terms of "logical coherence" I have in mind here something like the coherence model of justification developed in the philosophy of science and more recently applied to legal decision-making: see Shiner, 1988; Hanen, 1983.)

For this investigation of the implications of communication norms for economic performance the fundamental issue is that rational social processes of testing and validating new knowledge — in the case of science, the fallibilistic core of the process — rest on the rigour, transparency and accessibility of a public communications forum for purposes of justificatory theoretical and empirical challenge and debate. The organization of this function through conference, peer-review and publication has no obvious analogy either in the organization of preferences by the market or in the

pricing of information by marginal utility analysis. If the resources applied to the generation of new knowledge are subjected to an allocative rationale which assumes the foundational status of pure subjective utility, the rational warrant provided by scientific validation procedures themselves, is undercut. Since this validation process is a social one, for potentially the most valuable kinds of new knowledge we cannot rationally know, by ourselves, which are valid and reliable, or therefore what we might discover or will need or want to know in the future, except by rationally-motivated *agreement*. We don't know whether a choice to maximize exchange value holdings will provide any useful viewpoint on our other investigative choices; nor therefore *what preferences to maximize* in the acquisition of information. (In terms of the role of public argumentation in scientific discovery, I have in mind the now enormous literature in philosophy and history of science concerned with the revolutionary (or 'paradigmatic') turn towards these social and communicative conditions of scientific discovery, most famously marked by the publication in 1962 of Thomas Kuhn's Structure of Scientific Revolutions.)

Stigler concludes with a vague nod in the direction of these problems. "The identification of sellers and the discovery of their prices are similar problems to... the detection of profitable fields for investment [e.g. technological innovation], or the search for information on the quality of goods" [including "moral attributes of their acquisition" (Buchanan, op. cit.)]. But "quality has not yet been successfully specified by economics, and this elusiveness extends to all problems in which it enters."

The existential problem of economics, as for Hayek, is pervasive ignorance:

Ignorance is like sub-zero weather: by a sufficient expenditure its effects upon people can be kept within tolerable or even comfortable bounds, but it would be wholly uneconomic entirely to eliminate all its effects. (Stigler, *ibid*, 187-8.)

Rational expectations theory, a fairly recent development in neo-classical economics, takes the ignorance of economic actors as its starting point and guiding principle. Given the fundamental postulate of methodological individualism that economic conduct is self-regarding, utility-maximizing conduct, this perspective emphasizes how, throughout a market economy, the negotiation and enforcement of contracts occurs in a persistent state of mutual ignorance between transaction partners about their respective scope for advantage-taking. In this perspective, therefore, the rational stance for all economic actors to take towards one another is to assume that contracts will be violated whenever other actors have opportunities to do so.

Such violations may take many forms, ranging from misdirection, to shirking, to outright fraud; but as a constant in economic relations, advantage-taking and its unearned rewards guarantee the ultimate destruction of all institutional arrangements premised on unreserved normative agreement or voluntary collective procedures (see eg Olsen, 1971). The rational expectations approach applies mathematical game theory to modelling the outcomes of strategic interaction sequences, in which other-regarding conduct is assumed not to occur (inspired especially by the work of von Neumann and Morgenstern, 1947). It is directed both at discovering hidden opportunities for opportunistic advantage-taking, and at analyzing the costs and benefits in various circumstances of measures to reduce the opportunistic violations of others, through such means as fuller specification of contracts, or more complete monitoring of transaction partners' activities.

A major focus of this work, known as principal/agent theory, attends to the structure of strategic interaction *within* commercial organizations. The forms of organization of capitalist firms are understood here as efficient (and therefore inevitable) responses to mutual deception and consequent mistrust among actors engaged in joint processes of production. Principal/agent analysis proceeds from a perceived core problem in the enforcement of labour contracts: the prospect that in a multi-person enterprise, some workers may not contribute their labour as fully as others. This 'free rider' problem is seen as creating the need for managers empowered to establish surveillance systems, reporting routines, and work and payment standards for workers, and to hire and fire them. Managerial control of organizational resources creates incentives for managers to establish strategic relations with lenders, insurers, new shareholders, supply creditors, etc., who will themselves then need to establish routines for surveillance and control over managers. By this ramification of counter-measures arising from suspicion and mistrust, one soon arrives at the specific array of hierarchical power relations which characterize a free enterprise economy (see Alchian and Demsetz, 1972; Axelrod, 1984). Typically, the risk of opportunistic violation of contracts is perceived in this perspective as arising only on the 'agent' or employee side of labour transactions, and it assigns little or no responsibility to the 'principal' or employer to constrain the opportunistic use in the labour contract of its greater latitude of power, or to use this power to devise organizational means for improving the level of voluntary coordination.

Charles Perrow has criticized the principal/agent perspective by arguing that "some settings, or organizational structures... will promote self-interested behaviour, others will promote other-regarding behaviour, and still others will be neutral" (Perrow, 1986, 13-14). He goes on to argue that

the “extreme assumptions” of this perspective, and the self-fulfilling prescriptions it generates for economic organization, give us a kind of benchmark against which to measure the interactional characteristics of different feasible economic arrangements. Perrow’s typology of the conditions under which competitive self-regarding behaviour will predominate (ibid, 16-17) is relevant in several respects for this study’s concern with the implications of rationalized communication processes for economic coordination. Perrow states:

1. “Self-interested behaviour is favoured when continuing interactions are minimized” by fluid labour markets, and heavy emphasis on individual, rather than group promotions and schedules.
2. “Self-interested behaviour is favoured where storage of rewards and surpluses by individuals is encouraged” by the tax structure, organizational hierarchy, steep salary structures, and minimal redistribution of wealth.
3. “Self-interested behaviour is favoured where the measurement of individual effort or contribution is encouraged” through piece rates, evaluations and promotions, and an emphasis on leadership.
4. “Self-interested behaviour is favoured where we minimize interdependent effort” by the design of contracts, work routines, equipment, assembly lines and surveillance systems.
5. “Self-interested behaviour is favoured where there is a preference for leadership stability and generalized authority” rather than alternating leadership tasks.
6. “Self-interested behaviour is favoured where tall hierarchies are favoured” over flatter and more flexible organizational structures.

As already developed above (see discussion of Rosegger, op. cit.), the ‘network economy’ exhibits contrary tendencies — flat hierarchies, intensive teamwork, and increasing emphasis on recurrent interaction and relationship-building — driven by the strategic imperatives of information acquisition. Much of the contemporary organization theory literature of ‘flexible specialization’ (see e.g. Piore and Sabel, 1983), while still tied to the technological determinism of its ‘post-industrial’

theory origins, also shows that Perrow's typology of economic interaction under principal/agent theory describes a set of conditions from which large firms increasingly depart, in their actual operations.

Principal/agent theory tells us how the rational expectations perspective applies neo-classical theory to the sphere of private exchange contracting and to the intra-firm dynamics generated by labour contracts. But an equally significant focus of the rational expectations approach lies in its application to government policy, public welfare, and the production and distribution of public goods. Several currents in the theory of rational expectations have converged, since the 1950s, on questions of how mathematical modelling of games and other strategic interaction sequences can be used to extend the postulates of methodological individualism to explaining the rational aggregation of individual preferences in the *political* process. These include the 'rational choice' perspective (see Elster, 1986; Sen, 1974; 1976; 1986); the 'social choice' perspective (see Arrow, 1951); and the 'public choice' perspective (see Buchanan and Tullock, 1965; Downs, 1957); these are sufficiently similar that the 'public choice' label may stand in for all. Public choice (also known by its principal advocates as 'new political economy') takes as its field of study the collective provision of public goods, understood as the domain of government. Government is defined as "that complex of institutions through which individuals make collective decisions, and through which they carry out collective as opposed to private activities" (Buchanan, 1979, 144). Note that only *formal* collective decisionmaking arrangements are admitted in this definition. Further, since a central tenet of the public choice approach is that "there do not exist collective desires or collective beliefs" (Elster, 1986, 3), public choice is devoted to extension of the economic postulates of instrumental

rationality and opportunistic self-interest to the study of political behaviour, and to the corollary treatment of political institutions as quasi-markets. Thus, in the public choice approach, economics is the study of “self-interested individuals exchanging private goods and services on the market”, and politics is “the science of self-interested individuals trading public goods in political institutions analogous to the market” (Udehn, 1992, 248).

Public choice theory can be understood as an interdisciplinary approach to public policy questions, based on a thorough extension of methodological individualism (which postulates an atomistic social world populated entirely by opportunistic and self-interested ‘utility-maximizers’) to the analysis of socio-political policy dilemmas from other disciplines in the social sciences and humanities, including political science, sociology, social psychology, anthropology, and moral philosophy (see Becker, 1986). On this basis, public choice advocates claim to make objective predictions of how, in any institutional context, social actors will calculate and enact strategies in pursuit of their exogenous preferences, and of how, therefore, a restricted and utilitarian set of public interest objectives can best be secured by government. In general, its assumptions about the self-interested opportunism of political representatives and the logic of strategic decisionmaking in politics dictate skepticism about the feasible scope of public interest governance. In this perspective, private production and exchange of virtually all kinds of goods is superior to public production and distribution, and therefore the proper role of government is simply to create and enforce the framework of legal rights necessary to private production and exchange. In the contemporary political context, public choice theory provides the underlying economic justification for reducing the scope of government services and the size of public budgets, and for privatization of public

services wherever possible. Buchanan (cited in Chapter Five) puts this succinctly: “To the extent that markets work, there is no need for the state. Markets allow persons to interact, one with another, in a regime that combines freedom and order, provided only that the state supply the protective legal umbrella” (Buchanan, 1986, 268).

Public choice theory has significant economic welfare implications. It was noted earlier that Paretian welfare theory ignores some problems of distributional fairness: even in a theoretical state of perfect competition, guaranteeing a Pareto-optimal equilibrium of production and consumption, it would remain the case that many different Pareto-optimal equilibria would be possible, and that some would be fairer than others. A laissez-faire economy could, for example, continually increase its production of luxuries for the wealthy at a faster rate than it increased its production of basic necessities for the poor, and still fulfill the Paretian condition of making no-one *worse* off. Or similarly, initial endowments of unearned wealth could grow continually more unequal between members of a laissez-faire society as successive generations inherited, without necessarily contravening the Paretian rule. While market *failures* have been addressed in welfare economics in various ways through theories of taxation (e.g. Pigou, 1920), theories of property rights (e.g. Coase, 1988), or theories of ‘contestable markets’ (e.g. Kaldor, 1939), the question of how society should choose *which* Pareto-optimal equilibrium to generate (assuming all market failures were corrected) leads straight to consideration of the political process. In a democracy, it is directly or indirectly through *voting* that such economic policy questions about the distribution of incomes are settled.

From the economist's point of view, the voting process is simply a rational means of aggregating individual preferences into a social welfare preference, or 'public choice'.

Unfortunately for economic theory, mathematical analysis of the voting process reveals that no such rational aggregation is consistently possible. This line of enquiry has deep historical roots, going back at least to Condorcet's 1785 "Essai sur l'application de l'analyse à la probabilité des décisions rendues à la pluralité des voix", in which he demonstrated that majority voting procedures among multiple persons with different preference-rankings very readily generate paradoxical outcomes in relation to majority preferences. Modern developments in the theory of rational collective choice (and the literature is vast; for an overview see Wrigglesworth, 1985) derive predominantly from Kenneth Arrow's 'impossibility theorem' (1951). This similarly establishes by mathematical analysis that there simply is no logical and consistent way to aggregate the preferences of individuals into a single consistent social preference, and therefore no instrumentally rational solution to the problem of prescribing or choosing among the multiple equilibria that populate the frontiers of the social welfare function.

Public choice theory's response to this result is to view democratic citizenship activities, not as standard instrumentally rational behaviour designed to bring about individually preferred ends by efficient means, but as norm-conformative actions in which 'utility' is more or less unintentionally realized from the satisfaction of 'doing one's duty' (see e.g. Elster, *ibid*, 22-7; Barry, 1979). More importantly, though, this result is taken to buttress the assumption that collective decisionmaking processes are inefficient and irrational, and private allocation efficient and rational; and that the role

of government and other collective authority in economic life should therefore be kept as small as possible in order to maximize the production of economic utility, however measured.

In information terms, the public choice perspective says that because of the impossibility of quantifying interpersonal comparisons of utility, democratic institutions are unreliable allocative information systems; and because they organize already-quantified preferences, markets are informationally superior. Even without knowing the expected value of information discovered in the market, the lower costs of discovering it there makes the market a more hospitable environment for the successful exercise of rationality (instrumental by definition in this view). Although the democratic process arguably calls for the exercise of the *communicative* form of rationality characteristic of ethical dispute and agreement-formation, the public choice theorist tends to see here only a simple choice between irrational custom and objective reason. As Elster put it, “Neoclassical economics will be dethroned if and when... sociological theory comes up with a simple and robust theory of the relation between social norms and instrumental rationality” (Elster, *ibid*, 26-7).

Institutional Perspectives in Economics

While it is beyond the scope of this study to reconstruct in detail the arguments of the various branches of the more historically-oriented perspective known as ‘institutional economics’, a summary comment and critique is in order. It should be noted that the work of some institutionalists has already been cited or described in passing (for example O’Brien and Helleiner’s (1982) treatment

of TNC information dilemmas, or Melody's (1977, 1987) analyses of the characteristics of information commodities). Disagreements over the boundaries between approaches are frequent, and these disputes extend even as far as the degree to which the *classical* economists implicitly shared the institutional perspective (for an argument claiming Adam Smith as an institutionalist see Elsner, 1989). This section begins by describing briefly some of the ways 'neo-institutional' analysis has attempted to augment the assumptions of standard "applied price theory" (Williamson, 1988) about information and institutions, and reviews its debt to the work of Joseph Schumpeter on oligopolistic competition and technical innovation (1976 [1942]; 1954). It then reviews some concepts from the 'traditional' or 'evolutionary' institutionalism of John Commons (1934), with a view to the implications of communication and information technology for the relationship between economic and normative orders.

Neo-Institutionalism:

The neoclassical perspective on information shades off into the neo-institutional perspective (see e.g. Williamson, 1979; 1986; Langlois, 1986; Nelson and Winter, 1982; North, 1991; Langlois; 1986; Dosi et.al., 1988) at many of the points in the former approach that have been the object of critical analysis in this study. Several schools of economic thought converge in this perspective. The origins of transaction-cost concepts in neo-institutionalism are found in the work of R. H. Coase, and in that of John Commons and other evolutionary economists in the American Pragmatist tradition. Behavioural economics (associated especially with the work of Herbert Simon; see Simon, 1959; 1978) a closely related approach, has here introduced overlapping concerns with human cognitive

processes of information search, computation, and decision into the field of economics. The concepts of bounded rationality and also of 'satisficing' (as opposed to optimizing) decisionmaking were first developed in this research program; other aspects of neo-institutionalism owe more to work in the Austrian School tradition, including that of Hayek and Schumpeter.

The differences between the neo-institutional and the neo-classical approaches stem from a shift in the fundamental conception of the economic process. Where the neo-classical approach studies processes of *rational choice* which maximize actors' utilities among market goods produced as commodities, the neo-institutional approach can be said to study ongoing processes of *contracting* between actors for all kinds of goods and services, among whom conflicting and costly claims may arise (Perrow, 1986, *ibid*; Williamson, 1986; Medema, 1992). This entails attention not only to the prices of commodities in markets, but also to the predictable attributes of economic actors, of different kinds of transactions, and of transaction-governance structures. Key concepts in the neo-institutional approach, by which a range of attributes of actors, transactions, and governance structures are distinguished, include:

1. *Uncertainty*, both in the objective sense used above, of unforeseeable conditions of market supply and demand, with consequent instability of market equilibria; and in the intersubjective sense in which actors "make strategic plans in relation to each other that are the source of *ex ante* uncertainty and *ex post* surprises" (Williamson, 1986, 181).
2. *Bounded rationality*, referring to the informational and computational limitations of transaction partners in creating and enforcing agreements, and the necessity, therefore, to create organizational and institutional forms which permit actors to 'economize on rationality' (but not encompassing any systematic critique of instrumental *definitions* of rationality).
3. *Asset specificity* — the degree to which "durable investments are undertaken in support of particular transactions" (Williamson, 1986, 179). The value of such investments routinely

are much lower in alternative uses, and high asset specificity therefore generates high contracting costs, and confers high economic value on the continuity of the contractual relationship itself.

4. *Opportunism*, defined in this approach as “the incomplete or distorted disclosure of information, especially calculated efforts to mislead, disguise, obfuscate or confuse” (Williamson, 1986, *ibid*, 175).

The neo-institutional perspective explains the search to reduce the transaction costs created by these four kinds of informational constraints on the process of market contracting as the origin of a “fundamental transformation” (Williamson, 1986, *ibid*, 184-5) of economic relationships. In the evolution of the market process, in this view, anonymous, instantaneous market-price exchanges of standardized goods are progressively transformed into a range of forms of long-term, inter-firm contractual relations and intra-firm hierarchical relations, facilitating increasingly specialized activities. For the firm, vertical integration is the efficient outcome of this search to reduce transaction costs. Neo-institutionalists assert the superior efficiency of very large-scale corporate organizations and oligopolistic industrial structures over the competitive markets of neo-classical theory, in the general instance.

Opportunism, bounded rationality, uncertainty, and asset specificity are all understood to contribute to the tendency towards large firms and small-numbers bargaining situations. Asset-specificity, in particular, gives rise to the ‘fundamental transformation’. The most highly asset-specific elements of the fixed and variable costs of an enterprise will only in reality be born by the *successful* bidder in an initial contract-bidding situation. As a result, even those contracting processes which begin as competitive auction-markets with large numbers of bidders will be transformed into strategic

relationships during contract execution (as the highly specific costs are amortized) and into small-numbers bidding situations at the contract-renewal interval (when these assets give the initial contractor decisive cost advantages). From the neo-institutional perspective, competitive markets are predicted to persist only for exchanges which operate entirely through spot markets; or have vastly reduced uncertainty due to well-developed market, product, and technology standardization; or where producers have very low entry barriers. When there are high entry barriers, uncertainties in the market environment, and long-term or repeat contracts, market exchange is replaced by vertical integration.

Technological change and oligopolistic competition:

The rising importance of information-related activities in the overall composition of advanced industrial societies' labour sectors, and the corollary rise in the informational composition of final costs of goods, can be interpreted within the vocabulary of mainstream economics as symptoms of incomplete and imperfect markets. Markets deliver price information, and in most cases (since futures markets are available for only a small subset of commodities) only the present prices which existing demand has generated for available quantities of utilities, and not the prices which alternative demand schedules for those utilities would yield. New substitutes for those utilities, made available through technological change, further alter the future scarcity of resources and the prices of factor goods in ways opaque to the static analysis of general equilibrium theory. Under realistic conditions of imperfect competition (as noted in Chapter Five), where many producers are price-givers, rational economic decision-making requires good substitutes for the information which is absent from an incomplete system of markets. The opacity of actors' plans and decisions to one

another, and especially of their strategic plans involving one another, are at the the centre of the problems addressed by neo-institutionalists. Under these circumstances, continuous increases in the volume of information gathering and processing activity, in facilitation, negotiation, and other communication processes, and in the level of investment in information and communication technology, are necessary and predictable for successful economic actors.

Joseph Schumpeter, a noted historian of economic thought (see Schumpeter, 1976; 1954) perceived the uncertain and contingent character of economic action and reason within capitalism, and concluded, not only that oligopolistic forms of market organization were necessary to sustaining the performance of capitalist economies, but that actually pursuing the ideal of perfectly competitive markets would generate only large-scale enterprise failure and economic catastrophe. With this bold view, Schumpeter challenged the arguments of the marginalists, who had defended the insights of the *classical* political-economists by providing a far more rigorous positive theory in support. In Schumpeter's words, marginalism "conserves the classic proposition that in the case of perfect competition the profit interest of the producer tends to maximize production..."

