Carleton University

**Canadian Telehealth Networks and the Mapping of Telehealth's Virtual Regions:
A Critique of Anthony Giddens's Structuration Theory**

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the Faculty of Graduate Studies and Research
in partial fulfillment of
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by

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Abstract

Critical of the technical and policy-oriented literatures on telehealth applications and evaluation methods, this thesis explores the implications of current research that both promotes the growth of telehealth networks and develops assessment and implementation programmes based on precepts borrowed from Anthony Giddens's theory of structuration and other purportedly 'reflexive' theories originating from the post-World War II sociological orthodoxy. I argue that such theories, more so than providing a viable theory of telehealth technology uptake and assessment, in fact contribute to a decidedly dominatory conception of technology-user subjectivity. They also signal a marked inattention on the part of telehealth researchers to the significance of the existing power relations between different telehealth users, these deriving from the distinctively geographical implications of the formation of 'virtual care regions'. The thesis concludes that rather than working to dissolve the materially existing health care hierarchies in the Canadian health care policy context, massified telehealth networks work to delimit the dimensions of accessibility accorded to particular groups in Canadian society, in a manner akin to the making of maps.

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Introduction

In this thesis I provide an interpretive overlay through which to conceptualize the simultaneously real-and-imagined, material and virtual health care geographies now championed in the technical and policy-oriented literatures on telehealth applications.¹ I speculate about what dimensions of improved access to specialized health care and to continuing medical education would be on offer to users were telehealth and telemedicine networks deployed on a sufficiently large scale as to effect the geographical reconfiguration of existing constellations of health care settings in Canada. My argument is two-fold. First, I suggest that that the expanded use of telehealth systems has important but above all geographical implications, both positive and negative, for the delivery of clinical health care and health information to their users, and second, that the prevailing theories of the rationale for interactive and networkable telehealth systems are exemplary carriers of potentially oppressive assumptions related to distinctively *late modern* forms of technology-user subjectivity.

Proceeding from the premise that telehealth applications work to fundamentally alter the political and economic geographies of health care services, I apply an integrative analytic method in assessing the social aspects of telehealth use, with elements drawn mainly from human and economic geography and postmodern and poststructuralist veins of critical social theory, but also from feminist scholarship and political economy perspectives. Theoretical eclecticism of this sort is essential, I suggest, for two main

¹ These rather robust literatures originated for the most part in the United States, coinciding with two distinct waves of academic and clinical interest in telemedicine, the first during the 1970s until the early 1980's, and a second in the 1990s. Thus clinical, technical, organizational and legal issues related to telehealth implementation and its evaluation are comprehensively outlined in Park (1974); Bennett, Rappaport and Skinner (1978); Field (1996); Reid (1996); Bashshur, Sanders and Shannon (1997); and Darkins and Cary (2000).

reasons. First, it reflects my commitment to take seriously the implications of telehealth and telemedicine technology uptake both within the micro-physical settings wherein its use alters human subjectivity and social relationships, and at the comparatively larger spatial scale at which electronic networks are believed to integrate with materially-existing health networks. It is now common to find the ‘virtual geography’ of telehealth networks heralded as a potential democratization of the time-space organization of health care transactions and practices, and above all, as a geography of improved access.

Against that assumption, I want to suggest that telehealth network use, telehealth expertise and its benefits for health care infrastructures and practices, will likely continue to be distributed unevenly in the emergent industrial geography of health care delivery in Canada. Further, I argue that this ‘virtual’ geography of uneven development is given rise to, at least in part, by qualities inhering in the character of networked telehealth applications in particular. What are called for in my analysis, then, are conceptual tools capable of rendering the different effects of electronic communications on human subjectivity visible, while at the same time depicting the multiple ways in which the uptake and dissemination of telehealth systems work in the service of the overarching (if less than systematic) logic of the commodification of health care services in Canada. As Colin Leys (2001: 73) argued in a somewhat different context, this integrative type of approach is not the same thing as seeking a ‘super-cause’, nor is it to denigrate, for example, the influence of the nuanced but deep-running conflicts between professional, management and consumer cultures over the dissemination of medical technologies as a causal factor in telehealth growth. Rather, I want to tease out the connections between

precisely these sorts of inter-cultural conflicts and the emergent forms of technology-user subjectivity and of time-space organization peculiar to the socio-economic system in which they operate. The social relationships specific to capitalist production are what drive the implementation of health informatics systems more broadly, and in looking to comprehend the potential uses and misuses of telehealth networks it is essential to explicate the emergent spaces wherein those relationships are realized.

Second, theoretical eclecticism is justified insofar as I argue that the reflexive relation that binds telehealth system use to its methods and theories of evaluation, *tells* us something about the value assumptions telehealth promoters hold with respect to the purportedly-improved geography of access achieved through the creation of network architectures. The literature promoting telehealth use is now authored mainly within the academic disciplines of health technology assessment (HTA) and health services research (HSR), though more purely clinical perspectives may be authored by telehealth's 'clinical champions' – those telehealth promoters directly involved in the delivery of patient care. Increasingly researchers in the fields of HTA, HSR and telehealth program evaluation more broadly, are integrating concepts and methods from the prevailing orthodoxies of social theory and the social sciences into their studies of the benefits and costs of wider telehealth system use. The recognition of a distinctive geography of cyberspace and of the time-space effects of telehealth system use are of crucial importance to these analyses, and I would concede that several predominant currents in contemporary social theory can prove integral to our understanding of the geographical implications of wider patterns of telehealth network diffusion.

That being entered, we find that the rationale for telehealth use now being presented in this ‘new’ theoretically-oriented literature on telehealth systems and their evaluation, assumes a particularly celebratory view of the relationship between the late modern mode of time-space organization and distinctively late modern forms of technology-user subjectivity. Critical social theory, post-structuralism, feminist theory and political economy approaches are but several potentially fruitful terrains from which to conceptualize the peculiarly contradictory effects of late-modern time-space relations for the status of the subject, concretized in the electronic media transactions made possible with the use of new information and communications technologies (ICTs).

The thesis has four parts. In Part I, I discuss the two main types of clinical telehealth applications that concern me. The first of these is teleconsultation, wherein primary health care providers and their patients consult with distant specialized clinicians using interactive videoconferencing platforms. This type of clinical activity can involve either the real-time and interactive examination of a patient, the use of electronic store-and-forward applications by clinicians to exchange patient data (radiological images, EKG readouts, laboratory test reports), or the ‘telementoring’ provided remotely by a consulting clinician to a referring physician who has encountered a difficult case. The second type of application is non-clinical in its scope – formal continuing medical education (CME) such as course work, and also those uses of telehealth systems that simulate attendance at televised conferences, participation in clinical teaching rounds, and other distance learning activities conducted without direct personal contact between teachers and learners (Milholland, 1997: 2-3). Applications like these are not clinical

aspects of health care delivery by definition, but are irremediably tied to clinical practices insofar as they are felt to generate clinical benefits.² For example, CME applications are commonly cited to improve both the effectiveness of medical care and the rates of provider recruitment and retention in remote communities, since they are said to reduce provider isolation and contribute to the re-skilling process in a full gamut of care delivery settings. In turn, some proponents of telehealth (cf. Lyttle, 1998: 1350) have argued that many health care providers will be willing to relocate to remote places for reason of the promise of telehealth systems being available for their use.

I argue that telehealth applications fundamentally alter the power relationships formed between telehealth users. This happens in such a way as to (re)constitute and (re)amass certain subsuming relations of domination of the interlocuting specialists located in socially and culturally powerful network hubs, above and over those providers and patients inhabiting the geographical and cultural peripheries of the remote nodes. In this vein I should like to emphasize that telemedicine systems are inhered with the capacity to affect the processes of subject-constitution of their users, a phenomenon

² 'Supportive' health informatics applications deployed in administrative functions, for instance EHRs (electronic health records) and statistical applications for clinical measurement and evaluation, will not be treated comprehensively in my work here. The choice to exclusively emphasize the health care reform effects of teleconsultation and telematics-assisted continuing medical education (CME) in this thesis, was a strategic one; these two domains of telehealth activity are those that according to the telehealth literature promise most significantly to reconfigure the geographical distribution of health care providers, and to affect change in the clinical and professional relations among telehealth users and in the formal and informal health care divisions of labour. These are the issues that I argue fundamentally affect the supply of accessible care and the production and reproduction of changing spatial and temporal contexts for care delivery. This argument seems to be consistent with the analysis of the barriers to broader telemedicine diffusion provided by Pelletier-Fleury et. al. (1997: 3), who note that, "[T]he principal problems faced by the diffusion of telemedicine may be considered as costs which are not linked to the technology itself, but which stem from the way such technology restructures health care supply."

whose features the telehealth literature could best capture first if its *auteurs* were armed with theoretical and conceptual devices imported from feminist- and postmodernist-styled critical theories in the social sciences, and second if their analyses incorporated a commitment to the use of geographical metaphors and analogues.

I am considerably less enthused about the theoretical and conceptual innovations now appearing in the telehealth literature describing the technologies' general 'theory of use'. In targeting for criticism the use of Anthony Giddens's theory of structuration as a social ontology of technology uptake and use on the part of telehealth researchers, I argue in Part I that the literature in this field has incorporated particular value assumptions that fail to take account of both the social nature of scientific change and the 'subjectivity inhering in objectivity' that appears blinkered in most research on the evaluation of health informatics applications generally. In more concrete terms, if we take greater dimensions of accessibility to health care services and information as the goal that telehealth implementation is to serve, then we should be wary of legitimating the discursive shift undergone in the telehealth evaluation literature wherein what Belkin (1993) termed a quality of 'epistemological standardization' of variables like accessibility, is supplanted by instrumental standardization in the assessment of how far telehealth network use can work in the service of simply generating 'better' evaluative science. I conclude, for my part, that evaluations of telehealth and telemedicine applications themselves contribute to the production of uneven spatial patterns and temporal rhythms of access in the materially-existing practices and infrastructures of medical care and information delivery. They do so by endorsing the use of telehealth

programs adoptive of a ‘universal approach’ to their deployment, reliant as these are on the assumptions that telehealth use is beneficial in all contexts at all times, and that all users are possessed of identical needs.

The formalized discourses that I examine in Part II – health services research, health technology assessment and program evaluation, are shown to reproduce early modernity-inspired instrumental and rational valuations of telehealth system use, I suggest at their peril. It is certainly the case almost without exception that the technical and policy-oriented telehealth research of which I am speaking has tended to ignore the character of virtual care regions (cf. Cutchin, 2002), as this relates to the problematic effects of telehealth technology uptake into the everyday practices of provider and patient users, and into both traditional and newly-emerging settings of health care service delivery.

As I have said, and against the unquestioning promotion of telehealth benefits extolled in the available literature, it is possible to argue that the integration of telehealth applications into routines of clinical use ought *not* come about simply as a consequence of unbridled curiosity and commercial pressure (Lehoux, Battista and Lance, 2000: 278), but rather as a process integrative of both the assessment of the needs of potential users and of the diverse characteristics of existing, material settings or ‘regions’ of health care delivery. We commonly find that the virtual regions of space formed by telehealth networks define user needs in a way that is dependent upon typified socio-topographical properties of material health care landscapes. Telehealth evaluation should above all be subject to a process of measurement against the needs of users and the characteristics of

the materially-existing geographies of health care and information delivery, if a dimension of appropriateness is to be retained in telehealth program design.

The premises I introduce in Part II are that telehealth applications and their evaluation are bound up in a reflexive relationship with one another, and that the formalized discourses of health technology assessment and health services research establish and reproduce an unduly optimistic discourse of telehealth promotion that enmeshes the values of capitalist market reform with particular technocratic and ‘substantive’ rationalities relating to the need for telehealth in the delivery of health services and information. We find that the ‘second wave’ of interest in telehealth systems may founder upon the inability of their owners to ensure equitable access to health services in the wider context of monopolistic media control, wherein accessibility is allocated solely according to the haphazard logic of internal markets.

I argue that telehealth and telemedicine applications facilitate the production of imagined, ‘virtual’ health care regions alongside the traditional or otherwise ‘real’ settings wherein health care services have been delivered in the past. The extraordinary portability of information has positioned clinical and administrative communications systems as the very bases of the envisaged health care systems for an ever greater number of industrialized societies (cf. Federal/Provincial/Territorial Advisory Committee on Health Infostructure, 2000; 2001). Where telehealth applications are implicated in the built architecture of electronic networks, the use of telehealth works to challenge the existing, material regions of health care (Cutchin, 2002). I argue that it is only with considerable difficulty that virtual regions can be conceived of as truly complementing

the material regions of traditional health networks populated by ‘real’ institutional sites. Where the virtual promises to integrate with the material in a wholesale fashion, the degree of overall system integration is instead threatened, usually at the expense of equitable access for telehealth users.

In Part III, I give account of how the character of the emergent ‘virtual regions’ created by telehealth networks is such that the health care infrastructures and practices that result come to defy the equation of distance in space with distance in time. This I suggest is a distinctively *late modern* technological capacity, insofar as through the use of telehealth systems, distant groups of health care providers and patients are ‘brought together’ over the medium of a telecommunications link - allowing the providers and patients to share information, and for providers to supervise treatment and conduct consultations remotely. Capabilities of this sort are distinctively late modern phenomena because connectivity is achieved across geographical and cultural distances in near-instantaneity, initiated and carried by the transmission of electronic signals. It is important, essential even to this analysis to identify and gain some measure of conceptual purchase over what I regard as the crucial defining attributes inhering in the perceived transition from early, high modernity to late (post?) modernity – the changing relationship between space and time, and the manner in which these twin dimensions of social intercourse are presented in social science literature. Linking into the argument made in Part I, I show that most of the more celebratory accounts of late modern time-space relations emphasize the emancipatory potential of sociability enacted under the conditions of increased time-space distantiation, and to the contrary, I argue that the late

modern age is characterized rather by circumstances of time-space compression.

Clinical health care work is a combinatory of social practices like any other, insofar as it is temporally and spatially organized - achieved and carried on to its timed completion through bodily orientation in space, in a fairly self-evident sense. The organization of health care delivery systems is likewise organized into differentiated care settings and timed transactions. But this does not mean that time and space can be properly conceived of as simple, mutually-exclusive 'containers' wherein social action simply 'happens' (cf. Keith and Pile, 1993). *Those* particular understandings of time and space need be assessed as objects of discourse deriving persistently from a specifically *early* modernist cultural system of philosophical categories that may no longer hold. This is why I believe we have sufficient reason to regard the present age as one involving an intensive round, not of time-space distantiation *per se*, but rather of time-space compression – whereby distantiation is simply a measure of what precisely are the technologically-feasible distances over which communication is possible, rather than the proper object of social scientific interest itself.

Following Cutchin (2002), I demonstrate how the 're-mapping and re-making' of differentiated and localized health care regions is accomplished through innovations in network architecture. From local area networks (LANs) connecting different floors of the same building, to the massified pan-national networks envisaged as aspects of Canada's ICT (information and communications technology) backbone, network architectures enable a trend that stands in fairly sharp relief against the more prominent character of the Canadian economic-geographical landscape of the last three decades.

Following the worldwide profitability squeeze of the early 1970s, the health and social policy discourses prevalent in most industrialized countries have endorsed the retrenchment of the decommodified social programmes that had in the post-World War II period enabled the articulation of ties between social citizenship and a territorially-demarcated entity termed ‘society’ (cf. N. Rose, 1993; 1996). It becomes necessary to assess the potential of network architecture to reinvigorate broad-based societal movements premised upon nationally and locally shared commitments to social justice and to the democratization of the citizenry’s interface with health care institutions. What is more, if it is in fact the case that network technology is essentially revolutionary in character, it is well-nigh time to interrogate precisely how its growth might contribute, if at all, to the dissolution of the institutionalized monopolies and hierarchies featured in Canadian health care delivery systems³.

In Part IV of the thesis, I conclude that the discourses extolling the democratizing potentials of electronic health networks, interoperability and civic connectivity do not constitute an authentic revival of meta-level governance over and within a delimited territorial domain of Canadian ‘society’. Neither do they signal a multitude of voices waxing lyrical for a reform agenda that democratically empowers and integrates localized

³ Of particular interest to those concerned to elaborate the ‘system effects’ of telehealth and telemedicine technology uptake, is the purported need for organizational and architectural integration between localized telehealth projects and larger, electronic network entities – for instance Ontario’s provincially-funded Northern Academic Health Sciences Network, and the Pan-Canadian Health Info-Structure. The telecommunications infrastructure of such networks permit connection with sites anywhere in Canada and around the world. The backbone telecommunications architecture required by telehealth networks is designed to integrate, conceivably seamlessly, with the material health geographies operating at different spatial (regional, provincial, national and international) and temporal (short or long duration connectivity) scales.

care settings into networked and interactive flows of ‘virtual bodies’ as the loci for more effective and less costly health care and information delivery. This is because the real and imagined care regions amassed through telehealth system diffusion, work precisely to delimit the dimensions of access made available in certain spatio-temporal settings and to the telehealth users who inhabit them. Summarily and in consequence, in the concluding remarks of the thesis I suggest that we have little reason to regard telehealth and telemedicine applications as the harbingers of distinctively more accessible models for health care service delivery, either now or in Canada’s immediate future.

Part I: The heresies and potentials of the theory of use behind telehealth

Health care organizations are increasingly using interactive and networkable information and communications technologies in the delivery of both clinical medical care and health information, in a growing number of administrative, clinical, educational and research functions.² Among these technologies are those termed ‘telehealth’ applications - electronic information and telecommunications technologies used to provide and support health care when distance separates the participants (Field, 1996: 16, 27; Lehoux, Battista and Lance, 2000: 277).³ Telephones, computers, interactive video transmissions, direct links to medical instruments, transmitted images and teleconferencing platforms are among the technologies deployed in current telehealth activity both in Canada and elsewhere in the world. Applications are now made available in any number of more-or-less differentiated care sectors – specialized tertiary care, secondary care hospitals of different sizes and locations, primary care at the micro-level of providers’ desktops, and in home- and self-care settings.

² See Cervinkas (1984) for an historical account of the variety of applications and media types experimented with in Canada since telemedicine’s infancy in the 1950s.

³ A point of clarification is necessary here. The US Institute of Medicine definition (in Field, 1996) designated this particular definition as one of *telemedicine* rather than *telehealth*. The latter term has since gained greater acceptance for reason that the term ‘telemedicine’ has tended to be associated exclusively with the curative, biomedicine-based clinical practices of physicians. Nonetheless, several of the authors cited in this work use the term ‘telemedicine’ to connote many of the same clinical applications that I refer to via the use of ‘telehealth’. Cutchin (2002: 24), for example, defines telemedicine as, “... the use of two-way, interactive audio, video and/or computer technology to deliver care to patients and facilitate the exchange of information between specialist and primary care physicians.” Elsewhere, Lehoux et. al (2000: 483) include among ‘telemedicine applications’ all uses involving ‘static and dynamic image transfer’, direct communications with patients or between providers, and ‘formalized group education’. Use of the term ‘telehealth’ is intended to better communicate the roles of different types of providers in clinical care delivery, the proliferation of non-clinical telematics use in health care (cf. Picot, 1998), and to represent the now predominant model for service delivery focused on health maintenance, wellness and disease prevention (cf. American Nurses Association, 2001; Milholland, 1997: 2). In this work I attempt to use the term ‘telehealth’ inasmuch as possible, particularly to reflect that patients, too, are in this sense telehealth ‘users’ when the more encompassing definition is in operation. Exceptions are made wherever I explicitly describe aspects of the clinical and professional practices of physicians using teleconsultation systems, where telemedicine might indeed be the preferred term.

Experts in the areas of health technology assessment and health services research have come to endorse a wider use of telehealth systems, and many have speculated that telehealth network infrastructures can be seamlessly integrated either alongside the institutions and settings wherein health care is provided and paid for through universal public health insurance, or within for-profit health care markets. In the former instance, telehealth applications are promoted as one aspect of a broader reform agenda through which the beleaguered federal Medicare program can again become a unifying force in Canadian national life (Naylor, 2000). In the latter case, telehealth and telemedicine are viewed as significant business growth areas. While the telehealth literature is replete with studies designed to demonstrate telehealth's technical efficacy and geographical viability, these tend to eschew critical examination of the manner in which the subjectivity of users is formed through use of the technology, and how the relations between users may change with the creation of virtual care settings or virtual 'regions'. It is to concerns of that sort that I turn to as the first effect of teleconsultation use, in an effort to demonstrate how teleconsultation and telematics-enabled CME work to create a decidedly uneven geography of access for telehealth system users.

Within the telehealth evaluation literature, Lehoux and her colleagues (1999; 2000; 2002) have published work that readily takes aboard concepts and methods that originated in sociological theory and in the social sciences and humanities more broadly. In several empirical studies they rely explicitly on Anthony Giddens's theory of structuration as foregrounding a 'theory of use behind telehealth' in general (cf. Lehoux, Sicotte and Lacroix, 1999), and behind teleconsultation in particular – its 'rationale', and

the manner in which physicians might be expected to use it in their daily activities.⁶

Terminologically speaking, this ‘theory of use’ can be likened to a ‘rationality’ of use, insofar as its conceptual purchase is extended over both an evaluative and a prescriptive dimension. On the one hand, defined outcomes are correlated to telehealth’s validity – a rationale for ‘why’ system uptake ought happen – and on the other, an account is given of ‘how’ the everyday use of the technologies can – and tends to be – accomplished by users.

Critical of the conventional telehealth evaluation literature that simply assumes a universal clinical need for telehealth applications, these authors argue that empirical telehealth evaluation research might best be undertaken with an appropriate theory of use in operation, because such a theory might account for the recurrence of non-financial human factors that inhibit wider telehealth system utilization, and indicate how new and sustainable routines for telehealth’s integration into clinical practices and organizational infrastructures might be secured. The results of this work indicated that there is in fact a considerable incompatibility between the taken-for-granted rationale behind telehealth use, and physicians ‘conventional’ everyday communications routines, an incompatibility

⁶ These qualitative studies reported results from the authors’ on-going research on the Quebec Inter-Regional Telemedicine Network, a telehealth program implemented initially in September of 1996 in four hospitals. In comparison to many telehealth programs, mainly pilot projects possessed of a limited range of specialty-specific applications, this network was adequately funded to adopt the ‘universal approach’ to remote consultations (Lehoux et. al., 2002: 890), wherein a flexible, multipurpose communications platform was used and all specialists were invited to participate. Such an approach is often the most cost-effective form of telehealth program both financially and organizationally, since the competing alternative is that of implementing and sustaining several specialty-specific teleconsultation programs in regional secondary-care hospitals which might find the outlay costs prohibitive. The approach is identical to that adopted elsewhere in Canada by the teleconsultation programs that I have obtained data on, notwithstanding the reservations I express in this thesis related to the appropriateness of ‘universal’ approaches to telehealth deployment at all times and in all places.

owing to an inattentiveness on the parts of telehealth researchers to the social character of clinical communications – the subject-statuses of users, and the relations of power distributed between them:

Interacting with either more or less knowledgeable peers, following or not following advice, explaining disease processes to patients with different socioeconomic and cultural backgrounds, or training residents implies that both communicating parties adhere (more or less) to a given definition of roles regarding who holds the authority of expertise and knowledge ... Thus, the use of telemedicine would depend on the degree of fit with the tasks ... and on its capacity to harmonise with, or restructure[,] the [actual] communications and social practices of clinicians (Lehoux et. al., 2002: 891).

The implication is that in most clinical settings, the everyday use of teleconsultation can be problematic, and that evaluation studies fail to account for generally low levels of utilization for reasons related to the fact that they are designed as little more than either demonstrations of technical feasibility, or as measurements of the expected benefits of task-specific applications. A lack of attention to the ubiquity of human factors affecting telehealth technology use, it is suggested, may mean that telehealth evaluation and assessments fail to adequately capture the reasons that some applications are both poorly adapted to clinical needs, and fail to survive beyond status as short-term pilot studies.

The authors see considerably greater promise in a theory of telehealth use derived from Giddens' version of structuration theory. On first examination, it is easy to discern why exactly Giddens' sociological writings appeal to and 'fit with' the interpretive aspirations of any self-styled 'theorist of telehealth practice' – Giddens shares with that theorist a concern for the development of theoretical frameworks that take the knowledgeability of human agents as their point of departure. Telehealth users are not

simple, typified ‘wetware’-based extensions of the new media technologies in this formulation; rather, they will actively participate in the development of telehealth applications and their dissemination in a way that is not technologically-determined, but rather *integrative* of the technologies as communicative media enabling of the completion of tasks.⁷

In this usage, then, Giddens’s theory of structuration is presented as a social ontology of technology uptake and use. Telehealth use is conceived of as a set of social practices, possessed of both structural and individual-behavioural properties which both enable and constrain agents’ abilities to integrate use of the technologies into their routine, day-to-day activities. By measuring how compatible this ‘theory of use’ of telehealth is in relation to the actual practices and communication needs of system users, these authors aspire to understand how telehealth systems can be integrated into routinely-carried out, effective and efficient patterns of utilization. Conversely, if during future qualitative studies there is demonstrated an apparent breach between the theory of use and the actual day-to-day practices of health care providers, it would be possible for researchers to speculate as to why teleconsultation has yet to become routine in health care providers’ practices, and more broadly why telehealth technologies have failed to achieve any better than dubious levels of integration into organizational models for health care and information delivery.

⁷ As the authors note: “For the purposes of our study, we conceive of technologies as structures, and of actors as users ... Such an approach posits that technologies do not operate ‘behind the backs’ of users; rather, they are embedded in, and they are extended by[,] the behaviour and knowledge of users. Thus the (re)production process always entails the [germ] of change” (Lehoux, Sicotte and Lacroix, 1999: 32).

Unlike many medical devices, telehealth and telemedicine platforms do not usually provide care, but rather are used to support clinical communications – in the sense that telehealth technologies enable or constrain communications practices, they are structures, in Giddens's terms – and the dimensions of acceptability or satisfaction that users report in relation to telehealth applications would retrospectively identify how enabling and constraining features of the applications had effected the users' communications practices. Positive levels of user satisfaction have been reported for countless telehealth pilot projects, among provider and patient users alike. But enthusiasm for a promising technology should not be equated with recognition of its sustained usefulness to clinical communications, and in the instance of patient satisfaction and acceptability studies, reported levels of acceptance or satisfaction may not overlap with the imperative for appropriate measures of the users' needs. As Lehoux et. al. (2002: 891, note 2) observed, "One may be satisfied with a technology, or accept it, without needing it to accomplish daily tasks", and conversely, "... one may need a technology without being satisfied with how it looks or functions, or without accepting the manner in which it was implemented."

Feasibility studies that promote telehealth use tend to gloss over the analytic importance of the clinical routines whereby both health care clinicians and their patients carry out communicative tasks, both actively adapting to and knowledgeably modifying the communicative context and its medium. It is in proceeding from this premise of the knowledgeability of human agents, that Lehoux and her colleagues are able to incorporate Giddens's conception of structure into their theory behind telehealth use, with

structure taken to exist as the ‘virtual order’ of rules and resources instantiated within the memory traces of knowledgeable agents. For Lehoux, Sicotte and Lacroix (1999), a commentator’s acceptance of Giddens’s terminology implies an escape from both voluntarism and determinism, since it is entered that telehealth technologies are ‘structures’ that enable agentic action as well as placing defined limits upon agents’ capacity to act. Telehealth users are accordingly conceived of as reflexive actors – they observe, monitor, reflect and recursively act upon their own conduct and that of others, continually bringing about changes in social practice as a chronically-reproduced feature of social action. The ‘context-effects’ of locales or settings of interaction are taken to either facilitate or stultify the wider utilization of telehealth applications, insofar as the reproduction of routinized interactions carries with it either the reproduction or transformation of all those structures considered integral to the patterns of what Giddens (cf. 1984) termed social integration. This is an altogether dynamic process, since telehealth users, in the structurationist view, will adapt and modify their routines and the interactive flow (*durée*) of action in order to incorporate new time-space settings for telehealth use.

The operation of a double-hermeneutical process whereby common language and cognitive skills are produced between professional and lay vernaculars, ensures that telehealth technology uptake can be facilitated for providers and patients alike, and forms the basis for a discourse of user-subjectivity wherein health care clinicians and their patients might be expected to incorporate and modify the applications in the *durée* of everyday social practices. This, since Giddens rejects the presumption that social

scientific precepts for conduct ought be modeled after the explanatory laws characteristic of the natural sciences, and because the social scientific endeavour is both reflexive by its nature and subject to its appropriation by social actors. As Lehoux, Sicotte and Lacroix (1999: 32) put it, “Because actors are reflexive, any kind of knowledge produced by sociologists is subject to being appropriated by them and thus, [is] capable of modifying their behaviours.” Giddens’s theory thus permits the study of what the authors term a ‘change in continuity’ – the rendering of a holy union between the ‘two horns of a technological dilemma’. This dilemma, on the one hand, sees technological innovation happen at a breakneck pace, but technology uptake and dissemination lag considerably behind due to the failure of agents to use technologies on a sufficiently wide scale as to improve the effectiveness and efficiency of health care delivery. On the other hand, the potentials for improvements in effectiveness and efficiency can only be identified and adequately researched in virtual isolation from the colonizing visions of proponents of more and better technological solutions – the technologies ought not, as most authors will concede, be deployed ‘in search of actual problems to solve’. To assume that telehealth technology uptake and dissemination will be both seamless and wholesale processes, is to ignore the fact that technology uptake and dissemination is usually partial, gradual, and characterized by dramatic fits-and-starts in patterns of more or less routine use.

Health services research would ideally study the changes in continuity brought about by the use of already-existing technologies – how technologies are used, modified, or rejected – before further technological solutions are proposed. The inverse scenario, as I have said, sees technological solutions unchained from the perceived ‘dead weight’

of comprehensive evaluation techniques, and set free in search of template health care problems and typified user needs to resolve. This is the approach to telehealth implementation and evaluation commonly (if less than explicitly) held to by the designers of telehealth systems, who may assume that users will possess similar or identical preconceptions, practices and preferences. Where in other industrial sectors it is ostensibly possible to analytically tie inputs and resource use directly to their generated outputs and effects, the picture is not so simple in the case of health care delivery. There are few well-established standards for judging and assessing the absolute effectiveness of medical practices, only rough frameworks defining probabilistic ‘best practices’, and these are themselves subject to unending critique and internal reformulation by way of clinical auditing.

Thus, taking changes in continuity as the proper object of telehealth evaluation studies would, in Lehoux and her colleagues’ view, ensure a sustained commitment on the part of telehealth researchers to interpret the use of information and communications technologies as a process of socio-technical change – self-evidently – of a process that is both partly social and partly technical, and partly agentic and partly structural, in the sense foregrounded by Giddens’s theory of structuration. Summarily, it is suggested that for the authors of telehealth evaluation research, a viable theory of technology use would best be informed by a theory of the everyday reproduction of structures, with reproduction taken to mean – according to the structurationist formulation – the mobilization, modification or contestation of the structural properties or sets under examination.

For Giddens, most actions undertaken by knowledgeable agents are aimed at maximizing their opportunity potentials and minimizing the existing constraints on those potentials. For instance, users of technology will aim to raise their self-esteem and reduce their anxiety, and therefore they will draw upon both conscious and unconscious sources of intention, and on individual and collective memory traces, in order to orient their actions toward anxiety-reducing and ability-promoting activities. This orienting process can be accomplished at all three levels of consciousness acknowledged in Giddens's theory (cf. Giddens, 1984) – at the level of the unconscious motivation to sustain ontological security, and at the twin levels of discursive and practical consciousness. Users' anxiety and self-esteem motivate their daily activities, and as Lehoux, Sicotte and Lacroix (1999: 33) describe the process, "This creates a tension that varies across individuals and groups, and explains the extent to which some users will (or will not) experiment with new activities." Ontological security is sustained, in other words, through the basic sense of trust in the facticity and processes of the object-world that individuals achieve through the carrying-on of routines; routines lend a sense of trust to individuals and collectivities alike in consequence of the dimension of predictability featuring so prominently in the reversible *durée* of everyday activity.

The terminological innovations introduced by Giddens in his theory of structuration – the processual concepts of regions and regionalization, routines as devices for the building of trust and the defusing of anxiety over changes in the object world, and the time-space aspects of the structuration of social practices – find both new currency and popular support in theories of use of telehealth applications and technology uptake.

The terms of greatest import are prescriptive, without being accorded the explanatory fixity of ‘causal laws’ of human behaviour. Rather, Giddens is concerned to elaborate an ontology of the subject-matter of sociological work. He at no point in time offered forth structuration theory as a systematized research programme⁸, preferring that, “[I]ts concepts ... be regarded as sensitizing devices, to be used in a selective way in thinking about research questions or interpreting findings.” (Giddens, 1991: 213). Lehoux and her colleagues make precisely such selective use of Giddens’s concepts, exporting three concepts from structuration theory for use in their analyses of the social aspects of teleconsultation: first, the production and reproduction of social structures by actors; second, the double effect (duality) of structures; and third, the role of anxiety and self-esteem in the establishment of routines.

Against this usage of devices from Giddens’s conceptual armory, I will argue firstly that Giddens’s theory is a decidedly deficient account of what a social ontology of telehealth technology use actually looks like. Secondly, I shall speculate that if it were in fact the case that social practices related to medical technology uptake and use ‘unfold’ in the manner in which Giddens would suggest they do, the implications for users of telehealth applications would be of a dominatory and oppressive nature, and that in consequence, an expanded scope for telehealth system use stands as an example of a policy bias for technological change implemented in a way that is *a priori* to the

⁸ In fact, Giddens (1991: 213) has commented that the concepts drawn from structuration theory or from his other writings are best used ‘in a sparing and critical fashion’, as ontological referents expressive of potential objects of social scientific interest. For a developed account of this aspect of Giddens’ work see Cohen, 1989 & 1990.

identification of actual health care problems and user needs. Following Lehoux et. al. (2000: 483), however, I want to emphasize that teleconsultation, and telehealth applications more broadly, fundamentally alter the types of exchanges that can occur both between health care providers and providers and patients.

Lehoux and her colleagues self-professedly reject the notion that a theory of telehealth use that ‘fits’ with existing clinical communications practice, is itself sufficient cause for the adoption of the technology (Lehoux et. al., 2002: 892, note 4); rather, they want to suggest that a theory of use that proves unfounded or otherwise misleading can demonstrate why uneven patterns of utilization are reported, and that this in turn can indicate a need to refocus the deployment of the technology under examination. I want to argue that such a need is already apparent in the case of most telehealth networks, and to present an alternative approach to that of structuration theory with respect to understanding the effects of telehealth use on the accessibility of health care and information. As Birch and Abelson (1993) argue, there is a crucial distinction to be made between access to ‘needed’ services, wherein the character of the services drives the level of access permitted, and the actual opportunities on the part of individuals to use those services. The telehealth technology-user depicted in the structurationist account proves to be a typified and ‘original’ agent, and the structuration theory-inspired theory of telehealth use risks obfuscating the opportunity costs to users deriving from the new, ‘virtual’ spatial settings wherein health care and information are sought. As it exists, this literature reproduces the celebratory view of ‘virtual health care geographies’ as being accessible to all, an account that enunciates only the enabling properties of the

technologies related to the elimination of inefficiencies in terms of time-costs.

In other words, this unitary conception of telehealth users as late modern ‘free agents’, and the conception of distancing technologies as enabling of the formation of liberatory, late modern and virtual spaces for health service delivery, deny the possibility of constraints on user access deriving from the character of subjects’ fixedness in place and the persistence of materially-existing health care practices and infrastructures. Health service delivery, where mediated through telehealth systems and networks applications in particular, I insist, *are not simply the same services delivered via different means* (cf. Park, 1975).⁹ Moreover, I argue that the new forms of care and information delivery are inhered with the capacity to effect the constitution of user’s subjectivity, their lived nexus of place-identity, in decidedly oppressive and dominatory ways, as I have said, and that these effects are potential effects of the deployment of Giddens’s theory of structuration in the formulation of telehealth research programmes as well. My intention is not necessarily to isolate Giddens’s theory in particular as the basis for theories of telehealth use that legitimate the uneven development of telehealth system benefits. Rather, my aim is to suggest that where health services research and health technology assessment studies attempt seriously to incorporate insights and conceptual innovations culled from the social sciences, they ought look elsewhere from that which I regard as a more or less pervasive sociological orthodoxy inclusive of theories such as

⁹ As Mark Poster (1990: 45, emphasis in original) has argued: “Communications at a distance are *in practice* new structures of discourse. Older models of communicative interactions based on face-to-face or print situations are not simply expanded or multiplied by their electronic mediation. The mediation changes the structure, the conditions that underlie symbolic exchange.”

those formulated by Giddens. The vein of social theory represented by the structurationist approach, indeed beyond the writings of Giddens alone, stands among the most potentially dominatory, obfuscating and oppressive programmes envisageable for the social sciences if the goal of critical discourse deconstruction is taken as a sufficiently important aspect of social-scientific knowledge production.

As Lehoux and her colleagues (2002: 894) have conceded, the structuration theory-informed theory behind teleconsultation that they employ, "... cannot sustain [or justify] a full restructuring of work routines in most medical specialties." The decidedly perilous possibility that I want to elaborate, is that policymakers may derive their decisions on telehealth network deployment in Canada precisely from the programmatic bases of discourses centered on the time-space restructuring effects of telehealth applications as these have been preliminarily endorsed in the new telehealth evaluation literature. The danger is that what I have termed the 'time-costs' and 'space-costs' associated with the manner in which telehealth use constructs virtual care regions,¹⁰ will be geographically ill-matched to the existing material practices and infrastructures of

¹⁰ For example, in Lehoux and her colleagues' studies (cf. 2002) the physician respondents were critical of the time taken to discuss single patient cases via the teleconsultation medium – a change in the practical continuity of their work, certainly, given that this is something that they would do only occasionally, if at all, were the referral network of the material care region left intact. In that instance, a patient would be sent directly to the consultant, and while the patient would herein incur the time-space costs of traveling, the time-costs to the referring physician would be minimized. Specialty-specific telehealth programs were seen as useful mainly for reason of the support they could offer to physicians and other providers practicing in truly 'remote regions' – the authors cite interviews with physicians practicing in relatively close proximity to urban-based tertiary care centers (between 75 and 115 km), who did not anticipate the routine use of teleconsultation because they preferred that their patients be seen directly by the consultant (Lehoux et. al., 2002: 894). Changes to the clinical routines in existence were seldom seen as legitimate or useful, save for applications in radiology in which only films were required to reach a consultant. The mere availability of the telehealth medium, may not signal a willingness on the part of users to restructure their materially-existing, everyday clinical routines.

health care and information delivery.

In uncritically promoting telehealth user-subjectivities deriving from a principle of ‘simulated proximity’, the telehealth literature rarely takes account of instances where the practice of being in co-presence with others may be beneficial, essential even, to the achievement of successful clinical communications. Analogously in the epistemic underpinnings of theories such as Giddens’s theory of structuration, as Bauman (1989b: 179) argues:

The most common sociological practice does not seem to endow ‘being with others’ (i.e. being with other humans) with a special status or significance. The others are dissolved in the much more inclusive concepts of the context of action, the actor’s situation, or, generally, the ‘environment’ – those vast territories where the forces which prompt the actor’s choices in a particular direction, or limit the actor’s freedom of choice, are located, and which contain such objectives as attract the actor’s purposeful activity and hence supply motives for the action. The others [are] not credited with subjectivity that could set them apart from other constituents of the ‘action context’. Or, rather, their unique status as human beings is acknowledged, yet hardly ever seen in practice as a circumstance which confronts the actor with a qualitatively distinct task.

The problem that simulated proximity introduces to clinical health care communications, then, is a rational-instrumental orientation on the part of the interlocuting, specialist clinicians in respect of their absent others. Teleconsultation at the professional level supposes an asymmetry of expertise, and for referring physician users, “To request advice is to accept that the interlocutor is more competent in the clinical areas being discussed” (Lehoux, Sicotte and Lacroix, 1999: 36).

This is above all an effect of the morally-distantiating features of electronic communications, in consequence of which, as Bauman (1989b: 179-80) charges:

The [dominant] actor's control over the situation aims at such manipulation of the context of the other's action as would enhance the probability of a specific course of conduct, and hence further reduce the position of the other within the [dominant] actor's horizon to one virtually indistinguishable from the rest of the objects relevant to the success of the action.

Specialist clinicians using telehealth applications are in this way endowed with the capacity to cast the various categories of referring providers into the role of mere ground-level executants, a practice that may be met with considerable resistance. Clinical autonomy is seldom easily-relinquished or transferred, though it remains the case that autonomy is tied closely to the dimensions of both the facility and the success of clinical communications – the 'success' of the transaction is determined by the facility with which relevant clinical information is communicated. Most often in teleconsultation use, but in relation to complex patient cases in particular, a delegation of clinical responsibility is ceded by the remote, referring physician, to the specialist consultant, and this seems related more to the desire on the part of the specialist consultant to achieve autonomy in relation to the generalist than to the desire of either to achieve trust in the content of the clinical information being communicated.

As Lehoux, Sicotte and Lacroix (1999: 36) concede, long periods of sustained interaction between clinicians is required to establish a reliable referral network of consulting specialists or peers upon whom they rely to give advice or to informally offer

medical opinions.¹¹ In conventional clinical communications routines, referral strategies are either ‘nominal’ – when a referring primary care provider asks a specific consultant to see a patient – or ‘undesigned’, wherein a referring physician is linked to a distant on-call physician who is qualified to act as a consultant (Lehoux et. al., 2000: 483, table 1). Confidence, it is suggested in either case, must be mutually-achieved, requiring information-rich communications media; thus, the most reliable criteria to assess who and when to delegate responsibility or autonomy to, has been the experience of repeated face-to-face interactions. Teleconsultation may in fact subject the clinical competence of the referring physician to increased scrutiny. Conversely, the competence of the consulting specialist is assessed beforehand by the referring physician, evaluated according to the criteria of the specialist’s base institution and its prestige, his or her reputation, views held by patients, the scope and ‘currentness’ of the consultant’s knowledge, and retrospectively according to the accuracy or effectiveness of the diagnostic or patient management advice provided.¹²

At the inter-organizational level as well, clinical communications networks can

¹¹ To this effect, Lehoux et. al. (2000: 484) report on their study of inter-professional relationships between remote secondary-care facilities and tertiary care centers: “According to respondents across all medical specialties, trust between a referring physician and a consultant is reciprocally established over time and with repeated casual contacts (often linked to a consultant’s on-site visits) ... Most referring physicians in the users’ group mentioned that their ability to present a given case, gather relevant information, and ask the right questions became more visible through teleconsultation – a situation that carries risks to self-esteem that some wished to avoid.” This twin-dimensioned problem of the increased visibility of the referring physician, and enhanced surveillance capability accorded to the consultant, was compounded by the fact that, “As teleconsultation supports goal-oriented [i.e., rather than casual] discussions and tends to narrow the breadth of exchanges, it is unclear how trustworthy relations could be established by videoconferencing only.” (ibid: 484).

¹² Many telehealth programs attempt to ensure some degree of physicians’ familiarity with consulting clinicians by respecting traditional referral patterns. For those referring physicians without extensive peer networks, the promise of telehealth applications like CME is said to lie in reducing professional isolation.

become quite predictable, but can grow increasingly complex in relation to complicated or difficult patient problems. Medical specialists and referring physicians alike will complete hundreds of verbal or written communications daily, of which many may or may not be effective and which may be burdensome and involve significant time- and space-costs. Depending on the nature of a communicative task, teleconsultation may remain rivaled in its utilization patterns by the more established, everyday communications media of phone, fax, and face-to-face transaction forms (cf. Lehoux et. al., 2000: 483). Quite apart from the time- and space-costs introduced by teleconsultation use in clinical practices, are the potential professional costs incurred where different relationships among providers are associated with different risks to one another's autonomy, and to the success of the clinical communications undertaken.

Lehoux et. al. (2000: 483) identify two main forms of provider relationship observable in the context of clinical consultations – interdependence, wherein clinicians are necessary to each other and are able to collaborate on equal terms; and dependence, wherein one party exercises more power over the relationship as a result of his or her relatively greater repositories of skills, resources or information. Interdependent relationships are usually more predictable – they are inhered with a dimension of foresight whereby a participant can reasonably predict what actions his or her co-participant will take in certain situations. As a basis for comparison, communications undertaken in relationships of dependence are more unpredictable, since in Lehoux et. al.'s (2000: 483) terms, "... risks to self-esteem (vulnerability) may arise, [though] competence – a criterion used in selecting trustworthy partners – can act as a

counterbalance.” In complex clinical cases in particular, then, “... consultants prefer to interact with a referring physician with whom they have had contact and chosen to maintain collaborative links – a strategy that builds on the competence of selected partners in dependent relationships, and introduces consistency in those that are interdependent.” (Lehoux et. al., 2000: 484).

An important respect in which I dissent from this view is in relation to clinicians’ reported desire to secure trustworthy communications with other categories of physicians. I would suggest that specialist consultants choose to maintain certain collaborative links instead of others *not* so much for reasons related to the trustworthiness and competencies of other physicians, but more so for a self-referential concern to retain their autonomy – what Donald Light (1995: 29) suggests to be the ‘most self-anchored end of the control continuum’. Light notes that efforts to retain autonomy do not inhere in professional work so much as they exist as a subset of the wider issue of control – that autonomy became a core aspect of professionalism because the external gaze of the state, management or other interested groups has not traditionally been able to penetrate the privileged preserve of clinical work, for example. Where physicians’ autonomy in the performance of their clinical tasks may be diminished with the development of new techniques for evaluating clinical performance,¹³ the problem of control over the

¹³ Techniques of clinical audit are the most obvious example of these – evaluation tools that allow the comparison of a physician’s practice patterns over time with either those of other physicians in the same geographical jurisdiction, or against standards set by professional associations or specialty-specific clinical research teams. The use of clinical audit, as Light (1995: 30) observed, means that “... the state or other institutional powers can know even more about the quality of work a professional does than the professional him/herself”, and importantly, that “Medical informatics, clinical algorithms and the computer have not only penetrated professional work but also rationalized it.”

substantive content of professional work remains a contentious one. What Light (1995: 31) wants to suggest has occurred in the context of most Western countries, is a shift from organizational arrangements characterized by a sort of ‘protected professionalism’, to arrangements that conform instead to the discipline of a kind of ‘contracted professionalism’. Physicians’ privileges of autonomy and authority more and more often give way to organizational and institutional imperatives for accountability and performance measure, with various categories of managers or ‘clinical champions’ of telehealth, for example, cast in pivotal middle positions.

Specialist clinicians will often retain central roles in the development of protocols within telehealth service delivery systems – protocols that generalist physicians and the rank-and-file of non-physician providers are obliged to follow. The internal differentiation of physicians, insofar as it works to designate choice specialist clinicians as the leaders of the profession, sees the profession of medicine get rationalized and corporatized *through the work of those leaders of the profession*, more so than by the force exerted by interests external to the profession. I argue that the rationalization of health care work does *not* usually imply a diminution in the autonomy of ‘professional medicine’ *per se*; wherever it might or might not actually imply this, is contingent upon the existing dimensions of internal differentiation of physicians into separate classes of the rank-and-file, and managerial and technical elite.

Specialist consultants are the physicians who most commonly constitute the new class of managerial and technical elite, and this development in the division of health care labour may find particularly far-reaching effects where certain ‘clinical champions’ of

telehealth use increasingly begin to dictate the scope of care practices to be performed by lower-status categories of medical internists and generalists, especially those working in remote regions. Lehoux et. al. (2000: 484) report that in their study, where normal consultations and teleconsultations were performed without the patients being present, cardiologists, neurologists and pulmonary medicine specialists frequently complained about the introduction of referring physicians as intermediaries between themselves and the patients, viewing the referring internist as a filter who might not forward all the necessary information to the patient. Respondents' willingness to rely on human intermediaries, whether these were referring physicians, trained telehealth nurses or telehealth technicians, was lacking. Some tertiary care specialists, Lehoux et. al. (2002: 897) observed, "... envisioned the possibility that technological advances (electronic stethoscope, high resolution camera, interface with ICU devices) would one day permit the consultant to be virtually 'at both ends', thus eliminating the referring-physician-intermediary and 'seeing' with one's own eyes what is going on."