Firms which cannot by their own individual action exert any influence upon the price of their products or of the factors of production they employ... will expand their output until they reach the point at which the additional cost that must be incurred in order to produce another small increment of product (marginal cost) just equals the price they can get for that increment, i.e., they will produce as much as they can without running into loss. And this can be shown to be as much as is in general 'socially desirable' to produce... In that case prices are, from the standpoint of the individual firm, not variables but parameters; and where this is so, there exists a state of equilibrium in which all outputs are at their maximum and all factors fully employed. This case is usually referred to as perfect competition." (1976, *ibid*, 77-8, *emph. added*)

Schumpeter criticizes the realism of this view vigorously, asserting that marginalism's theoretical proof of the “principle that competitive industry tends to maximize output... itself requires assumptions which reduce it to little more than a truism”. This is mainly because the ‘principle’ applies only to a state of static equilibrium, and “*capitalist reality is first and last a process of change*” (ibid, emph. added). Models for analysis of the performance of firms in an economic environment of static equilibrium are, therefore, irrelevant.

The authors of the marginalist revolution in economic thought (eg Marshall, Wicksell, Menger), and the classics also, assumed that perfect competition was the rule, and that the role of economics was to analyze exceptions to the rule and design remedies to restore it, or compensate for its absence.

But in Schumpeter's analysis, it is perfect competition itself which is the exception:

...every grocer, every filling station, every manufacturer of gloves or shaving cream or handsaws has a small and precarious market of his own which he tries... to build up and to keep by price strategy, quality strategy... and advertising. Thus we get a completely different pattern which there seems to be no reason to expect to yield the results of perfect competition and which fits much better into the monopolistic schema. (ibid, 79)

The methods by which firms exert influence on the price of their own products and input factors (rather than being pure takers of prices from the market, as perfect competition requires), differentiate the different types of monopolistic and oligopolistic competition which have been central among the objects of analysis of modern economists (see eg Baumol, 1965). Schumpeter played a pivotal role in turning economists' attention to these institutional phenomena, laying some of the groundwork for the later application of game theory to the economic conduct of firms. He insisted that in real monopolistic and oligopolistic markets no singular equilibrium exists, that what

emerges instead is “an endless sequence of moves and countermoves, an indefinite state of warfare among firms” (Schumpeter, *ibid*, 79), and that most of the social benefits (other than increased output) imputed to competitive markets are fictional, the reality being various forms of predatory and extortionist conduct and social waste.

This gives an idea of the relevance of Schumpeter’s analysis for broader discussions about the interaction of economic and normative orders. Like few previous economists, he perceived the necessity of forms of normative social integration to the functioning of economic institutions, as well as their ‘extra-economic’ origins. His perception of a fundamental conflict between the inevitably increasing scale of the modern corporation, and the necessary maintenance of an encompassing normative social context for economic action, lent his analyses a strongly pessimistic flavour. Horton (1992) notes the relationship of Schumpeter’s arguments to those of Durkheim, Parsons, and Weber. Parsons “regarded the integration of divergent economic interests and social roles within the division of labour” (Horton, *ibid*, 260) as problematic unless effectively regulated, and following Durkheim, identified *contract* as the central regulatory institution of market exchange. But the rules of contract are not (for any of these theorists) a matter of strict economic efficiency: “the origins of the rules upon which contract are based are seen as extra-economic... fraud and coercion are excluded from the operation of contract by means of socially prescribed and sanctioned rules” (260; see also the discussion in Chapter Five).

A second aspect of the interaction between economic and normative orders noted by Schumpeter is the agency of entrepreneurs. Schumpeter realized that the appropriate combination of the factors of

production does not occur spontaneously through the market mechanism, but requires the additional integrating factor of organization or entrepreneurship. Characteristics such as conspicuous display or dynastic ambition show that “the organizer or entrepreneur draws on extra-economic sources of motivation and commitment” (Horton, *ibid*, 261).

Following Weber, Schumpeter argued that capitalist societies tend to destroy the normative social foundations their economies require in order to function, in three ways. First, the development of capitalism undermines entrepreneurialism, because large enterprise administration, and large-scale management of technological innovation, rationalizes the entrepreneurial function by bringing it under the control of committees and teams of experts. Secondly, mature capitalism also diffuses ownership through large corporations, replacing the more individualized forms of proprietorship characteristic of its earlier stages, and thereby elides the moral distinction between productive ‘ownership of things’ and economic coercion of persons (see discussion in Chapter Five). And thirdly, Schumpeter suggested that in promoting rationalism, capitalism promotes a critical attitude which is eventually extended towards the capitalist social system itself. Thus, capitalist rationalization destroys cultural values; but in the process rationalization also transcends capitalism by creating the necessity of new forms of economic organization, and new forms of economic rights.

Schumpeter’s work was a turning point in the analysis of modern market processes, not least because it brought a much greater degree of realism to the task of understanding the behaviour of large capitalist organizations, and the specific contracting processes and transaction forms which typify them. But for Schumpeter this analysis was not a prelude to criticism of capitalism on economic

grounds. His blunt view in fact was that by the economist's sole criterion of increasing the national product, oligopolistic capitalism is superior to other forms of economic organization. And his reasoning here turns upon the relationship between capitalism and technology. In the "state of warfare" among oligopolistic firms, new technologies of production can confer vital strategic advantages; and their pricing strategies are therefore set to produce the surpluses to enable constant search for and adoption of new technology. In this context, technological innovation causes obsolescence and replacement of capital equipment, on average, *before* it is 'used up' by the production process. It is this dynamic — these "gales of creative destruction" (Schumpeter, *ibid*) — which deliver constantly increasing industrial output. The superior economic performance of capitalist economies is then a result of oligopolistic rivalries and resulting intensification of information search and processing activities, not described or predicted by the market model.

Traditional Institutionalism (Evolutionary Economics):

Schumpeter's observations about the industrial structure of capitalist societies converge in many ways with John Commons' development of a pragmatist micro-economic foundation for institutionalism (1934). Commons' interactionist perspective on the economic process, and his view that all economic interactions combine elements of conflict, interdependence, and normative order, led him to seek an analytical unit of activity "which correlates law, economics, and ethics" (Medema, 1992, 292). He therefore identified the *transaction* as "the smallest, most basic unit of economic

analysis” (Medema, *ibid*, 292). This is in contrast to the classical and marginalist economists, whose positivist orientation emphasized the centrality of the property relations between the actor and the objects she controls; these approaches correspondingly identified the *commodity* as the basic unit of economic analysis (Medema, *ibid*).

The transaction, in Commons’ usage, is a social interaction, and takes different forms in different exchange circumstances. Additionally, the scope of the transaction “hinges crucially on the authority’s [eg the Court’s] determination of the bounds of legal control, that is, of *what constitutes property*” (*ibid*, 293). The transaction is defined by Commons as:

the alienation and acquisition, between individuals, of the rights of property and liberty created by society, which must therefore be negotiated between the parties concerned before labour can produce, or consumers can consume, or commodities be physically exchanged. (Commons, 1934, 652; cited in Medema, *ibid*, 293)

Because the legal system creates property rights in both tangible and intangible property, the exchange of physical commodities does not exhaust the description of the transaction. On the contrary the legal status of intangible property such as information “has greatly expanded the scope of transactions and has added to the importance of emphasizing the transaction as the basic unit of economic analysis” (*ibid*, 293). In the context of the ‘information economy’, the transaction is an appropriate unit through which to investigate the relationship between normative and economic orders and structures.

Traditional institutional economics, in the Veblen-Commons tradition, has been from its inception sharply critical of the nomothetic character of mainstream economic thought, and of the model of

subjective utility-maximizing rationality imbedded in it. Methodological anxiety has therefore not been an important motive for attention to themes of information and uncertainty among traditional institutionalists. Instead, information has become a salient focus more recently, in large part through a theoretical concern with the role of *technology* in social change (see eg Melody, 1977; 1987; 1993; Mansell and Silverstone, 1996; Freeman, 1982). In the institutional tradition, social 'evolution' is the outcome of conflict between established cultural practises and their rationalization through technology (Mirowski, 1988; Tool, 1988). The emerging centrality and pervasiveness of *information* technology has presented traditional institutionalists with a practical opportunity to test their postulates regarding technology: that it is a key force impelling institutional change, defining the relative scarcity of resources, and determining the performance of economies.

The increasing economic impact of information technology — both as an industrial sector, and in its economic effects within other sectors — has heightened the interest of mainstream economists in information-related inquiry. In classical and neo-classical economic theory, as we have seen, processes of acquiring, processing and using information have been bracketed away for the most part as questions of individual psychology, and thus outside the domain of economic inquiry: the information requirements of individual, rational, utility-oriented economic action are taken to be ideally satisfied by the operations of markets (though this may, by some accounts, require particular structural and regulatory interventions to ensure). In the neo-classical approach (and to an important degree, in the neo-institutional approach) the concept of information remains closely linked to an hypothesized utility-oriented rationality of individual economic actors. The concept of information is still deployed in these approaches to specify how the information requirements for rational self-

interested action are satisfied, and to show what information-related limitations on or departures from the rationality-hypothesis are necessary, and what degree of validity such limitations or departures preserve for the postulated market models.

To institutionalists, however, the market model entails insupportable assumptions about the quality of information, and the computational expertise and rationality possessed by its postulated egoistic economic actors. An important characteristic of the new information technologies, brought more clearly into view in the dynamic perspective of traditional institutionalism, is that these are *generic* technologies that enable acceleration of the *technology innovation process itself*. If market structures and entry conditions are sufficiently competitive across diverse sectors, such that the search for competitive advantage (including, especially, oligopolistic forms such as competition between *products* or for *capital*) sustains demand for innovation in *producer* goods, the potential profitability of the proprietary information continually produced by firms may become greater than that of the other products to which that information is an input. In that case, investment may shift increasingly into the R&D process, with economy-wide implications for the rate of amortization of capital goods, the availability of productive capital, and the adjustment of producer to consumer goods markets (see e.g. Elson, 1980; Morris-Suzuki, 1986; Rosegger, 1991). On the consumption side, the same technologies of process control can be and are being applied to stepping up the velocity of transactions (as is explored in depth in the following case study chapters). If we distinguish between information as a dimension of all economic processes, and the *electronic digitization* of information as an economic process of technology innovation and adoption, then much of the 'information economy' literature can be understood as a set of temporally and spatially specific inquiries into the

computerization of the economy (Melody, 1987; Poirier, 1990). In other words, the economy always was, in some sense, an ‘information economy’ — but not a computerized one. Computerization makes the information dimension of the economy, its constitutive influence on the institutional and normative contexts of economic action, more visible and explicit.

The traditional institutional approach treats established norms and rules of human conduct as forms of public good which effectively substitute for the missing information and bounded rationality possessed by economic actors. In neo-classical theory, public goods are goods available to all, any one economic actor's use of which does not reduce the amount available to others (Samuelson, 1954). Public goods display strong indivisibilities, positive externalities, and economies of scale. As one author comments in a discussion of technical standards as public goods: “the more producers and consumers use a given standard, the more each gains from use by others through gains in comparability and interchange-ability” (Kindleberger, 1983, 377). In the institutional approach, social norms are understood as constituting an accumulation of the ‘collective wisdom’ of a culture as an inventory of public goods or forms of social capital, available to each economic actor in substitution for the individual knowledge and rationality assumptions of the classical and neo-classical models.

Public goods consisting of the behavioural rules and norms which we (more or less tacitly) employ as we move from one functional setting to another are ‘institutions’. Institutions are defined as “modes of collective action” (Samuels, 1987, 864), or as “behaviour rules (or patterns of behaviour) governing the activities of individuals in recurrent multipersonal situations” (Elsner, 1989). In the

institutional view the economy “is more than the market mechanism: it includes the institutions which form, structure, and operate through, or channel the operation of, the market” (Samuels, 1987, *ibid*, 865). Institutions have the observable function of *stabilising* our social, political and economic interactions into relatively predictable, or at least less uncertain patterns, and thus reducing the cost- and risk-barriers to cooperation and coordination. Through the use of norms and rules we acquire a degree of certainty that our own and others' actions will be intelligible, appropriate, and received with approximately their intended meanings: each user “gains from use by others through gains in comparability” (Kindleberger, *ibid*).

Economic actors who are acculturated to the institutions of the social context in which they act do not need perfect information in order to make reasonably effective decisions. For example, a functional familiarity with the everyday norms of interpersonal interaction in market cultures permits anonymous buyers and sellers who know very little about one another to complete many kinds of transactions without posing unacceptable risks to either party. On the other hand, transgression of those norms (e.g. by failure to participate in ritual respect- and trust-building exchanges, by refusal of standard disclosures, or by coercive or ambiguous conduct), creates levels of suspicion and threat, traceable largely to the absence of information about the meanings and motives of the other party's behaviour, which can prevent completion even of simple transactions. Thus even the most mundane interaction norms function as a non-monetized public good whose absence would impose large costs on all private economic actors. (More complex examples are presented in Chapter Nine within the case study.)

While the institutional perspective offers a more realistic account of how effective economic decisions are taken in the absence of full relevant knowledge, it raises new questions about the origin and development of institutions, the efficiency of existing institutional arrangements, and the scope for and effects of sanctions against non-compliance, dissimulation and other forms of opportunism. In many cases, sufficient deliberate investment of resources may succeed in changing specific social rules to the benefit of particular actors: for example, through litigation, regulatory intervention, political lobbying — or, as the accompanying case study will illustrate, *through technological innovation*. From the institutional perspective, the public policy question of whether such social-rule changes are also in any particular case in the ‘public interest’ — whether they conform even to the Paretian standard of social welfare — must go beyond the utilitarian calculation of direct and monetized costs and benefits to economic actors possessing effective representation in those legal, political and design processes, and find ways to take into account the cumulative, society-wide burden of the new information and transaction costs which such changes may entail.

Information Context and Economic Value

In recent years there has been a great increase in systematic inquiry devoted to the social and economic effects of communication and information technologies. The current period is one of rapid technical convergence between computing and telecommunications, in which the installed base of digital information storage and processing devices are being linked in ever more-extensive and multi-featured networks. These developments pose a continuing challenge to our understanding of the structure and function of society's institutional and normative ensemble, since broad transformations are now predicted across most or all institutions through the impact of the emergent

telematic modes of information generation and dissemination. The new information technologies locate us all — whether as consumers, homemakers, employees, managers, entrepreneurs, citizens or policymakers — in a context of fundamental institutional evolution. In such a context it becomes difficult for individuals to discern the specific norms of conduct appropriate to various social roles, or to evaluate the continuing legitimacy of established rule-systems. This is in part due to new uncertainties introduced by technological changes in the structure of information flows within familiar contexts. It is also in part because the value and meaning of the information exchanged through familiar role-norms and rule-systems is influenced by dynamic interactions among the broader ensemble of social institutions.

Conceptualising the context-dependent character of information, and modelling the economic implications of this view, is a counter-intuitive exercise for mainstream analysts of the computing and telecommunications sectors. Engineering advances in these sectors have been built on a definition of information content as a quantifiable measure of the entropic probability of a signal (Shannon and Weaver, 1946); but this definition is not useful to economists and public policy analysts, since it is incapable of specifying the different meaning, and therefore economic value, two mathematically identical signals may have for a receiver. Recent neo-institutional theory has begun to develop measures of the value of information which take account of the way in which it is structured and organised in relation to an economic agent's upstream and downstream exchanges (see e.g. Glazer, 1991; Chee-Wah, 1992; Nooteboom, 1992; Medema, 1992; Tordoir, 1987; Williamson, 1988). In this approach, a focus on the information characteristics of *transactions* provides the

context which gives meaning to the *content* of signals: *the economic value* of information is then given by *its role in facilitating future transactions*.

One of the implications of this view is that realisation of the full value of their investments in computerisation will require firms to make further large investments in networking capacity, in order to increase the speed, volume, control and information intensity of *transactions*. The firm's objective is to apply information captured during transactions to reducing the cost and increasing the value of future transactions. In this context the focus of the economics of information is brought to bear increasingly on marketing and contracting processes, and particularly on the embedding of these processes within telecommunication networks.

The Relationship Structure of Transactions

These developments raise further considerations having to do with the relationship between concepts of economic rationality and processes of social communication. If economic transactions are understood as types of interpersonal or inter-organisational communicative interaction, then the micro-economic definition of information as signal *content* whose meaning (value) is given by the *context* of the interactions in which it is used, is still inadequate. Its methodological underpinnings in pragmatist philosophies of language and science prescribe for institutionalism an approach to interpersonal (or interagency) interaction that distinguishes *three* necessary levels to the determination of the meaning of a signal (or utterance): content, context, and *relationship* levels (or first-, third, and second-person perspectives). Discrete items of data only become meaningful information when set in a functional context *and* decoded in terms of the *relationship* obtaining

between the sending and receiving parties. In every interaction, messages are exchanged about the relationship between the interlocutors, along with other contextually-relevant content-level information. The transmission (though not the veracity) of relationship-level information is unavoidable — even if the content level of the signal consists of a *refusal* to disclose information. Communicative rationality, or communicative competence, is the capacity to send and receive signals which are intelligible and congruent at all three levels.

The question of relevance to economic method that arises here is: What *relationship* messages between firms and their interaction partners *best facilitate future interactions*? When an enterprise, in an effort to maximise the informational value of its transactions, automates information surveillance of its interaction partners, seeks increasing levels of control over the context, the content, the timing and duration, and even the medium of their interactions, and simultaneously conceals information about itself and its other interactions as enterprise assets, it communicates relationship information to those partners which brings into question the structure of the relationship, the legitimacy of the interactions of which it is composed, and its own trustworthiness. At the relationship level, such a pattern of interaction communicates a strong desire and intent to exercise authority and control over the behaviour of other parties, and puts in question the possibility of binding rational agreement. This may or may not be acceptable to particular interaction partners, but it is certainly marginal to the concept of a voluntary contractual relationship. Agreements made under highly unequal informational conditions may be viewed as coercive and involuntary by subordinate parties (and the assertion that such enterprise behaviour is intended solely to increase

consumer choice viewed as a strategic form of semantic incongruence between the content and relationship levels of the dominant party's proposition).

Arguably, the widespread deployment of information and telecommunications technologies to such ends *reduces* the value — and even the *intelligibility* — of future transactions. Benefits are created for private firms only at the potentially greater cost of degrading or destroying existing public norms of interaction, surveillance and disclosure. Transaction norms that reduce the transaction costs experienced by all economic actors, and that enable the development of understanding and trust between autonomous transaction partners, may be economically superior to competitive market alternatives: only case-by-case ethnographic investigation can reconstruct the rationality-potentials of existing interaction norms. (The interrelationship of trust-building activities and processes of technology adoption has been addressed from several perspectives: for a symposium on social science approaches to trust, see Gambetti, 1988; for a highly abstract institutional analysis see Giddens, 1990; for systems and network analyses see Luhmann, 1979; and Weizacker, 1991; and for a case study in the sociology of science see Bodewitz, Buurma and de Vries, 1989.)

III. INSTITUTIONAL EVOLUTION IN TELEMATIC NETWORKS

Institutional research on CIT development has focused attention on some constraints and possibilities in socio-economic organisation previously under-theorised in economics. It has enabled widespread

changes in perception of pervasive (though largely non-monetized) information and communication *costs* involved in all forms of human coordination; and simultaneous changes in perception also of the concrete *value* of social processes of knowledge, inquiry, understanding and agreement. The central questions of the emerging global information economy can be seen, in this perspective, as questions about how to achieve adequate levels of knowledge, understanding and agreement from our expenditures of time, effort and other resources on communicative interaction. This will require careful differentiation and translation of existing norms and rules of interaction, on a case by case basis, to make their application in the telematic environment clearer and more transparent. It may also entail radical public policy measures with respect to the governance of network infrastructures.

To conclude Part II of this study, and to set the context for the case study which follows in Part III, this section applies institutional and critical-pragmatic concepts to the economic analysis of advanced telecommunication technologies. A pivotal and rapidly growing domain of information technology investment and information management is found in the use of advanced telecommunication networks for consumer information-collection and surveillance, and this application issue will be the focus of these remarks. Rapid technical change in the configuration of network services presents corporate actors with the opportunity to use the technological innovation process to alter the tacit rules of economic interaction in opportunistic ways. In particular, telecommunications carriers and their major marketing clients seek to use network services to gain access to detailed consumer information for demand management purposes. Private corporate control over the social capital represented by public norms of commercial interaction and disclosure is profoundly enhanced by digital network technologies. For reasons developed below, this

increased imbalance of informational control may seriously impair the transactional efficiency of networks. The development of *democratic* institutions for the governance of relevant aspects of public network configuration is therefore suggested as an appropriate economic policy prescription for correcting this imbalance.

Although formal law and policy in the privacy and intellectual property areas bearing on personal information control has not developed as quickly as the relevant technologies, a complex, pre-existent background of *tacit* social norms and rules can be demonstrated to surround and shape the information disclosure routines of consumers (see Chapter Nine). The design of methods of network surveillance of consumers has, therefore, direct implications for the normative and institutional structure of economic transactions. Business users of personal information not released directly and voluntarily to them by consumers for the specific purpose at hand, as well as telecommunications carriers who abet the process of personal information extraction by selling teletraffic data, are *blurring* the existing rules and norms of interaction. This creates a large potential for negative externalities in the form of increased transaction costs experienced by all economic actors.

Corporate actors have questioned why the disclosive status quo should be regarded as the optimal arrangement. Researchers have noted that disclosive norms have not been static and have evolved in response to the changing technological context. James Katz, for example, points out in relation to the controversial privacy implications of Calling Number Display (Caller-ID) services, that before the widespread introduction of direct-dialling as a basic technological feature of telephone service, calls were manually connected by operators who routinely announced callers' identities to receiving

parties (Katz, 1988). But this example can also serve to illustrate the tendency for disclosive norms within a given society to evolve towards greater personal control of information boundaries, rather than away from that condition (as further discussed in Chapter Nine). This is a function of the individual's use of social norms of information boundary control to develop an increasingly differentiated and autonomous sense of self. The more a given society ascribes importance to individual autonomy and choice, the more value it ought to attach to achieved levels of self-control of personal information flows.

Preservation of the disclosive status quo is not necessarily the optimal arrangement, in any case — from an institutional perspective it is merely the minimal requirement. A focus on the status quo occludes consideration of the information boundary management opportunities presented by the new technologies. Institutional analysis should focus on network configurations that *improve* the flexibility of individuals' information boundary management activities by sharpening the definition of relationship-level messages. In addition to preserving existing disclosive expectations, consumer privacy measures should be expanded to encompass methods of progressively improving the capabilities of network subscribers to store, access, manipulate and selectively disclose personal teletraffic and other data, and to monitor and control the location and use of personal or proprietary data shared with other parties. This approach views new network technologies and services as transforming the background norms of interpersonal interaction into overt technical and performance standards (see Kindleberger, 1983; David, 1990; Hawkins, 1996; Hills, 1991, 135-203). The configuration of new services by telecommunications carriers and their marketing clients must be design-sensitive to those transformations, to avoid instituting economically suboptimal standards.

Disclosive Standards

With a constructive focus on the opportunities presented by the new network technologies for improving the communicative rationality of transaction processes, possible service configurations can be compared in terms of their impact on individual boundary management activities, and also in terms of their impact on broader associated processes of social change. Adoption of network technologies — in any service configuration — will certainly alter individuals' boundary management practises, and associated disclosive and interactional norms, potentially in many ways. A key question is whether this process of normative social change will be conflictual, unpredictable, risky and expensive; or whether the transition can be made more smoothly, with a widely understood and accepted distribution of costs and benefits. Telecommunication carriers and equipment manufacturers, and computer hardware and software suppliers should be familiar with this problem, given their ongoing involvement in national, regional and international technical standard-setting processes, where precisely these kinds of considerations arise.

Standards can be classified into three types. Intentional adoption or accidental evolution of an **arbitrary** standard occurs simply because of the relative benefit conferred by adherence to *any* standard. Use of a common calendar, for example, vastly reduces the costs of coordinating physically dispersed activities, but no particular advantage in this regard obtains from the number of days allocated to each month, beyond the fact that agreement to this standard already exists. The benefit of an arbitrary standard is that it reduces transaction costs. Other standards are adopted because their **technical superiority** confers a benefit. For example, the computational advantages of the decimal system of weights and measures have generated a gradual spread of these standards,

and these advantages are additional to the benefits which would accrue to agreement on any other available standards of weight and measure. Technical standards confer production economies in the use of materials and labour inputs, which may translate into allocative efficiencies and economic welfare gains. Finally, some products and processes are subject to **performance** standards. Strict rules of evidence in criminal court proceedings may serve as an example here, since they are neither arbitrary nor more efficient than less onerous standards, but rather are *performatively* related to the production of legal decisions as recognisable instances of 'justice'. Performance standards are related to the maintenance and improvement of the *quality* of goods and services and the *legitimacy* of contractual and regulative procedures.

Existing norms of telecommunication disclosure of personal information share some features of all three kinds of standards. In the sense that they have evolved from a path-dependent course of technological development, they are partly arbitrary. In the sense that they display an evolutionary tendency toward greater subject control over information disclosure — through such developments, to use the example of voice telephony, as direct-dialling, silent number options, and screening devices — they have, arguably, exhibited technical superiority for their users. And in the sense that interpersonal communication is by definition directed at least in part to the creation of beneficial relationships between individuals, exacting disclosive norms are also performative features of that process. A transition to new standards resulting from new technological capacities will be smooth and consensual to the degree that it is perceived as preserving and enhancing the technical superiority and performance benefits of the existing implicit norms. Carriers and marketers, however, are widely pursuing the technological substitution of arbitrary disclosive standards which are intended

to alter the distribution of transactional benefits to their advantage. The likelihood of a smooth and consensual change to such new standards is very low.

The question that arises here is: What form of governance is appropriate for setting network performance standards in public switched networks? It was noted in the introductory chapter (page 13) that the technological rationalization of interaction norms and competences entails a systematic re-design of traditional lifeworld processes, with such consequences as the prolematization of taken-for-granted modes of collective action, and the “selective radicalization of ‘modernist’ values” (Offe, 1985, op. cit.). Norms of disclosive interaction are among these ‘taken-for-granted modes of collective action’; and among the modernist values which may be relevant in this context is *democracy*. Both neo-classical and institutional economic theory can be interpreted to show that the distribution of bargaining power (and therefore costs and risks) between vendors and consumers, and consequently the velocity of feasible transactions in the economy, are influenced by collective choice of public goods such as transactional standards of disclosure. In these circumstances the *democratization* of the standard-setting process within public switched networks is an appropriate means of generating rational consensus on the quality and legitimacy of the public goods in question: network performance standards. Carrying out this policy prescription is, due to the intrinsic characteristics of communication networks, nearly costless, because it can be effected by using the surplus capacity which is always available in the network, and already expensed through subscribers’ access charges. The remainder of this chapter’s discussion explores aspects of this economic policy prescription for the democratization of the public switched telecommunications network (PSTN).

Increasing the Quality of Network Transactions

The contemporary prevalence of capital-driven efforts to restructure the social norms of personal information disclosure through intensified consumer surveillance places consumers in a doubly obscure and ambiguous position. First, consumers' individual sense of vulnerability and need for self-protection is triggered by loss of control over disclosure of personal information which they are accustomed to using strategically. As explored in the following case study, this has less to do with the perceived potential for later misuse of the information itself, and is more a reflection of the immediate use individuals make of information-disclosure negotiations in setting-up and structuring their relationships with others. Involuntary extraction of personal information unavoidably harms this 'boundary management' process, irrespective of regulations regarding registration, subject access and correction, or collector use-limitations which may be put in place on the data by industry or government. Understanding the content of an interaction requires *perception of the feedback mechanism* between speaker and recipient (see Chapter Three discussion of MacKay, 1969), and personal information disclosure sequences are themselves constituent elements of the feedback mechanism.

Secondly, the broader institutional settings within which consumers deploy their accustomed control over personal information are themselves subtly transformed by alterations in disclosive norms, since other parties have simultaneously been subjected to the same change of rules and loss of information control. Social psychology research findings suggest (see Chapter Nine) that if some information boundaries dissolve under the impact of new information and communication technologies, remaining boundaries will, in consequence, become more rigid. In the context of voice telephone

services, increased use of screening devices, such as silent numbers, answering machines and voice-mail services, increased levels of abruptness and rudeness, and increased resistance to commercial telephone transactions can all be understood as rational responses to increasing uncertainty about the *relationship-level* information exchanged in that medium. Telephone and data network transactions with unknown parties can therefore be expected to become more difficult to initiate and conclude satisfactorily, as consumers experience declining control over personal information disclosure.

The solution to the "crisis of control" in sales and marketing systems does not lie in coercively increasing the *quantity of information* held by vendors about consumers. Much more to the point, it requires using information technology to improve the *quality of interactions* between vendors and consumers. If the strategy of carriers and telemarketers thus far – to dismiss consumer privacy claims on narrow legalistic grounds (see Chapter Eight) – produces large and unnecessary consumer resistance to network transactions (and hostility to carriers and marketers), this will significantly drive up the cost of transactions throughout the network. If individuals' boundary management processes are not respected, they will preserve them by terminating interactions which appear to threaten their control of personal boundaries whenever possible.

This can be re-stated in Habermasian terms. If, in the telematic environment, individuals are not given an opportunity in their interactions with others to exercise their communicative competences at establishing and judging the grounds for *comprehension* of promises and demands, *trust* of intentions, *agreement* with proposed relationships and activities, and *acceptance* of others' interpretations of facts and events, they will not have adequate means of understanding, believing

or accepting information from interaction partners, or, therefore, of cooperating with others. (For a critical-pragmatic discussion of policy considerations regarding the reproduction of interaction rules see Forester, 1989). Voluntary and decentralised exchange of information, and mutual coordination and adjustment of choices and actions — the claimed moral core of the market process — are rendered extremely risky and expensive for consumers by coercive extraction of their personal information. Transactions are increasingly unlikely to take place in the telematic environment as the web of surveillance grows more extensive, and the individual's data-shadow denser and more complete.

Implications for the Telecommunications Carriage Industry

This is not the way to go about improving the functioning of domestic or global markets. On the part of business users it is an *inefficient* use of costly 'Intelligent Network' infrastructures, on two counts. First, it fails to maximise the utility of opportunities for interactions with consumers. Second, it fails to make the most efficient use of the PSTNs' characteristic of universal connectivity. Increasing the efficiency of telematic interactions with consumers is a matter of designing services which are configured so as to increase the level of differentiation possible between different contexts and stages of disclosure. Transaction partners' mutual *discovery* of the forementioned 'grounds for comprehension... trust... agreement... and acceptance' entails complex sequences of disclosive demand and response. The decision-rules individuals employ in existing institutional settings must be translated carefully into the telematic environment to reproduce these outcomes. Foreclosing key behavioural options is an irrational way for the carriers to do business. It is, in fact, the abandonment

of a potentially vast new market for carriers in which they could function “as the authenticators of the Information Age” (Samarajiva, 1991, 85).

In the network environment, distance and location are becoming increasingly irrelevant to the cost of transacting. Costs are more a function of the connectivity and transparency of networks, the expenditure of time, effort and skill in the processing of information, the number of times original compilations of information can be re-used, and, as argued here, the existence of effective relational norms and standards. Much of the information processing that takes place in digital environments is a mechanisation of information processing we already perform in analog mode, and much of it is directed at ‘authentication’. In face-to-face interaction, the display of official documents, such as a driver's license or a passport, is an obvious form of authentication, as is the use of a credit card, a postal frank or a bus ticket, or of a title or a uniform. In a less obvious manner, our abilities to remember faces, interpret gestures and intonations, and evaluate attitudes and intentions serve ‘authentication’ functions: they allow us to decide whether the contents of interactions are intelligible, valid, trustworthy and legitimate.

In our day-to-day existences, these functions are so pervasive that they have receded into the background and become invisible much of the time. But the unique character of the network environment as a ‘virtual’ space means that pre-existing methods of ‘authentication’ developed for use in face-to-face interaction and in other media, such as the print medium, have become non-functional — and therefore obtrusive. Electronic markets need ‘good-faith’ third-party intermediaries. If the carriers were not so quick to dismiss the privacy claims of individuals, the new

intelligent network services would tend to be seen as *solutions* to a broad set of authentication problems which are characteristic of the telematic environment.

Samarajiva has offered a practical suggestion for stimulating the development of network services which improve both the quality of customer interactions, and the optimisation of network characteristics. He proposes a modernisation of telecommunications policy to match the modernisation of the technology that is already underway, while preserving the beneficial public-goods characteristics of networks. His proposal is to update the common carrier doctrine of 'content/carriage separation' for application to digital PSTNs, and this also furnishes a useful policy foundation upon which to ground the democratization of the standard-setting process, as recommended above.

This proposal begins from recognition of the importance of *interpersonal* (and inter-organizational) information in the economic process. For commercial transactions through networks (or anywhere else) to be completed, parties *do* need verifiable information about one another. They may need to know, among other items:

- whether the other party is who they claim to be;
- whether and when they can provide/pay for promised goods or services;
- where they are (or where they wish goods/services to be made available);
- whether, when and how payment is to be made;
- detailed and verifiable past payment, service and credit records;
- ancillary materials, equipment and process specifications;

- production or consumption plans and schedules; and
- employment records, references and personal qualifications (for e.g. professional service transactions).

Other, non-commercial interactions within (or outside of) networks also create needs for interacting parties to verify specific information about one another, or to disclose confidential information (for example, permitting remote database access or correction). For individuals and organisations to freely entrust public network operators with the many kinds of sensitive information needed to perform these intermediary services, network operators must enjoy an unimpeachable status as a trusted, third-party 'honest broker'. They must face no potential conflicts of interest in their use of information entrusted to them or gathered by them through processing network traffic data. *Therefore they must be barred from competition in information provision markets.*

In this context it would be up to individuals and organisations to negotiate the terms of disclosure for each form of transaction. As vendors and consumers explored, together, ways of using network services to improve the quality of their transactions, public network operators would be able to evaluate the characteristics of and levels of demand for further useful authentication service options, and to seek performance standards approvals for them from subscribers. On the foundation of a basket of network services configured on the principle of subscriber control of performance standards, additional services could be developed to enable customers to store various types of information in the network, and to selectively release it on a transaction-by-transaction basis. Current technical standards dilemmas, such as the widely-discussed 'network computing' scenario, are far more tractable from this perspective, and looming privacy disputes in a variety of

organisational settings, such as that over access and control of medical files, might also have satisfactory technical solutions in this direction. Additionally, public network operators at the forefront of developing such solutions would be well-positioned in telecommunications software markets with valuable new and tested products. The market for such 'authentication' services is potentially very large, since many transaction-related functions, such as billing, payments processing, freight-forwarding and customs-clearing are increasingly migrating into digital environments. These functions could become far more efficient if supported by widespread PSTN services of this type. "The present trend toward non-network based billing systems," as Samarajiva notes, "is extremely pernicious to the effective utilization of the network to conduct transactions irrespective of location" (ibid, 86).

In the telecommunications privacy debate the telemarketing industry has become the most visible and contentious example of commercial malfeasance in the use of new telecommunications services. But in reality, telemarketers represent only a tiny fraction of the existing and potential demand for transaction services, and their preferences, in terms of service configuration, may be far from typical. This can be illustrated by brief examination of another rapidly growing form of electronic transaction service: Electronic Documents Interchange (EDI), a form of integrated digital ordering, payment, inventory and forwarding system designed to increase the velocity and reduce the administrative costs of inter-firm product supply. Users of EDI systems need to be confident about the security of their enterprises' proprietary information in its transit through the network. Some experts have suggested that such networks in their entirety may be subject to "catastrophic collapse" from data-theft and viral attack (Sullivan, 1990, 248). In this area, especially given the unsettled state of the

law concerning electronic data, users need reliable assurances that all their information disclosures will be voluntary and intended, and their account information held secure.

Both buyers and vendors have an interest in preserving control over the communicative conditions surrounding their transactions. An equilibrium of information control on both sides of a transaction conduces to negotiation, agreement and coordination between the parties. But if network operators, in their role as intermediaries between vendors and buyers, disturb this equilibrium of informational power (or fail to positively protect it by the provision of adequate data security), they increase the risks involved for all parties, and reduce the likelihood that contractual agreements will be concluded. These proposals — for content/carriage separation, and democratization of the performance standards-setting process in public carrier networks — restore this equilibrium by conferring limited *de facto* property rights in personal information on data-subjects, and thereby increasing the bargaining power of consumers in monopolistic and oligopolistic markets.

In each country's development of a role in the global 'information economy', the preservation of the community's level of trust in the institutions of the network environment — the trust of business as well as non-business elements of the community — is vitally important. This in turn requires the carefully-drawn exclusion of carriers from activities in which they have commercial conflicts of interest. Carriers' product indivisibilities — their simultaneous production of interconnection services and teletraffic data — are potential sources of such conflicts of interest. Content/carriage separation is a means of eliminating this conflict. Teletraffic data — commercially valuable information *content* — is produced costlessly in the course of producing interconnection services.

The carriers' favoured configuration of new services seems to offer a means of realising separate revenue-streams from the sale of teletraffic data collections, by marketing them as a variety of interconnection services (e.g. CND). However, selling teletraffic data (even in the implicit form of network services) will most likely *reduce* PSTNs market-share for interconnection services, in two ways: (a) by creating incentives for fragmentation of the carriage service market, as other players seek to secure their own data and capture that of others; and (b) by reducing the real value of digital network interaction for commercial purposes, due to consumer and contractor resistance and avoidance.

The longer-run net benefit to carriers from selling only interconnection services may well exceed the net benefits of selling both products, especially if enhanced interconnection services are developed which do not attempt to spirit away data to other clients. Other organisations are at present wary about entrusting transaction-related information to the PSTNs, since the PSTNs are now evolving rapidly into formidable information service competitors. The basis of their power to compete in information service markets derives from their universal interactive connectivity, and from their control of the enormous TTGI databases. The creation of incentives for PSTNs to *protect* data subjects' control over TTGI related to themselves, and to develop services designed to *enhance* individual selectivity in the release of personal and proprietary information, would permit a vast array of storage, processing and transaction-related functions to migrate into the PSTNs. This would allow all parties to make the most efficient use of the PSTNs' universal connectivity, and thereby allow markets to work more efficiently, and other new forms of international civil and private association to evolve.

PART III

**CASE STUDY:
PERSONAL DATA AND THE DESIGN OF ELECTRONIC INSTITUTIONS**

CHAPTER SEVEN:

CALL MANAGEMENT SERVICES AS AN ILLUSTRATIVE ISSUE

Because of the ubiquity of voice telephone services in the industrialized world, and the consequent accessibility of examples drawn from this domain, the issue of telephone Call Management Services has been selected for illustration of the argument presented in the previous chapters. The contemporary convergence of computing and telecommunication technologies has been accompanied by the introduction of a range of new network capabilities into the Public Switched Telephone Network (PSTN). These new features have complex implications for the control and use of personal and proprietary information. The growing 'intelligence' of the PSTN, especially in the context of increasingly integrated and unregulated markets for information services of all kinds, has intensified concern about trends in the commercial availability and use of information about individual citizens and consumers. In particular, Common Channel Signalling System 7 (CCSS7) network traffic control technology, and the new Call Management Services (CMS) options it supports, raise questions about the implications of new telecommunication technologies, coupled with liberalised telecommunications markets, for individual privacy. These issues and questions provide an exemplary case for investigation of the technological process of rationalization of tacit communicative competences.

One CMS option now available in many markets has excited considerable privacy-related controversy. Calling Number Display (CND) is a paid service which delivers callers' telephone numbers to a visual display panel on the specialised telephone handsets of subscribing receivers.

Callers' numbers are delivered as digital signals and can be transferred to computer files for storage. Some uses of this service are widely seen as benign, and even as privacy-enhancing. Individual CND subscribers, for example, may desire such a service for call screening or time-management purposes. The service is also useful to many organisations for streamlining interactions with clients: for example, by triggering automatic call-up of clients' computer files and notation of call receipt concurrently with answering the call. Emergency service providers, such as police and fire departments and ambulance services, are very interested in the potential of CND to improve their ability to respond to life-threatening situations, and to discourage misuse of emergency numbers.