The perceived risk of unreliability attenuates us to the fact that different types of patient information, which vary across different medical specialties, are accorded different measures of importance by clinicians. Accordingly, I want to suggest that it is because different types of clinical information are needed across different medical disciplines and sub-disciplines, that teleconsultation is unlikely to be appropriated by all physicians at an even pace, in all health care settings and at all times. A related problem is incurred where a referring physician or other primary care provider is required to know how to perform clinical examinations in almost the exact same way as the consultant

(Lehoux et. al., 2000: 484). This problem is usually less pronounced in cases of consultation or mentoring between specialists of the same discipline, but the prevalent form of teleconsultation continues to involve power relations between dependent parties, with the remote, referring generalist delegating his responsibility, and subsuming his competence, to those of the consulting specialist. Technological limitations persist, even given the emergence of innovations in robotics, that see tactility as the single most important sensory mode to be effectively precluded from clinical communications conducted through telehealth systems.

Conversely, since the utilization of telehealth applications may be both easier and more cost-efficient or profitable when used in certain medical specialties and in certain health care settings, the resultant changes in the organization of clinical communications will develop unevenly, and work to sediment the usual means and patterns of communication in some places in ways that are *more* rather than *less* resistant to change. Lehoux et. al. (2000: 484) noted, for example, that radiologists and some dermatologists reported being more enthused about the value of teleconsultation since their primary source of diagnostic information is contained in disembodied images – what is purported to be ‘objective’ clinical data. For them, the use of teleconsultation would rarely constitute so great a change in either clinical routines or practical continuity, as it might for other specialists like neurologists and cardiologists. It may be that radiologists have been better able to cope with clinical uncertainty in their work generally, given that in the interpretation of ‘object-images’, only a few clinical variables are taken into consideration, and that it is in applications like this that the rationale for teleconsultation

use is most easily-accepted among users.

Consultants like cardiologists and neurologists, as a basis for comparison, tend more often to put clinician-dependent (subjective) information like patient narratives, and clinician- or observer-independent (objective) information, together when gaining a diagnostic picture. The subjective information is more highly-valued in these specialties, but lacks the capacity to be numerically accounted for, measured or indexed; it is associated with an idealized concept of the art of clinical practice, and hence is seldom regarded as a standard of consultants' competency under consideration before teleconsultation. A preference for objective information interpretation, as displayed in the work of the radiologists, for instance, is felt to better demonstrate the consultant's competence insofar as he or she possesses a large reservoir of prior cases against which one new case can be contrasted and classified (Lehoux et. al., 2002: 898).

In turn, I think it significant that only those telehealth applications involving the transmission of non-clinician-dependent information – x-rays and other medical images, electrocardiograms (EKGs), electroencephalograms (EEGs) and laboratory results – implicate specialist clinicians into positions of dominance in relationships of dependence, and are most easily accepted by both those clinicians and the subordinated referring generalists. Such relationships of dependence are an example of the sorts of clinical

communications practices¹⁴ that remain fairly resistant to change, owing to the persistence of the boundaries separating different sets of professional competencies. Irrespective of whether a consulting radiologist, for example, provides services to a fellow specialist in an interdependent manner, or authoritatively to a remote internist dependent on the radiologist's interpretation, the clinical information transmitted remains disembodied, in the final instance, and it is therefore regarded as being 'objective' in its character. Radiologists and other specialists whose communications needs are defined solely by this capability to transmit and receive stored or live-motion medical images, are seldom involved in potential disagreements over patient care strategies, given the 'objective' nature of the clinical information in which they broker, and are therefore rarely cast in an authoritative, subsuming position of dominance over dependent generalists.

Generalists are probably less likely to reject the advice of specialists where the data transmitted are understood as 'objective', and given that teleconsultation changes the existing structure of power relations between secondary and tertiary care centers, it is important to recognize the dimension of delegated responsibility introduced into traditional clinical communications with teleconsultation use. Insofar as remote, referring physicians accept greater responsibility for patient care when applying advice

¹⁴ Primary care providers, especially those practicing in remote regions, are unfailingly implicated in dependent relationships with consultants practicing in the tertiary-care centers or other network hubs. The power relationship involved derives from the hierarchical organization of health care occupations within institutional settings, certainly, but owes also to the uneven distribution of resources and services made available between the subsumed peripheral and the more powerful core sites. I will return to discuss this in Part III of this thesis.

from a distance as opposed to formally transferring the patient to a tertiary care center, they are more likely to establish genuinely collaborative, interdependent relationships with distant consultants in telehealth applications wherein clinical advice takes the form of objective image-interpretations or laboratory test results, to name but two examples.

Consulting clinicians, at the same time, may prefer to receive objective information from referring generalists and internists in lieu of subjective interpretations.¹⁵ In Giddens's terms, consulting specialists will seek to build up their self-esteem through the deployment of their clinical skills, but their anxiety is increased concomitantly where teleconsultation is used, having entered the new possibility of missed or inaccurately-communicated information on the part of the referring provider. It is unsurprising, then, that the question is commonly raised of whether telehealth applications should be restricted in their scope of use to those clinical applications involving the transmission of images and objective data. Because subjective information is perceived as largely observer-dependent, the belief may be that it is therefore not reliable once transmitted through an electronic link.

As Lehoux et. al. (2002: 898) point out, however, the separation-in-practice between observer-dependent/subjective data and observer-independent/objective data may not be significant in any case, since clinicians at both ends of a transaction will

¹⁵ The clinical work of pulmonary medicine specialists, neurologists and cardiologists – those specialties founded on practices of physically examining and verbally questioning the patient – can see a dimension of clinical uncertainty introduced with their integration of teleconsultation. Lehoux et. al. (2002: 898) report that teleconsultation in these specialties increases clinical uncertainty in two main ways; that, “(1) an exhaustive patient examination cannot be performed by the consultant; and (2) [that] focusing on a single question asked by a physician who ‘filters’ the patient’s narratives might prove misleading.”

inevitably interpret the transmitted information at some point in time. The only true distinction lies in whether the subjectivity of transmitted data is either downplayed or celebrated by clinician users, sentiments that can betray their level of overall acceptance of the technology and of the resultant shifting of clinical responsibility. Considering especially that non-physician providers may be expected to assume many duties related to remotely-based tele-care, subordinated care providers practicing in remote regions may justifiably choose to protest against the consideration of physician-centered competencies as the sole criteria for evaluating what are and what are not 'reliable' referral strategies. Alternatively, non-physician providers might choose to refuse clinical responsibility for medical acts that lie beyond their scope of knowledge and skills.

Where the proponents of telehealth growth posit the existence of universal, typified and compliant object-users, they inadvertently fail to take account of the manner in which subjective user preferences and needs limit the forms of information that users are willing to transmit or receive through teleconsultation. As Lehoux et. al. (2002: 898) put it, it seems as though for the physician-user, dealing with his or her own subjectivity is acceptable – essential even – whereas relying on someone else's subjectivity may act as a significant source of clinical uncertainty. Insofar as Lehoux and her colleagues demonstrated a gap between their theory of telehealth use and the actual, lived structuration processes shaping communications routines among consulting neurologists, cardiologists and pulmonary medicine physicians, their analysis can feature prominently in theoretical efforts turn reflexive consideration back onto Giddens's theory of structuration. I argue that the acceptance of Giddens's precepts implies acceptance of

both an ontologically-typified conception of the telehealth technology-user and an externalized conception of objective structures, and thus that we find the human factors shaping telehealth communications routines to be quite ill-rendered in the taken-as-given structurationist account.

The electronic mediation of information, as Poster (1990: 11) has argued, affects the constitution of technology users' subjectivity insofar as it decenters the autonomous, rational subject and re-replaces him or her as an agent with no anchor, no fixed place, no point of perspective: "In electronically mediated communications, subjects now float, suspended between points of objectivity, being constituted and reconstituted in different configurations in relation to the discursive arrangement of the occasion." The subject can seldom access what Giddens would term the enabling properties of the communication structure, and in turn is more often locked into typified routines and embedded along subsuming, universalized and original time-space paths – hardly the liberated subject-position occupied in the time-space nexus that structuration theory and other reflexive sociologies have proclaimed to uncover.

The net effect of telehealth technology uptake is in reality a double-effect, and certain medical specialties and perhaps more crucially certain settings of health care delivery, may not gain as much from the introduction of teleconsultation as will others. Inasmuch as networked telehealth applications collectivize users, so too do they atomize them. For example, in the absence of telehealth evaluation research that takes account of the differentiated needs and preferences of clinician-providers, relatively little critical examination can be directed at the informal processes by which the routine interactions

that they have established may or may not effect their willingness to use telehealth (cf. Lehoux et. al., 2000: 485). By logical extension, critical insights of this sort might be used to problematize aspects of existing clinical, non-telehealth-enabled communications between providers, and between providers and their patients. There is clearly a strong linkage between the study of the social aspects of interactive communications technologies and the study of mass culture, at least insofar as both narratives take as their object of study the relations between the social groups occupying the points of resistance or of acquiescence to dominant cultural forms.

I argue that telehealth applications *can*, with certain qualifications and under particular circumstances, enhance the dimensions of accessibility inhering in specialized health care services and health information delivery. These circumstances are most likely to develop where telehealth research takes adequate account of the materially existing features of health care infrastructures (i.e., traditional referral networks), of the time-space practices, and of the positionalities and concomitant needs of users.¹⁶ For example, the knowledge we gain of the ‘conventional’ communications routines of providers allows us to predict what are reasonably stable referral patterns, dependent as these will

¹⁶ Lehoux et. al. (2002) reached similar conclusions in their studies, arguing that teleconsultation cannot enjoy true ubiquity in clinical settings for reason of its inhering time-space boundedness. They again cite the inequities of time- and space-costs incurred in routine telehealth use when set against conventional communications practices: “[T]he social networks by which ... interconnectivity makes sense and can be operationalised need to be both respected and maintained. Both users and non-user subgroups tended to compare teleconsultation with its fiercest rivals: phone, fax, courier, Internet, taxi, etc. Teleconsultation has not yet acquired the same level of user-friendliness, and its use is generally restricted to designated rooms. Users have to reach the teleconsultation unit, which is symbolically very time-consuming and, in the case of an emergency, not necessarily associated with a ‘clinical move’. The most important drawback of teleconsultation for all medical specialties is the extra time it required for discussing patient cases.” (Lehoux et. al., 2002: 899).

be on the patients that physicians and other providers see, the regions in which they practice, and the dimensions of clinical isolation they face. As a basis for comparison, the structuration theory-inspired account enters decidedly subsuming assumptions about both who the users are, and what needs they will desire to see met.

Truly symmetric relations and what Lehoux and her colleagues termed ‘trustworthy’ peer networks, appear to be achieved only where clinicians trained in the same specialty consult with one another – possible only if one assumes that a sufficient supply and distribution of specialized expertise exists on-site in remote care regions so as to meet patient needs. This would be a scenario wherein patient and provider travel costs to distant tertiary care centers would rarely be incurred in any case, and teleconsultation would rarely, if ever, demonstrate any practicable benefits, in principle at least.

Teleconsultation services, in order to see their use justified, need to integrate with the rest of the practices and infrastructures of clinical information delivery that providers and patients need,¹⁷ regardless of where they are located. Teleconsultation may contribute more significantly to enhanced communications facility *within* or between specialized tertiary care institutions, rather than supporting the clinical practices of health care providers located in outlying regions. Trust, it would seem, is more easily secured where expertise is both symmetrically developed and collaboratively organized; this is a state of affairs seldom achieved in or between the atomized, remote network nodes of cultural

¹⁷ Darkins and Cary (2000: 84-5) cite an important example of this limitation on teleconsultation’s usefulness: “[I]f a teleradiology program establishes a mammography service to screen women in remote rural areas for breast cancer, it is not sufficient just to perform the investigation and then report back on the mammogram. The telehealth program must also ensure [that] women have access to counseling and biopsy if the results are abnormal.”

and geographical peripheries. Remote providers face challenges to the completion of their clinical practices related to the uneven development of resources and patient management options, certainly, but also to the uneven development of expertise in the use of telehealth systems themselves. This is a problem that remains, for all practical purposes, unseen in massified, urban-based tertiary care institutions. Such context-features of uncertainty, endemic in remote care delivery systems, might be offset however by the establishment of formal agreements around the sharing of clinical responsibility.

The manner in which clinical responsibilities are defined is closely connected to the extent to which providers and patients will accept telehealth technologies, a factor in the potential growth of telehealth activity that requires material, rather than solely virtual, coordination and collaborative efforts between diverse institutions. It is suggested that telehealth programs providing CME may play a role in the development of inter-provider trust and in the establishment of accepted protocols for the sharing of clinical responsibility (cf. Lehoux et. al., 2000: 485; Lehoux et. al., 2002: 899, note 17). What remains unclear is how improved coordination of clinical or educational services between core and remote settings, could affect the uneven distribution of relations of clinical dependence and independence, or lessen the time-costs incurred with lengthy discussions of patient cases with consultants.

Thus, while I argue that CME and other educational services provided over telehealth links, such as simulated attendance at conferences, meetings, and clinical rounds in tertiary care centers do *not* work to effect existing distributions of providers,

the decision-support and isolation-reducing features of alternative technologies to telehealth might be able to do so. Respondents in Lehoux et. al's (2002: 899, note 17) studies suggested that e-mail based discussion groups might prove superior to teleconsultation or telementoring with respect to obtaining needed advice on a precise clinical question. Without instituting significant time- and space-costs for providers and health care institutions, stand-alone technologies like web-based educational kits and CD-ROMs were suggested to hold the advantage of being available for use virtually anytime and anyplace – from home, for example – without the assistance of telehealth nurses or technicians. The financial costs related to the physical outlay of telehealth platforms and telehealth rooms in institutions, would be eliminated in this manner as well.

The reduction or elimination of time-costs, space-costs, and financial costs may prove impossible in the implementation of marketized telehealth, but not so in case of alternative, not-for-profit media types. The potential integration of telehealth services into clinical practice is a goal ill-served by the erection of financial and time-space barriers. As Lehoux et. al. (2002: 899, note 18) pointed out, fee-for-service provider remuneration schemes are incompatible with lengthy discussions of patient cases, and telehealth applications in institutional settings demand a finely-tuned and foolproof coordination of 'electronic appointments' in virtual time-space. It is the case that primary health care providers value time spent providing services over that spent scheduling teleconsultation sessions or extensively discussing academic teaching cases with specialist consultants who, in most cases, have comparatively fewer demands on their time. In turn, I argue in concert with Lehoux and her colleagues that in order for

teleconsultation to become routine in the clinical practices of allied primary care providers, remote generalists or internists, it should first be implemented into the everyday practices of medical specialists. Thereafter, remote physicians and other providers would have established networks of clinical support available at established sites and at mutually-convenient times. Only in this manner could a more 'even' uptake of teleconsultation applications be established, and different medical specialties could envisageably use teleconsultation to establish new, sustainable routines in the virtual telecare regions.

Concomitantly, however, I suggest that Giddens's conceptions of structure, the duality of structure, and routines are not in fact the most analytically relevant of devices capable of accounting for the present patterns and pace of telehealth growth, the expectations attached to its use and the low levels of utilization demonstrated across most telehealth programs. In fact, the structurationist-inspired account may identify no significant problem with an uneven uptake of telehealth technology. There are therefore three central concepts culled from Giddens's exposition of structuration theory that I see as indeed *more* integral both to the project of elaborating what the *existing* social ontology of technology uptake actually *is*, and to a specific, theoretically-informed account of the processes whereby the temporo-spatial reorganization of health care delivery is now being effected through creation of telehealth network infrastructures. These are: regionalization; routinization; and, finally, the 'double hermeneutic'.

I do accept that Giddens's conceptions of structure and the duality of structure are the twin centerpieces of his social theory; however, a short exposition of the strengths

and weaknesses of those conceptual devices will, I think, demonstrate the manner in which Giddens devises strategic conceptions of structure and the duality of structure that colour, at worst determinately, his usage of the terms regionalization, routinization and the circuitry of knowledge production in such a way as to inadvertently posit a universal, typified and subsuming conception of the human agent. Telehealth users, if properly conceived of as Giddens' universal and typified agents, cannot adapt and modify telehealth systems to meet their health care and information delivery needs in the virtual care regions of cyberspace. Rather, they can aspire only to populate the subsumed, emergent geography of commodified space/marketized nature characteristic of material health care regions that are, for all practicable purposes, mapped for them in a technologically-driven fashion.

I seek to demonstrate that even where health services research and health technology assessment studies of telehealth systems desire keenly to take on-board interpretive traditions derived from social theory, in appropriating the ontological emphasis of Giddens's theory of structuration, its concepts and assumptions, telehealth research risks reproducing an account whereby the health care needs of distinctively late modern subjects – telehealth users – see their lived nexus of place-identity subsumed beneath an industrial geography of uneven development and diminished – rather than enhanced – access to adequate standards of effective health care and health information. I turn now in Part II to the main implications for late modern subjectivity derived from Giddens's conceptions of structure, the duality of structures and the processes of structuration.

Part II: Structuration theory's typified time-space, determinate structure and original agents

The nature of the relationship between human agency and social structure has been both an endemic and defining problematic in the history of the social sciences and in sociology in particular. Different theoretical traditions and approaches have formulated the problem in ways signalling some or another measure of slippage towards the privileging of either structure or action, a tendency well captured by Margaret Archer (1990a: 73):

On the one hand structuralist Marxism and normative functionalism virtually snuffed out agency: the acting subject became increasingly lifeless, while the structural or cultural components enjoyed a life of their own, self-propelling or self-maintaining. On the other hand interpretive sociology busily banished the structural to the realm of objectification and facticity; human agency became sovereign, while social structure was reduced to supine plasticity because of its constructed nature.

Against those once-compelling currents, a number of more distinctively reflexive sociologies were devised in post-Second World War academic circles. These sought to recast the society-individual/structure-agency antinomies into a single, quasi-dialectical conception of the reciprocal constitution of social interdependencies through the complex interplay of agency with structure, the individual with society. From this view, individualized social actions shaped by the presence of wider societal structures, are simultaneously the conditions for those structures' reproduction. This synthesizing effort in sociological theory capitalized on sympathies for the task at hand in the discourses of social theory more broadly, in particular those inspired by the Frankfurt thinkers to defend agency, the right to difference and private autonomies from the impersonal, bureaucratic and colonizing vision of the totalitarian state. Updated theories of agency

and social action, argued the ‘new’ social science orthodoxy, were necessary insofar as arguments about the democratic potential of the public domain would need to take aboard concerns for the possibility of systemic solutions to private troubles.

Anthony Giddens was among the leading exponents of a newly-exposed vein of critical theory. In formulating his theory of structuration, Giddens was self-professedly establishing a critical reconstruction of the orthodoxy of sociological theory,¹⁸ installing in its place what he termed a hermeneutically-informed social theory cognizant of the imperative for a decentring of the subject, certainly, but in a way quite different from that taken up within the structuralist and poststructuralist paradigms of the sociological mainstream. Rather, Giddens’s twin aims were to recover the subject as a ‘reasoning, acting being’ (Bauman, 1989a: 42), and to locate *social practices* at the very root of the constitution of both the subject and the social object (cf. Giddens, 1976: 110-1). In the place of a good number of dualisms reflecting the vacillation between objectivism and subjectivism in the social sciences, Giddens instead substituted certain ‘dualities’. He

¹⁸ It is my sense that, while Giddens may not have entirely successfully effected a thoroughgoing rewriting of sociological history, it has in the past three decades become increasingly difficult to give an account of the history of sociological thought *without* according due mention to Giddens’s treatments of the discipline’s core issues and subjects of debate. More so than having elaborated a distinctive grand theory of the object world of sociological study, Giddens to my mind seems to have at least demarcated the discursive parameters within which the recurring terms and concepts of sociological relevance are usually debated. Bauman (1989a: 36) takes note, for instance, of the importance of Giddens’s elaboration of the duality of structure; that, “[T]here is no doubt ... that Giddens’s project lies at the very heart of sociology as a ‘discursive formation’ ... Indeed, it was the incessant effort to solve the puzzle of purposeful action of knowledgeable actors producing ‘unintended consequences’, or of the evident incapacity of ‘free actors’ to exercise their freedom in the course of end-oriented action, or of the stubborn tendency of the multitude of individual actions to sediment into a reality independent of these actions and in its turn making the action dependent on itself which, for all intents and purposes, constituted the history of sociology ... [T]he history of sociology thus ... has been a graveyard of failed attempts to overcome theoretically the practical contradiction ... between people making history (society, system, structure, etc.) and history (society, system, structure, etc.) making people.”

employed the concept of ‘structuration’ to designate a processual duality of structure and agency as mutually constitutive aspects of social systems, thereby, in Bauman’s (1989a: 42) terms, “... avoiding the traps of an ‘objectivist’ social theory (‘in which human agency appears only as the determined outcome of social causes’) and staving off the threat of ‘sliding into subjectivism’ – the fate of which the initial over-eager reactions to the collapse of Parsons’s dominion were not careful enough to escape.”

Giddens designated structure, the duality of structure, and system as the core concepts of the theory of structuration. In so doing, he aimed to analytically disembed the concept of ‘structure’ from its representation in the natural-scientific tradition of sociology and in functionalism. Likewise, he sought to extricate the notion of the human agent as a modular sort of ‘cultural dope’ from the sociological discourse (Clark, 1990), and to instead emphasize the conception of structure as a ‘virtual order’ of organized rules and resources. Structure in this formulation is recursively drawn upon by knowledgeable human *agents*, and thereby works to both instantiate and reproduce structures – structure in the plural, used here to designate all those “... relations of transformation and mediation which are the ‘circuit switches’ underlying conditions of system reproduction” (Giddens, 1984: 24) - as aspects of social practice. Structure was thus seen by Giddens to govern social action while remaining analytically ‘outside’ of it – a virtual order of relations that are ‘out of time and space’ while achieving ontic status in the knowledgeable activities of the situated human subjects who reproduce them as aspects of the structural properties of social systems.

It is in this sense that Giddens authors an impressive reorientation of previously

taken-for-granted sociological sensibilities, by devising a definition of structures as both constraining *and* enabling of *human agency*, with social action being what he places at the centre of social theory's plate, as the ontological preoccupation of social scientific accounts of the character of social practices produced across the twin dimensions of time-space. Day-to-day life, then, should not here be viewed so much as the foundation of social life but rather as the unfolding of all those reified interconnections through which what Giddens (1976; 1984) termed social integration and system integration are achieved.

Since structures in this view are all those rules and resources constitutive of the structural properties reproduced in the day-to-day flow of social action, and exist, if anywhere, only in the minds of knowledgeable agents, it makes little sense to criticize Giddens for naïvely according privilege to knowledgeable human agents over and above discrete and overarching structural constraints *given Giddens's particular conception of structure* – above all, as a duality incorporative of agency as both its precondition and medium of instantiation and (re)production. Nonetheless, Giddens's work on structuration theory does in consequence tend to disembed an historically informed concept of human agency and install in its place an altogether generic and abstracted concept of agency based on a mish-mash combinatory of what typified actors implicitly or explicitly know (cf. Boyne, 1991). The very beginning premise of the duality of structure, according to Archer (1990a: 77), "... oscillates between the two divergent images it bestrides, between [1] the hyperactivity of agency, whose corollary is the innate volatility of society; and [2] the rigid coherence of structural properties associated with the essential recursiveness of social life."

I suggest that structuration theory, in Giddens's formulation, gravitates towards status as an analytic privileging of Archer's former image (1), but without specifying precisely what the 'innate volatility' of society might be beyond actors' capability for recursive monitoring and modification of their actions as an aspect of the reproduction of structural properties. Giddens's agents achieve *not* genuine universal transcendence or 'original status', nor necessarily do they achieve perpetual imminence (i.e., in their subjective specificity), but are accorded instead a rather peculiar sort of transcendence in their immanency, if you will – they appear to lack recourse to a shared collective past, and the future they possess is perhaps too fortuitously given account of by Giddens as an 'open field' of possibilities. That in itself stands as the object-original nature of Giddens's agent.