For some subscribers, such as shelters for family-abuse victims, the implications of CND are more ambiguous, since the ability to monitor incoming CND appears quite useful, but sending the same information on outgoing calls may endanger their clients. Addiction, suicide and AIDS counselling services need to be in a position to assure callers that their services are anonymous and confidential. Professionals such as doctors or lawyers, who may need to respond to urgent after-hours office calls from their home telephones, may object to providing CND to receivers of such calls if they thereby lose the privacy protection of having unlisted home telephone numbers. Telecommunications carriers have typically proposed offering CND-blocked service to classes of subscribers like these, who have demonstrable extraordinary interests in preserving the confidentiality of their telephone numbers.

Potential large-scale privacy effects flowing from the use of CND by marketing organisations are more contentious, and carriers have generally exhibited less sympathy with these concerns.

Marketers and advertisers may use CND to collect callers' numbers, and store them together with information elicited during calls. This information may range from expressions of interest in particular products, to employment and credit details. These consumer data collections can then be expanded by matching them against other public and private databases. For example, Infomedia Corporation provides a service to marketers which augments calling number information by providing "complete name and address, with up to 24 demographic characteristics about the caller" (Johnson, 1989, 35; see also Gandy, 1990, 208). These enhanced collections can in turn be sold to other commercial users.

This issue, especially, appears to attract little in the way of consensus, and therefore stands at the centre of the telecommunications privacy debate. As technological innovation has driven down the costs of private-sector collection and utilisation of personal information about consumers, it has also driven up the intensity of privacy-related conflict over the configuration of new telecommunication services and the control and ownership of Telecommunications Transaction-Generated Information. (TTGI denotes information about transactions conducted over the telephone system, as well as transactions related to telephone service, which are generated by telephone networks; this terminology originates with McManus, 1991). Discussion in the following pages focuses on this issue from both sides of the conflict, exploring the contrasting arguments which have been brought to bear upon it.

The policy implications of this issue are numerous and complex. Government regulators must decide whether, and if so, how, they will respond to demands from consumers and consumer

associations, workers and unions, disadvantaged citizen groups, government and professional agencies, and others, for telecommunications privacy protection. They must also consider an equal and opposite set of demands from carriers, information, security and emergency service providers, marketers, retailers, prospective CMS subscribers, and others, for access to teletraffic information to enhance the effectiveness of their activities. Policymakers must attend to a wide range of policy considerations, including the following:

1. What social and economic costs and benefits might arise from the migration of an increasing proportion of transactions into the network environment;
2. How those costs and benefits will be distributed under various data protection scenarios;
3. How telecommunications carriers' CND services ought to be configured;
4. How teletraffic data sharing among licensed carriers and information service providers ought to be regulated (for example, competitive provision of international long-distance services may result in a need for transmission of teletraffic and billing information from local to separate interexchange carriers, and the latter may be offshore firms subject to contradictory data protection law and regulation);
5. Whether use of the network for telemarketing and market research purposes should be subject to any forms of privacy-related regulation. Examples of relevant constraints which have been placed on telemarketers in various jurisdictions include limits on calling hours; prohibition of 'cold-calling' and random calling; consumer registers and directory marking programs to indicate subscriber preferences regarding receipt of commercial calls; limits on use of synthesised voice apparatus; and other guidelines on call etiquette;
6. What agency or agencies ought to exercise jurisdiction over telemarketing; this consideration raises the question of whether self-regulation by industry associations and codes of conduct, as is common for marketers in other media, is appropriate. Alternative government agencies, at various levels of government, with regulatory interests and expertise in this area could include: consumer protection, trade practices and competition, telecommunications, privacy, and ombuds offices and agencies;
7. What kinds of network terminal attachments ought to be permitted, and whether their use ought to be regulated in particular privacy-oriented ways. Different kinds of terminal equipment pose unique privacy implications. (One example is provided by the intrusive potential of autodialling equipment, which can be programmed to rapidly set up calls to

number sequences variously defined, to automatically monitor and re-call busy lines, and to offer synthesised voice interactions to respondents. Telephone Information Management Systems (TIMS), which generate calling and billing information for each extension line within a Private Automated Branch Exchange (PABX) present a distinct set of concerns about employees' privacy expectations in the workplace);

8. How service bundling, pricing, availability and cross-subsidization of carriers' CMS services ought to be regulated. Here the privacy issues are most closely intertwined with issues of competition policy, social policy, and consumer protection. For example, telemarketers argue that CND services, by improving vendors' targeting of consumers, improve consumer access to product information and, therefore, the overall efficiency of the market exchange process. Should CND services therefore be viewed as elements within licensed carriers' Universal Service Obligations (USOs)? Or, on the contrary, does the introduction of such premium services into metropolitan areas, before some rural areas have received basic services such as itemised billing or private line service, or have achieved statutory quality-of-service standards, itself abrogate USO license conditions?
9. What further innovations in network technology and services are expected on the market in the planning period, and what their effects on privacy expectations will be.

This case study focuses most explicitly on the first three of these questions. Criteria for evaluating the first two very broad questions must be generated, in order to create a coherent conceptual framework for answering the others. The CND issue — the third question — is then taken up in detail, and employed as the case in point throughout the discussion. The remaining issues are addressed mainly by inference, although the implications of the analysis for these issues will be clear.

The Technology

The signalling technology underlying CND and other Call Management Services was first deployed in the mid-1970s in AT&T's long distance service, though without the modern CMS features. Most

long-distance, local and cellular telecommunications carriers in the OECD countries have now installed advanced versions of these systems in their service areas. This development is closely related to the planned convergence of voice, text and video communication flows into future international broad-band Integrated Services Digital Networks (ISDNs). The PSTNs are currently described by many network planners as evolving into an intermediate 'Intelligent Network' (IN) stage whose elements include extensive fibre optic cabling, new digital switching, and the new signalling systems and their resident software. The IN, as Richard Gabel notes, is "optimized for the economic transport of all forms of information transmitted in digital form".

The current telephone network has been optimized for voice service. Moving data or video is quite another matter. From the point of view of a data network, the voice network is noisy, slow and relatively narrow. (Gabel, 1992, 9, 38)

CCSS7 is designed to meet the signalling requirements of future ISDNs, but it also enhances the operation of existing analogue network elements, as well as representing a less daunting intermediate investment in the ISDN scenario than, for example, universal broadband cabling. It works by switching call set-up and signalling functions — rings, busy signals, routing and other network control information — through a narrow-band digital channel separate from the channel on which the connected call itself is carried. In this way the circuit path for each call (whether it is a voice or data transmission) is established before the call itself is sent over the network. This is known as 'out-of-band' signalling. By enhancing the flexibility of teletraffic information use even within existing analogue network elements, CCSS7 improves network management in several important ways (see generally: U.S. Department of Commerce, National Telecommunication and Information Administration, 1991; Bonatti, 1989):

- increased efficiency of equipment utilisation through reduced trunk requirements per volume of traffic;
- automatic call rerouting to avoid congested areas of the network;
- automatic maintenance, testing and correction of faulty network elements;
- distributed billing information, better traffic record-keeping and fewer unbillable calls;
- faster completion of connections and reduced equipment holding times;
- network control features operable by users during transmission; and
- higher international signalling compatibility.

Most of these functions have no privacy implications, and for the most part enable internal improvements in the reliability, efficiency and flexibility of the PSTNs. However, the fact that they also enable the provision of CND and a variety of other potential CMS features to subscribers (CND blocking, call rejection, call diversion, last-call-return, busy-line monitoring, call tracing and distinctive ringing, to name a few) provides additional incentives for carriers to install advanced signalling systems. These services in themselves create new revenue flows for carriers from their existing subscriber base, while also providing the infrastructure for an expanded information services sector which will deliver further new revenues to the carriers. Medical alert and security monitoring services are examples of the kind of secondary private business opportunities presented by the installation of customer-oriented CMS features in the PSTNs.

It is the CMS features themselves which have generated the most privacy-related debate and conflict in the telecommunication context. The CMS features are derived, fundamentally, from the way CCSS7 gathers and distributes information within the network about each telephone call, and, for

billing purposes, about the subscriber from whose telephone a given call originates. Items of signalled information include the time, duration and routing of the call, and the called party's and calling party's numbers. The latter — the Calling Line Identification (CLI) data — may be held within the network, or passed on through the local loop to the called party's handset; and whether or not it is passed on may be preset in the configuration of the network, or it may be offered as an optional decision of the calling party. CND service is the delivery of CLI data to the handset of a CND service subscriber. The other CMS services also make various uses of the CLI data; it is technically feasible for the other teletraffic signalling, and even billing information, to be passed into the local loop as well. But the extent of teletraffic and customer data which may be disclosed by carriers, including CLI data, is generally under the jurisdiction of a public regulatory authority. Thus, privacy concerns related to TTGI in general, and specifically to CND (or 'Caller ID') services, led to vociferous debate in regulatory, legal and policymaking fora. These debates clearly illustrate the complex interpenetration of normative and economic dimensions in communications technology adoption processes.

CND: Organization of the Analysis

This analysis critically examines the interdisciplinary literature of the telecommunications privacy debate, currently in session in many national jurisdictions, over the control of commercially valuable TTGI. Due to these simultaneously international and interdisciplinary aspirations, the analysis must be conducted in rather general terms. What it loses in specificity, however, it may perhaps recover

in conceptual breadth of application. Its principle object, as stated above, is an evaluation of the arguments, and evidence (the latter fairly exhaustively catalogued in the citations), presented on **both** sides of these debates.

The chosen strategy is straightforward, if somewhat transparently dialectical: each of the following two chapters attempts to muster the strongest possible evidence and argument in support of **one** of these opposing positions. As an orientation device, each of the two main arguments which follow is summarized here, accompanied by a numbered proposition which states the debating position it is intended to support.

PROPOSITION 1

The development of enhanced information networks, services and markets constitute vital forms of economic modernisation, necessary to every country's establishment of a competitive position in the new global markets. Privacy claims must not be permitted to impede or prevent effective response to these challenges.

Argument

New applications of digital technology have the capacity to increase the velocity, flexibility and control of every aspect of production and distribution, across all industrial sectors. But achievement of equivalent speed and control in the identification of customers, the development of client relationships, and the completion of transactions currently lags behind other elements of business activity. The existing sales and marketing process therefore acts as the major brake on growth and development of the Information Technology (IT) based global economy. Information about consumers is a 'bottleneck' in the information economy, and the PSTNs control the bottleneck. PSTN installation of 'intelligent network' services are a vital form of economic modernisation, because they permit firms to develop more personalised, intensive and responsive relationships with their clients. International 'free flow' of TTGI will help relieve serious problems of coordination between the new high-speed, flexible, IT-based production systems, oriented to global markets, and the older mass marketing systems designed for communication only with domestic markets of anonymous,

statistically-identified consumers. Regulatory restrictions on the free flow of TTGI, on the other hand, may well impede these necessary systemic adjustments.

PROPOSITION 2

The new network capacities have the potential seriously to impair individuals' exercise of fundamental privacy entitlements. CMS services are of great potential benefit to commercial users, but business interests must be prevented from damaging individuals' privacy in their zeal to realise these benefits.

Argument

Many individuals consider that they have a profound interest in controlling the release and dissemination of information they consider to be private and personal. For these individuals, the issue is not which kinds of information may legitimately be collected, or what rules obtain for notification, registration, reuse or resale of particular items of information, once they have been collected. The issue is one of psychological well-being, as this is affected by the degree of **self-control** individuals experience over disclosure of personal information.

The manner in which individuals regulate exchanges of personal information has been intensively studied by social psychologists. Individuals use their personal control over information disclosures to set up psychologically important information boundaries, and to adjust them appropriately during the conduct of their different relationships. Researchers conclude that this 'boundary management' process is the key mechanism in the development of a sense of individuality. It is also strongly related to the evolution of sustained, harmonious and beneficial relationships. From this perspective, disclosure of caller identities and calling-patterns is an exemplary form of personal information over which individuals need and expect control. Involuntary extraction of TTGI is harmful, not only because of potential misuse of the information, but because of unavoidable damage to individuals' boundary management processes.

CHAPTER EIGHT:

GLOBALIZATION AND THE POLITICAL ECONOMY OF PERSONAL DATA FLOW

This chapter takes up the argument of the proponents of telecommunications 'modernization'. Beginning in the first subsection with a brief account of the international policy debates on Transborder Data Flow, the following two subsections then focus on the emerging strategic importance of PSTN teletraffic databases, and on the critical role of personal data flows in the marketing strategies of large enterprises.

The Ascendancy of the 'Free Flow' Doctrine

The protection of personal information has been an important issue on the international communications policy agenda for a number of years, arising especially in debates concerning the rules governing trade in services and Transborder Data Flow (TDF). During the 1980s international policymaking in these areas gave rise to sharp conflicts over both personal data protection and cultural sovereignty concerns. These conflicts, which can be viewed as arguments between the advocates of different theories of economic development, carried into the proceedings of a number of major international organisations, notably the UNGA, UNESCO, UNCTAD, GATT, IMF, ITU, IBI, WIPO, and OECD. Much of this policy terrain, irrespective of individual opinion on privacy issues, has now become a matter of relatively settled principle. Few States are in a position to pursue regulatory directions entirely divergent from the data protection agreements which now exist.

The term 'TDF' originated in efforts to address in international law and regulation, the distinct characteristics of digital information transfer across national frontiers. It was soon realised, however, that new rule-systems in this field would impinge dramatically on the regulatory and market structures of other forms of information transfer (such as publishing, broadcasting or postal systems) and also on other significant industrial sectors (such as the computer and telecommunications hardware and software industries). Moreover, **intra**-national disputes, for example, disputes in the US involving flows of commercial information across state and municipal boundaries, have also reached adjudication as 'transborder data flow' issues. Most of these cases were 'commercial speech' cases, that is, the disputes involved state and municipal attempts at regulation of advertising. Most attempted regulation was ruled unconstitutional under the First Amendment by the U.S. Supreme Court. (U.S. Supreme Court cases concerning TDF across **state** boundaries include: *Posadas de Puerto Rico*, 1986; *Louisiana Public Service Commission*, 1986; *Dowling*, 1984; *Capital Cities Cable*, 1983. U.S. Supreme Court cases concerning TDF across **municipal** boundaries include: *Los Angeles*, 1986; *Los Angeles*, 1983; *Community Communications Co.*, 1981; *Metromedia*, 1980.) In light of these ambiguities Sandra Braman suggests that TDF "actually refers not to a specific object or phenomenon, but to a perspective through which information policy matters can be viewed" (Braman, 1989, 237).

In international negotiations, and in supporting research, three contending historical positions on TDF rules can be broadly identified. The position of the U.S., also supported by a number of non-EC members of OECD, can be characterised as a 'laissez-faire' perspective, focused more-or-less exclusively on the provision of legal incentives for the production of information and communication

goods and services (for example, an expanded regime of intellectual property rights, or coordinated international investigation and prosecution of 'computer crime'). Advocates of this position have been reluctant to agree that TDF poses any great threat to defensible privacy interests.

A second and directly opposing position emerged early in these debates, which was highly critical of what its advocates viewed as the weakened political sovereignty and cultural coherence, growing economic dependency, and monopolistic distortions implicit for the 'less-developed' countries (LDCs) in the laissez-faire model. This was the perspective taken by the 'radical' LDCs, led by India and Brazil, and supported also by many critical researchers in the 'developed' countries (DCs).

Between these two positions a broadly reform-liberal or social-democratic perspective emerged, which emphasised the role of both public and private sectors in development, and propagated a vision of information technology as a decentralising and equalising force within and among societies. This was roughly the position of the EC, several DC's (including Australia), and a number of LDCs. (John Richardson describes the typical bargaining positions and strategies of these interests in a discussion of the recent GATT negotiations on trade in services; see Richardson, 1988, 202.) It was the advocates of this position who most strongly thematised personal data protection issues. Compromise suggestions from this group for protecting personal information while avoiding over-stringent restrictions on its international transfer led to the adoption, in the mid-1980s, of an international agreement on the protection of personal data under the auspices of the OECD (OECD, 1984, 1985). The Council of Europe had also previously adopted a more binding protocol directed

at the same issues (Council of Europe, 1981). CoE has more recently issued a Draft Directive extending the terms of the Convention (Council of Europe, 1990).

The OECD Guidelines do **not** prohibit the international collection, transfer or commercial use of personal information. The OECD Guidelines are intended to **prevent** signatory States from enacting laws and regulations **restricting** international collection, transfer or use of personal data among entities resident in those States. They accomplish this by creating a framework of 'bare-bones' principles directed at States' responsibilities to guarantee civil-law protection of the security and corrigibility of individuals' electronic files. To the extent that serious international disagreement persists over data protection issues – and this remains an irritant between the EC and the US – it takes the form of a disagreement over the conditions under which personal information may be legitimately collected, transferred and used by private enterprises, and not over the question of whether this should be permitted in the first place.

The quickest route to appreciation of the basic rationale underlying this evolution of international policy is to review the US position in the earlier debates. Notwithstanding the limited modifications to it achieved in the OECD Guidelines, the US doctrine of 'free flow of information' has become the defining principle. The 'free flow doctrine' calls for unrestricted international movement of all information, telecommunications services, media programming and advertising as dictated by market forces. To quote a US State Department document, this is to be accomplished through international "extension of the First Amendment prohibition against laws 'abridging the freedom of speech, or of

the press' " (U.S. Senate, 1983, quoting the 1st Amendment to the U.S. Constitution). The same report asserts that the overriding virtue of the free flow doctrine is its contribution to democracy:

In addition to its economic benefits, free flow of information in the `marketplace of ideas' serves to promote cultural development and to strengthen political liberty and effective self-government. (Ibid, 129)

(Exactly how **foreign** rights of establishment in information and communications industries strengthen effective **self**-government, is not made clear.)

The free flow doctrine was originally a US foreign policy response to UNESCO's `New World Information and Communications Order' (NWICO) initiative, which was championed, as noted above, by many of the less-developed countries in the UN system. Free flow grew over time into a coordinated US policy initiative across a broad range of communications and information industries:

US telecommunications and information policy... reflects efforts to: enhance the free flow of information across national borders... and promote an international environment for the provision of telecommunications and information facilities, services and equipment – and for the production and dissemination of information itself – in which maximum reliance is placed on free enterprise, open and competitive markets, and free trade and investment with minimum direct government involvement or regulation. (Ibid, 127-8)

This divergence between US and LDC agenda led to sustained conflict especially within the UN system. The State Department view of this conflict was that:

throughout the international telecommunications and information arena, the United States has encountered resistance by other countries to the application of marketplace and free flow principles... [I]n the area of mass media and information policy, UN organizations have drafted `codes of conduct' in support of restrictive policies. We believe these codes fail to strike a reasonable balance between legitimate concerns over sovereignty and the fundamental doctrine of free flow of information advocated by the United States. (Ibid, 129-30)

Data Protection and the US First Amendment

The US policy rhetoric is a heady mix of themes of individual liberty, unfettered markets, free speech, and democracy. Because of this rhetorical linkage, US First Amendment doctrine on the allocation of speech rights in the mass media provides a pivotal reference point in the TDF and services-trade debates. For example, free trade advocates routinely invoked the First Amendment against the claims of communication and information sovereignty advanced by the developing nations. (This is not in fact the first effort to 'export the First Amendment': an earlier episode is documented in Blanchard, 1986.) In later stages of the debate, the First Amendment has been raised against the data protection concerns of its European communication and information trade competitors. What is the relevance of the First Amendment to these issues?