Boyne (1991: 57-8) captures the main contours of Giddens's descent into voluntarism in four separate criticisms; first, that societies are not in any case constituted of abstract agents, that they are instead composed of actual human individuals possessed of historically-determined sets of characteristics. Second, that social theories deriving from an abstract notion of human agency may effectively 'block off' the realistic appraisal of possible social futures by diminishing the relevance of structural constraints at either the level of the society or at that of the individual personality. Third, that:

[T]he assertion that human agents knowledgably, but not intentionally, produce and maintain social structures can lead to an assertion of the power and ability of human agents to shape these structures and thereby [to] exercise control over their future; this hidden utopianism can function to preserve existing structures of society, since actual involvement with failed projects of structural change will serve to confirm the personal inadequacies of the would-be agents of change, with the result that social change is confirmed as

the responsibility of the other, or even as beyond rational control, and societies are thus fated to remain as they are or to change as they will without hope for the repair of all their tragic imperfections.
(Boyne, 1991: 58)

Fourth, and more generally in relation to the character of structuration theory as I will suggest later, the fundamental point of departure for social theory is taken to be that of abstract human agency, a convention that as Boyne (1991: 58) describes it, is in “... perfect accord with the demands of late capitalism for total adaptability and direct multifunctionality on the part of its social subjects.”

Even if we take as given that ‘structure’ in the singular describes the complex assemblages of rules and resources recursively drawn upon by actors in the reproduction of social practices, and in turn that these same rules and resources exist as the means of system reproduction, it nonetheless follows that there is a distinction between social reproduction and system reproduction deriving from what I term their different scales of instantiation. Separately from being integral to abstracted theoretical consideration of how social systems are structured, Giddens sees the differentiation of spatial scales and the opposition between ‘micro’ and ‘macro’ contexts, as concepts illustrating how social interactions unfolding in contexts of human co-presence – those effecting what is termed ‘social integration’ – are structurally implicated in the process of time-space distantiation – in other words in defining how social systems are able to span large sectors of time-space, or what Giddens styles as ‘system integration’.

In a related way, Giddens wants the caveat entered that, “The relation of social to system integration cannot be grasped on a purely abstract level; the theory of urbanism is essential to it[, f]or it is only with the advent of cities – and, in modern times, with the

urbanism of the ‘created environment’ – that a significant development of system integration becomes possible.” (Giddens, 1984: xxvi) The implication of this aspect of his argument, is that it is only in the contemporary, reflexive age of modernity that system integration becomes a viable human *project*, more or less intentioned and subject to administrative oversight. This state of affairs is juxtaposed to that in pre-modern societies, wherein there are comparatively few prospects for the achievement of ‘integration’ or ‘distantiation’ beyond the scale of the comparatively simpler co-present proximity that characterizes ‘social integration’, to again employ Giddens’s specific term. It is here – where Giddens’s writings on political sociology, the concretizing of knowledgeability into academic disciplines, and structuration theory all transect one another – that he takes up his concern with the time-space orderings of human sociability and social conduct.

Giddens regards spatiality and temporality as elemental common grounds for analysis in the social sciences in general, and as the objects-proper of empirical work in sociology, history and geography in particular. This is because of the primacy that Giddens professes to be according to time-space boundaries as aspects of the interaction contexts and social systems under examination in his theory of structuration. For example, he notes that the ‘positioning’ of the human body in common contexts of time-space is fundamental to the constitutive practices of social life, in four separate but interrelated ways (Giddens, 1984: xxiv-v):

Every individual is at once [1] positioned in the flow of day-to-day life; [2] in the life-span which is the duration of his or her existence; and [3] in the duration of ‘institutional time’, the ‘supra-individual’ structuration of social institutions. Finally, [4] each person is

positioned, in a 'multiple' way, within social relations conferred by specific social identities ...

Giddens here ambivalently navigates a considerably wide conceptual gulf between a definition of 'position as positioning' and 'position' as a typification of functional agentic roles, but I think more the more important implication of the schema is the notion that social encounters and the very contexts of interaction themselves are temporally and spatially 'positioned', not simply their component actors. It was in this context that Giddens found the methods and technique of time-geography to be of significant usefulness to the 'mapping' of the micro-physics of individuals' movements in time-space, both to and from different contexts of interaction.¹⁹

In drawing attention also to the manner in which the 'seriality' of encounters – their enmeshment into the flow of social interaction – is sustained through actors' achievement of reflexivity, Giddens can justify the move to argue that the temporal and spatial 'situatedness' of social interaction is not of any real empirical interest unless it holds that actors maintain the successful recursive monitoring of their actions and anticipate the responses of others, in such a way as to first mediate their activities, and second to generate the time/space-situated, common frames of meaning necessary to sustain communicative action.

As situated interactions ('encounters') lend their effects to processes of social integration, so in Giddens's formulation will the latter become institutionally 'linked-in' to the wider processes of system integration – this owing to the duality of structure. To

¹⁹ For the basic theoretical assumptions and precepts behind 'time-geographic notation', see Hägerstrand, (1970).

wit, he writes that, “[T]he substantive nature of the duality of structure is to be [empirically] ‘charted’ in terms of the forms of institutional articulation whereby contexts of interaction are co-ordinated within more embracing social systems” (Giddens, 1984: 334). Co-present encounters, as well as the system integrations (or fragmentations, for that matter) that we see enacted in ‘intersocietal systems’ and along the ‘time-space edges’ at which different societies come into contact in time or space, are characteristically ‘regionalized’, meaning that certain more or less stable patterns of conduct are rendered appropriate at or within specific time-space ‘locales’, thus carrying the connotations of the structuration of social conduct over time-space. Giddens employs this definition of what a ‘region’ is in order to juxtapose it against that usage commonly found in academic geography, wherein ‘regional geography’ has sought to describe the study of different physically demarcated areas on a map. Giddens (1984: 365) bemoans the lack of attention afforded to the concept of regionalization in sociology in particular; as adopted within the sociological orthodoxy, regionalization has been a problem associated almost exclusively with urban sociology. It has been used primarily with reference to studies of neighbourhoods (1984: 365), and perhaps as a consequence of this second tendency, the subdiscipline of ‘regional science’ in geography actually lent its form to the concretization of ‘urban sociology’ as a distinctive ‘field’ partitioned-off from academic sociology in general.

Against that tradition, Giddens (1984: 365) desired to establish a very broad usage of the term ‘regionalization’, without treating it as in any way equivalent to that of ‘regional science’. Ideally, rather than seeing sociologists elaborate a distinctive field of

‘urban-sociological’ concerns, Giddens (ibid: 119) wrote that, “Regionalization should be understood not merely as localization in space but as referring to the zoning of time-space in relation to routinized social practices”, and that “The organization of social time-space refers to the forms of regionalization within (and across) societies in terms of which the time-space paths of daily life are constituted.” (ibid: 260). Thus Giddens’s concern with the ‘situated nature of social interaction’, as it is related to the reproduction of the structural features of social systems – with the study of enabling and constraining context effects as constitutive features of interaction, in other words – made his engagement with the more expressly-empirical work of time-geographers such as Hägerstrand, Janelle and Thrift seem a natural fit.

For his own part, Giddens (1984: xxv) justified his sharing of the concern for a complexly-developed understanding of regionalization with the time-geographers:

Time-geography ... has as its principal concern the location of individuals in time-space but gives particular attention to constraints over activity deriving from physical properties of the body and of environments in which agents move.

The ‘regionalization’ of locales, for Giddens, again conceived of as the demarcation of differentiated contexts wherein particular activities of individuals are to be coordinated, is a skilled accomplishment of human agents achieved via the situated nature of social interaction – from the level of co-present dyadic encounters, all the way up to the inheritance of cultural traditions from the past or instances of international conflict at the level of time-space edges or intersocietal systems. In a very real sense, time-space ‘gets’ regionalized with the routine movement of individuals’ life paths through those settings of interaction that are spatially demarcated for different activities – a kind of ‘normative

zoning'. Summarily, we should conclude that regionalization for Giddens involves a process akin to the 'mapping' of locales for coordinated types of activities, and thus that locales themselves are not just abstracted places but literally the concretized settings of interaction.

The serial character of encounters is thus taken to both influence and be influenced by the regionalization of locales for purposive conduct of particular types. At the levels of both social and system integration, Giddens argues, regionalized locales are used tacitly but indeed chronically by social agents in the enactment of communicative action. Regionalized locales or settings of interaction are thus closely implicated with the notion of routinization – as Giddens (1984: xxv) puts it, with, "... the substantially 'given' character of the physical *milieux* of day-to-day life [that] interlaces with routine and is deeply influential in the contours of institutional reproduction." In this view, routines are the main carriers of the duality of structure through the interactive 'flows' of social life.

My understanding of the social aspects of information and communications technologies in health care, is not altogether incompatible with an implicit acceptance of certain of these conceptions of Giddens's – for instance I concede that the time-space orderings of co-present encounters are qualitatively different from the orderings of interactions established with 'absent others', and that the 'situatedness' often required of information-intensive interactive contexts (cf. Boden and Molotch, 1994) is disrupted with the implementation of distancing-technology use where interjected into the routine social practices of actors. However, I also insist that if it is in fact the case that

the enactment of routines at the hands of knowledgeable agents sustains for them the sense of ontological security, it stands to reason that this basic system of trust is displaced through the formation of interaction contexts based upon the principle of absence rather than of presence.²⁰

Lehoux and her colleagues, in employing Giddens's theory of structuration as a social ontology of telehealth use, emphasize how actors might be expected to recursively monitor and reflexively influence or control the newly-created contexts of distanced interaction, so as to establish new routines that integrate telehealth applications into their everyday practices. Against that usage, I would be tempted to suggest that Giddens's apparent blinkering of the unequal or otherwise differentiated transformative capacities of human agents,²¹ allows him to posit no better than determinate, modular and universalizing contexts of interaction, so abstracted and typified as to represent an account of agency without the agent. This practice habitually finds Giddens enunciating his agents' active role in the constitution of regionalized locales, contexts, or settings in a way that glosses over the possibility of dislocated and multiple subjectivities that may *not* be endowed with enhanced communicative capacities through the telecommunications medium.

A crucial aspect of my argument is that time-space *compression* works to

²⁰ This would seem consistent with the findings of Carey's and Russell's (1976) research on their experiences with Project U-6, the multipurpose telemedicine system experimented with at Kashechewan, Ontario using the CTS/Hermes communications satellite. In one study the authors identified a correlation between the level of user perceptions related to the acceptability of teleconsultation and the simple count of human sensory media provided for – voice, visual acuity, tactility and so on.

²¹ Giddens's analyses are for instance blind to the centrality of gender to the experience of communicative action (see Murgtroyd, 1989).

produce, rather than eliminate, cultural and geographic dimensions of 'distance'. An individual's 'sense of place' can be atomizing as well as integrative, and the feeling of powerlessness is an everyday fact of many of the occupied positionalities that agents 'take up', if we follow the implications of Giddens's argument that he tends to leave untouched analytically. While it is the case that human agency impels historical change, that the latter 'takes place', and while it is also true conversely that 'place can *be taken*', this view tends to portray the relation of place to identity as something that is *a priori* 'given' rather than actively produced as 'positionality'. Place can be represented as a site of radical difference, lending form to subversive movements of agents over time, though explicitly at least, Giddens (1984: 367) seems loath to concede as much; social life for him remains 'structurated' more as a continuity than as a rupture, and he only allows that:

A sense of place seems of major importance in the sustaining of ontological security precisely because it provides a psychological tie between the biography of the individual and the locales that are the settings of the time-space paths through which the individual moves. Feelings of identification with larger locales – regions, nations, etc. – seem distinguishable from those bred and reinforced by the localized contexts of day-to-day life. The latter are probably much more important in respect of the reproduction of large-scale institutional continuities than the former.

The positionality peculiar to a specific place or locale in this scheme seems largely irrelevant to the reproduction of large-scale institutional forms. This aspect of the constitution of social life is for Giddens achieved through the political socialization of assumed autonomous and rational subjects acting in localized interaction contexts that preserve and reproduce the existing power arrangements between agents.

From this standpoint, while it appears to be Giddens's, the intractable political

structuration of society leaves little authentic opportunity for agentic contestation. Most agents can achieve a 'sense of place' at the spatial scale of the localized contexts of day-to-day life and in regions of co-present interaction; comparatively fewer can aspire to identify with the 'given' place-identities we find 'structured' for them by absent political authorities who act at the level of significantly larger-scale locales such as a cities, regions or nations. Yet I think we can reasonably conclude that Giddens would maintain that this is at once an enabling as well as a constraining relation.

Objective structural constraints and their twin structural enablements appear to exist in structuration theory mainly in a conceptual parallelism to the dialectic of absence and presence, respectively, as these latter two dimensions of existence are actively produced via the media of different interaction contexts. It would appear that interaction contexts can be characterized by more or fewer properties of presencing and thus of enablement, or of absencing and hence of constraint. Crucial to Giddens's analysis is the precept that modern capitalist societies are characterized by newly-prevalent modes of technologically-mediated sociability wherein absence need not constrain the possibilities of communication or of transformative action. If it is in fact the case that the objective value that Giddens attaches to the duality of constraint/enablement is tied in with that which he tethers to that of the presence/absence duality, then for our purposes we can regard the duality of constraint/enablement to be Giddens's choice of unit of measure for

the ‘integrative dimension’ seen to inhere in a particular encounter.²² To this effect, he argues, for example, that “In institutional analysis it is permissible to establish regularized connections which are set out in an ‘impersonal manner’” (Giddens, 1984: 177-8). It is only in this sense that Giddens sees any such ‘regularized connections’ as unfolding beyond the control of knowledgeable agents while simultaneously existing as structural properties possessed of an ‘objective existence’ – the regularized patterns are contextual typifications, most aptly put, not structural ‘explanations’. Giddens sees the principle of reflexivity as the crucial characteristic of the dimensions of structuration typical to interaction contexts, meaning that the reflexive monitoring of conduct inheres in the objective ‘facticity’ which the structural properties of social systems display, rather than standing outside of it.

The situatedness of an interaction context is thus taken to be the very condition of existence for those institutional forms ordered across time-space. Proceeding from this premise, Giddens (1984: 179-81) can insist that in the theory of structuration:

[A]ll explanations will involve at least implicit reference both to the purposive, reasoning behaviour of agents and to its intersections with constraining and enabling features of the social and material contexts of that behaviour ... Structural constraint is not expressed in terms of the implacable causal forms which structural sociologists have in mind when they emphasize so strongly the association of ‘structure’ with ‘constraint’ ... The only moving objects in human social

²² Structural principles, possessed as they are of twin aspects of constraint and enablement, coordinate the dimensions of presence and absence, respectively, that bind encounters between agents into the processes of social integration and in turn into the binding and stretching of social systems over time-space, this according to Giddens’s formulation. In turn, we find that an understanding of the process of time-space distanciation lends its form to the minimalist sense in which it makes sense to speak of the reproduction of ‘social order’ in structuration theory.

relations are individual agents, who employ resources to make things happen, intentionally or otherwise.

There do exist certain ‘circuits of reproduction’²³ that Giddens will allow, analogous in their form to homeostatic feedback loops implicated in the ‘stretching out’ of institutions across space and time; that being entered, these circuits should not be properly regarded as simply the ‘sources of social stability’ in a functionalist sense. Rather, analyzing circuits of reproduction for Giddens is an analytical move, intended “... to indicate some of the main forms of change involved in the transition from one type of societal totality to another.” (Giddens, 1984: 190-1). We find that much of Giddens’s effort to elaborate structuration theory as a method of institutional analysis, actually ceases to treat time-space as the locus of the complex interplay between the duality of presence-absence and the duality of structure, and that institutional analysis in structuration theory is instead geared almost exclusively towards the task of generating a historical periodization of societal totalities of particular types.

Relatedly, I should like to take issue with the use of the term ‘locales’, that Giddens employs with prejudice, against that of ‘places’ as the time-space settings of social action. In so doing, Giddens tends to obfuscate the considerably more dynamic

²³ Giddens (1984: 192-3) clarifies: “By circuits of reproduction I mean fairly defined ‘tracks’ of processes which feed back to their source, whether or not such feedback is reflexively monitored by agents in specific social positions ... Reproduction circuits can always usefully be examined in terms of the regionalization of locales. There is no harm in thinking of such circuits as having something in common with electronic circuits, which can be traced out in a visual display – the graphic techniques of time-geography, in fact, might be relevant here ... The concentration of the population in newly expanding (and internally transformed) urban areas is one of these processes of change ... [A]s important as any of these is the mechanization of transportation, the tremendous expansion of means of communication from the late eighteenth century onwards and the development of electronic communication dating from the invention of the Morse Code.”

and sophisticated conceptualizations of place developed in theories of human geography. He analytically severs the relation of the concept of place to positionality, identity and the subject and instead extols the virtues of the concept of 'locale' as being akin to universal and generalized 'action contexts' to which he very nearly accords a dimension of internal coherence in time-space that I seriously doubt exists at the level of what he termed 'system integration'. Certainly, it was not Giddens's aim to conceive of space as possessing an intrinsic nature or foundational essence. What he does argue, however, is that regionalized demarcations of place (locales are his preferred term, again) are produced through their instantiation in strips of time-space, at moments of continuously born-anew contexts of interaction. Dynamic time is set against static space, and the very notion of shifting, transient or nomadic experiences of place is subsumed beneath an *a priori*, 'given' map of paths traversed in universal space. A map, as made clear by Massey (1994), is not the same thing as geography, and nor is it the same thing as a place.

By perhaps unintentionally portraying a universal and subsuming, abstracted and determinate conception of space as a set of locales, Giddens summarily oversimplifies, and indeed misses altogether, the imperative to understand 'place' as positionality, as actively constitutive of often subversive identificatory subjectivities. He thereby renders his preferred term, that of 'locale', as so significantly abstracted a site of social action that I suspect that even the most knowledgeable of Giddens's social agents end up vertically suspended in the heights of a stratospheric, universalized non-place as typified, rational actors. Paradoxically, Giddens had maintained in *The Constitution of Society*

(1984: xxxiii) that all rationalist generalizations about causal conditions seem unable to hold, in the final instance, since the knowledgeability of the agent works as the practicable disruptor of all those locales falsely represented as generalizable or universal. The implication of his own formulation, I would suggest then, belies this apparent commitment to epistemological depth. Giddens winds up instead ascribing ontological facticity to universalized, typified and determinate subject positions in what proves to be a decidedly subsuming and universalized conception of space.

Above all, Giddens sees the disembedding mechanisms and absence-relations that are characteristic of modern life as amenable to the sustaining of trust via the reflexivity intrinsic to human practices.²⁴ While trust vested in absence and faith in disembedding mechanisms are on the one hand associated with a ‘de-skilling’ of day-to-day activity at the hands of proliferating discourses of (distantiated) expertise, likewise are the resultant knowledge repositories appropriated by lay actors and recombined with aspects of human ingenuity in such a way as to secure trust in both the reflexivity of modernity itself, and in the power of personal and *interpersonal* affectivity to ensure security in the unlikely but conceivable event of systemic failure.

The capacity for recursive monitoring lends its effect to the ordering of activities into adaptable routines, and so reflexivity and routinization are likewise the most elemental aspects of the basic sense of trust that Giddens sees as integral to most actors’ ability to simply ‘go on’. In other words, predictable routines and encounters are the live

²⁴ Giddens (1991: 211) writes, for instance, that, “In many situations, conditions of modernity promote activism rather than privatism, because of modernity’s inherent reflexivity, and because of the many opportunities for individual action and collective organization that are offered.”

matter of the flow of interaction, which is itself simultaneously the basis for the carrying-on of routinized encounters. Giddens thus remains attentive to the mutual-constitution involved in the relation of routines to the processes of structuration: the sense of 'ontological' trust that agents achieve is established when the 'right' connections are made between the activities of the agent with the interaction contexts through which he or she navigates spatially (i.e., activities are 'regionalized'), and in the temporally-reversible *durée* of day-to-day life (i.e., social life is very often enacted in the form of routines). The episodic character of co-present encounters, for instance, is both derived from and is the precondition of stable routines of interaction that are carried out via the medium of the knowledgeable agent's bodily orientation in time-space.

It is in this way that Giddens explicitly ties the practices of maintaining trust to the stretching of social relations across time and space:

The notion of trust connects directly to the concept of time-space distanciation ... One of the key features of modern institutions ... is that they 'disembed' social relations from local contexts of action. Disembedding means the 'lifting out' of social relations from local involvements and their recombination across large spans of time-space. The mechanisms of disembedding depend upon trust, where trust is defined as having 'faith' (of some sort) in the workings of systems, or processes, of which one possesses only limited knowledge ... Trust in disembedding mechanisms is vested not first and foremost in individuals, but in abstract capacities ... (Giddens, 1991: 209).

Not coincidentally, one main implication follows: that sociology-proper for Giddens should rightly be concerned with the study of social relations that are disembedded and distanciated, characterized in other words by a dimension of absence; this fits with his conception of sociology as a discipline possessed of theoretical purchase over the

dynamic character solely of modern societies. He fails to justify why contexts of co-present interaction should even figure in analyses of the reproduction of distinctively *modern* institutional forms *unless* we accept that he is in fact committed, as I have argued, to a stratagem of reading-off abstracted patterns of system reproduction from those of context-bound social interactions.

As noted earlier, Giddens's concerns with the routinized character of daily life and the constraints imposed on human activity through the properties of the body and the physical contexts wherein bodies move, were shared by theories of time-geography. He praised the graphic representation of individuals' time-space paths that the time-geographers made possible through their 'time-space maps', noting that "If the daily activities of a specific individual are recorded, it is easy to build up a gross characterization of his or her routine activities, in so far as these comprise trajectories in time and space" (Giddens, 1984: 112). The representations of the time-space paths trodden by individuals are themselves 'structured' articulations, collated as rules and resources in the repository of consciousness that an agent has recourse to in the reflexive reproduction of his or her routine activities. In privileging the time-space coordination of human activity as its object of study, time-geographic analysis demonstrated a concern, shared with structuration theory, for the mapping of the routine, day-to-day activities of individuals. Accordingly, Giddens was able to incorporate several aspects of time-geographic analysis into structuration theory, particularly insofar as time-geography was premised upon an understanding of settings of interaction as actively produced through the enactment of co-present encounters rather than as *a priori*, 'given milieux' of social

life.

But I would be in remiss if I did not add that Giddens was also attentive to four principal deficiencies of time-geographic analysis. First, he takes note of time-geography's underdeveloped and naïve conception of the human agent; in time-geography, there is a marked tendency to posit 'individuals' as existing somehow outside of the social settings of interaction. Giddens thus saw time-geographic analysis as a rather unsophisticated account of the form and nature of the individual-behavioral 'projects' that agents pursue. Second, Giddens identifies a distinct re-rendering of the action-structure dualism in time-geography, insofar as, " 'Stations', 'domains', etc., are themselves taken as givens, the outcome[s] of uninterpreted processes of institutional formation and change[, with] ... little emphasis ... placed on the essentially transformational character of all human action, even in its most utterly routinized forms." (Giddens, 1984: 117). Third, time-geography in Hägerstrand's original formulation tended to analyze the bodily orientation in time-space solely as physical movement undertaken against the constraining properties of the body, where for Giddens all types of constraint are simultaneously to be understood as types of opportunity, indeed as media for the enablement of social action. The approach taken in Hägerstrand's framework thus betrayed a link to a version of historical materialism, Giddens (1984: 117) criticized, with the implication being, "... that [the] allocation of the scarce resources of the body and its media has some sort of determining effect upon the organization of social institutions in all types of society." In Giddens's theory of structuration, as a basis for comparison, such an assumption could only hold in the case of modern capitalist

societies, in which a premium value is attached to the 'efficient' use of resources.

Relatedly, Giddens's fourth criticism is that time-geography has a weakly-developed and predominantly negative conception of power, wherein capability and coupling constraints are likewise treated in zero-sum conceptions of power as limitations on action. Even if power were considered conversely as a 'generative' capacity to limit action, it remained the case for Giddens that, "... the 'constraints' of which Hägerstrand speaks are all modalities for the engendering and sustaining of structures of domination" (Giddens, 1984: 117). My concern in the main is that Giddens does not provide a practicable alternative to this formulation, as he tends to reproduce the articulation of 'universal' time-spaces that was characteristics of time-geographic accounts, despite his claims to the contrary.

Giddens no less than vacillates between a deficient and 'given' conception of space when set against what he sees as the intrinsically liberatory character of what I term 'simulated proximity' (simulated 'presence', perhaps, in Giddens's terms), a phenomenon characteristic of the contemporary age marked by prevailing modes of sociality conducted in circumstances of absence. He explicitly (cf. Giddens, 1984: 118) suggested that time-geographic analysis risks very much becoming mere 'time-analysis', insofar as the time-geographic notation method was one involving the 'charting' of movements between stations and presented in a linear, determinate fashion – inattentive to the imperative for understanding the reversible character of day-to-day time as deriving from the distinctive spatial properties of modern social forms. In other words, while applauding time-geography's positing of both human social conduct and settings of

interactions as reflexively implicated in the organization of time-space relations, he simultaneously saw in time-geography an emphasis on integrating temporality into social theory at the expense of a sophisticated conceptual scrutiny of the notions of place or location.

Specific forms of locale, for Giddens, are possessed of different levels of presence-availability, that quality of co-present interaction that enables agents in 'come together' in time-space, where proximity in time means proximity in space and vice versa. It was only some hundred years ago, as Giddens (1984: 123) noted, that pre-modern societies were characterized by constituent communities of high presence-availability, communities in which the media of communication were identical to those of transportation. Communicative capability, for pre-modern subjects, was established through the medium of the mobile human body and its ability to position agents in situations of co-present proximity. As a basis for comparison (cf. Giddens, 1984: 85), "... in contemporary societies individuals are positioned within a widening range of zones, in home, workplace, neighbourhood, city, nation-state and a worldwide system, all displaying features of system integration which increasingly relates the minor details of daily life to social phenomena of massive time-space extension."

Beyond the contexts of co-presence, then, locales or settings are regionalized at distinctively larger time-space scales; the most exemplary cases again being those of the changing spatial properties of international agencies, newly-territorialized nations, and the localized 'built environments' populating urban landscapes. That studies of urban spatialization, for example, stand as central analytic concerns of a wider theoretical

consideration of the ‘structuring’ of time-space relations, I do not take issue with.

However, Giddens sought out a conception of regionalization that was significantly more attenuated to the nuances of historical specificity than he regarded to be theories of regional geography, and he therein tended to both parody and denigrate the complexity of regional geography’s multiple understandings of social change and the dynamics of regional differentiation. He writes, for example, that “Regionalization across long spans of time-space [is] analysed by many writers in terms of familiar notions such as ‘uneven development’ and distinctions between ‘centre’ (or ‘core’) and ‘periphery’”, and that the *problem* inherent in this view is that “These notions [are] applied across the whole range of the settings of locales, from large to small” (Giddens, 1984: 130-1).

I have three principal criticisms of Giddens’s position here. First, his use of the concept of ‘regions’ as the basis for differentiations of centre from periphery is derived explicitly from a privileging of embeddedness in time as the basis of relations of dominance, at risk of dispensing altogether with the general spatial implications of the distinction between the two poles of the center-periphery binarism. He proves unduly quick to dispense with the importance of what Lefebvre (1991) called the ‘production of space’ as impelling historical change. Giddens’s concern is to recover contextuality as the connecting precept linking social to system integration, and in that regard he tends to posit the centrality of the historically-specific micro-physics of agents’ positioning against more conventionally structuralist – and specifically historical materialist – conceptions of class formation and social change. In so doing, he demonstrates what I have already designated as a less-than-effective analytic strategy of beginning from the

premise of original agents and typified settings and inadvertently reading-off reified effects from these properties of social systems at the multitude of spatial scales.

A significant reason why Giddens feels equipped to make this empirical move, is derived from his endorsement of Hägerstrand's time-geographic notation method. Thus, with regard to my second criticism of Giddens's conception of regionalization, it becomes apparent that his analysis works to analytically lift the concepts of core and peripheral regions 'out of place', and re-enmesh them into the amended but nonetheless typified, universal time-space paths charted in time-geographic notation. His intention is to insert within time-geographic notation a more complexly-developed theorization both of the agent and of the organization of settings of interaction as 'regions'. Where Hägerstrand depicted time-space paths as having 'linear' trajectories through time, Giddens would have instead proposed a notation method whereby routinized practices are portrayed as carried out along time-space paths in the 'reversible time' of the day-to-day *durée* of activity. For structuration theory's leading exponent, the routine character of conduct is best represented in terms that communicate a dimension of 'return' rather than of determinacy²⁵, though I am uncertain just how this formulation is any less analogous to arguing that the routine character of social conduct is in some sense 'given', than was the time-geographic method of charting 'stations' along a linear time-space path.

Giddens seems content to rest the distinction upon structuration theory's concern

²⁵ According to Hägerstrand's original method of time-geographic notation, in Giddens's (1984: 134) words, "[W]e look at time-space 'laterally' and the 'time' arrow makes out a specific temporal sequence (usually equivalent to the working day)." Against this, Giddens (1984: 134) proposes "... not to abandon this type of notation but to supplement it – certainly conceptually, if not figuratively – with [one] in which we are looking 'down', as it were, rather than laterally ..."

with how encounters are carried on by their participating actors, which is a premise if followed that sees encounters both ‘sliding away’ in the reversibility of time and presented as impossible to understand independent of their implication in the spatio-temporal bracketings of social and system integration. What Giddens in fact does here, is obfuscate the philosophical precept behind the core-periphery distinction, by suggesting that theoretical analysis emphasizing the actual practices of social agents will undermine the doggedly-assumed solidity of the micro-macro distinction in relation to the categorization of the objects-proper of social-scientific study, and that therefore the ontological possibility of structures of spatial inequality is precluded – better, subsumed – beneath the understanding of reversible time as the history of knowledgeable agents forever capable of affecting structural change. He thus ignores altogether the need to amend time-geography’s understanding of space, in focusing exclusively on updating its theorization of time.

Third among my criticisms, is a more general but nonetheless crucial one. That is, that the very solidity of the core-periphery dualism is in the end reproduced in Giddens’s formulation, when this same dualism has been subject to fairly compelling critical elaboration in the discourses of academic geography. In actuality, Giddens tends to posit two separate conceptual triads of interrelated terms; the first is that of micro-contextuality-time, the second that of macro-structure-space. Respectively, Giddens conflates the first triad with associated notions of the ‘core’, and the second with notions of the ‘periphery’; accordingly, he tends to undervalue the second triad in comparison to the first. His particular understandings of the three central concepts of structuration

theory – structure, the duality of structure, and system – in fact demand the respective denigrations of the macro- as measured against the micro-, of structure as against contextuality, and of space against time. I want to reassess the central positions occupied by the concepts of structure, the duality of structure and social system within structuration theory as expressive of a subsuming, altogether modernizing vision of the objects-proper of social scientific work, beginning with the centrality of the concept of ‘system’ to Giddens’s overall project. Giddens is concerned with the patterns of system integration as the principal theoretical bridge erected between his theory of structuration and his writings on political sociology and his typology of different societies, best understood here as ‘societal totalities’, the largest unit of social analysis over which Giddens’ sociology aspires to gain conceptual purchase. A somewhat self-evident feature of *traditional* societies is that there is a near-fusion of social with system integration; social interaction in village communities is based solely on the principle of co-presence, or of proximity. Contexts of co-presence were and remain, in these societies, the main ‘carrying contexts’ of interaction.

The development of cities gave rise to a new type of society – the class-divided society – wherein the mode of regionalization of interaction contexts was increasingly formed and reformed around the ineluctable antagonisms and interdependencies between the urban and the rural. The basic feature of this society was a spatial concentration of resources – especially politico-administrative resources – that resulted in a greater dimension of time-space distancing of social relations than was the case in tribal communities (cf. Giddens, 1984: 143). This initial spread of urbanism in Western

societies was a consequence of the rise of modern industry in these class-divided societies, but fully concretized patterns of purposive industrial location appeared only in Giddens's third type of society, that of the modern capitalist form. The traditional cities of class-divided societies did not exist in 'commodified time and space', and so in Giddens's formulation, "The buying and selling of time, as labour time, [became] one of the most distinctive features of modern capitalism." (Giddens, 1984: 144). Modern capitalist societies are in this view characterized most crucially by the introduction of an organizing principle of the commodification of time and space into planned, 'created environments' geared to the spatial patterns and temporal rhythms of industrial production. In his version of structuration theory, we can fairly conclude, Giddens indeed *needs* to retain and emphasize this concern with the integration of differential spatial and temporal distributions of human bodies and encounters over time as typified, periodized features of societal totalities.

Giddens installs within structuration theory a view of 'historicity' impelling the processes of social spatialization. As demanded by his commitment to a particular conception of 'social systems' and to their specific historical periodization, time, contextuality and micro-level manifestations of social action in effect work to replace the notions of space, (conventionally understood) structure and macro-level object-relations in the theory of structuration while serving many of the same analytic purposes. It is not that Giddens is inattentive to the significance of the space, structure, or macro-level object relations; rather, his considerations of each treat space *as* a matter of time, structure *as* a matter of context, and the macro- *as* a matter of the micro, all towards the

authoring of a considerably aggrandized master-ontology of typified and universal social systems in the plural. This is evidenced by virtue of the fact that Giddens professedly viewed *history alone* as the very structuration of events in time and space through the continual interplay of agency and structure – as what he terms “... the interconnection of the mundane nature of day-to-day life with institutional forms stretching over immense spans of time and space.” (Giddens, 1984: 362-3). In following Meštrović (1998), we can suggest that Giddens’s concern for sociological work as a form of historicity works to embolden his decidedly modernizing vision of what the core ontological objects of social scientific study *ought* to ideally be.²⁶

I want next to return to the primacy of Giddens’s bold reconceptualization of the term ‘structure’ in structuration theory, and in turn to argue that his understanding of the concept in fact demands the subsumption of the macro-, structure and space triad beneath that of the micro-, contextual and time triad. I want to treat this argument more or less in concert with that which I make in relation to the duality of structure, since this latter term in Giddens’s theory is to be inferred from that of ‘structure’. To begin with, I want to demonstrate some of the limitations of the view of structure as existing within a duality alongside agency. Even if Giddens’s definition of structure (as I earlier discussed it) is

²⁶ Giddens is unapologetic for his equation of sociological work with the study of distinctively *modern* societies alone: “Modernity is the core concern of sociology. Sociology was established as an endeavour to understand the massive changes that, from about the eighteenth century onwards, disrupted traditional modes of life and introduced quite novel forms of social organization ... Sociological concepts, theories and findings are not simply ways of analyzing an independently given subject matter, but enter directly into what *modern* institutions are. This constitutive involvement with modernity characterizes all of the social sciences, and in some part the humanities; but sociology has a peculiarly central position in this regard because of its analytical focus upon modern social life.” (Giddens, 1991: 207, my emphasis). We would not be unduly aggrandizing, then, were we to see the theory of structuration, in Giddens’s hands, as above all, an hermeneutically-inspired ‘social ontology of modernity’.

accepted, the theory of structuration in his hands accordingly presumes that it is only the 'unacknowledged conditions' of a social form that remain beyond the capacity of the more or less discrete actor to modify or reproduce, and even these are transmutable if considered by way of the 'unintended consequences' of agents' actions. All social interaction unfolding in contexts of bodily co-presence, for Giddens, is 'strategic action', and it is presumed analytically possible for the observer to read-off the structural properties of the social systems involved through the study of those activities and relationships carried out via the medium of the duality of structure. Inadvertently, in relation to a problem that I will return to discuss later, it is only in asserting the duality of structure that Giddens appears to re-assert the 'objective' qualities of 'structure', despite his desire to dispense with the common structural-functionalist tactic of equating the term 'structure' with the notion of a 'system' of functional prerequisites for social action.

In urging that we treat structure as a duality alongside agency, Giddens is calling attention to the principle of reflexivity as the basic orienting principle of interactions undertaken in the distinctively *modern* domains of social life, premised as this is on his insistence on the knowledgeable agent who recursively monitors his or her actions. Structure, if it has any conceptual substance prior to its entry into the duality with agency, appears to be possessed of objective qualities that only after recursive monitoring are subject to transformation or perpetuation. Toward this effect, Giddens (1991: 204) wrote that, "In the sense in which I use it – to refer to the way in which social activities regularly reconstitute the circumstances that generated them in the first place – recursiveness [is] ... influenced by theories of autopoiesis (i.e. of self-reproducing

systems) in biology ...” Social systems here appear possessed of the capacity to self-regenerate independent of agency, in this instance, again evidencing Giddens’s vacillation between twin dimensions of determinism and voluntarism.

It is the latter tendency toward voluntarism that Giddens appears to privilege with greater force, however, and so in his formulation the only ‘supra-individual’ constraints that we see superimposed upon the field of possible human actions are those derived from an actor’s lack of knowledgeability of unknown conditions. It could of course be argued here that it is *not* always the case that an actor’s knowledge can in fact universally affect the conditions of envisageable action; some structures, it would seem, are better conceived of as being beyond the actor’s control (cf. Bauman, 1989a: 40). Giddens’s habitual accounting of the practices of ‘agency without an agent’ misses the point of fact that, as Boyne (1991: 59) argues, “... social subjects are made; their practical skills as members of society come to be what they are as a result of historical processes over which human agents exercise very little degree of control”. This precept does not necessarily imply that agents are not knowledgeable. Rather, we would do better to enter the qualification that human knowledgeability is unevenly distributed, and that entire realms of social action can be imagined that are beyond the limits of even the most knowledgeable actors’ recursive monitoring and reflexive control. Giddens appears unable to accept this, arguing that, “The theorem of the duality of structure occupies a central place in structuration theory precisely because it encapsulates the recursive elements of social life so fundamental to social organization and change.” (Giddens, 1991: 204).

Giddens's theory thus remains very much an agentic theory of social action. His conception of the agent, universal and generalized, is decentered only insofar as she or he is knowledgeable about his or her actions in relation to structures. In fact the agent occupies the very centre of Giddens's theory; agents are herein recentered as outward-looking and subsuming subjects in relation to one another, as agents typically possessed of emancipated, ontic being-in-the-world as the architects of their own history. I think we have good reason to be skeptical of this premise. Boyne (1991), for example, chose to demonstrate the limits of agents' knowledgeability in relation both to existent social conditions and to the end effect of historical change. To illustrate, he pointed to Foucault's studies of the functions and effects of mechanisms of social control exercised over the insane in 17th and 18th century Europe. In this example, the correlation of control functions to control effects was not at all cogently 'planned' by a single social agency of the state, nor by the bourgeoisie or working class. In turn, as Boyne (1991: 54-5) observed:

Nor, as a specific historical outcome, can it be ascribed to the knowledgeable practices of sets of social agents over time unless one accords priority to the changes in social structure that determine what knowledgeability is at any one point in time. This does not mean that historical movement and change cannot be investigated and interpreted. It may be beyond the reach of social agents who are, as well all are, part of it, but we can pause and look back, and even learn from the processes we see at work. The general point remains, however, that the rich and complex workings of our societies are the legacy of historical processes without a sovereign subject (and the case of mental illness is just one of many examples that might have been used to make that point). We are dealing here with the condition of history. Faced with this condition, it is hard if not impossible to speak of the 'knowledgeable social actor' – which is, of course, the very heart of Giddens' theory of structuration – as the solution to sociological theory's search for adequacy.

In Giddens's theory of structuration, then, it appears as though knowledgeability is a quality which may at least in principle always be distributed evenly between the partners of micro-contextual, dyadic interactions, and thus that knowledgeability would appear (quite incorrectly) to constrain all actors in *identical ways at all times*.²⁷

A commitment to theoretical emphasis on the historical nature of actual subjects would avoid the reproduction of this assumption, but Giddens's theory of agency instead insists on an abstract conception of subjectivity wherein *all* social subjects are in some way knowledgeable even if the social theorist must be willing to allow for variations in the achieved levels of discursive and practical consciousness between actors. As Boyne (1991: 58) argues, "The point is that the degree of knowledgeability, whether implicit or explicit, is not something on which one can philosophically legislate; it is a matter for empirical enquiry." Giddens desires to escape the habit of legislating such caveats into laws of causal fixity, though I remain uncertain that he accomplishes this with any real measure of success.

Giddens's contention that structures are 'instantiated' through agentic practices, is a rather restrictive conception of structural reproduction. It seems to imply an unfortunate and paradoxical dimension of paralysis, wherein template 'moments' of structuration are forever born anew through actors' unconscious or recursive orderings of their practices, but in a way peculiarly divorced from the possibility that the *past* practices of an actor or group of actors may, better I think, *substantiate* unintended

²⁷ This view, paradoxically, was exemplified mainly in structuralist theories of historical change, which as Boyne (1991: 59) noted, almost unfailingly demonstrated a fundamental confusion between "... history without a 'transcendental subject' and history without 'knowledgeable human subjects' ..."

consequences in the *present* (cf. Archer, 1990b). Thus, we find that Giddens affords hollowed-out ‘structures’ very little real staying power over the *longue durée* of institutional time, instead posing their existence in a substanceless, fleeting and ephemeral flow of instantaneities. Bauman (1989a: 43) expresses somewhat similar concerns, noting that in the taken-for-granted usage of the term ‘structure’, quite separately from Giddens’s definition, it is conveyed that “... in a certain set of events[,] probabilities are not distributed at random: in other words, that some events, given sufficiently long time and a large volume of cases, are more likely to take place than their alternatives[,] ...simply denot[ing] the commonsensically evident features of social reality...” This, more so than requiring imminent ‘instantiation’ in a given social interaction, since as Bauman (1989a: 46) argues, quite rightly I think, “The idea of a social actor ready to act but needing norms and resources to do so is as preposterous as the idea of the system needing some ‘functional prerequisites’ to remain one.”

It is forever the case that for Giddens history is explained on the basis of the situated activities of practically-knowledgeable agents, and that this premise derives firstly from his desire to undermine what he views as the inattention afforded to human agency in functionalist, structuralist and post-structuralist work. Secondly, however, the emphasis on situated human practices is derived from the hypostasizing tendency in his account, this in consequence of his accordance of status-as-truth to the terminological conventions of sociological discourse. The danger of hypostasis, for Bauman, is realized only when the social theorist takes up the problem of trying to explain ‘how’ the structure came into being, or indeed of ‘how’ it operates, by condensing the verb (i.e. ‘structure’)

into a noun (i.e. 'structure') without recourse to the everyday constraints we usually impose upon our speech. Thus, where "... a phrase like 'structure constrains' conveys merely a simple observation that the probability of people doing something differs depending on who the people in question are[,] ... [i]t hardly occurs to the non-theoretical speaker that somewhere a 'thing' waiting to be dubbed 'structure' can be found which actually confines people's movement" (Bauman, 1989a: 44). In wanting to make the case for a double-hermeneutical incorporation of sociological conceptions in the latter fashion, Giddens actually effects a situating of structures *outside* the confines of the unconscious, or outside of the practical or discursive consciousnesses of the human agent. Even if structure is in Giddens's formulation to remain analytically outside of agency itself, it was to find its instantiation in the memory traces and resultant practices of contextually-situated agents.

It may well be possible that structuration theory, in Giddens's hands, then, demonstrates both a deleterious concept of the agent, and a deficient concept of structure. For example, it is Bauman's fear that rather than exorcising an unduly metaphysical and objectivist view of structure, Giddens inadvertently reproduces it in the theory of structuration. The implication of an unfortunate conflation of simple processual structuring with the positing of a new metaphysical conception of 'structure', is that Giddens reasserts the dualism between social action and its external determinants by retaining an understanding of structure as a 'metaphysical prop', in Bauman's (1989a: 45) words. Giddens's theory of structuration ultimately founders upon a deficient concept of the human agent, and possibly upon the reproduction of a typified and

determinate conception of structure.²⁸ In this view, the process of ‘structuration’ is cordoned-off as quite something else, something differentiated from structures, effected through human agency, but never quite enabling of social change. Bryant and Jary’s (1991: 28-29) account of structuration theory captures the basic properties of this three-way conceptual tension quite well:

On the one hand, Giddens seems to offer [structuration theory] as an open-ended, and non-compulsory, framework - ... (Conception A). On the other, he develops it into a forceful expression of a particular historical view – an expression, moreover, that is relentless in its strictures against, and exclusion of, alternatives (Conception B). There would also seem to be a third reading in which an overriding ontological emphasis on the historicity of human action and human societies ‘resolves’ the tension between A and B; reflexivity, knowledgeability, unpredictability and contingency not only limit the role of laws and generalizations, but are also here a cause for celebration (Conception C).

Given these conflicting prejudices, it is unsurprising that Giddens has so little difficulty tying his account of the duality of structures to the formation of more or less steadfastly-enduring institutions; his conception of what ‘societies’ are, in fact, is premised upon the manner in which structural principles serve to produce a specifiable overall ‘clustering of institutions’ across time and space, with precisely such a clustering being the most basic identifying feature of societies of particular types.

In his view societies are simultaneously types of social systems and are comprised of social systems; they possess identifiable and articulated institutional ensembles, which are in themselves social systems by virtue of the fact that they are coordinated through

²⁸ For a summary of this argument, see Craib, 1992.

the continuity of *praxis* via the reproduction of structural properties.²⁹ Giddens (1984: 171) comments that, “In general ... it is true that the greater the time-space distancing of social systems – the more their institutions bite into time and space – the more resistant they are to manipulation or change by any individual agent”, but that again constraint implies enablement insofar as, “Time-space distancing closes off some possibilities of human experience at the same time as it opens up others” (Giddens, 1984: 171). Giddens hereby subordinates the spatial implications of the duality of constraint and enablement to those of the temporal; he expressly acknowledges that institutional analysis can never see its object of study ‘lifted out’ of time, though we can guess that the implication of his argument is that the same may not hold for space. System reproduction in fact demands the unbinding of the spatial embeddedness of institutions in order that reproduction in history can be secured at the level of system integration, in intersocietal systems or at time-space edges in a way related to agents’ achievement of reflexivity in their envisaged projects. Colonialism stands as an example of the double movement afoot here.

In concluding, I would suggest that Giddens *needs* to posit an account of spatial fixity as set against temporal dynamism precisely because of his commitment to preserving the theoretical importance of an account of system reproduction and system integration to his typology of societies. His particular ontology of the qualities of reflexivity and ephemerality characteristic of late modernity cannot afford to ascribe any more than marginal importance to space as a barrier to the accelerated movements of

²⁹ In this view, according to Craib (1992: 61), “[T]he system is seen as a well-oiled organisation in which everybody’s activities dovetail into those of everybody else, and ‘feed back to their source’ to enable a smooth and continual working.”

free-floating agents. If time is the entity bestowed with a relation to the achievement of reflexivity, then space must be subsumed beneath time as the stultifying ‘container’ wherein there live only memory traces of organic traditions whose utilities no longer hold, in accounts like that of Giddens’s version of structuration theory.

In the (presumably now-past) age of high, heavy modernity, neither individual agency nor the authority of the social scientific observer need have been so forceful in their identificatory self-assertion as portrayed in Giddens’s version of social theory; the then-dominant image of society, as Bauman (2000: 133) describes it, “... had a solid epistemological foundation which comprised entities as solid, unshakeable and indomitable as the Fordist factory or the order-designing-and-administering sovereign states (sovereign if not in reality, then at least in their ambition and determination).” In late modernity, to the contrary, time must be possessed of the capacity to see object-relations shape-shift at the expense of spatial fixity-in-place, and continually born-anew moments of agentic possibility undergo a cyclical process of ontological authentication and reification.