During the 1970's and early 1980's the US Supreme Court developed a highly libertarian interpretation of the free speech rights enjoyed by corporations under the Constitution, broadly protecting their public and private communications against government regulation. The courts sharply limited the power of governments to regulate advertising, through an emphasis on the rights of consumers to receive it. The general rationale for the revised commercial speech doctrine is summed up in a passage in one of the Court's key decisions:

So long as we preserve a predominantly free enterprise economy, the allocation of our resources in large measure will be made through numerous private economic decisions. It is a matter of public interest that those decisions, in the aggregate, be intelligent and well-informed. To this end, the free flow of commercial information is indispensable. And if it is indispensable to the proper allocation of resources in a free enterprise system, it is also indispensable to the formation of intelligent opinions as to how that system ought to be regulated or altered. Therefore, even if the First Amendment were thought to be primarily

an instrument to enlighten public decisionmaking in a democracy, we could not say that the free flow of information does not serve that goal. (U.S. Supreme Court, Virginia Board of Pharmacy, 1976)

The line of cases articulating the closely related corporate speech doctrine also turns in large part on the citizen's right to receive corporate expression. In a 1978 case regarding the legislative power of the government of Massachusetts to prevent corporations from using the media to influence the vote on state tax referenda, the Supreme Court found the speech rights of non-media corporations to be equivalent to those of media corporations or of natural persons. The interest of the State in preserving the political process from the distorting influence of corporate expenditures was of lesser import, said the Court, than the interest of citizens in receiving the views of corporations (U.S. Supreme Court, First National Bank of Boston, 1978). A more recent US Supreme Court case, however, involving a dispute between a utility and its state regulator, may extend the corporate speech rights found in that case in a privacy-affirmative direction (U.S. Supreme Court, Pacific Gas and Electric Co., 1986). PG&E was directed by the state utility commission to open the newsletter it distributed to ratepayers in the monthly billing envelope, to the views of a group of consumer advocates which had been organised among the ratepayers. The Court accepted the lower court's determination that the "extra space" in the billing envelope was the property of the ratepayers, but it overturned the utility commission's decision on the basis of the corporation's First Amendment right to **not** speak. This extension of negative speech rights to corporations relied on a line of cases affirming an individual's right to not speak (e.g. the Pledge of Allegiance) on the basis of their "individual freedom of mind" (see also U.S. Supreme Court, West Virginia Board of Education, 1943, 634; U.S. Supreme Court, Wooley, 1977, 714).

The commercial and corporate speech decisions provided an early domestic policy platform in the US for the proclaimed arrival of the international free flow of commercial information. In the following years the NWICO position in the UN agencies largely failed, and the laissez-faire and social-democratic positions found grounds of mutual commercial accommodation. It is in this context that the personal data protection policies of other States must be understood. Mark Feldman makes this explicit: "recent international acts concerning transborder data flows have applied the same kind of standard to **national regulation in the interest of privacy** as the [US] Supreme Court has applied to commercial speech" (Feldman, 1986, 346, *emph. added*). Feldman, discussing the OECD and EC data protection instruments, says that:

both instruments recognize that the free flow of personal data across frontiers is essential to economic activity, and both incorporate limitations on government regulation of transborder data flows in the name of privacy. (*Ibid*)

There is, he says,

an interest shared by a great many countries in developing a new set of international rights and responsibilities relating to transborder information flows that would encourage technological innovation and economic growth by facilitating the free flow of commercial information and the development of informatics industries. (*Ibid*, 344)

According to Feldman, the important interests that "need to be accommodated in any meaningful international regime for transborder data flows" (*ibid*) are:

- (i) the right to establish and to operate data-processing, information, and other computer services within States and across international boundaries;
- (ii) the right of access to foreign databases and data-processing facilities and to international communication links; and

- (iii) the recognition of proprietary interests in new forms of intellectual property and technology such as computer software and satellite signals [as well as compilations of personal information].

The major trade competitors of the US are fully aware of the rapid growth and high profitability of the entertainment, telecommunications and information services and equipment industries. In a number of cases they have tried to position their domestic cultural and information services industries for growth by protecting them behind tariff, subsidy and quota barriers, often employing privacy rationales. This is, as noted earlier, a continuing irritant in trade relations between the US and Canada, as between the US and the EC. But at this point the dispute is just that: a trade dispute. In large part it has migrated – couched unambiguously in free flow terms – into trade negotiations milieux such as the General Agreement on Tariffs and Trade (GATT) (see especially Herzstein, 1986).

The US initiative to `export' the First Amendment has, meanwhile, been very successful. Recent Canadian constitutional rulings concerning the regulation of advertising have closely followed the US commercial and corporate speech rights doctrines, to the extent of overturning elements of French language-rights jurisdiction in Quebec which predate Confederation by over a century. Australia's Telecommunications Privacy Inquiry also yields a good example. The brief to the Inquiry from the newly licensed telecommunications carrier, Optus, explicitly argued the immunity of telemarketers from government regulation on U.S. commercial speech rights grounds.

The contemporary global industrial restructuring associated with the rapid innovations taking place in digital technology is, then, not only an engineering accomplishment; in its socio-economic dimensions it rests equally upon an inter-nationalization of market principles in the regulation of all information and communications practises. The process which led to the current international agreements on telecommunications privacy issues also introduced an important (though by no means absolute) degree of stability and certainty regarding communications and information sector investment, employment and growth. It therefore brings the development of an 'information society' modelled on neo-classical economic principles, much closer to realisation.

The Effects of Telecommunications Reform on Personal Data Flows

If personal data protection (and cultural sovereignty) concerns over TDF were framed, debated and resolved in mass communications and free speech terms, it is nevertheless the case that the primary site of conflict and nexus of control over these issues is increasingly within the evolving private and public telecommunications networks. The public networks have become the object of concerted international privatisation and market liberalisation efforts. Advocates claim that large social benefits flow from the increased efficiency – both of telecommunications enterprises themselves, and of major users – attendant on privatisation. But the evidence for efficiency increases of the PSTNs themselves, as a direct outcome of PSTN privatisation, is highly ambiguous. Systematic research does not support the claim that enterprise privatisation by itself conduces to greater enterprise efficiency (see especially: Vickers and Yarrow, 1991; Vickers and Yarrow, 1988; Melody, 1991;

Melody, 1989; de Fraja, 1991). But one of the things this research **may** support is a view that the privatisation of PSTNs, by restructuring global markets across many industries, changes the balance of bargaining power between large transnational enterprises and most national States.

The basis of this view is the perception that the evolution of digital technologies, together with liberalised TDF rules, sets off an explosive **fission of production sites from consumption sites**. In combination with the rising service composition of the industrial economies, telecommunications privatisation enhances the ability of TNCs to use international restructuring of markets as a means of disciplining domestic policymakers. This drastically alters the balance of bargaining power between TNC's and governments, leading either to public policy packages designed to business specifications, or to the rapid economic decline of the State. Many powerful States understand the 'globalisation of markets' via TDF as a significant threat to their economic sovereignty, and have expressed this forcefully: "Transborder data flows, unchecked in the hands of companies, will lead to the withering away of the nation-state" (Alain Madec, Director of the Bureau de l'Informatique de France, quoted in Revesz, 1988, 103; see also Australia, House of Representatives Standing Committee on Long Term Strategy, 1991; Canada, Department of Communications, 1981).

From the point of view of the TNCs, however, liberalisation of information services markets — while indeed dissolving existing cultural, political and geographical links and boundaries — is, as Dorothy Riddle suggests, merely a means of "maintaining competitive positioning":

On-line data services are helping to close the gap between production sites and consumer markets in order more effectively to match products with markets... The result of such decoupling is more flexibility for both the consumer and the producer. As data services

increase accessibility to services through increased transportability, producers are freer to relocate production sites globally... The ability to decouple production and consumption also means that the size of one's domestic market becomes less crucial since international markets are just a call or keystroke away. (Riddle, 1988, 73-4)

Thus it is likely that telecommunications liberalisation, by weakening the bargaining power of States, compels further rounds of deregulation and liberalisation in other industry sectors. Future stages of telecommunications reform can already be seen to involve the continuing conversion of the analog telephone infrastructure to meet growing demands for digital data and video transmission capability, and increasing vertical integration in the supply of information content and carriage services of all kinds. This in turn accelerates the transformation of information-intensive sectors, such as finance, education, law, health, arts and entertainment, and the political process itself, by international market forces. Protection of personal information becomes an increasingly central question in these developments, because it is a crucial resource in TNC rivalry and competition for markets. With respect to these activities, where will control of network information and 'intelligence' – information on traffic and billing, users and use patterns – reside? In domestic PSTNs regulated by common carrier rules, or in international private corporate networks? For here especially, as Dan Schiller and RosaLinda Fregoso remark:

Private controls over network intelligence... magnify opportunities for transnational companies to dictate the terms of trade across the entire range of information products and services that would be provided over their networks. (Schiller and Fregoso, 1991, 208)

These authors suggest that two competing models of telecommunications modernisation have predominated in this context of institutional transformation in the international economy (ibid, 195). They identify these models as, first, the TNC demand-side 'in-house' model; and second, the

telecommunications services industry's supply-side ISDN model. The 'in-house' model focuses on generating conditions for the creation and expansion of digital multifunction networks within and between major corporations and their suppliers, distributors and customers. The ISDN model proposes the evolution of the PSTNs towards a smaller number of more centralised, comprehensive, integrated, international broadband digital networks. These models can be thought of as specifying different terms of entry into the 'information society' for any given national economy.

The privatisation of publicly-owned networks and liberalisation of telecommunications markets in the recent period are an outcome of underlying conflict between these two dominant models and the interests they represent. Conflict between these models revolves around such questions as: Who will supply and pay for modernisation of the public infrastructures? Will large corporations migrate to them, or will they prefer to continue investing in their own specialised networks? What will be the definitions, specifications and terms of interconnection for private networks? How fast and how comprehensive, geographically and technically, will modernisation be?

Three Stages of Telecommunications Reform

Schiller and Fregoso describe the evolution of the relation between these two models through three historical stages of telecommunications reform and modernisation, originating in the US and extending globally from there. All have involved shifts in capital spending, in cost allocation, and in industry regulatory policy.

Stage One: The first stage of modernisation was the successful drive in the US to open up corporate opportunities for bypass of the PSTNs. This was achieved through a number of initiatives to establish points of competitive entry into the service monopoly of the public networks – notably private microwave networks, private satellite networks, attachments of `foreign' terminals, and changes in the boundary between telecommunications carriage and information processing markets.

The corporations' incentives in this bypass effort were:

- (i) lower costs;
- (ii) customised applications;
- (iii) security against rate increases or availability problems;
- (iv) investment tax credits; and, most of all,
- (v) `hidden' asset capture through "maximisation of private control both of information systems and the data coursing through them" (ibid, 198).

Stage Two: The second stage of modernisation was the push to liberalisation of **transnational** communication and privatization of **foreign** publicly-owned networks: the `export' of privatisation policies. Pressure on foreign governments to privatise PSTNs was introduced through US government agencies such as USAID, the State Department and the Commerce Department, through the early example of privatization in the UK, and through trade negotiations regarding preferential domestic procurement arrangements. Increased TNC involvement also became visible in international fora such as the ITU and CCITT. ISDN-model planning, Schiller and Fregoso suggest,

became a prime object of **private** corporate involvement in the international agencies and in the privatization drive:

In particular they battled to modify the design of ISDN to ensure allowance of private interconnection on maximally favourable terms, and to permit placement of critical networking functions within private user-based equipment. (Ibid, 201)

Thus at the end of the second stage the ability to capture TTGI assets from **public** networks became one of the key strategic and design objectives of the TNCs.

Stage Three: The third stage of modernisation, global private network-building, represents the convergence of the previous two stages: domestic PSTN bypass with global PSTN privatization. By 1984, the authors point out, the private TNC networks were well-developed, with over 1000 private transnational systems in operation (annual expenditures on each averaging between \$50 and 100 million: *ibid*, 202). Electronic products had become the largest single category of TNC capital equipment spending. Clearly, the 'informatisation' of the economy was now an established phenomenon. In this third stage of modernisation the line between telecommunications firms and other large enterprises became blurred:

Heightening corporate dependence on telecommunications, however, not only conferred competitive advantage in established markets, but likewise created a foundation for diversification into profitable new information services. Indeed it became increasingly difficult to distinguish between communications companies and large corporations ostensibly serving entirely different markets. Business users increasingly became service suppliers – a trend that deepened with further innovation of digital networks. (Ibid, 203)

In this context, the drive to privatisation of the PSTNs has been a critical prerequisite for broader cycles of economic exploitation of information. Private transnational systems for specialised

information generation, processing and transmission — including systems for R&D, production, distribution, accounting, finance, legal, marketing and customer data — set the stage for dramatic shifts in the geography of employment in the ensuing years (see Ernste and Jaeger, 1989; Castells, 1989; Gillespie and Robins, 1989; Gillespie and Williams, 1988). Taxation and financial incentives, low tariffs, liberalised markets, and cheap and efficient communications and education infrastructures have become more important than proximity to materials, energy, cheap labour, or large markets, as factors influencing the location of modernised production, distribution and service functions.

Certainly the privatisation initiative was successful during the 1980's, with the World Bank, the IMF, and the previously mentioned US agencies participating vigorously (the authors note that World Bank loans for telecom projects between 1986 and 1988 reached \$769 million, and that US development loans for telecommunications reached \$504 million in 1988: *ibid*, 203). Jamaica, Guatemala, Costa Rica, New Zealand, Hungary, Sri Lanka, India, Taiwan, Chile, Argentina, Mexico and Australia were among the countries that embraced some form or degree of telecommunications privatization in that period, despite various degrees of domestic opposition. (This opposition has often been quite determined; for example, serious political turmoil surrounded the privatisation effort in Mexico.) The international debt crisis, tied aid, the threat of capital flight, and the threat of network bypass were all used as levers to accomplish privatisation.

While privatisation advocates argued that this was the logical alternative to corporate bypass and consequent revenue erosion of the PSTNs, in fact **both** happened. Privatisation resulted in reduced

public service obligations for the PSTN's, incentives for them to cultivate specialised user markets, and pressure to realise revenue flows from their personal information databases. (Schiller and Fregoso quote Madsen Pirie and Peter Young regarding the advantages of market discipline of PSTN managements: "This will eliminate the former social overhead objectives, including concerns for public employment and the more general notion of public accountability": Pirie and Young, 1986, 15.) At the same time, as deregulation continued, users have often found it feasible and profitable to bypass at various scales, and to develop new means of digital TGI collection. Both the private TNC network proprietors and the privatised PSTNs now seem to be keeping their options open, at least until investment risk, digital services demand, the direction of regulatory policies, and vectors of technological evolution become more stable and predictable factors (see e.g. Tipton, 1991, 3).

Meanwhile the integration of global markets continues apace. The next stage of communications modernisation will apparently involve still more-intensive service and product development on the part of PSTNs, as they try to woo back corporate customers, cope with the ascendancy of 'Internet' network standards and markets, and generate further revenue streams from their teletraffic data collections. For reasons explored in the following section, these efforts are likely to be focused especially on more efficient exploitation of personal user and use-pattern data.

Information Control and Enterprise Management

This subsection examines how large enterprises use digital communications systems and the information which flows through them. This leads, in conclusion, to a more detailed focus on the role **personal data** plays in contemporary business strategies.

TNC's are dependent on transborder data flows in their operations. This is less because of static cost-advantages conferred by TDF, than because it enables firms to do things they simply could not do without it. Revesz and Dresner confirmed this in an in-depth interview survey of several executives in each of 89 TNC's in 10 OECD countries, plus an equal number of interviews with experts, government officials and international organisations. The TNC's included banks, service companies, and a wide variety of manufacturing concerns, including especially automotive, electronic and aerospace firms. Both head office executives, and foreign subsidiary executives were interviewed, "often yielding widely different perceptions of the same phenomenon" (Revesz and Dresner, 1983; a corroborative update of these findings is reported in Roche, 1992, 488). They report that "25 of the 89 companies said simply that the effect on cost and efficiency is irrelevant. TDF is necessary for their firms to stay competitive and survive in the world market" (Revesz, 1988, *op. cit.*, 99).

A typical TNC, according to Revesz and Dresner, has sales, service, manufacturing and research operations in anywhere from 20 – 80 countries, and transfers more information across national boundaries, especially in electronic form, than any other type of entity. Riddle's matching estimates are that between 70% and 85% of worldwide data flows are internal to TNC's (Riddle, 1988, *op. cit.*,

75). TNC's use TDF in R&D, marketing, service support, distribution, manufacturing, and strategic and financial management. The use of TDF in financial management matured first, which may be a "natural outgrowth of the fact that many corporations began computerisation of their operations in the finance department" (Revesz and Dresner, *ibid*, 94-5). R&D was also an area of extensive early use. Other uses – 'just-in-time' inventory systems, integrated ordering, inventory, forwarding and invoicing systems, CAD/CAM and robotics – are growing rapidly though, with the clear objective in all areas being maximum automation and integration. These innovations permit TNC's to move from large dedicated factories toward smaller and more flexible plants. For example, the spread of programmable machine tools that can be updated with software delivered instantly through the telecommunications system makes short production runs more cost-efficient. As a result, even fairly advanced factories can be located virtually anywhere.

In summary, the dependence of TNC's on transborder data flows in their operations is a matter of competitive survival. Enterprises in many industrial sectors which make efficient use of higher levels of information and communication inputs tend to experience lower unit costs, due to a variety of factors:

- (i) increased locational flexibility and related labour cost advantages;
- (ii) effective multi-sourcing for other inputs;
- (iii) greater production flexibility and shorter break-even production runs;
- (iv) enhanced inventory control;
- (v) greater control of the labour process resulting in higher labour productivity;

- (vi) scale advantages and cost-spreading for advertising, marketing, insurance, finance, legal, consulting and other indivisible costs; and
- (vii) increased responsiveness to existing and potential customers.

This helps elucidate the increased value of **consumer information**, and of enhanced PSTN services, to firms which are information-intensive in their other operations. (The implications of CCSS7 technology for highly flexible service bundling for international CMS users, including international CLI, are described in Bakunowicz, 1991/92, 67.) Network services such as videotext, voice-mail, call monitor, CLI, and automated calling functions can now be integrated with the firm's other process control functions to achieve greater marketing effectiveness, because they can:

- (i) reduce marketing, sales and service paperwork;
- (ii) reduce response time to customers;
- (iii) increase time spent by sales staff on interactions with customers;
- (iv) personalise customer responses;
- (v) increase the accuracy of responses;
- (vi) generate more repeat business;
- (vii) strengthen business relationships; and
- (viii) improve the quantity, quality, and resale value of information in customer files.

The PSTN 'Bottleneck'

Any firm, then, which is aware of the conditions of doing business in the global marketplace, may be imagined as facing the following situation. It has access to an array of automated digital devices

for design, engineering, fabrication and packaging of virtually any product mix it plans to manufacture. Software inputs make this equipment highly flexible in application, parsimonious in its on-site use of skilled labour, capable of achieving break-even on short production runs, and highly location-insensitive. The firm can also access an equivalent array of automated inventory, materials ordering and handling, and freight loading, forwarding and tracking hardware and software. It can automate its finance and accounting systems, and integrate them with reporting, ordering, invoicing, customs-clearance, payroll and payment systems. It can integrate all of these systems together to reduce remarkably the turnover time and overhead costs of filling orders, the holding time on inventory and the waste on materials; to increase the speed, control and quality of production and the diversity of the product mix; and to complete all paperwork before the first production worker lifts a finger. But what it cannot yet do is to exercise any equivalent control and efficiency in its marketing and customer relationships with all the prospective global end-use consumers of its products. The ultimate risk in all of this productive investment is that it will be met by insufficient end-use demand. The importance of personal information flows to enterprises reflects their need to acquire more control over this dimension of the production cycle.

Information about consumers is a 'bottleneck' in the information economy. And the PSTNs control the bottleneck. While digital technology has permitted both increasing speed and increasing control of every aspect of the process of production and distribution of goods, achievement of equivalent speed and control in the identification of customers, the development of relationships, and the completion of transactions with them lags behind all other elements of the firm's activities. The existing marketing and sales process, while subject to rapid differentiation and specialisation, is not

yet capable of full integration into information-based production systems. The marketing process therefore functions as the major brake on growth and development of the global economy. Or, as Rowland Moriarty and Gordon Swartz express it: "In the rush to automate, the marketing and sales function is the next frontier... [W]ringing yet more cost reductions from production labour is increasingly difficult... On the other hand, investments in marketing and sales automation systems hold tremendous potential for productivity improvements" (Moriarty and Swartz, 1989, "Automation to Boost Sales and Marketing", (Jan/Feb) *Harvard Business Review*). The mass media demand-management processes associated with a mass-production manufacturing system (the concept of 'demand management' was introduced by Galbraith, 1967) cannot generate equivalent coordination of consumption with production under automated high-technology production conditions. The demand-management system must also be rationalised and technologically modernised. (Good discussions of 'Fordist' vs 'Post-fordist' production systems are found in Ernste and Jaeger, 1989, *op. cit.*) New systems must be put in place to permit firms to develop more intensive, responsive and differentiated relationships with consumers. The absence of such an updated system of sales and marketing control has created what Beniger (1986) calls a "crisis of control".