Giddens’s (1991: 220) concern with the ontological aspects of modernity is justified, in his terms, because “Theoretical reflection in sociology has a distinctive status in virtue of the constitutive nature of social knowledge, and takes place at the frontiers between what ‘is’ and what ‘might be’ in social life.” Giddens fails to specify, indeed, how certain structures might be transformed where others will not – each possibility, each potential, is left to the command of the knowledgeable agent, and both possibilities – ‘what is’, and what ‘might be’ – are regarded as essentially ‘open’ in their character. If

such potentials were in fact so open to the transformatory power of the human-technology interface, what would be the implications? I want to suggest that these implications encompass the atomization of typified user bodies in cyberspace, the differentiation of core and peripheral sites of health care delivery, and hence an overall uneven geography of access to needed health care services.

To conceive of teleconsultation use as a change in clinical continuity, is to accept that some structures, in Giddens's terms, will persist where others will be transformed. The usual referral networks in health care delivery are maintained through informal communications between providers – by telephone, or by chats conducted in corridors (Lehoux et. al., 2002: 899). Yet more common, are practices whereby patient referrals and transfers are completed without direct communications between the referring physician and the remote consultant. The co-present or electronically-mediated interaction of the two, in any case, constitutes a change in the continuity of clinical communications practices. Some teleconsultation programs, for example, do not insist upon the presence of the referring physician in the same room as the patient being examined by the distant consultant, though the referring physician may attend either if he or she desires to do so, or if the patient requests his or her attendance. This creates a reflexive 'feedback loop', in real-time no less, between the consultant and the referring physician, an enabling property of teleconsultation insofar as clinicians would not normally be able to talk to consultants to whom they have transferred patient cases. Feedback is structured through use of the innovation, certainly, but Lehoux et. al. (2002: 899) question just how desirable this type of feedback actually is – would the

desire for real-time feedback be so great between physicians involved in different medical specialties, as for that characteristic of the feedback loop between physicians involved in peer-to-peer relations?

They also suggest that an instantaneous feedback structure can work to reproduce sustained diversity in clinical expertise – a system of individuals with different strengths – insofar as telehealth networks can easily reproduce the distinctive ‘referral pathways’ characteristic of the communications routines of particular providers in particular settings. As they put it, “A teleconsultation system, if organised and managed properly, could reproduce those pathways by both formalising and smoothing the access to specialised expertise for clinicians (who have not already established a large personal network)” (Lehoux et. al., 2002: 899-900). Where specialized investigative techniques are not available locally, arrangements can be established inter-departmentally whereby the remote facility will transfer or ‘teleport’ patients to multiple tertiary care centers. Against this, I concede that referral strategies can be modified through patterns of teleconsultation use, but that most often these reconfigured networks will be *contra* traditional, materially-existing referral networks if telehealth applications continue to be deployed in a way that seeks out marketized spaces wherein service delivery is commodified or otherwise made a source of profit. The geographical relations between health care facilities, for instance hospitals, remain uneven ones. Lehoux et. al. (2002: 900) concede that the use of teleconsultation systems works to challenge the established relationships between hospitals, as well as the categories used to define their status – but that, “As the frontier between a secondary and a tertiary care centre is often blurred in

practice (especially at the department level), a teleconsultation network is more likely to be shaped by dyadic (paired) relationships at the department level, [than] could ... revolve around a single tertiary care centre.”

In my formulation, this is precisely the source of the dominatory nature of ever-larger telehealth networks – that teleconsultation, possessed of potential benefits for clinical communications, is ill-used once implicated in ever-more-expansive network utilities; that, in other words, virtual care regions are amassed whose boundaries stretch far beyond the territoriality of the bounded material care regions held below in virtual suspension at the other end of the link. Inter-departmental links are established and then multiply between increasingly more secondary and tertiary care facilities, with the result that, as Lehoux et. al. (2002: 900, note 22) describe it in terms inspired by Giddens, “[S]ymbolic effectiveness seems to result from the linking ‘with the top’ (enabling property), whereas no one [desires] to get connected to centres belonging to an equivalent or inferior level (constraining property).”

If telehealth networks, teleconsultation systems and CME programming instantiate spatial patterns and temporal rhythms characteristic of geographies of uneven development, these effects are left analytically unretouched in the pro-telehealth literature. The perceived enabling properties of teleconsultation increase in an inverse relation to the *cultural and geographical distance* the patient would otherwise have to travel in order to be seen by a consultant. Teleconsultation cannot easily overcome the constraints of place, identity and territorially-bound subjectivity that come to bear upon users’ needs. The constraining properties of teleconsultation, in turn, are realized as such

in consequence of the limitations users impose upon the types of information that they deem to be ‘safely’ transmitted at a distance. Users may believe that only objective data can be safely consulted from a distance, and concomitantly that relying on subjective information as interpreted from the cultural and geographical margins remains inappropriate.

Giddens himself sidestepped the problems associated with objectivism and subjectivism by simply refusing to acknowledge either – by jettisoning the debate between the two to the frontiers of other thinkers’ studies of epistemology, while he gets on with the business of focusing on ontological questions – i.e., what is the nature of human being and doing? (Clark, 1991: 24) – and with the task of describing the subject matter of the world rather than explaining it. The problem with Giddens’s social ontology of potentials (cf. Cohen, 1989),³⁰ is that no justification is provided for its sustained separation from the concerns of epistemology. Bryant and Jary (1991: 24-5) note that Giddens hereby:

denies himself one of commoner gambits of the ontologist, which is to argue that the world must be like it is said to be for it to be possible for us to have the knowledge of it we do have, a gambit that depends on prior justification of some claim to know (based on experimentation, prediction, technological application, vindication in social practice or whatever).

³⁰ Specifically, Cohen (1990) argued that the manner in which Giddens intended that researchers make selective use of structurationist concepts in accordance with their particular needs, retains for structuration theory the status of an ontology of potentials. He writes: “They are ontological because they do not [in themselves] refer to empirical events, but rather to generic human capacities and conditions through which social life is constituted, patterned, reproduced and changed. They comprise an ontology of potentials because they admit manifold variations in the way social life is constituted in disparate historical settings and on different occasions.” (Cohen, 1990: 34).

The writers inspired by Giddens's version of structuration theory are prepared to make precisely this leap of ontic faith – they are prepared to appeal to the claims to know of academic economics, for instance, as a justificatory argument for representations of the users of telehealth or other health care systems as original, typified and rational actors in vast markets of potential activities and projects. Giddens, for his part but no less emblematically of the prevailing, decidedly *il*liberal social scientific orthodoxy, appears to have wanted an ontological grounding established for theorizing at the expense of either substantive theorizing or the analysis of 'history itself' (Bryant and Jary, 1991: 27). In this regard, Giddens has authored a 'post-empiricist' sociology dismissive of epistemology in order so that he is able to justify his effort to bypass the taken-for-granted dualism of objectivism set against relativism. But Giddens sustains a distinctively modernist project of social scientific articulation insofar as his essential enterprise for social science remains an appeal to the actor's capability to choose among selective criteria of understanding – in no way would Giddens allow that the 'doing of' social science might at any point in time be an 'irrational' endeavour. In this sense, we might better regard Giddens work as being of a 'pre-empiricist' variety.

Even where the synthesizing of evaluation criteria in the social sciences is openly endorsed by Giddens, who himself employs an eclectic approach to theorizing, the social scientist (better, each social agent), even in this essentially 'open-ended' algorithm, nevertheless is presumed capable of providing justificatory arguments for what theories or aspects of them are selected for use, and for which are dispensed with. I can accept this, certainly, but Giddens's commitment to ontology implies that he sees the matter of

developing those arguments as belonging with theorists of a different stripe – the epistemologists – where structuration theory can proceed with no settled means of assessing different, and contesting, values. As I will demonstrate in the section that follows, that inattentiveness to the principles and practices of justification (cf. Bryant and Jary, 1991) in Giddens's theory, risks the authoring of descriptive accounts in telehealth evaluation research that are, in the end, decidedly more acquiescent than critical in their relation to the power interests who would see telehealth applications implemented in all contexts of health care in all regions.

Part III: Telehealth evaluation, structuration theory and the circuitry of knowledge production characteristic of late modernity

I have argued that telehealth applications are tied into a reflexive relationship with their evaluation, meaning firstly that the rationale for telehealth use is based upon evidence of its effectiveness (cf. Darkins and Cary, 2000: viii), but also that evaluation studies on how telehealth might be effectively integrated with conventional health care infrastructures and practices will form the basis for any new and evolving applications. In their most elemental formulation, as Fox (1991: 712) describes them, evaluation studies either explicitly measure or qualitatively identify the presence or absence of certain attributes (ends) and relate these to the availability of certain other attributes (means). In the evaluation of health care, the identification of those particular means compatible with the achievement of particular ends is quantified through the ascription of a value to either the process or the outcome being examined. Even the most qualitative of measurements and reported features – valuations of a process or outcome as being ‘not bad’ or as ‘getting there’ (Fox, 1991: 712) for instance – are quantified as aspects of the evaluation of clinical decision-making, the rationalization of services and the spatio-temporal distribution of health care resources.

In the orthodox model of evaluation, all ascriptions of value tend to be derived from the measurement or identification of two main concepts – ‘effectiveness’, and ‘efficiency’ – derived from the terminological arsenal of the discipline of economics. Fox (1991: 712) describes the importance of these two concepts to the design of economic evaluations:

Both relate means to ends: effectiveness denotes the extent of carrying into effect, executing or accomplishing specified objectives[,] ... while efficiency denotes the fitness or power to accomplish these objectives ...

They derive from, and insist on, the possibility of ascribing value to the consequences of an action. The benchmark by which both the efficiency and the effectiveness of any action are to be judged is the maximum attainment of an objective.

Having entered that evaluation is a value-laden and therefore substantive rationality, we find that the claims of the rational actor model implied in evaluations of outcomes tend to oversimplify the ways actors interact. Precisely the analytic usefulness of the institutional-ethnographic method advocated for by Lehoux and her colleagues, is that its commitment to the measure of continuity in processes can re-attenuate telehealth evaluators to the 'human factors' that, in most contexts of use, circumscribe a limited field of access to the clinical benefits of telehealth systems. This, and yet the theory of use the authors propose assumes that Giddens's 'hermeneutically-informed' theory of structuration, suitably amended, is able to account for how technical discourses centered upon the efficient and effective use of telehealth applications might incorporate the everyday communications practices of users, and thereby recursively 'feed back' into the discursive formulations of policymakers, managers and health care providers seeking to promote, implement and evaluate different telehealth applications.

Knowledge of telehealth use, knowledge of 'how to be a user', is reproduced in a circuit of production whose character I suggest to be characteristic of modernist thought. The modernist assumes that the Enlightenment meta-narrative of rationality has been imported into the design of health care provision and delivery, and that disciplines like health economics, health technology assessment and health services research can fine-tune this rational system for added dimensions of effectiveness and efficiency. Accordingly, insofar as Anthony Giddens adopts the view of sociology as the study of

distinctively *modern* societies and social practices, he would I think accept the usage of structurationist concepts to interpret the circuit of production of knowledge of the purported ‘best practices’ (cf. Picot, 1999) of telehealth use in the technical and policy-oriented literatures. Against the use of the structurationist approach, I want to suggest that the formalized discourses of health technology assessment and health services research (HTA and HSR) can aspire to do no more than reproduce dominatory relations between telehealth network users through a kind of socio-topographical mapping of typified user needs, at least wherever social theories like the structurationist paradigm guide the formulation of telehealth program evaluation methodology.

In order to demonstrate this, I want to take note of several of the shortcomings of Giddens’s implied circuit of knowledge production as it figures prominently in structuration theory. Giddens sees the essential (albeit dynamic) character of social-theoretical knowledge as that which is produced through the application of a ‘double hermeneutic’; in this two-way process, non-sociologist agents enter into and assess the frames of meaning produced in the course of their practical activities, and these frames of meaning are subsequently reconstituted in the technical-conceptual schemes of professional social scientists. Inversely, those formalized discourses are appropriated symbiotically in greater or lesser measure into the production of the social reality by scientists and lay actors alike. Bauman (1989a: 34-5) similarly renders Giddens’s double hermeneutic as a strategy of, “taking note of the essential identity of the linguistic medium from which both the social reality and its sociological account are woven.”

For Giddens, the importance of social scientific accounts in the constitution of

social life is derived from his basic premise that societies are produced through the practices of skilled, knowledgeable agents – the idea that every competent member of society is his or her own ‘practical social theorist’ (Giddens, 1976: 15). Thus the double hermeneutic inheres in sociology and in the deployment of its concepts in the lay discourses of the non-sociologist. He sees a pivotal distinction between the incorporation of concepts and theories drawn from the natural sciences into non-scientific discourses, and the appropriation by lay actors of the concepts and theories produced in the social sciences. In the former case the knowledge produced enjoys a technological object-relation with its subject matter; the natural science disciplines generate discursively-formulated meanings for an ‘independently given and autonomous world of objects and events’ (Giddens, 1984: 351), an object world seldom subject to recursive monitoring and subsequent reconstruction save for instances of dramatic intervention in nature’s rhythms and patterns. In the latter case where there is a slippage of technicized social scientific schemes into the everyday vernacular of lay actors, the conceptual schemes devised by the social scientists themselves become constitutive elements of the ‘subject-matter’ they take up as their object of examination, and by that token change the very context of their application (cf. Giddens, 1976: 79). The social sciences therefore do stand in a technological relation to their subject matter, but not purely or exclusively so; the ‘discoveries’ of social science are incorporated into action in a way expressive of the object-origin of the world, in Giddens’s account, rather than simply signaling its transformation through the linguistic-disciplinary medium of *techné*.

By implication, a two-way intercourse is assumed between the concepts and

theories devised in the social sciences and the lives of the human subjects whose behaviour is analyzed. Just what degree of effectivity can be accorded to the double hermeneutic as a mechanism for the reproduction or dissolution of structures, is a source of contention, given that as Bryant (1991: 181) argues, quite rightly I think, “There is ... a basic contradiction between sociologists who strive to make their argumentation as rational, coherent and systematic as possible and a society in which reason, coherence and systematicity have only a limited currency or relevance.” We have good reason to doubt whether the systematic causal and prescriptive frameworks elaborated by social scientists are taken account of by the holders of institutional power, mainly because of the ephemerality of most public issues in contemporary societies and the resultant ‘lag’ between social scientific research work and its scope of applicability to the issues on the agendas of policy makers.

For his part, Giddens would likely emphasize that the relation of the double hermeneutic to causal generalizations in the social sciences is a potential stratagem for *either* dominatory or liberatory change *if one keeps in mind the principle of reflexivity* as the origin of the non-social-scientist’s knowledgeability. The double hermeneutic is thus implicated in the essentially practical-critical character of social science more broadly, furthering an above all *reflexively-developed* conceptual awareness of the practical connotations of scientific discourse. While it is certainly envisageable for the social theorist to deploy his or her narratives in order to expose the illiberal aspects of social life, it remains the case that social theory can equally often signal the expert legitimization of ‘historical blindness and political amnesia’ above and over the non-sociologist

citizenry.

So because social theory is inherently critical from the standpoint of Giddens – the criticism of wrong beliefs is a distinctively political position – he seems to desire to forever emphasize the human capacity for transformative action. As a basis for comparison, Boyne (1991: 58-9) argues that the human sciences:

[F]eed on the phenomena that are produced as a by-product of the workings of social power; they produce knowledge of such phenomena that, by virtue of being documented and thereby glossed with the patina of what has rigorously and methodically been shown to be the way things are, tend to become treated as natural rather than historical; this new knowledge of the objective social world takes its place within the field of social power, the workings of which generate new phenomena that the scientific attitude will once more seek to understand.

It is in this way that the circuit of knowledge-power-knowledge is transmuted into the triad of knowledge-power-space – by opening up a subsuming discursive space for the social scientific *auteur*. Thus from Boyne's standpoint, Giddens has precluded the possibility that lay actors will see social phenomena as anything other than naturally-existing and thus resistant in the final instance to agentic transformation. The social theorist's authority is presented as unassailable for the most part, deriving from a confusion left unelaborated to the lay actor. It is in this way that the double hermeneutic in fact presents itself as a decidedly one-way translation. The conflicts over translation that Giddens meant to solve in conjuring the concept of the double hermeneutic, have tended to be presented by the social science orthodoxy as being, 'over who is to understand what, rather than over who has the authority to declare the propriety of the translation' (cf. Bauman, 1989a: 47). Giddens in effect reinvigorates the social-

theoretical search for singularity of perspective, and so paradoxically, as Boyne (1991: 73) argues, the theory of structuration is in fact underpinned by Giddens' skillful appropriation of concepts that, in their original context, worked to demonstrate the questionable nature of his entire enterprise.

Truth, in Giddens's formulation, is the concept of human agency as the precept for all social action, coupled with the notion of the duality of structure. Both structuralist and post-structuralist accounts of these 'true' referents of social theory are inadequate, to Giddens's way of thinking, because they fail in capturing the original, ontological presence of human agency, succeeding only in representing it.³¹ The structuralist position defines the relation between signifiers and signifieds as being fundamentally representative and hence unproblematic, therefore not treating the original presence of human agency at all; the post-structuralist position as expressed by commentators like Derrida posited that representation can at best be hoped to render a four-dimensional truth characterized by a significant aspect of supplementarity (cf. Boyne, 1991: 68-9).

Giddens's theory, in comparison, is concerned with considerations of ontology because the ontological materiality of his 'truths' provide him with a clear referential object (social action) for social theory in general and sociological theory more

³¹ As a basis for comparison, Bauman (1989a: 46) sees a crucial failing of structuration theory to be quite analogous to this – its positing of the unspecified 'man as such', 'man as species being', etc., demonstrate how Giddens's analysis starts from the idea of action and aims to confront the ensuing process of structuration, but denies the specificity of the social action under examination while simultaneously shirking from the inevitable recognition of an 'already-structured world'. Any theory such as Giddens's, wherein an empirically empty account of action is started from in order to 'read-off' the resulting facticity of the world, will in Bauman's (1989a: 46) terms, "... inevitably generate the need for some 'metaphysical prop' to account for the empirically evident uneven distribution of possibilities." In point of fact, I argue, these probabilities are precisely the 'structured' patterns of social action that should captivate the sociologist's interest.

specifically. But in targeting for criticism the immateriality of the referent in orthodox structural linguistics and in post-structuralist thought, Giddens offers no viable criterion for distinguishing between the two positions. Boyne suggests that this is because, “[T]he offering of the criterion that does distinguish them would be self-indicting[;] that criterion, is precisely the philosophically established dismissal of appeals to the referent, to the origin, to agency as the *real basis* of social life”, and this because “[u]ltimately, such appeals have no substance” (1991: 68).

It is probably the case that Giddens is guilty of importing certain functionalist qualities into post-structuralism’s stratagem of decentring the subject in his effort to preserve a privileging or recentring of the actual activities of the subject as the object-origin of sociological interest. For example, Giddens (1984: 32) sees the semiotic move characteristic of much post-structuralist work as a dispensing-with of the ‘structured’ outcomes of the subject’s activities, the recentring of which is elemental to his programme for theoretical sociology. Against the interests of Giddens’s project, however, in Boyne’s (1991: 68) words, “... the decentring of the subject within post-structuralism rejects the philosophy of the subject as a version of the origin and recasts the subject as a supplement, something both added to and replacing the absent origin[al].” Boyne is here describing supplementarity as a thoroughly indeterminate dimension of subjectivity, and argues that in fact both language and subjectivity can be supplemental in relation to one another with neither retaining theoretical primacy as the potential usurpers of the centered object-origin view of subjectivity. Importantly, Boyne (1991: 68-9) continues:

The post-structuralist argument is not that the decentring of the subject is the first step on the road to a more adequate philosophy of the post-Cartesian subject, it is that any philosophy of the subject must, in the end, be indeterminate between the subject as structured and the subject as agent. That is as near as the essential duplicity of a world that cannot redeem its promises will allow us to get. It means that the programme of transcending voluntarism and determinism is precisely magical, that the theory of structuration cannot deliver what it promises.

The point is that the variety of works in social theory that take as their object of study the 'context effects' that come to bear on communicative action, including those efforts formally incorporative of the mediation between structure and agency, cannot take as their point of departure the determinate and original social agent; I would suggest that Giddens's account does precisely this. Instead, these works would do well to attempt to grasp theoretically the epistemologically multiplied and shifting forms of subjectivity, and to develop, as Bauman (1989a) put it, their theory of society rather than that of social action. I regard Giddens's theory of structuration as one wherein there is asserted an altogether illusory concept of the knowledgeable agent, because in his account the 'recursively monitored' contexts of social action appear to unfold within the purview of a peculiarly universal and subsuming understanding of time-space.

Giddens constructs a post-positivist ontology that is no less expressive of what Lash (1999) termed the first modernity's epistemic master-subjectivity than were the considerably older trajectories in social thought of which he was rightly critical.

Giddens's style of theorizing sees him appropriate an unending recourse to the practical activities of knowledgeable agents as the basis for a reflexive, post-positivist ordering of social scientific accounts. I do not desire so much to debate the facticity of Giddens's

theory as to argue only that its contained concepts – its ‘sensitizing devices’, in Giddens’s own terms – fail to work effectively in a critical analytics of how telehealth application users may either resist the uptake of telehealth technologies, or of how acquiescence to wider patterns of use for the technologies might be secured. My criticism of the use of ICTs is not based upon a reductive equation of technology with the instrumental rationalization of action, but rather upon a mode of critique that identifies a dual character to the emergent new virtual regions of health care service delivery. The forms of subjectivity constituted in these nomadic new spaces, stand in a distinctive relation of domination above and through the sitings in time-space wherein are enunciated the epistemic realities of place, gender, ethnicity, and so forth.

As a basis for comparison, Giddens self-professedly takes up ontological concerns in lieu of those more intrinsically epistemological issues that he feels to have been on the agenda of the sociological orthodoxy for too long. We find a similar trajectory of development being undertaken in health care evaluation research in general, and in telehealth evaluation studies in particular. In both fields, evaluation is increasingly associated with the practice of economic evaluation, a starting point that works towards the analysis of either ‘outcomes’ or ‘impacts’, while obfuscating the alternative modalities of evaluation that emphasize measures of process, as I have said.

Ontologically-oriented accounts (of which Giddens’s theory of structuration is but one), are usually applied to describe the outcomes and impacts of social practices that unfold in the ‘original’ and ‘given’ object-world. Economic evaluation from this view designates ontologically-fixed and ‘finished’ measures of (cost-)effectiveness and efficiency as the

two main variables effected through changes in the methods of providing and delivering health care, where more purely epistemological orientations centered on the measurement of processes can yield no such original or finished objects of study. There is an important distinction between the respective methodological biases that feature in evaluations of process, and those in evaluations of outcome. That evaluations of process, perhaps completed in the form of institutional-ethnographic studies of everyday technology users, assume no original or fixed objects (as I argued earlier), is precisely their greatest analytic strength!

Epistemologically-oriented accounts of the multiple and differentiated subjectivities and positionalities of technology users are necessary to the elaboration of theories of telehealth use that incorporate user needs as a guiding principle of telehealth's development and evolution. In turn, it remains the case that the imperative for epistemologically-sensitive ethnographies, for example, is better taken up in the form of critical approaches to social analysis than in that of universal and subsuming models of rational actors and typified, instrumental social action. For example, Fox (1991: 711), in a way directly related to my criticisms of Giddens's theory of structuration, argues for the adoption of postmodernist and poststructuralist social theories in order to champion the "[R]ejection of structuralist or quasi-functionalist theories of social organisation, of sociological metanarratives and of the possibility of universality of communicative ability." The post-structuralist and postmodernist strategies of jettisoning that singular, typified and rational Archimedean position from which evaluation studies are to be 'properly' conducted, work to re-focus evaluation exercises toward the explication of the

social relations of power and the discursive practices of the agents whose activities are to be evaluated. Postmodern sociological analysis, for Fox, is a critical stratagem adopted in order to uncover the value-laden character of evaluation studies – that set of values expressive of the unequal power relations and conflicting interests of both the evaluators and their customers.

Insofar as social scientists accept the underlying philosophical premises of postmodern analysis, they recognize the relations of power that operate more or less explicitly in the texts they produce, and they recognize the values and assumptions implicit in their own analyses. Practitioners of postmodern sociology thus demonstrate a sustained commitment to what Fox (1991: 711) terms a ‘truly reflexive sociology’, contra to that elaborated by Giddens, who proves capable of theorizing only decidedly underdeveloped conceptions of structural transformation and the human agent. His analysis, and that of social scientists who carry forward his theoretical assumptions in the design of research on technology use, for example, import a twinned methodological bias for the taking-up of typified, universal and ‘original’ objects-of-study – rational-instrumental variables like cost-minimization, cost-benefits, cost effectiveness and cost utility appraisals derived from academic economics, measured explicitly and recorded in the form of quantitative data, and understood to be the most desirable of ends (outcomes) brought about through use of the technologies. The concepts employed in such evaluations are ‘locked into’ a model derived from economics – often an altogether external model of the social world populated by a shared community of rational actors. In process evaluation, by way of contrast, ethnographic methods are used whereby the

values of the participating subjects are actively sought. I would suggest that the economic logics implicit in the orthodox approach to evaluations of health care innovations, are mutually-constitutive with the logic of the ‘new orthodoxy’ of sociological theory contributed to by disciples of Giddens’s and others’ purportedly ‘reflexive sociologies’. In the same vein, Fox contended that a fundamental incommensurability exists between the economic logics implicit in evaluation, and the rather different valuations brought about by what truly reflexive sociological analysis can promise. This incommensurability reflects more than simply a dispute of disciplinary boundaries between sociologists and economists – what is reflected is rather the deep-running conflicts over the nature and status of social scientific auteurship.

The assumption of Giddens’s, or of a commentator using structurationist concepts, we can presume, would be that economic theory’s typified model of the rational actor is appropriated and incorporated into lay understandings of what particular health care reforms are or are not promoting of improved efficiency or effectiveness – of, in other words, the substantive rationality implicit in the very nature of evaluation of outcomes. I want to suggest that the double-hermeneutical movement involved does not unfold evenly. If understood to unfold unevenly between differentially-empowered agents, we find that the anticipated achievement of formal rationality, in Fox’s (1991: 716) words, “... is compromised by substantive rationalities reflecting value or belief commitments of groups within the market.” The slippage of the assumed formal rationality into the everyday discursive practices of actors, for example the users of telehealth applications, describes but one process brought about by the double-

hermeneutical circuitry of knowledge production described by Giddens, in such a way as to falsely legitimate substantive rationalities and power-contingent valuations and judgements. The double-movement becomes a source of obfuscation of the values of those conducting the evaluation. The double-hermeneutic can thus be problematized if understood as the slippage into social practice of a false claim to formal rationality, wherein the underwritten substantive rationalities imported into the logic of evaluation are (falsely) assumed to be free of inbuilt normativity and contingent interests.

Against traditions like structuration theory, and instead following Weber, Fox (1991: 714) extols the importance of recognizing the distinction between formal and substantive rationalities in the design of evaluation studies. The former he defines as rationality derived from a greater rather than lesser degree of calculability achieved through particular means and procedures. Formal rationality is therefore expressed in features inhering in particular processes – capitalism, science, legal and administrative systems are processes that appear to maximize the calculability of action, and in turn are seen to possess considerable formal rationality and indeed objective status. Substantive rationality, on the other hand, Fox regards as deriving solely from the value attached to some particular substantive end, result or outcome – in other words, from judgements of the value of particular human activities. According to measures of substantive rationality, chains of causality are determinable from specific variables entailing

particular value commitments.³²

For Fox, a recognition of the distinction between these two types of rationality enables the recognition of just precisely the level of relativism that tends to be imported into evaluation studies, a relativistic but nonetheless authoritative position of *auteurship* on the part of the researcher that may be either more or less shared, or more or less determined by the contingent interests of the evaluation customer. The research implications that follow from the circuit of knowledge production instantiated by structuration theory tend to reproduce this false representation of substantive rationalities as being expressive of formal rationality, as demonstrated in most evaluation studies premised upon the measurement solely of outcomes. Fox quite adequately demonstrates that it is only within a distinctively modernist social scientific stratagem that the substantive rationality of evaluation achieves hermeneutical recourse to the object-valuations of science. In turn, the purportedly-reflexive sociologies like that elaborated by Giddens resolve the problem of value, of evaluation as incorporating a substantive rationality in the guise of formal rationality, through the use of universalizing and subsuming concepts expressive of a social-scientific commitment to the valuation of temporal progress and the differentiation of modern as against non- or pre-modern societal forms.

³² Fox (1991: 716) employs the example of measures of the 'rational use of resources'; according to a formal rationality, "... all that would be meant would be that the use [was] calculable." However, as he continues: "If one wishes to judge rationality on the basis of some assessment of a causal relationship between ends and means, or of the consistency of resource allocation with some value commitment – say maximizing patient recovery – then what is meant is substantive rationality. Evaluation studies, with their concern both with causality and with value commitments, are without doubt therefore concerned with substantive rationality rather than the formal rationality of the calculability of [human] exchange ..." (ibid: 716).

The substantive rationality of evaluation, derived as it is from its subjective value commitments, also achieves objective status as a formal rationality in consequence of a further claim to rationality deriving from what I think is an altogether incomplete interpretation of human agency in the social sciences in general. Giddens's conception of the double-hermeneutic is meant to communicate the two-way process whereby the sociologists and non-sociologists discursively constitute the subject-matter of their knowledgeability to simply 'go on' as agents, reflexively implicated in the reproduction of structure as the rules and resources that 'structurate' social practice. This formulation describes a circuit of knowledge production wherein health technology users, for example, are discursively constructed as 'users' in such a way as to sever the values of evaluation that will guide their use of the technologies under examination from the values and goal-orientations of medical interest groupings, whose values are in turn to be seen as irrational.

If the double-hermeneutic is better conceived of as a decidedly uneven and in fact one-way exchange, we find the discourses of evaluation in health care and in the telehealth literature to be wanting of shared, formal rationality. Despite their claims to the contrary, these discourses in fact fall within a relativistic strand in the sociology of science and within a circuitry of knowledge production wherein the power relations between agents are typified and thus insulated from critical deconstruction. The rationalities, indeed the positionalities, of diverse populations of telehealth network users cannot be assumed to be the same, yet with proliferating discourses promoting 'universal approaches' to telehealth technology uptake and dissemination, and given the pervasive

policy emphasis on information technology uptake on the contemporary health care reform agenda in Canada, as Fox (1991: 721) put it, “[T]he power of such information goods to constitute localized substantive rationalities is overwhelming.”

The telehealth evaluation literature lends its scientific objectivism to the formal rationality tethered to the subjective rationale for telehealth use, in spite of the fact that not all telehealth applications will yield the same clinical benefits for users in all health care specialties. Telehealth users have different needs, and as health care fragments into more and more distinct sub-specialties, some using telehealth systems and some not, the incommensurability of different users’ rationalities for use will increase, creating a vast market of potential uses and misuses. Conventional evaluation research on telehealth applications tends to miss the point of fact that even where the formal rationality of telehealth technology use is well-established, the rationality of the market, in terms of the processes of actual engagement by actors, is in fact based on local rationalities of need. The universal, subsuming and typified conception of the market actor cannot supply a fixed Archimedean position upon which economists or other evaluators of innovations in health care might base claims to rationality or to truth. It is Fox’s (1991: 722) argument that in relation to health care evaluation, the postmodernists’ critical strategy of deconstruction would alternatively take as its task to:

[I]dentify local practices which, while appearing to attempt to fulfill the objectives of the service, prevent achievement of particular objectives (whatever they may be), but meanwhile ensure the fulfillment of other objectives such as maintenance of hierarchies, routinising or marginalizing particular activities, etc.

In a way akin to Fox’s proposed methodology, I should like to argue for a recovery of

epistemological concerns in the evaluation of telehealth applications – for the rejection of singular, metanarrational rationalities behind their use, and for methodological consideration of the multiple realities constituted through strategies of telehealth implementation driven by ideological interests. Giddens's conceptions of the double hermeneutic and of the ontological status of the circuitry of knowledge production serve only to reproduce the reflexive relation between telehealth evaluation based on economic outcomes and a theory behind telehealth use that, in itself, remains incomplete.

The most evident failings of telehealth evaluation research are derived from what I have termed a distinctively late modernist conception of technology-user subjectivity. The criticism stands as much an indictment of reflexive sociologies as it does of the formalized discourses of health services research and health technology assessment. The 'universal' approach to telehealth use, which assumes that the technologies under examination will improve access to clinical health care and health information at all times and in all places, signals a marked inattention on the part of telehealth evaluators to the differentiated needs of different users. If improved access to needed services is taken as the goal of telehealth growth, it is essential to note that networked telehealth technologies are at once individualizing as well as collectivizing, working as much to atomize users within an uneven geography of access as serving in the interest of inter-organizational integration. In so far as Giddens's theory of structuration works to situate typified, original agents outside of the nexus of dialectical time-space, and re-replaces them in subsuming, universalized action contexts that are in the end determinately structured, the account of the subject-user of telehealth technologies formed is one that in fact re-positions

the modernist-inspired binarisms of dynamic time set against static space, structures as set against agency, and individuals against what may be decidedly oppressive social structures in the emergent virtual geographies formed through electronic communications networks.

***Part IV: The virtual geography of Canadian telehealth networks:
Regionalization, accessibility and the making of maps under
conditions of late modern capitalism***

Having treated the social aspects of telehealth use at the spatial scales of user-subjectivity and power relations between users, I want in Part IV of this thesis to demonstrate the scope of the ‘health-care system-related effects’ of telehealth implementation and evaluation. In many countries telehealth applications are but one aspect of broader political programmes aimed at enhancing citizen interactivity with government and non-government services through the deployment of information and communications technologies. The belief is that truly networkable interactivity can be achieved, and in turn, that this phenomenon heralds the creation of a new modality of representative government. The building of network architecture is a process linking together citizens with government agencies and departments, health and social services, schools, libraries, penal facilities and an increasingly large roster of nonprofit and for-profit continuing education providers.

Network architecture enables the proliferation of telehealth applications in the multiple late modern nether-regions of cyberspace. When generated by the distributed interactive computing of innumerable networks, cyberspaces in turn open up a range of new possibilities for human perception and manipulation at whatever terminal interface – textual, graphic, audio or visual. In turn, as Luke (1999: 31) argues:

By displacing human action into another domain, new sites of identity, community and sovereignty for human subjects emerge that are, on the one hand, linked to material realities, while working, on the other hand, quite differently because of the practical properties of such cyberspatial constructs, like speed or simultaneity ...

Thus, we find that the regionalization of the material geographies of health care service

delivery find a unique parallelism in the manner in which network architecture is implicated in the formation of the ‘virtual’ regions of telehealth and telemedicine’s distinctive geography. Analogously, as Foucault (1980b: 176) argued of the centralized, urban-core contexts of eighteenth century Europe – “[P]riority areas of medicalisation ... are isolated and are destined to constitute so many points for the exercise and application of an intensified medical power”. I suggest that this same colonization is presently being undertaken of the geographical and cultural margins, in the most remote of rural settings of health care delivery.

In insisting upon theoretical accounts specifically of the *geographical* aspects of telehealth and telemedicine use as this relates to the accessibility of health services, I am calling attention to changes in the spatial organization of health care work brought about by way of telehealth innovations. For example, the large, urban-based medical complexes usually organized around a medical school and an affiliated tertiary care center, are geographically suited to recruit and retain highly-skilled and specialized medical labour, and are possessed of the organizational flexibility to *not* internalize their most costly workers, but rather to simply access them when needed and in the time and quantities that they are required in each specific instance. Organizational flexibility and adaptability of this sort are in fact facilitated through the recombination of these centres of provision and technology diffusion, coupled with their dispersed, ancillary and peripheral localities serviced via telehealth and telemedicine networks. Advanced systems of service provision, public or not, still seem to be dependent on their agglomeration in a select few large metropolitan hubs.

Thus we find that the most prevalent mode of organization of virtual care regions now conforms to what Lehoux et. al. (2002: 894) termed the ‘spoke-and-hub site model’, implying a number of remote hospitals connected to a common referral center and building upon assumptions of what a ‘remote region’ is like, and of what human and material resources are found there. If the case for telehealth system use is to be believed, telehealth innovations should enhance all types of health services in all regions. The related assumption that remote providers might use telehealth applications to both reduce travel costs and enhance patient access to a fuller range of tertiary care services in cyberspace, is premised upon the mapping of preconceived sociological-topographical properties of materially-existing health care infrastructures. Where a given mapping of a ‘health care region’ may be mistaken, is in the assumption that if patients are not transferred after receiving a diagnosis with teleconsultation, specialized treatment techniques and specially trained physicians and nurses will be on offer to provide the recommended services and care required locally.

Such dimensions of uneven development between the spoke sites existing in the material care regions in question, are seldom accounted for in the ‘selling’ of telehealth and telemedicine to policymakers and governments seeking to enhance access to needed health services. As Lehoux et. al (2002: 894-5) reported, generalist physicians in their respondent groups warned that if they were interested in soliciting a consultation from a distant specialist on a complex or otherwise difficult case, such instances were nonetheless infrequent, and that patient transfer would be required in any event because regional hospitals might not have access to the required technical or human resources to

manage or treat such cases. Remote advice may rarely be sufficient to manage or solve a patient's health problem because of lacking dimensions of integration inhering in the material care region.

If there are so many negative effects of expanded and telehealth use, then we should aim to devise theories accounting for why its growth is proceeding in an unchecked fashion, with numerous distinctively-motivated communities of interest seeking to demonstrate the technologies' potential. Such theories would need to be themselves integrative enough to elaborate the relationship between the regionalization of social settings and human practices, the use of new information and communications technologies, and the shifting character of health care economies; in turn, theories of this type would allow us to describe the processual manner in which telehealth applications are used to provide information, professional medical education and patient care geared to what I have argued are the temporal rhythms and spatial patterns particular to the commodification of health care delivery in capitalist countries.

Now largely-out-of-fashion theories of industrial location under capitalism, for instance, proceeded from the premise that the 'optimal spatio-temporal arrangement' for any given industry could be derived from aggregate measures of consumer demand in a bounded territory, and product or service supply could be adjusted to account for population shifts over time. Since health care and information delivery is happening in multiple and increasingly differentiated settings, such models for understanding political efforts aimed at spatial reorganization, are not particularly useful in the existing political-economic context of the health reform agenda. The glut of telehealth and telemedicine

systems that are now facilitating the regionalization of settings and productive processes in health care, on the contrary, *can* be usefully understood through the interpretive application of concepts imported from regional economic geography, and thus I believe that an analogism can be entered between firms' quest for flexibility and changing patterns of geographical organization of the health care industry in contemporary Canada.

Telehealth at the level of clinical practices institutes particular time and space costs to health care transactions that, in the final analysis, may limit the realization of clinical benefits for certain applications. Indeed, at the level of regionalized 'health care systems', the virtual care regions produced through telehealth technology use are not to be properly considered spaces of user empowerment, but rather of typification and subsumption to the imperative for telehealth uptake and dissemination voiced by the telehealth system designers. Insofar as the circumstances of late modern time-space relations involve the production of 'simulated proximity' between users, they simultaneously either produce, underpin or embolden real, materially-existing geographic and cultural distances.

The great imaginings of a putatively new mode of sociability based on the immateriality of human communications conducted in virtual reality (VR) remain subject to the constraints deriving from users' 'boundedness' in particular places and particular relations of subjectivity in 'real life' (RL). In designating the reshaping of the dimensions of virtualized 'access' accorded to users of telehealth networks as exemplifying a particular mode of political organization of cyberspace, we see that telehealth networks increasingly implicate their users into patterns of time-space

production in the service of wider social processes of marketization – the sorting out of different categories of users, and their re-emplacement into the global markets of telehealth services provided for profit.

I argue that in the contemporary circumstances of time-space compression, marketized telehealth services prove unable to yield any better than an uneven geography of access, unable to account for the possibility that telehealth system users in culturally and geographically remote regions are both bounded and based, differentially positioned in their respective places. In the absence of localized ownership and control of telehealth networks, the spatial patterns and temporal rhythms of health care and information transactions will continue to be determined by capitalistic interests that are purely exterritorial, rather than localized. Knowledge of the time-space ‘locatedness’ of social forms and types is presented as a taken-for-granted starting premise of theory-building in the social sciences and humanities – any society, human behaviour or phenomenon is in some self-evident sense ‘situated’ in both time and space, each has a duration in elapsed time and a ‘scale’ of effect in space. But any understanding of time as distinct from space, and of the two as discrete, mutually-exclusive ‘metaphysical containers’ wherein social life thereafter ‘happens’, is itself incomplete, as I have argued. The time-space constitution of human life is a process implicated along with a process whereby human societies and activities interlace into the constitution of a time-space nexus, the conceptual ‘clamping-together’ of reciprocally-constitutive time-space into a single if somewhat unwieldy neologism.

There are two related, distinctively modern social processes whereby temporal

and spatial relations are produced; the first is that of time-space distantiation, and the second that of time-space compression. These processes are themselves embedded in time-space, and simultaneously produce the time-space effects of social practices; a core aspect of my argument is that they can be seen to happen more or less in concert with one another, or separately. It remains the case, however, that many commentators instead periodize the two – modernity is juxtaposed against pre-modernity (or, more aptly maybe, any number of anti-modernities), and time-space distantiation, not compression, is regarded as the core feature of the time-space organization of distinctively *modern* social life. Theorists who describe time-space distantiation as the defining feature of late modernity, or of postmodernity even, do so in an approving fashion, usually emphasizing the emancipatory potentials of social action enabled through late modern modes of transit along electronic networks. Against that view, other commentators emphasize the contemporary crisis in our experience of time-space, as one of their compression – that rather than decoupling time from space, the two have since at least the beginning of the nineteenth century periodically collapsed in on one another, recombined so as to allow for the spaces of representation, of radicality, to periodically interpenetrate the idealized abstractions of modernist thought. Postmodern aesthetic and political forms were ushered in by the stress of time-space compression, and they have continued to find their genesis in late modern capitalism's pursuit of increasingly flexible accumulation strategies.

Accordingly then, I want first to describe some of the basic properties of the first perspective – that of those authors (cf. Giddens, 1984; Boden and Molotch, 1994;

Bauman, 2000) who accept the characterization of modernity as the age of time-space distantiation; subsequently, I shall describe the basic contours of the argument of those who see the accelerating process of time-space compression as integrally involved in the transformation of modern capitalism into its distinctively non-modern and perhaps distinctively *postmodern* form (cf. Harvey, 1989, 2000; Jameson, 1991).

It is common in lay and academic discourses to find modernity and modern life characterized respectively as a period in history and as a mode of sociality both based on a principle of distance or of extension, not of co-present proximity nor of emplacement. In turn, in late modernity the prevalent form of social spatialization is the production of sites linked in to networks of interdependencies – a process that we see substituting for that of extension, which itself had replaced emplacement.³³ The ‘friction of distance’ is no longer a deleterious barrier to modernizing, historical progress as individuals, firms and bureaucracies become progressively more ‘footloose’ (Boden and Molotch, 1994: 257).³⁴ Time-space distantiation is conceptually developed as a ‘stretching’ of social relations across time-space (cf. Giddens, 1984), communicating the idea that modern social practices are enabled and facilitated at progressively greater social and

³³ Consider for example Foucault’s account, wherein “... starting with Galileo in the seventeenth century, extension was substituted for localization” (Foucault, 1986: 23), owing to the rise of early, high modernity after the Middle Ages. Foucault argued that in the Middle Ages, localized emplacements worked to situate things in their place, sometimes through human acts of violence, but in a way dependent upon the good fortunes of a perceived and projected natural order of things-in-their-place. It was not until the seventeenth century that social forms shaped by principles of place, localization, proximity, containment, and microcosmic chains of emplacement were supplanted by the positing of universal space, of the abstracted principle of extension.

³⁴ The elimination of the friction of distance thus finds its effect on economic life to be what Dawson and Foster (1996: 54) term a “... vision of a more perfect and universal corporate dominated market environment – one from which countless numbers of people with pecuniary resources [are] excluded.”

geographical distances (i.e., the constraints of space are increasingly rendered irrelevant in relation to the metaphysical and metaphorical ‘reach’ of human ingenuity) over progressively shorter durations in time, achieving near-instantaneity in late modernity through the use of transportation and communications systems unavailable to the subjects inhabiting pre-modern societies.

The communications technologies that enable time-space distantiation, are seen not only to expand the reach of sociability across ever-greater physical-geographic distances, but past the horizons of social, cultural, political and economic difference as well. I want to suggest that the simulated proximity gained through electronic communication, represents achieved sociability at progressively greater social distances from the consideration of moral calculation (cf. Bauman, 2000; 2001) and ethical responsibility. Within this particular rubric for understanding time-space distantiation, and electronic communications by logical extension, we see information and communications technologies working to disassemble relations of subjective, epistemic affectivity and posit in their place abstractions of purported universal relevance and objectivity – precisely those precepts of rational-bureaucratic social organization associated with modernity, considered as a particular time-space epoch and as a dominant sociocultural form.

This view of time-space distantiation as the definitive modern quality of human life, rather unapologetically reproduces the fiction of metaphysical time left untethered from physical space; further, while taking as its central point of departure the proposition that the rise of modernity itself is a function of the severing of time from space, it

subordinates the analytical relevance of space to that of time in social science accounts of social change – access to instantaneity in time becomes the referential marker of modern dynamism while the command of limited, localized space is regarded as the essential feature of a modular type of pre-modern communal life. While it remains a source of contention as to when precisely modernity emerged as a distinctive period in human history, it is Bauman's (2000: 8) suggestion that:

Modernity starts when space and time are separated from living practice and from each other and so become ready to be theorized as distinct and mutually independent categories of strategy and action, when they cease to be, as they used to be in long pre-modern centuries, the intertwined and so barely distinguishable aspects of living experience, locked in a stable and apparently invulnerable one-to-one correspondence.

If that is in fact the case – that modernity was virtually from its inception (if not identifiably until at least the time of Descartes) premised upon a practical *and* metaphysical unbridling of temporal elapse from spatial fixity – then only more so in the contemporary late modern period, wherein emerges the single most dramatic tendency towards the severing of the time-space relation into antinomic categories than that performed in any epoch that has went before.

Perhaps the single most significant commentator for whom the notion of modern distantiation in time-space was subject to critique, has been David Harvey (cf. 1989; 2000). He (1989: 219) noted that the dimension of 'access' to shared sociability that human subjects can achieve, is dependent upon the subjects' 'distanciation' in time and space – that, in other words, the 'friction of distance' imposes limits upon the possible 'stretching' of human affairs and interactions across space and time. In this formulation,

distance is conceived of as a barrier to human interaction, imposing transaction costs upon the systems of production and reproduction of relations of appropriation and domination (ibid: 219). In turn 'distanciation', for Harvey, is really no more than a measure of the degree to which the friction of distance in space has been overcome (via the phenomenon of 'speed-up' in time) in order to enable communications over increasingly greater spatial scales. The experience of communication, and the time-space relations that enable its completion, have most assuredly changed with the shift from modernist to postmodernist ways of thinking about social relations and subjectivity.

Harvey was inspired to appropriate the terms of postmodern criticism in order to issue a defense of Baudelaire's definition of modernity as a period wherein the prevailing aesthetic form conjoined the 'eternal and immutable' with the 'ephemeral and fleeting'. This, in an effort to demonstrate that the lives of modern subjects were from modernity's inception characterized by a sense of the fragmentary and the contingent, that at no point in time did modernist metanarratives, suffused with the monotony of modernizing rationality, constitute so solidified a conception of the ideal social order as to deny the possibility of rupture and discontinuity.³⁵ In other words, modernity was totalizing and solidified only in its tendency towards fragmentation, and in modern subjects' power to completely tear asunder whatever had went before. Importantly, this underlines the claim that Giddens's sociology, which vacillates between a typified and strangely inanimate conception of the emancipated human agent, and the reproduction of a determinate and

³⁵ Indeed, in the domain of literature Harvey (1989: 11) suggests that, "[T]here is abundant evidence ... that most 'modern' writers have recognized that the only secure thing about modernity is its insecurity, its penchant, even, for 'totalizing chaos'."

paralyzing conception of social structure (recall section I on the relation between telehealth, subjectivity and relations of power), is an example of an altogether modernist discourse. It reveals a likened tension between the dimensions of internal rupture and avant-garde radicalism, as set against the eternal and immutable, as that tension which persists between agency and structure in the reflexive sociologies of which Giddens's is but one example.