The new marketing systems are predicated on the use of digital technology in a way which transforms the relationship between products, individuals, and organisations. We have become accustomed quite rapidly to the appearance of micro-processors in numerous everyday devices that need complex control mechanisms: for example, in audio and video equipment, in cooking and laundry equipment, and in automobiles. "But equally", as Noel Williams puts it, "computers can be used to control people".

Of course, the manner of control is less direct than using electronic information and electronic signals. Instead computers can be used to hold information about people which becomes the basis of the way we are thought about, observed and treated by institutions. (Williams, 1990, 221)

From the point of view of the firm, to survive by competition in open markets for the business of anonymous customers with unknown preferences, would be to dwell in perpetual darkness. In comparison, the development of mass media-based forward demand-management processes for consumer goods markedly improved the visibility of risks and opportunities. But however finely tuned its methods have become, mass media-based marketing has never been able to close the circle between its statistical profiles of consumer-audiences and the individual consumer's actual spending decisions, and has therefore been of limited use in controlling and intensifying individual interactions between consumers and vendors. For this, reducing the firm's costs of identifying individual consumers, accumulating personalised background knowledge about them, calculating the costs and benefits of transactions with them, and designing and addressing more effective communications to them, are required.

In these circumstances, technical innovations in the PSTNs (such as the CCSS7-based services), which permit more intensive gathering of information about consumers and their preferences – and which generate more timely and focused customer responses, stronger client relationships, greater degrees of market specialisation and better service on the part of firms – increase the level of coordination between production and consumption and help relieve the enormous strains on innovating firms and on the evolving global information economy generally. In this context, most nations do not have the independent power to impede the development of faster, better-controlled

markets through technological innovation, or to foreclose over-the-horizon technologies from reaching the market: at least, not without experiencing severe economic penalties. From the instrumentally-rational perspective of the corporate decision process within the international trade and investment communities, over-zealous domestic protection of consumers' personal information privacy rights can only be seen as a serious impediment to communications modernisation.

CHAPTER NINE:

INTERPERSONAL NORMS OF INTERACTION IN THE DISCLOSURE OF PERSONAL INFORMATION

This chapter argues that, while CMS services can contribute greatly to the efficiency of transaction networks, commercial interests must be prevented by sound public policy measures from damaging the tacit communicative competences of transaction partners. This is the route to achieving superior economic benefits from these technologies. The first major section below develops a conceptual framework, drawn from the social psychology literature, for analyzing the process of personal information disclosure within interpersonal interaction routines. The second major section applies this perspective to the particular case of Calling Number Display (CND) services.

I. MANAGEMENT OF PERSONAL INFORMATION BOUNDARIES

Habits and norms of personal information concealment and disclosure emerge from social custom and family history, and seem often to operate below the threshold of conscious awareness. And yet our habits in this regard are pervasive and constitutive elements of all our interactions with others. Even within close and intimate relationships, individuals are selective in disclosing information about themselves. In more casual interactions, both revealing and receiving quite commonplace private information creates a degree of potential vulnerability and need for self-protection. For example, merely revealing one's name, address or telephone number increases one's accessibility to

the receiving party, and to any others with whom they choose to share it, as well as one's vulnerability to data-matching and surveillance, should the other party have some motive for such activities. (Data-matching is a key concept in the information privacy literature: it is, quite simply, the augmentation of records by high-speed electronic database comparison and merger. However, the implications of data-matching may be quite subtle, due to its unpredictable inferential consequences: see Katsh, 1989.) Receiving such information from another creates an expectation that one will use it to renew contact, and, possibly, that one will cause offence if one does not. Certainly the identity of correspondents and conversational partners, and the frequency, duration and topics of interactions with them, is personal information which, in urban industrial societies, people are typically selective in disclosing.

Privacy expectations of course vary from culture to culture, as well as from individual to individual. What is invariant across cultures is the presence of a concept of differentiation between persons, matched by an enabling capacity for self-control of culturally appropriate markers of differentiation (Altman, 1977). Thus, as Altman puts it, privacy "defines the limits and boundaries of the self. When the permeability of these boundaries is under the control of a person, a sense of individuality develops" (Altman, 1975, 50).

Richard Posner offers a corroborative view, asserting that privacy expectations develop from more rudimentary towards more elaborated forms over time in the same society, and that "the development of civilization" can be viewed as the growth of opportunities for privacy, secrecy and concealment. He goes on to argue that concealment of information increases the efficiency of communication

processes; and that legal protection of privacy and secrecy rights functions as a surrogate for the creation of property rights in information, which in turn creates a socially beneficial incentive for investment in the creation of information (Posner, 1981, 246-9). Posner suggests that information privacy rights are also the foundation of public communication rights: in other words, that communication rights are mere qualifications of a more fundamental right to **not** communicate.

Individuals manage the risks of personal information disclosure by erecting metaphoric personal boundaries, controlled by implicit social rules which regulate the flow of information to and from others. Telephone use offers many graphic examples of personal information control activities. For example, telephonic communication is often preferred as a medium for interaction with unknown individuals in defined social roles, where there may be a risk of discrimination (e.g. civil servants, salespeople) -- or for conflictive interactions with friends and associates, where tact and diplomacy must not be compromised by involuntary visual clues. In both contexts the telephone is perceived as a device which permits individuals to control the flow of personal information. (Excellent Australian survey evidence of this pattern of behaviour is provided in: Moyal, 1989, 78; see also White, 1992, 25.)

The process by which individual boundaries are coordinated and information disclosure enabled, limited, or prevented, constitute what psychologists have labelled the 'boundary management process'. While the extent and rigidity of individual boundaries varies widely, their existence, and their use in exercising self-control over personal information flows, is ubiquitous. The importance of personal information control processes is described by Sandra Petronio:

Understanding the dynamics of managing information privacy is becoming acknowledged as the key to relationships of all types... Managing and coordinating private information contributes to a sense of autonomy and independence... the management of privacy is a mechanism that balances individual identity with social interaction. (Petronio, 1991, 332)

Use of the boundary perspective within the fields of social and behavioural psychology originated with Altman (ibid, 1975; see also Altman, Vinsel and Brown, 1981); and continuing research on interpersonal boundary management processes is associated particularly with the approaches known as transactional analysis, object-relations theory, and family-systems theory. Boundary management processes have been empirically investigated with respect to: marital couples, parent-child relationships, and family systems; relationships between friends and co-workers in pairs and small groups; and supervisor-subordinate relationships (see citations *infra*). Boundary management provides a potentially fruitful perspective on understanding relationship structures and processes at several scales, including dyadic, small group, intra-organisational and inter-organisational levels. However, investigation and theory-building has so far focused on boundary maintenance and coordination between individuals and within primary social groups, and little work has been done (in this tradition) regarding boundary processes between individuals and organisations, or between organisations. Much research on socio-economic impacts of new communications and information technology, however, implicitly problematises boundary definition and maintenance issues at the organisation level (see, for example: Castells, 1989; Ernste and Jaeger, 1989). Government regulatory processes have also been analysed from a systems-theory perspective as forms of inter-institutional boundary coordination (see Luhmann, 1985; Teubner, 1987, esp. 19-22).

Research on marital couples is a good example of how boundary management research has been applied, because it furnishes a context with conflicting disclosive expectations that must be balanced. (The central privacy precedent in US constitutional law is set in just this context, and asserts a marital 'zone of privacy' protected by the 1st, 3rd, 4th, 5th and 9th amendments: see U.S. Supreme Court, *Griswold*, 1965.) Disclosure of highly private information, in the form of feelings and opinions, is expected on the grounds that this is fundamental to maintaining and increasing a sense of closeness; but marital partners are also expected to maintain a reliable and separate sense of individual identity by controlling the flow of private information to one another. Research in this context clearly indicates that a degree of selectivity in the communication of private information, by providing a means of balancing intimacy and autonomy, leads to more harmonious and beneficial spousal relationships, increases the longevity of relationships, and reduces the level of partners' boredom (see Cozby, 1973). Controlled disclosure of the details of personal phone calls furnishes a good example of the kind of selectivity in releasing private information which is found in healthy intimate relationships.

Interpersonal boundary management research up to this point has focused on investigation of:

1. the conditions prerequisite to individual disclosure (Petronio and Chayer, 1988; Petronio and Martin, 1986; Petronio, Martin and Littlefield, 1984; Petronio, 1990a);
2. the reconstruction of boundaries after privacy invasion (Petronio and Braithwaite, 1987; Petronio and Harriman, 1990; Petronio, Olson and Dollar, 1989); and
3. the characteristics of boundary coordination in conditions of unsolicited disclosure (Petronio, 1991, *op. cit.*; Petronio, 1990b).

Through this research program Petronio and her colleagues have been able to extend Altman's original work in three ways. First, they have applied the boundary perspective specifically to information flows (Westin's concept of 'partial display' also resembles the perspective on information boundary negotiation described here: see Westin, 1970). Second, they have examined the dynamic features of boundary coordination, rather than only the statics of boundary maintenance (e.g., the role of disclosure recipients' responses in shaping disclosers' strategies). And third, they have investigated the rules and sanctions individuals deploy in matching disclosive performances and expectations. Essentially, the boundary management perspective is an investigation of how the meaning of an information disclosure varies, depending on the way the message is communicated.

The Content-Relationship Distinction

To clarify the implications of disclosive control strategies for issues relating to data collections and their use, it is instructive to preface further discussion of the boundary management perspective with a description of the characteristics of telephonic interaction in basic communications terms. Communicative interactions between human subjects can be shown to involve, always and necessarily, an exchange of information simultaneously at two 'levels'. In the systems theory approach these are labelled the 'content' and 'relationship' levels of interaction. (For a basic introduction to the systems theory perspective on intersubjective processes see Watzlawick, Bavelas and Jackson, 1967.) At the content level, interaction is oriented to the exchange of demonstrable propositions: speakers attempt to say things about themselves, one another, and the world they both

inhabit, and to respond meaningfully to what others have said. At the relationship level, interaction is oriented to **enacting a relationship** between the speakers. This is achieved through the 'performativity' of their utterances, or in other words, through **how** they speak. Performative aspects of interaction include gesture, intonation, volume, proximity, and so on, as well as certain syntactic features of their speech, such as patterns of pronominal use, modality, and direct and indirect quotation. These levels of interaction are considered to be hierarchically arranged, in the sense that the interpretation of information exchanged at the 'content' level is substantially dependent on the way 'relationship' information has been conveyed and interpreted.

In a CND-capable telephone calling environment, **both** the voice interaction **and** the numerically-coded interaction by which the release or non-release of CLI data is negotiated have content and relationship levels. The content level of the **voice segment** includes all that is said, in the strictly locutionary sense. At the relationship level what is said and how it is said are used simultaneously to negotiate the characteristics – mutuality, obligation, continuity, dominance, and so forth – of the relationship between the interlocutors.

Taking the universal per-call CND blocking capability urged by many carriers as the case in point, the content level of the **CLI-negotiation segment** encompasses: the ring which indicates the caller's attempt to initiate a voice segment; the CND data present on the called party's receiving equipment (or the fact of its absence); the non-connection signal (or transfer to a synthesised message requesting unblocking) which blocking may trigger; and/or the completion (or non-completion) of the voice

connection in response to CLI disclosure (or non-disclosure). These are the content-level information elements of the CLI-negotiation segment.

Through this content-level information (and through the pattern, timing, etc. of its release), the parties exchange relationship-level information as well. For example, choosing to block CLI on a call may convey a perception that the relationship is covert in character, or that the caller wishes to avoid a display of deference, or simply that no previous relationship exists. Placing a call without activating the blocking option may, conversely, communicate deference, or the expectation of recognition, or merely ignorance about the CND feature and no intended relationship information at all. In turn, rejection of blocked or unblocked calls might convey numerous alternative relationship messages: 'I don't know you,' 'I don't like you,' 'I'm afraid of you,' 'You have offended me,' 'You're not worth my time,' etc. The contents of the CLI negotiation segment, then, simultaneously convey the information that a communication has been initiated, responded to, and (perhaps) the initiator's identity – **and** information about what sort of relationship the parties perceive themselves to have, what their evaluations of that relationship are, and perhaps even some information about perceived conflicts, desired changes, and so on.

Disclosure as a Strategic Process

The boundary management literature operationalises the content/relationship distinction for the analysis of disclosive decision-making. Decisions about whether, and when, to disclose such personal information as telephone numbers are strategic (if often subconscious) elements of

relationship negotiation. This research reveals the existence of complex 'pre-disclosive' sequences of interaction which function to set up conditions and limits on potential disclosures of private information, to constrain the range and type of likely responses, and to reveal likely effects of disclosure on both parties' communication boundaries. A range of possible motives for disclosure (five categories of motive are distinguished in Derlega and Grzelak, 1979), and of variables determining choice among message strategies of both disclosing and receiving parties (five strategic variables are listed in Petronio, 1991, op. cit., 316), have also been identified in clinical research.

Disclosure must be understood, then, as a strategic process. Actual disclosures are generally found to be accompanied by messages about appropriate or desirable responses. These response-expectations are communicated in interaction sequences which are either embedded in the disclosive interaction, or occur before the disclosive sequences. These expectations influence the respondent's choice of response-message strategies (Petronio, 1991, op. cit., 321-5). The various elements of this complex and largely unacknowledged process of strategic meta-communication can perhaps best be envisaged as a kind of 'organic signalling system'. Much like the telecommunications signalling systems discussed in the Introduction, these sequences of interaction function to set-up and establish the conditions of intended message transmissions.

To summarise, when a need for disclosure arises, interaction partners negotiate the intersection of their communication boundaries. Consider the hypothetical example of Sue, who is a bank loans officer, and Chris, who is her branch manager. Sue has discovered that she is pregnant, and is considering whether to have the baby. She wants to determine the conditions and length of

maternity-leave entitlements, whether her job responsibilities would be unchanged when she returned, and whether any informal sanctions against such a decision would occur. In proposing to make the unsolicited disclosure to Chris that she is pregnant, Sue opens up her communication boundary by communicating expectations regarding the form of Chris' response: she reveals that she wants confidentiality, she also wants a realistic response, and she wants assurance that merely raising her questions will not commit her to any course of action or expose her to any sanctions. Disclosure thus has an effect on receivers' boundary management activities: Chris regulates her boundaries in response to the communication of these expectations from Sue, by indicating her willingness to receive a confidence, to treat it with discretion and to respond objectively, and perhaps by volunteering to view it hypothetically. **After** both parties have adjusted and matched their expectations about Sue's disclosure and Chris' response in this way, Sue discloses her pregnancy. (Regarding decision criteria for strategic regulation of communication boundaries see also Minuchin, 1974; Johnson, 1974.) From sequences like these, demand-response **patterns** evolve in their relationship which permit smoother future disclosive interactions about a wider range of topics. These patterns are characterised by appropriate complementary role-taking. (Symmetrical and complementary role-adoption are discussed in Watzlawick, Bavelas and Jackson, 1967, *ibid.*; Berg and Clark, 1986; Carson, 1979; Rogers-Millar, L.E. and F. Millar, 1979.)

Strategies of disclosive interaction may be direct and explicit, or indirect and implicit. (Regarding conditions affecting choice of explicit or implicit message strategies see Jacobs and Jackson, 1983; Sanford and Roach, 1987; Tracy, Craig, Smith and Spisak, 1984; Baxter and Wilmot, 1984; Cody, McLaughlin and Schneider, 1981; Cody, Woelfel and Jordan, 1983.) Both kinds of strategies may

be quite functional in producing an acceptable `fit' between disclosive messages and response messages. (Regarding the function of ambiguity in `pre-disclosive' sequences see generally Bavelas, Black, Chovil and Mullett, 1990; Berger and Calabrese, 1975.) Satisfactory `fits' (well-coordinated boundaries) result from the effective pre-disclosive communication of demand and response expectations, and congruent role adoptions, by prospective disclosers and recipients.

Failure or refusal to pre-adjust boundaries in a mutually understood and agreed manner may result in a deficient, equivocal, or overcompensatory `fit' between disclosure and response. Poor boundary management may cause difficulty in establishing desired relationships or terminating unwanted ones, and are likely to generate sensations of discomfort and mistrust within already-established relationships. Chronic mis-coordination of boundaries may be an important indicator of relationship breakdown. On the other hand, the evolution of satisfactory, complementary fits between individuals' boundaries, where those boundaries are flexible and self-controlled, produces benefits – harmony, security, trust, sustained interest, balanced autonomy and interdependence – in all kinds of dyadic relationships between individuals and within primary social groups.

Public and Private Communication

These processes can be understood, then, as indicating the existence of a spectrum of forms and mechanisms of control which we exercise over aspects of our relationships with others. These forms of relational control accompany all of our interactions to one degree or another, whether with long-standing intimates or complete strangers. By enabling us to maintain a balance between autonomy

and interdependence during the development of our various relationships, and by providing intelligible role-expectations, means of disputing and settling claims, and a sense of identity, safety and comfort, these forms of relational control function as the psychological prerequisites of effective communication. As we establish, by stages, the intelligibility, sincerity and appropriateness of the demands and responses of other parties we begin to provide more information about ourselves. (For extended discussion of the generation and functioning of these conditions of communicative competence see Habermas, 1984.) An appropriate degree of control over personal information makes an increased intensity of communication possible and desirable.

Privacy may therefore be defined as an index of the degree of consent to and control of their relationships with others which individuals experience. This perspective subsumes other approaches which focus on distinctions between informational (symbolic) or physical intrusion, and between 'incoming' and 'outgoing' information flows. Authentic privacy claims are not primarily oriented to the objective characteristics of particular kinds of information, but to the mutually voluntary and self-controlled character of **interactions**. The establishment of personal boundaries and the exercise of privacy entitlements should be understood as *dynamically related* to the establishment of functional consensual relationships in which both public and private communication become more satisfactory, productive and efficient.

Privacy Expectations

Viewed in this way, the notion of privacy can be seen to bundle together a series of usually implicit expectations. All of these, when made explicit, can be seen to have high individual and social value, especially in cultures which ascribe importance to individual autonomy and choice. The full range of these expectations, or entitlement-claims, may include:

1. the ability to enter into only those relationships which individuals have mutually chosen, and to terminate relationships;
2. the ability to conduct relationships on the basis of mutually accepted interaction rules (regarding e.g. frequency of interactions, permissible interruptions, and disclosive demand and response expectations);
3. the ability to participate in the selection of topics of interaction, and to refuse to speak or to have opinions ascribed on particular topics; and
4. the ability, within a given relationship, to limit disclosure of the existence, characteristics or contents of other relationships.

Of course, these are far from absolute entitlements: they must be balanced against other interests in most circumstances. For example, it may be that **none** of these claims are valid in the context of one's relationship with, say, the tax-collector. In the context of the CND debate, claims of access by emergency service providers to callers' telephone numbers may well override claims of privacy entitlement. But each of these privacy expectations is recognised as a defensible entitlement in some circumstances, in one or more legislative, administrative, common-law, or constitutional law sources. These are the basic claims which must be defeated in any instance of involuntary personal information extraction or use. (Compendious treatment of the legal sources is provided in Trubow,

1989. For a recent survey of relevant US privacy law pertaining to telecommunications see Forbes, and O'Hara, 1991.)

BOUNDARY MANAGEMENT AND TELECOMMUNICATIONS SERVICES

In the context of personal information resident in the telecommunications network and generated by the act of subscribing to telephone services, or placing or receiving telephone calls, the implications of the boundary management perspective are quite obvious. First, in general terms, the practical objective of individuals' boundary coordination processes is to control the **quality** of interactions, and of the relationships that result from recurrent interactions. Depending partly on the frequency of their occurrence within a relationship, the quality of telephonic interactions may be just as significant as the quality of other interactions. In many instances they may have to substitute entirely for other forms of interaction, and in that case their quality assumes heightened importance. From a boundary management perspective, the quality of interactions is affected in a basic manner by the **degree of self-control** individuals exercise over personal information disclosure. This has clear implications for the configuration of PSTN services, such as CMS.

The second general point is that, in broad outline, the characteristics of **embodied** communication and boundary management can serve as a guide to **mediated** communication and boundary management, such as in the telecommunications environment. In preparing new service offerings,

the basic design principle to observe in relation to privacy issues is to emulate as closely as possible the structure and sequence of embodied communication. This might be usefully visualised as a nested set of interaction domains in which the interpersonal establishment of **matching** disclosive demands and responses triggers entry into the next boundary layer, and so on. The general pattern of voluntary information release is that it is sequential, and contingent on the outcomes of previous boundary coordination tests. This capacity should be preserved in telephonic interaction.

The evidence is that this capacity is not sufficiently assured in the telecommunications environment. On the contrary, the telephone is widely perceived as a pre-eminent source of privacy invasion. Some jurisdictions in the US report the number of subscribers with unlisted telephone numbers as having exceeded 40%. In a national survey in 1988 (conducted door-to-door, rather than over the telephone), the US population spontaneously identified telephones as the **single largest source** of privacy invasion (Katz, 1991). And the new 'intelligent network' services have given rise to a remarkable flurry of legal and regulatory challenges. (See for example the overview of US regulatory activity on Caller ID in Samarajiva, 1992, 57.)

Of the many CCSS7-based network capacities, CND is the most controversial; it is discussed in detail here to provide an example of the implications of the boundary management perspective for telecommunication services design. Clearly CND, without the correct 'blocking' configuration (see *infra*), removes significant personal information from the sphere of personal control. This is information which individuals are accustomed to withholding or disclosing on the basis of prior boundary coordination interactions with others. Unblockable CND is particularly damaging in that

individuals may be unaware that this information has been disclosed, even after completion of the interaction. CND is a relatively crude service, in terms of the information it provides, and is of little use to individuals in establishing credibility, urgency, or other meaningful initial characteristics in an interaction. For individuals without either an extraordinary memory, or a large prior investment of time and money in computer storage and reverse-directory manipulations of the CLI data, it is not even very useful in establishing the **identity** of most potential callers. But it is – emphatically – useful to commercial users, who can justify such investments for marketing and customer service applications, and as a form of `hidden asset' capture for resale.

CLI services may be configured in such a way that callers have no choice about the release of their calling number to called parties who are subscribers to the identification service. Or, a range of configurations in which the release of calling numbers is `blocked' from CLI service subscribers' receiving equipment are also feasible. The main blocking configurations are:

- (i) unblockable CND transmission;
- (ii) per-line transmission with per-call blocking; and
- (iii) per-line blocking with per-call unblocking.

Unblockable CND Transmission: The first configuration – unblockable CND – is incompatible with and destructive of individual boundary management efforts. Those who have need of CND to prevent harassment (or who desire to monitor or collect numbers for any other purpose) can achieve their objective without requiring all other parties to involuntarily release their numbers to one

another, in the following manner: CCSS7 technology is capable of supporting Automatic Call Rejection (ACR) services. ACR redirects calls to a message requiring the caller to unblock a blocked number in order to achieve completion of the call. This, by making number release voluntary rather than automatic, preserves the boundary control experienced by all parties. This is feasible within all the other blocking options.

Per-line Transmission with Per-call Blocking: The per-line transmission with per-call blocking configuration is also inadequate. Per-call blocking creates the potential that automatic number release (and perhaps further personal information in the future) may become the social norm, because the default status of number release would give rise to a suspicion of harmful intent if withheld. Relinquishment of control of personal information under these conditions is more coercive than voluntary. Moreover, the requirement that individuals take affirmative action to prevent automatic number release presumes that they are aware of and understand the network configuration and its implications. There are masses of educational and consumer research which cast serious doubt on the general plausibility of this assumption; and special problems in operating the blocking option effectively are faced by immigrants without dominant-language skills, households with children, and the hearing-disabled.

This configuration weakens individuals' self-control of information disclosure at both content and relationship levels; and it increases the degree of uncontrollable ambiguity about messages at the relationship level. Both of these outcomes have deleterious effects on the ability of individuals to manage information boundaries to the benefit of their sense of identity and the quality of their

relationships with others. Strategic decision-making at the relationship level is removed from the hands of individuals, and a technologically-embedded norm of CLI data disclosure is substituted. In this configuration **the strategic decision is reversed**: use of the per-call block option only permits individuals to send whatever relationship-level messages are conveyed by **transgressing** the new disclosive norm. Even telecommunications carriers admit that this configuration will alter the social norm: "U.S. market research and consumer attitude surveys indicate that a significant number of CND subscribers will refuse to accept calls with a blocked code" (OPTUS, 1992, 9-10).

Only by transgressing the social norm will they be able to use their control over disclosure of this information for boundary management purposes, and the results are thereby made significantly more ambiguous. This is not a special case affecting only unusually vulnerable persons – it is a generalised outcome of pervasive normative change in the social environment, driven by the adoption of a sub-optimal technical service standard.

In this configuration, the unrealistic assumption that all parties are aware of the CND capability and competent to operate their blocking option assures a degree of involuntary disclosure at the content level, and also increases the ambiguity of information exchanges at the relationship level. If they are unaware of these features (and therefore always unblocked), callers will communicate unintended relationship messages, along with unintended content messages (their CLI data). At the same time, awareness of and use of the blocking option in the ambient default unblocked setting may well communicate threat or suspicion, which may be equally an unintended relationship message. And **avoiding** use of the blocking option, in order to avoid sending messages of threat or suspicion,

necessarily sends the alternative false or unintended messages conveyed by unblocked CLI (e.g. a message of consent to re-use of the data, a willingness to be called back, etc.). Relationship messages about the perceived or desired continuity and permanence of relationships are poorly communicable in this configuration.

People use their control of disclosure to maintain their sense of individuality and the quality of their relationships. But this process itself can be damaged by the ambiguity inherent in a situation where individuals may only exercise this control by delivering relationship messages which are not intended in that context. Disclosure is not truly voluntary if a positive decision (and a normatively transgressive one at that!) must be taken in every instance to prevent it. In such circumstances some proportion of disclosures will be involuntary. And if disclosure is not voluntary, the intersubjective meaning of a disclosure is lost.

Producing a new social norm of automatic number release by adoption of either of the first two configurations creates an additional large threat to personal boundary management efforts. An increase in the amount of TTGI available in society will have as a direct outcome a matching increase in the invasive capacity of precision marketing and advocacy specialists. A few moments thought will reveal that the scale of new TTGI generated by any of these configurations will be enormous -- consider only the quantity and value of information which could be generated for resale by a single service, such as carrier provision of a "talking yellow pages" audiotex service which matched query topic, calling number, directory name and address, and location census data for all callers within a jurisdiction.

These problems are not confined to telemarketing operations, though they are the most obtrusive in this context. The easy availability of reverse-directory compilations and other forms of database matching means that mail and even door-to-door solicitations may become easier and more valuable to marketers (see Australia, House of Representatives, 1991, 27); that telemarketing can also be conducted from ever greater distances, including internationally; and that in all these forms, marketing efforts can be backed up with more complete prospect files. A related pernicious problem is the tendency of useful information to continually migrate into more, larger, more centralised, and more accessible databases (see Morris-Suzuki, 1986, 86-8). It is worth noting that many licensed carriers are also in the telemarketing business themselves. Leaving aside the conflicts of interest this seems to present, it is a sad irony to contemplate the ordinary householder whose basic telephone charges have paid all the sunk costs for installing the CLI capacity in the local exchange in the first place, who has then committed a steady extra revenue-stream to the carrier by subscribing to the new CND service, and who shortly thereafter begins receiving frequent and intrusive calls from the telephone company's own telemarketing clients!

Per-line Blocking with Per-call Unblocking: The per-line blocking with per-call unblocking configuration does not share the problems of the other configurations. It preserves all boundary-management interests, and brings telephonic interaction into closer emulation of the phased information-release characteristic of effective boundary coordination processes. Rapid development of a technical capacity for separate billing of different sections of a call, to accommodate the negotiation of CLI release, as well as other forms of phased information release which might require prior establishment of authenticity of the caller's identity (e.g. security codes, computer access

codes), would further enhance the quality and effectiveness of telephonic interaction. With regard to vulnerable individuals and locations, such as shelters for abused women, where an urgent need exists for both blocked CND on outgoing calls and CND on incoming calls, this configuration is the superior one. Blocking is passive (or `default') for outgoing calls unless callers wish to disable it: no reminder or extra effort is involved when the line is to be blocked. Blocked incoming calls can be automatically messaged to require unblocking (ACR, outlined above). And most of all, this configuration avoids stigmatisation of calls from boundary-protecting persons or locations as "blockers" -- such a caller is experienced merely as one more of the many people who value their privacy.

Redlining

A final issue which needs to be addressed here is `redlining.' In the marketing context, redlining is the practise of classifying sales prospects as unlikely purchasers, and therefore as candidates for exclusion from promotional campaigns, packaged specials, product information distributions, and the like. These judgements are based on inferences drawn about their income and credit profiles, often using information such as residential location. A caller's local telephone exchange prefix is, of course, a fairly good source for this information.

The implications of redlining can be put in the context of another public policy debate: access to information. Opponents of restrictions on the collection and use of personal information often claim

that consumers in general will be impoverished by resulting lower levels of access to market information, and that markets will thereby work less efficiently. But using CND to increase the success rate of telemarketing campaigns in fact may simultaneously reduce **both** the information privacy **and** the information access of many consumers; and this is an effect traceable to **both** outgoing **and** incoming calls. The literature already contains many examples of "the use of automated systems to restrict access to goods and services on the basis of models or profiles... capable of predicting the profitability of any given interaction" (Novek, Sinha and Gandy, 1990, 535; see also Rule and Attewell, 1989).

CND data is not only the key to linking constellations of other data together for marketing purposes in a cost-effective manner -- even by itself CND can be a reliable means of geodemographic classification of individuals. For outgoing calls, such classifications are used to decide for which consumers it is likely to be worthwhile investing in the provision of any outgoing product/service information in the first place, and among `viable' consumers, which ones are `appropriate' targets for a given campaign. CND may also be used for redlining incoming calls:

[T]elephone services which facilitate identification of the calling party will make it easier for firms to engage in `electronic redlining' where calls from low-income neighbourhoods identified by their telephone exchange can be routed to a busy signal, a long queue, or a recorded message suggesting that the desired information is not presently available. (Novek et al, *ibid*)

Case study Conclusions

Information privacy and information access, while apparently conflicting values, may in fact be more interdependently related. In effect, any technical or policy measures which decrease data subjects' control over personal information disclosure also decrease their equality of access to desired information held by others, by reducing their bargaining power. Efficient markets, like democratic states, are reliant on well-informed constituents. By putting control of personal information disclosures in the hands of the data subjects to whom they pertain, the policy remedies advocated here optimise both values – privacy and access – and, thereby, the equity and efficiency of information provision and telecommunications carriage markets.

CHAPTER TEN:

CONCLUSIONS: TOWARDS A CRITICAL PRAGMATIC ECONOMICS

In this study I have attempted to reconstruct a philosophical and methodological dialogue between positive economics and interpretive sociology, concerning the economic implications of the new information and communication technologies. This is, of course, the strategy of 'immanent critique'. By thematizing the new technologies as central elements of the concrete social conditions of contemporary capitalism, I have in effect suggested that they provide the material conditions from which an objective standard for criticizing the rationality of the present historical period can be derived, and from which some aspects of a more rational organization of social life can be discerned.

This critical intent was pursued by taking up in turn the situated perspectives, the validity claims, and the justificatory arguments of the interlocutors (Parts I and II), and by applying them independently in a case study of the allocation of communications resources in the technology innovation process (Part III). The close-up view of economic 'action in the street' (introduced as an imaging device at the beginning of Chapter Two) was explicated through a presentation of the *economic process* as the achievement of coordination through acculturated use of expressive, normative, and reflexive (as well as instrumental and strategic) forms of action and reason. The 'long view from the window' (the alternative visual metaphor from Chapter Two) was unpacked in a correlative manner by tracing, within the theoretical discourse of economics, the development of its model of the *social communication process* as a pure positive datum. This also entailed attention to the expanding efforts

of economics to contain the paradoxes arising from application of this instrumental model, through peripheral revisions to its reductionist account of economic action and reason.

In both perspectives, special emphasis was placed upon transactional communication sequences and patterns, and upon the creation and distribution of information about transaction partners. These were shown to be exemplary aspects of the economics of information and communication within digital networks, because they directly reflect the role of coordination expenditures in the evolution of the economic process. In the mainstream of the economic perspective, interpersonal communication and information processes have not been the object of direct empirical study. Researchers in this tradition have continued to assume, in a tacit and somewhat circular manner, that their abstract methods of collection and statistical treatment of aggregates of such data are valid and reliable, and in fact reflect and should reflect, for all relevant purposes, only the instrumental and strategic competences of actors upon which their models are originally premised. In the interpretive perspective, transactional communication and personal data collection have deeper cultural and social significance, reflexively influencing the way actors participate in the economic process.

As each economic actor in a mediated environment pursues her singular path through production, coordination and consumption activities, she casts an increasingly dense and multi-dimensional “data-shadow”, from which her routines and her preferences, her history and her relationships can be read, and even, to an extent, reconfigured. Just as our physical passage through sites of economic activity can be seen to be structured into complex sequences of communicative interaction events, so our ‘virtual’ passage through the emerging institutions of the network economy is signalled by the

continuous exchange of information and the ongoing construction of exchange relationships. But what goes widely unremarked in this new environment is that *it is our data-shadows that often speak to our transaction partners for us — and they speak for us on topics selected arbitrarily by others, and generally without our knowledge or volition.*

While this automation of interactions through digital technologies can to a degree substitute for a system of market prices (as a means of coordinating actions and creating exchange relationships), because of the involuntary character of much of what we communicate in the network setting, the libertarian claims of market theory cannot apply. Respect for the autonomy of the individual is incompatible with a system of economic coordination in which the individual is routinely compelled to communicate with unknown others, in a state of potentially complete ignorance of either the occurrence or the meaning of their own communications. This casts the neo-classical economists' informational concerns with the problems of ignorance and uncertainty (see Chapter Six) in a different light. As information and communication technologies progressively enable an instrumental form of rationalization of the normative lifeworld, engineered obedience becomes a possible solution to uncertainty:

Uncertainty in economic transactions would vanish... if obedience could be presumed... Problems of economic organization would be greatly simplified if this condition of obedience were satisfied, or even closely approximated. Robots have the feature that they satisfy obedience requirements at zero social conditioning cost, albeit within a limited range of responsiveness. (Williamson, 1986, 176-7)

Efforts to pre-determine the outcomes of transactional 'games' through 'data-veillance', 'data-mining', and other computational strategies distort the terms under which transaction partners negotiate agreements, if they are based on control of other parties' origination of information and

communication. Because it is to such a large extent tacit and involuntary, the communication of personal information, the control of disclosure and interaction structure, and the negotiation of the characteristics of mediated relationships are not fully and clearly recognized as emergent aspects of the regime of communication entitlement in the network setting. They are, rather, increasingly treated as the elements of new bundles of property rights, emergent in the process of technological innovation, and properly allocated by the welfare criteria of intellectual property law. To a much deeper extent than possible with earlier media, human communicative interaction in the “communal oral world” is thereby “split up into privately claimed freeholdings” (Ong, 1982, *op. cit.*), and “mature capitalist property seen as a web of state-enforced relations between persons, some assumed voluntarily and some not” (Grey, 1980, *op. cit.*).

In earlier chapters I developed an argument that problems arising in positive economics’ model of social information and communication processes have particularly damaging implications for its ability to theorize economic welfare in a satisfying manner. It is of little comfort to know that in theory, *if* the economy consisted of a complete set of perfectly competitive markets, actors would have access to something close to perfect, costless, ubiquitous information, and exchange aggregates trend always towards a singular, pareto-optimal equilibrium. The real terms of trade entail costly uncertainties, radical indeterminacies, incommensurable preference rankings, ubiquitous oligopolies, and multiple possible equilibrium states.

This last — the existence of multiple pareto equilibria — implies the necessity of institutional mechanisms by which society may choose among possible equilibrium states, and among the

trajectories of technological and institutional change by which they are to be achieved. From the neoclassical perspective, representative democracy is this mechanism. Unfortunately, neoclassical theory has also demonstrated the impossibility of aggregating the preferences of self-regarding individuals into any single stable social preference. The “invisible hand” notwithstanding, modern deployment of the model of the economic actor as an instrumentally-rational, utility-maximizing opportunist has failed to generate any strong account of how even the most diffuse and general public interest can reliably be derived from the aggregation of such actors’ self-interested preferences through unregulated economic exchange. The remaining path *not* explored by positive economics — indeed, ruled out of court — carries us towards the cultural study of modes of rational achievement of intersubjective agreement, and the associated collective action competences upon which economic coordination really rests.

According to Hegel, the analysis of the mediation of the individual's needs through the needs of others — the initial “moment” of civil society — is the central task of political economy (1967, 126-7). The remaining sections of these conclusions are intended to suggest how the foregoing arguments might be applied to this practical task in the contemporary context.

The 'Democratization of Consumption':

The broader social and ideological context within which communication research is conducted and debated has shifted significantly in recent decades. The rising appreciation of the importance of media literacy had seemed, only recently, to herald an emergent popular understanding of the critical *public* function of communication resources and practises; but this concern has now been displaced by vigorous deployment of the language of private commerce in public affairs. Neo-liberal claims about the efficiency and accountability of the *private* sector, the fiscal necessity of privatizing public institutions and deregulating trade and industry, and the imperatives of technology, globalization and 'national competitiveness' have rapidly become the privileged categories for mass media discussion of the public interest in all sectors. With regard to their own sector, the globally integrated private communications industries present themselves as exemplars of the rightness of these claims, even as concentration of ownership in the media marketplace accelerates, and diversity of published opinion in the mass media declines. Disregarding these tendencies, the media routinely ignore popular or scholarly criticism of private-sector control of public information processes, and portray any espousal of *expanded* public or community control of the media as ridiculous or incomprehensible positions.

The mass media's embrace of the commercial tropes of globalization has also obscured their own obstructive role in the development of more democratic international public institutions and of basic civil rights in the international public sphere. 'Trade in services', 'free flow of information' and the 'Information Superhighway' are the defining media categories of international communications policy and governance in the global information society. Behind this premature closure of the earlier

unresolved arguments about 'cultural sovereignty' and 'media imperialism', the emerging institutional and electronic structure of global civil society is being pruned and shaped to swell the private usufruct of the global oligopolies, led by the media and information industries.

This policy momentum justifies itself by recitation of a convenient and comforting nostrum: that the internationalization of commercial culture, with electronic media technology as its vehicle, will unfailingly act to ensure the development of democracy and human rights. In this "Whig interpretation of communications history" (Carey, 1981, 77) the development of communications *technology* becomes a story of unfolding progress towards freer and more democratic, better-informed and more literate societies -- "the story of the progressive liberation of the human spirit":

More information is made available and is made to move further and faster, ignorance is ended, civil strife brought under control. In this version of the rhetoric of the technological sublime it is the machines that possess teleological insight. (Ibid, 78)

In serious political journalism, Gwynne Dyer's recent work is a good example of 'the rhetoric of the technological sublime'. Dyer recapitulates, in truncated and functionalist form, part of the institutionalist argument that the spread of the printing press and literacy made it possible for the mass societies of Europe, a few centuries ago, to evolve mass democratic institutions out of their "authoritarian, hierarchical, patriarchal" antecedents (Dyer, 1996). On this basis Dyer's technological-determinist conclusion is that the world's other mass societies, "because they are now permeated by mass media too", are also and therefore now abandoning their own tyrannical histories and unleashing "an avalanche of democracy":

'Westernization'... is not a plot by Coca-Cola. It is a process that happens in any mass society that democratizes... Which means that it is legitimate to talk about the emergence of

a global culture... **All we are doing is to democratize consumption.** (Ibid, 1996, emph. added)

Of course in its blurry outlines this story is appealing — and even convincing, if we use a sufficiently restricted notion of democracy, and if we accept that processes of competitive market exchange and collective self-governance are governed by the same micro-economic logic. The ‘global democratization of consumption’ does not seem to imply, for example, any matching plenipotentiary democratization of the *workplace*. Indeed, regional and national differentials in regimes of worker discipline, and resulting opportunities for labour cost-reductions, represent a major strategic resource for global capital.

Nor is the globalization of consumer culture necessarily accompanied by an expansion of civil and political rights. The new wave of assaults across the OECD countries (and their dependent states) on longstanding institutional arrangements fought and won by the civil rights, labour, and women's movements, such as the current restructuring of public education, healthcare, and family support, appears to be driving the welfare state only in the direction of a coercive and retributive ‘night-watchman’ for property. In the sense that they are formally representative and legally constituted, perhaps the outcomes are democratic; but they are hostile to democratic participation and to established normative institutions of self-governance in community life.

Moreover, if the free movement of skilled labour and commodities is in fact connected to the spread of these restricted forms of democratic order, this connection seems to have no implications that ensure even the most vestigial civil rights entitlements to the world's exploding diasporic populations.

International retreat from civil rights in favour of trade at the top of the public policy agenda, and domestic retreat from respect for the treaty rights of refugees, are good evidence of the ground rules of democracy in the neo-liberal policy perspective. Only by the most egregious doublespeak can the current international private-sector attack on public institutions be construed as an expansion of collective self-governance.

If, as Carey suggests, *communications technology* is the displaced subject to which these policy choices are being attributed, it is only in order to shield from view the transnational corporate beneficiaries of neo-liberal policies. Nevertheless, among the theorists of the public choice momentum, a few forthrightly admit that the central item on the agenda of globalization is projecting a global regime of laissez-faire commerce, and not democracy and human rights. The business media are not too shy to reprint instructive and improving commentary from corporate-funded think-tanks, such as Stanford's Hoover Institute, to this effect:

Democracy, the selection of leaders by competitive elections, is often practised in the same places where there is also protection of human rights, property rights, the rule of law, and free markets for goods and services. Therefore democracy is sometimes construed as a necessary condition and guarantor of a liberal economic order... [But] the existence of multiparty elections tells us little about the characteristics of the political systems that preserve free markets. The missing link that unites democracy with economic performance is liberalism. Liberalism... is the key to distinguishing those nations that succeed economically from those that fail... If multiparty elections do not necessarily generate a liberal **economic** order, then [East Asian] leaders should not apologize for failing to develop Western institutions during the transition to a market-based economy. (Root, 1996)

Towards an Immanent Critique of Neo-liberal Discourse:

Struggles over communication policy have emerged as central in the post-war system of international power, and the communications industries as among the largest stakeholders in the dominant public choice model. Thus, as Hamid Mowlana states, “communication study is largely the outcome of global and national forces that have propelled the communication process to the centre of domestic and international attention and concern” (Mowlana, 1994, 354). Fortunately, alternative perspectives on democracy, and alternative traditions of international media research and practise which challenge the dominant model, continue to be available in the contemporary context. This is an appropriate place to suggest how these alternative traditions of communication study may contribute to an immanent critique of the neo-liberal discourse on globalization, information technology, and commercial culture, as pursued in these pages. One way of approaching this is to insert the methodological questions from economics into the mass communication research agenda. In communication studies, the relevant debates revolve around the status of media effects theory in all its forms; media effects theory embodies assumptions identical to those expressed through methodological individualism, as surveyed in earlier chapters, in the economics of information and communication.

This concluding discussion moves onto the ground of mass communication research (MCR hereafter) by picking up the threads of a conversation among a broad sample of international communications researchers, recently published in the form of festschrifts for two prominent members of that research community, Dallas Smythe (Wasko, Mosco and Pendakur, 1993), and James Halloran (Hamelink and

Linne, 1994). The 'political economy of communication' is an investigation inaugurated by Smythe, and thematized at the core of all of his own research as the dynamic study of the use of communications resources in maintaining or contesting structures of social power. Halloran's approach to mass communication research exhibits a somewhat more functionalist theoretical grounding in media effects theory and journalism studies, but advocates a no less consensual and empowering communications practise. Together these symposia provide an angle of critical insight into the globalization of commercial culture which is glossed over in the neo-liberal account of the "democratization of consumption", and by the contemporary ideological role of the mass media in promoting this interpretation.

To begin with, many of the authors represented have drawn direct and pointed conclusions about the implications of corporate dominance in the creation of global civil society, and the surplus of communicative rights enjoyed by corporate speakers. For example, Herbert Schiller focuses on the role of the mass media "as the most powerful instrument for creating and channelling consumer demand to fulfill corporate marketing needs and objectives..."

All else follows from this increasingly globalized institutional pattern... It has to be expected that if recognition of this relationship does develop and remedial changes are proposed, the systematic response will be to accuse the challengers of seeking to infringe on freedom of expression. But freedom of expression and personal liberty are *human* rights and enjoyments [and were originally won by labour and its allies]. Corporations exercise these rights to an ever-increasing extent only because their enormous influence has enabled them to shape the legal system to their benefit and to the disadvantage of the bulk of the population. (H. Schiller, 1994; [Ruggles, 1994])

The methodological issues arise frequently in these collections. Vigorous methodological debate potentially marks a 'field' off from a 'discipline', as Gitlin observes: "A field, in the sense of high-

energy physics, is a territory through which high charges work. It radiates around a set of charged questions... and if things work well, it illuminates” (1994, 53). Gitlin points to the methodological influence of media studies as such an illumination in the social sciences generally, especially in its attention to “the workings of media *institutions* and to the *histories* of those institutions and the cultural forms they have sheltered and excluded” (ibid, 54). The great diversity of critical approaches to the study of media, he says, challenges the social sciences to reflect on the “totality of society”, pushes us collectively towards questions of

how... we shall understand a society that routinely, profusely traffics in images; of the part played by technology in transforming human consciousness (and unconsciousness)... of the meaning and limits of the globalization of culture. (Ibid, 57)

Graham Murdock raises similar methodological questions, but perceives a “damaging division” in communications studies between

the political economics, sociologists, and political scientists, whose major interest is in the organization of [communications] systems and their links to wider social, economic and political formations... [and] the practitioners of cultural studies, who approach [these systems] as key sites for the articulation of public discourse and are mainly concerned with the way meaning is organized... (Murdock, 1994, 171)

I want to argue here that because of this methodological “bifurcation” (ibid, 171), the typically ‘critical-functionalist’ research of much policy-oriented work in the political-economy of communications faces a major disadvantage in its effort to contest public choice theory's dominance in the communications policy domain. In the public choice model, social interaction routines and other enculturated communication processes are insignificant factors in analyzing public policy choices, because they are epiphenomenal to the presumed innate characteristics of instrumentally rational economic and political actors which determine their preferences and intentional acts. Aspects

of this methodological individualism are shared by the effects paradigm in communication studies, and this is the basis of most critiques (see Murdock, 1994; Mowlana, 1994.) Since the very ubiquity of the atomistic micro-economic assumptions of public choice theory makes them appear settled and largely self-evident, they have acquired the status of well-rehearsed and 'common-sense' epistemic propositions for individuals enculturated to them within the institutions of consumer society and positive science. A matching jurisprudential privileging of the autonomous and metaphysicalized subject is also built directly into the discursive structure of the liberal civil-rights regime (eg the 'free marketplace of ideas'), where the political-economic conflicts which do reach the public sphere, are managed.

In mass communication research, in contrast, there is a distinct lack of articulation to alternative contemporary theoretical underpinnings in the social sciences at the same level of abstraction. Building bridges to communications research from critical social theory, contemporary philosophy of language, and post-colonial and cultural studies perspectives enables an emancipatory, as well as a critical, program of research: a means to contest the normative *purposes*, as well as the empirical outcomes, of the neo-liberal agenda.

Clear historical and conceptual links exist between the traditions of critical political economy and critical social theory. The institutional analysis of the MCR tradition has historical roots in Weberian economic sociology and American philosophical pragmatism, stemming especially from Veblen's and Dewey's investigations of the cultural imbeddedness of economic processes and technological systems. And philosophical pragmatism is also the intellectual origin of symbolic interactionism and

Piercean philosophy of science. Both of these latter fields have been integrated into critical social theory (see especially Habermas, 1984; 1985).

Murdock and Mowlana (ibid, 1994), who also take the critique of the effects model as their entry point, suggest that the MCR field needs to move away from the methodological individualism of the effects model, and in a critical hermeneutic direction. They emphasize MCR's lack of theoretical integration and continuing unresolved debates. Mowlana prescribes a "radical departure from the premises of the old perspective about the role and effect of media":

A more elaborate theory for the interaction of change in social structure, change in communication patterns, and change in culture is needed in communication research. Implied in this assertion is a new research perspective in which the focus is shifted from communication as social control to communication as integral to sociocultural change. Therefore a different set of disciplinary methodologies must be formulated to operationalize this type of research. (1994, 355-6)

Mowlana identifies the theoretical stance taken towards *rationality* as the issue at the centre of the methodological dispute in mass communication research. Unfortunately he inaccurately groups critical theory and "laissez-faire doctrine" (ibid, 363) together as co-tenants of the assumption of instrumental rationality. In trying to advocate a position "attacking the authority of reason" (361), he also wrongly attributes this postmodernist position to Habermas. He is correct, however, that the form or forms in which reason experiences itself (and even an anti-rationalist position must convince us by its reasons) — and the distinction on this point between critical theory and laissez-faire doctrine — are at the core of the methodological debates in mass communication research.

Critical theory and public choice are more usefully treated as rival research programs: “Their main point of difference lies in the public choice belief that rationality is synonymous with its instrumental variant” (Dryzek, 1995, 112). Game theory provides powerful tools for public choice, in performing accurate descriptive analyses of instrumental rationality, but in doing so it reconstructs “only one human competence. The capacity to act instrumentally or strategically may be a universal human competence, but other competences can exist too” (ibid, 113).

The critical theory position is that there are multiple, observable forms of rationality and logics of action (for instance, ‘instrumental’, ‘strategic’, ‘normative’, ‘dramaturgical’ and ‘communicative’ rationalities and action-orientations are discussed in Habermas, op. cit.). Most of these forms of rationality are linked to tacit competences at initiating, maintaining and altering different kinds of relationships with other actors, and for establishing and contesting meanings, standards, rules, and intersubjective agreements within those relationships (see especially Wellmer, 1992, 171-220). That is to say, they are the basis of a range of *collective action competences* (see also Offe, 1985, 170-220; White, 1987). These tacit competences are the basis of successful actor coordination in all economic and political interactions, and are linked to variations in the economic performance of different societies.

A ‘methodological interactionism’ can be posited on this basis, which displaces the instrumental Cartesian subject from the centre of its epistemology in favour of forms (and logics) of communicative interaction. ‘Methodological interactionism’ can thereby contribute to a research strategy of “liberating [public choice] from self-misunderstanding” (Dryzek, ibid, 111). In light of

this immanent critique, public choice theory is reinterpreted as a “*critical theory that tells us what happens when instrumental rationality runs wild*” (ibid, 114, emph. added).

In its attention to transactions and organizations, “habits of mind” and cultural contexts and histories, critical institutional communications research is already a multi-level investigation of collective action competences. It is missing only the connection, through critical theory, to a communication-centred micro-economic theory grounded in the logic of collective, rather than individual, action. This internal theoretical link between the political economy of communication and the pragmatics of communicative interaction reveals the contemporary study of communication as the locus of an integrated critical model of economic action. For this reason it is a key site for the critique of public choice theory, and thus for discursive resistance to the neo-liberal policy agenda. The fundamental problem, not only of communications policy, but of economic policy in general, “then becomes one of designing institutions to curb strategic behaviour and to promote communicative rationality” (ibid, 115).

In the contemporary context, the stakes for mass communication research on these issues are axiological, rising at the centre of its self-identity. MCR has a pivotal role to play in the emergence of global culture. Without understanding social communication as prior and prerequisite to individual choice and action, a globalized commercial culture can understand itself only as an expression of technological determinism and the “Whig interpretation of communications history”:

With the advent of new information technologies, the established powers are strengthened, new dependencies are created, and new social discrepancies are brought about. The situation is worsening day by day... This is because the *ethical* questions have been subsumed under the banners of science, progress and development. (Mowlana, 1994, 360)

The Network Economy -- Integrating Critical Theory and Mass Communication Research:

The political-economic role of new electronic network technologies in the globalization of commercial culture is an issue which illustrates the methodological prescription sketched above.

Vincent Mosco points out the centrality of the issue succinctly: "electronic services are vital to capital... as an instrument of the organizational control necessary for global expansion" (Mosco, 1993, 149). Mosco, too, draws a connection between the methodological debate in MCR and the study of the technological and institutional development of the information economy:

One of the more important goals of political economy should be to incorporate this area [new communication technologies] into central concerns of its scholarship and praxis, to understand the relation between transforming telecommunications and transforming social life. (Ibid, 149)

His prescriptions for accomplishing this are, first, to disregard market assumptions, and focus instead on systematic assessment of communication skills and competences, and the design of the appropriate technological armature to support them; and secondly, since "we know that reliance on marketplace solutions is undermining this principle... to renew a commitment to universality of information services... as a fundamental right" (ibid, 148).

In the same volume, Robin Mansell has also investigated the global strategic stakes in telecommunications technology innovation, emphasizing the manner in which the neo-liberal agenda in international telecommunications planning and policy "neglects or excludes the interests of major

segments of the user population” (Mansell, 1993, 194). Mansell concludes that Smythe's concept of ‘cultural screens’ is a useful way to conceptualize the role of telecommunications policy in safeguarding social and economic development goals: this includes “border control of the movement of information as well as the technical artefacts that support the marketing and exchange of telecommunication services” (ibid, 193).

Such proposals for the differentiation of new public institutions in the communications sector recall Dryzek's problem of “designing institutions to curb strategic behaviour and to promote communicative rationality” (op. cit.). William Melody notes that institutional change and communication systems have a complex inter-relationship: “Institutions reflect the patterns of interaction between and among individuals acting within or between groups, or through formal organizations. Patterns of interaction may be determined by custom, law, organizational role, or some other guideline for behaviour...”

Changes in the pattern of interaction bring about changes in institutions... New communication systems often introduce fundamental changes in the structure of information flows and the quality of the information communicated.” (Melody, 1993, 65-6)

Quoting Friedrich von Hayek, Melody explains that the communication of knowledge “is the crucial problem for any theory explaining the economic process... or of designing an efficient economic system” (Hayek, 1945, cited in Melody, ibid, 74). He asserts that for this reason communications policy, and planning and design for communication systems, must be understood as central to the diffusion of wealth and the promotion of economic development (ibid, 68).

When information is treated as a market commodity, Melody points out, two kinds of information markets arise: those in which returns are maximized by widespread low-cost replication of information products (for example, marketing information), and those in which “maximum market value is achieved by restricting information to specialized users who value its scarcity” (ibid, 77). The former kinds of information markets tend strongly toward centralization of control and monopoly, due especially to the spread between first-copy and replication costs; “thus”, he says, “competitive forces in many information markets are likely to be rather weak” (ibid, 78). And for the second type of information market, the inherent characteristics of information as a commodity create opportunity costs, quality-control problems and misinformation risks (ibid, 78). Additionally, information commodity markets tend to distort flows of knowledge between socio-economic groups and regions, with wealthier economies dominating in the production of low-cost, widely diffused consumer information for poorer economies, and in the control of scarcer and more valuable information about them (ibid, 79). These are some of the ‘negative externalities’ accruing to the commodification of information and communication processes, and to the development of a ‘network economy’ following the public choice model.

While the new technologies are clearly adopted by many economic actors with rational, opportunistic intentions in the direction of their private goals and preferences, and in competition with other actors, much of their expected gain may be cancelled out in any case, if other actors also become equipped with higher information-processing capabilities. Indeed (as discussed in an early chapter), in light of the attending increases in available information, the spatial and temporal flexibility of the technology, and the ramifying patterns of interconnection among actors conferred by its use, the electronic

network technologies may well make rational calculation more difficult, and lead to rising *uncertainty* about action-outcomes for many users. Increasing the rate of data collection and processing, increases the rate at which that data is fed back, in the form of goal-directed actions, into the environment from which it is drawn -- thereby also transforming that environment and the conduct of actors in it at an accelerating rate.

In this respect the emergence of telematic networks illustrates the inherently reflexive and inter-subjective character of social action, consisting in part in the fact that “the knowledge claims [actors] produce... become revised in a practical sense as they circulate in and out of the environment they describe” (Giddens, 1990, 177). Objective measurements of the use of knowledge and communication resources are at the same time subjectively meaningful inputs into social practises, and these “are constantly examined and reformed in the light of incoming information about those very practises, thus constitutively altering their character” (ibid, 38).

Instrumental strategies of reasoning are confounded by this reflexive character of information processes, as by other interdependencies arising in the use of communication systems. It is well known, for example, that switched networks exhibit large *positive* externalities: inasmuch as communication networks are valuable fundamentally because they connect users to one another, the value of network resources to users is increased by *other* users’ access to the same resources. These positive externalities have implications for the universal access rights to information services for which Mosco calls: these rights are not some species of public charity, but powerful means of supporting overall economic performance.

A fundamental reason electronic networks are inappropriate objects for neo-classical micro-economic analysis (also canvassed earlier), is that transactions within electronic networks are not closely similar to market transactions. This is due to the underlying characteristics of network 'connectivity' and 'addressability': all users of a switched network are physically connected by it, and over time, and have an 'address' through which other users (as well as network operators) can communicate with them (eg telephone numbers in a voice network). To the degree that new software applications stimulate a migration of economic transactions into network environments, this feature of 'addressability' becomes part of a network-driven transformation of the intrinsic characteristics of transactions themselves. The standard economic description of a market transaction is that it consists of the offer and acceptance of an exchange between *anonymous* parties of *standardized* goods, with *no presumption of its recurrence*. The matching description of an addressable network transaction is that it consists of parties *who have significant knowledge of one another* completing an agreement for the exchange of increasingly *differentiated and non-standardized* goods and services as one event in a *continuing sequence* of transactions recurring between them.

The continuity of this relationship, the patterns of interaction that arise between the parties, and the fuller knowledge they acquire of one another's preferences, values and intentions mean that alternative transaction-partners are only imperfectly substitutable, and that repeat transactions within the relationship can be processed at lower cost. It also means that goods and services are more readily customized, and that for both parties, information about new transaction-partners and their relationships become factors in decision-making. This bears no resemblance to the neo-classical model of pure market competition, in which fully substitutable goods and transaction-partners exist

for each anonymous transaction, and prices give complete decision-making information. The concept of a competitive market equilibrium thus loses most or all of its explanatory power as a benchmark against which to measure the welfare implications of communications policy measures; and indeed, may dictate economically deleterious paths of development. A new 'methodologically interactionist' benchmark, one which captures the gains from trade which are dependent on the *communicative* features of network transactions, would uncover a range of new, potentially superior equilibria of economic action, and of policy options leading to them.

Viewing the economy as a process of coordination between economic actors, it becomes apparent that the economic performance of a network is closely tied to its ability to generate and support forms of economic cooperation. What critical theory can contribute to the political economy of electronic networks is a framework for detailed analysis and evaluation of these collective action competences, in terms of their implications for the structure and performance of a network economy, or organizations within it. Collective action competences can be understood as communicative forms of social capital, largely tacit, but becoming visible in the course of (and also as barriers to) technological rationalization. It is crucial, in considering the kind of political and economic spaces we wish to build in a global civil society, to ensure that our shared treasury of social capital is not destroyed by misapprehension of the forms of rationality which sustain the economic process.

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