Thus, as Harvey (1989: 42) warns, it is often a tenuous proposition to simply binarily set the modern aesthetic form against its postmodern critique, to "... depict complex relations as simple polarizations, when almost certainly the true state of sensibility, the real 'structure of feeling' in both the modern and postmodern periods, lies in the manner in which these stylistic oppositions are synthesized." The divisions between modern political-economic structures and postmodern cultural-ideological relations have, within the history of capitalism, never been so clearly demarcated from one another as is so often suggested in some deconstructivist, postmodernist-styled accounts, or as expressed in the longing-for-metanarrativity found in certain structuralist theories. So complex are the relations and interpenetrations of each domain between one another, that it is difficult to discern if and where the modernist impulse in political, economic and cultural life in fact has ended, if indeed it has.

The ascendancy of Enlightenment thought involved the interjection of what now seem rather grandiose humanist doctrines into the modernist imaginary, although certainly the modernist project was already possessed of dimensions to that effect. The point, however, is that modernism from its genesis accorded to itself a view of historical

change that was riven with mutations and dismantlings, fragmentations and revolutions in intellectual and aesthetic life. It is not difficult to see both how and why modernism aimed to decouple time from space, to smash the latter into pieces with the necessary implication that its fragmentation will remain essential to the modernist's command of time. As Harvey (1989: 16-7) puts it, "[W]e here see at work that opposition between the ephemeral and the eternal in a rather different guise ... If the modernist has to destroy in order to create, then the only way to represent eternal truths is through a process of destruction that is liable, in the end, to be itself destructive of those truths ..."

What I have described as the 'new' orthodoxy of social theories typically privilege time over space in their formulations, and indeed most theories incorporative of the concept of time-space distantiation enact exactly this privileging of time over space as well. This is not surprising, superficially speaking, given the manner in which they articulate core concerns related to temporally-bound processes of social change, modernization and revolution – with, in other words, the annihilation of space through time, to repeat Marx and Engels' famous maxim – as the very defining feature of modern social life. To the contrary, Harvey suggests that an attentiveness to the aesthetic aspect of modernity captures the practices whereby space is produced in such a way as to render time irrelevant; through, for example, the actions of the architect who tries to communicate certain values through the construction of a spatial form capable of freezing the experience of a place in a way that transcends time. Any system of representation is at once more of a spatialization of time than a temporalization of space.

The time-geography pioneered by Hägerstrand was conceded by Giddens to be

more intrinsically concerned with the mapping of the rhythms in time of individual biographies, than with the spatial dimension of social practices. Harvey (1989: 211-3) does not go so far, but notes that the time-geographic notation method, "... tells us nothing about how 'stations' and 'domains' are produced, or why the 'friction of distance' varies in the way it palpably does.". Harvey herein confirms that time-geographic notation tends to posit the existence of universal, typified and subsuming time-space paths, stations, domains and biographies.

A more sound analytic method for the study of time-space practices, Harvey suggests, would proceed from the premise that political power and ideological hegemony are achieved in a way that is dependent upon the ability of subjects to control the specific material contexts of their personal and social experience. Human agents thus work to achieve command over space in order to establish their respective positionalities – to stake out a position in the world that binds one's identity to that place in time. Positionality is created through discursive and material practices of inclusion, as well as of exclusion. Poststructuralist deconstruction is an analytic tactic uniquely suited to the task of rendering the multiple discursive and material practices of exclusion by which different 'positions' are established (Butler and Scott, 1992: xiv).³⁶ From this standpoint, objectivity and subjectivity, ephemeral and eternal, agent and structure, and indeed time

³⁶ These authors elaborate specifically on the potentials of a feminist poststructuralism to appropriate the terms of orthodox political discourses in order to expose their inbuilt obfuscations of antinomic positions: "[A] feminist poststructuralism does not designate a position from which one operates, a point of view or standpoint which might be usefully compared with other 'positions' within the theoretical field ... To perform a feminist deconstruction of some of the primary terms of political discourse is in no sense to censor their usage, negate them, or to announce their anachronicity. On the contrary, this kind of analysis *requires* that these terms be reused and rethought, exposed as strategic instruments and effects, and subjected to a critical reinscription and redeployment." (Butler and Scott, 1992: xiv).

and space – are binarisms capable of seeing their internal boundaries continually blurred and transgressed, transposed onto one another and compressed into novel recombinations. Of the modern-postmodern opposition, for example, Harvey (1989: 116) suggests that, “There is much more continuity than difference between the broad history of modernism and the movement called postmodernism” – that the latter can be seen as a particular type of crisis within the former, one that, “... emphasizes the fragmentary, the ephemeral, and the chaotic ... while expressing a deep scepticism as to any particular prescriptions as to how the eternal and immutable should be conceived of, represented, or expressed.”

In turn, postmodernism is characterized by a concern for difference, for the difficulties of communication, and for the complexity and differentiation of interests, cultures and places. It is the suggestion of Harvey, that the spatio-temporal crises of flexible accumulation are derived from the necessity for capital to achieve a ‘spatial fix’ – to invest considerable time, space and resources in the development and implementation of technological innovations, improvements to facilities and labour management strategies that are ‘fixed-in-place’ – paradoxically towards the end goal of achieving greater ‘speed-up’ in the time required for the turnover of surplus accumulation. Thus time-space compression, not distantiation, is the characteristic feature of the experience of time and space in circumstances of postmodernity, certainly, but also in the history of the successive waves of accumulation that have unfolded under the conditions of a distinctively *modern* form of capitalist production in most Western societies.

Telehealth applications, particularly when disseminated in the cyberspatial context of electronic networks, work to amass relations of temporal instantaneity in

clinical communications, purportedly diminishing the need for materially-existing health networks to achieve spatial fixity in place. In seeking to annihilate space and subordinate to the march of the logic of temporal progress inhering in historicity, theorists like Giddens who isolate time-space distancing as the crucial defining quality of late modern sociability palpably fail, it seems, to acknowledge the dynamism of place. Place exists, I would argue, as the most essential repository of collective memory on offer to late modern users of communications technologies. More so than in any way overcoming the boundedness of place, telehealth technologies and networked applications work to implicate particular places and their populant positionalities into the rhythms and patterns of time-space compression. As time and space become ever more tightly bound together, it is the suggestion of authors such as Giddens that space is no more than a gap to be filled with human communicative action (cf. Gregory, 1989: 206). For authors such as Harvey, space does indeed become filled, but specifically by human efforts at achieving fixity, not transcendence.

As I have argued, the inception of modernity effected a philosophical and practical privileging of the domain of time, of temporal elapse, *over* the significance of space as the point of origin for the profaning of the sacred and the destruction of all that had went before; time has also found in modernity its capacity to be commodified more readily than can space. Proscriptions for technology uptake, for example, will inevitably report the various ‘time-costs’ associated with a particular technological application, and costs, as per the logic of price-fixing markets, are variable over time, lending substance to the oft-repeated maxim, ‘Time is money.’ That time-units can easily be tethered to

monetary valuations therefore points to their relative advantage in ‘carrying capacity’ when juxtaposed to space. Thus Bauman (2000: 112) suggests that, “Time became money once it had become a tool (or a weapon?) deployed primarily in the ongoing effort of overcoming [the] resistance of space: shortening distances, stripping the ‘remoteness’ of the meaning of an obstacle, let alone of a limit, to human ambition.” The instantaneity made possible in late, liquefying modernity, empties space of its constraining properties when set against the equation of temporal elapse with the modern compulsion towards progress. That compulsion, however, brought under siege by its feminist, postmodernist and poststructuralist critiques, has undergone a shift in form.

No longer does the idea of ‘progress’ signal immediately the notion of ‘societal progress’, of ‘socialized’ progress. Rather, technological innovation and uptake provides a template example of the manner in which policy choices are increasingly made with the technology’s implementation itself as the goal without regard to the effects, whether indeed it shall yield benefits and, above all, with the inbuilt assumption that individuals ought modify their behaviours and traditions to incorporate its use into their everyday practices. Technological innovations, from that standpoint, become solutions in search of problems, with the speed and facility of their entry into use becoming the overarching goal of national innovation strategies. In late (post?) modernity, we find that the advent of post-Panoptical modalities of governance to mean that the exercise of power can be achieved in absolute instantaneity, with the transmission of a fleeting electronic signal, and the net effect is that power is no longer bounded, nor even slowed, by the constraints of institutional fixedness or the resistances of space; power has become truly

exterritorial. While the consideration of time itself - history - may not in fact have suffered its demise more than simply undergone a shift in direction, what is increasingly clear is that (post)modern history augurs the end of the era of power exercised through mutual, co-present spatial engagement between state and citizenry, capital and labour, surveillants and inmates.

During the last three decades, the dismantling of the great Panopticons of intensive labour management and organizational rigidity held the promise of liberating individual agency both analytically and in human practice from the bonds of structural constraints and from enframement within a closed social system of rationalized and productive work. But the promise of liberation stripped from the modern subjects of the Fordist-modeled state certain benefits which only recently have become salient with their gradual disappearance. As Harvey (1989: 171) noted, the increasingly flexible motion of capital, "... emphasizes the new, the fleeting, the ephemeral, the fugitive, and the contingent in modern life, rather than the more solid values implanted under Fordism." The economic practices of increasingly flexible accumulation, in other words, find their cultural counterpart in the rise of the postmodern aesthetic, and what Jameson (1991) termed the emergent 'cultural dominant' of the postmodern is one wherein all is, literally, dismantled and born anew as a matter of the distinctively post-Panoptical, but still steadfastly *modern* exercise of power.

For the postmodern critique is forever subject to the prospect of being reigned in by the terms of its own critical lexicon, and as such cannot present itself as a thoroughgoing and authentic displacement of the forever incomplete, obsessive proclivity

towards modernization; what, in other words, Bauman (2000: 28) terms, "... the overwhelming and ineradicable, unquenchable thirst for creative destruction (or of destructive creativity, as the case might be: of 'clearing the site' in the name of a 'new and improved' design; of 'dismantling', 'cutting out', 'phasing out', 'merging' or 'downsizing', all for the sake of a greater capacity for doing more of the same in the future – enhancing productivity or competitiveness)." The discursive contours of the age of postmodernity, in Lyotard's well known formulation, in fact provide the very condition for modernity's ascendancy as the prevalent cultural code. What beckons are regional theories capable of grasping the full extent of the ongoing changes in our experiences of place and of positionality.

Human geography is riven with accounts such as these. For example, transecting all of the rural, economic, and ethical contexts of telehealth use, Cutchin (2002: 19) argued that there was a common thread of geographical change ushered in by the proliferation of telehealth or telemedicine applications, what he terms the 'regionalization' of care. Regionalization is a difficult-to-define concept, and the range of organizational reforms in health care that can be conceptualized within regionalization's definitional purview are legion. Preliminarily, we can argue that telehealth and telemedicine applications enable the regionalization of health care in two distinct but related senses: first, and perhaps most self-evidently, in that telehealth and telemedicine technologies 'create regions' – in other words, that they enable the 'territorialization' of health care settings at both larger and smaller geographical scales, herein accounting for multiplicity of time-space settings wherein health care and

information are sought.

Second, and in a conception that I will return to, the uptake of telehealth applications is a constitutive set of practices effecting what social scientists like Anthony Giddens (1984) have likewise termed ‘regionalization’, here used to describe a process involving the nominal-discursive and tacit-behavioural ‘zoning’ of particular settings for specific sorts of activities. As different ‘regions’ are rendered over time as being differentially ‘zoned’ for multiple and shifting sorts of activities, so are relations between the individuals populating those regions transformed. This usage of regionalization is not wholly incompatible with the first usage, insofar as it retains an emphasis on the precept of ‘regions’ as being in some way or another *organized according to spatial principles*. Regionalization in this sense is seen to contribute to the formation of established communications practices in health care, and to the communications networks linking together providers and patients, through the production of ‘context effects’ and routinized interactions. It is the case, I think, that regionalization is best conceived of in either sense as a principle of organization particular to a health care ‘system’, meant to indicate that the most prominent feature of that system’s organizational form is above all geographical in its character.

Geographical and spatial metaphors are everywhere employed in academic and lay considerations of health care system design, and it is the concept of a ‘health care system’ itself, rather, that I use with appropriate caution, since the term has tended to describe a modular, overly-concretized entity comprised of a continuum of health care ‘sectors’ through which a patient is thought to move, from self care and primary care

through to acute tertiary care, in turn to long-term and palliative care settings. In point of fact clinical health care *and* health information are sought, perceived and delivered both within and outside of an enormously fractious and disintegrated assemblage of geographical settings, and the creation of virtual regions of care alongside their material counterparts stands as evidence to precisely this fact.

By according to regionalization its appropriate definitional breadth, we can include changing organizational structures for health care decision-making, especially in the areas of financing and service allocation, among those reform initiatives aimed at regionalization. Church and Barker (1998) define regionalization as an organizational arrangement whereby there is an intermediary structure of governance created to assume the decision-making authority previously assigned to either centralized or locally-based structures. The newly-created, meso-level authorities can thus be created through regionalization ‘upward’ from the devolved level of local boards, or ‘downward’ from large, centralized governing agencies. Regionalization upward implies centralization to some extent, inasmuch as the regional structures are centralized in their coordination of services provided in more purely local settings. The assumption is that centralized planning at the level of regions, reduces the duplication of services and administrative waste that are thought to be characteristic of larger bureaucracies. Simultaneously, the meso-level of centralization is felt to assist in the enforcement of relatively equal standards of care and in the realization of economies of scale that localized structures cannot achieve. Cutchin (2002: 22-23) counts the carrying out of decisions related to the distribution of physicians, the distribution of capital expenditures, and the control of

patient movements between services as being within the purview of 'upward-moving' regionalization programs.

Regional health authorities responsible for managing the transition from acute institutional care to community-based care, on the other hand, are charged with affecting a true 'cultural shift' (Casebeer, Scott and Hannah, 2000: 89), in the sense that the new organizational culture will reflect a population health model based upon the unique characteristics of the region, its management orientation, the broader social determinants of health and a principle of improved access to more responsive and effective services. Thus, regionalization downward implies decentralization from the standpoint both that the new population health model in operation is considered to be more sensitive to local needs, and that locally-based representation structures provides an accessible avenue for citizen-participation in health-care decision-making (Church and Barker, 1998: 468).

Thus, in practically all definitions of regionalization, the implied policy goals are centered upon improving access, quality, cost and equity in service coordination and delivery. What is more, as Cutchin (2002: 23) argues:

Discussions of regionalization usually recognize that a vertically organized hierarchy must be imposed across a landscape by ordering services spatially following the organizational structure and the regionalization emphasis ... The net effect is argued [to be] a 'rationalization' or 'appropriate distribution' of scarce resources to better meet the needs of a population in a defined area ...

While the concept of 'regionalization' may, as I have said, imply either a decentralization or centralization of authority, it is by no means associated by definition with the dissolution of hierarchies. Vertical hierarchies of community-based organizations

develop in order to share resources and improve efficiencies, with the implication that some interests, groups and organizations will possess more authority than others, given that as Cutchin (2002: 23) observes, “Individualism and ‘community independence’ are often based in anti-centralization positions and are seen as barriers to regionalization ...”

Cutchin (2002: 22) usefully points out that the ‘first wave’ of US-based telemedicine systems were developed in the 1970s but had all but disappeared by the mid-1980s, owing mainly to the financial, technical and practical-behavioural constraints against its broad-scale use in medical care delivery. Regionalization was only beginning to enter governmental discourses promoting cost-containment and more devolved levels of administrative oversight in the 1980s, and the successful uptake of telemedicine and telehealth systems would demand those concomitant reform initiatives aimed at regionalization. The two in one sense imply one another, if in fact we take it as desirable for telehealth and telemedicine activity to find their most valued uses mainly in geographic regions which may have lay outside the practicable jurisdiction of the care region as it existed prior to regionalization.³⁷ The re-emergence of telehealth and telemedicine networks in the 1990s in the US, Canada and elsewhere, therefore occurred in a wider political context wherein regionalization was by then established as a central feature of the health care reform agenda.

³⁷ While the financing of Canadian health-care was and remains accomplished through the federal medicare program, Church and Barker (1998: 470) point to the importance of non-price factors related to opportunity costs, language problems, level of education and cultural differences as barriers to access. I have made this point elsewhere, but it bears repeating for reason that the achievement of effective overall care is dependent in regional arrangements upon the levels of access accorded to all those people living in the region for a full, comprehensive range of care (Church and Barker, 1998: 470), from hospitals at one end to home services at the other. It is in all of these sites that non-cost factors may prove most persistent as barriers whereby persons fail or refuse to seek the care they need.

The relationship between telehealth applications and regionalization came to present common conceptual and applied challenges to medical geographers and health service researchers alike. Regionalization *and* telehealth applications were promoted as reform initiatives capable of enhancing the dimension of systemness present along an ‘integrated continuum’ of health services. Regionalization programs were designed to improve either inter- and intra-organizational coordination in multi-hospital systems, or at the level of community-based care, and Cutchin observed both processes to be occurring today in the case of the United States. Importantly, he qualifies that fact in noting that multi-hospital linkages tend to have a more direct interlacement with telemedicine networks (ibid: 23) than does community-based care to date, and large, urban-based tertiary care hospitals remain the most prominent of network hubs even in the wake of emergent patterns of regionalization downward to the level of individual communities. Reform initiatives aimed at regionalization, not all that unlike those aimed at the creation of massified telehealth networks, also paradoxically seem to be much more often about the centralization, integration or overt amalgamation of hospital functions than they are about sustaining practicable *continuity of care* for the users of community-based services.

Accordingly, regionalization initiatives have tended to be politically-driven by seemingly conflicting ideologies; where a welfarist ideology demands the rationalization of services towards the achievement of greater equity in access and quality of care or information, a competing market ideology focuses on the imperative for cost-savings, and may be derived more directly from a for-profit provider organization’s ability to manage

a regional system, save expenditures and increase net operating results (cf. Cutchin, 2002: 23). A third ideology is one often held to by grass-roots health care advocates, who praise the greater measure of local control achieved through some regionalization programs. Where the ‘downward’ style of regionalization is undertaken, it is aimed at reallocating more resources to the community care sector, whose authority is usually vested in local decision-making bodies and wherein it is believed by some that service delivery itself is both more equitably-shared and possessed of a greater dimension of continuity.³⁸

In a way related to the conception of regionalization as a ‘zoning’ of social settings appropriate to specific activities, we find regional health care systems to be organized into more or less distinctive settings, and those are ‘zoned’ in the sense that providers and patients alike are acclimated to the use of those contexts or settings for particular types of health care transactions. The implementation of telehealth and telemedicine technologies into routine health care practices is generative of similar ‘regions’ of activity, again defining particular settings and practices as normatively appropriate, according to the varied influences of the ideology(ies) driving the regionalization process itself. The network architectures upon which telehealth systems rely to deliver their services to bounded populations, too, are ‘regionally-based’ at

³⁸ However, as Church and Barker (1998: 474) argued: “While presumably the introduction of a population-based funding model will ensure that resources are distributed according to the needs of the identified service population (including cross-boundary traffic), this creates a further political problem – particularly in rural [regions] which export large numbers of patients to major urban centers ... [B]oundaries appear to [dissolve] as communities in some of the smaller regions outside major urban centers attempt to join the larger regions.” Predictably, the achievement of economies of scale may be more difficult than regionalization advocates suggest, since the patterns of patient traffic can inflate the costs incurred in one region over another at any given point in time.

varying geographical scales – from the micro-level of a video-link to a physician's desktop, to community health information networks (CHINs), to the level of national health indicator-monitoring databases. In a process analogous to the manner in which regional health care geographies are created, regions of virtual health care are put in place via networkable telehealth systems.

In Canada, reforms geared towards regionalization have been implemented in almost all of the provinces and territories, as aspects of a health care reform agenda driven mainly by the cost-saving rationality championed by market reformers of various political stripes. Regional health care systems have also been instituted in response to popular support for greater equity and enhanced citizen participation in health care decision-making (Cutchin, 2002; Church and Barker, 1998). Regionalization has been suggested to have yielded more negative than positive outcomes for rural communities in provinces like Saskatchewan, for example, as local community hospitals have been amalgamated or closed altogether (cf. James, 1999). Many observers view the provinces' regionalization initiatives more positively with regard to the creation of the larger, vertically-integrated authority structures and regional health boards that work to maintain acceptable levels of access to primary care and to preserve traditional referral patterns. It is believed that the strategies of both systemic rationalization and enhanced local control are more easily achieved in Canada than in the United States, for instance, because of the compensating effects of easier access to care overall, and the provision of universal public health insurance.

But the euphoric techno-fantasies about the democratizing potentials of network

architecture are utopic, and tend to gloss over the lived realities of the multiple positionalities that will no doubt populate the contradictory, heterogeneous, and contestatory landscapes of virtual as well as material health care regions. This matter of fact has not prevented the proponents of electronic networks from imagining typifications of those ‘absolutely perfect other places’ (cf. Foucault, 1986: 27) that might be brought inside and mapped onto the emergent (but ultimately uneven) geographies of network connectivity. The relations of place to identity define what precisely are the sites of contestation littered across what Bauman termed the ‘garden cultures’ characteristic of modern geographies.³⁹ These geographies are mapped through the media of political technologies as the sites of difference or of sameness, defined and designed for inclusion or exclusion.

Most telehealth applications are now designed with the requisite dimension of flexibility needed to achieve network interactivity, with web-based and wireless structures providing the most visible examples of the ethereal, ‘virtual’ spaces being developed between materially-existing telehealth platforms and material health care geographies. The virtual health care region, then, is established in conjunction with the material sites of health care facilities, with the most important of these usually being a specialized, tertiary care hospital. As Cutchin (2002: 26) describes it, this ‘core’ hospital

³⁹ As Harvey argued, any system of representation of this sort is a fixed spatial construct, with clearly delimited boundaries of inclusion and exclusion. Gardening, or the creation of maps, work to convert object-spaces into a fixed schema. Harvey (1989: 253) noted also that, “By treating certain idealized conceptions of space and time as real, Enlightenment thinkers ran the danger of confining the free flow of human experience and practice to rationalized configurations”, and that, “It is in these terms that Foucault detects the repressive turn in Enlightenment practices towards surveillance and control.”

is, "... normally at the center of a function[al] medical care region, serving as the highest-order facility that receives upward referrals in a regional constellation of care providers and organizations."

In the same manner that we should not interpret clinical telehealth applications as being identical to the provision of traditional health care services, a virtual region of care can only in rare instances be regarded as a simple cyberspatial extension of the materially existing health network along which it is organized. This is because the inequitable distribution of telehealth expertise, and the uneven distribution of the resources required for sustainable telehealth projects, are problems that exacerbate the existing inequities already *internal to* the material constellations of health care regions. As Cutchin (2002: 26) argues, it is felt that, "[T]he virtual network and [virtual] region shall eventually be embedded within – indeed be the backbone of – the entire brick-and-mortar network of a region", and that therefore, it is taken as given that material network structures both will and indeed should underlie the virtual regions of telehealth systems, both in concept and in actual infrastructure. This connection serves firstly to lend further evidence to the argument that I have wanted to make by following Cutchin's formulation, tying material processes of regionalization as an aspect of the health care reform agenda to the virtual regionalization of health care practices and transactions accomplished through telehealth implementation and evaluation. Secondly, however, what is pointed to is the principal problem that I see to result from the interlacement of real-and-imagined, material-and-virtual regions of health care – their hierarchically-networked character. In the Canadian context, hierarchical rather than distributed network forms have been the prevailing

model for telehealth linkages since the 1970s.

We should not, as Cutchin might as much concede, assume that there currently exist even, equal or equitable geographies of care even in contexts as yet untouched by the effects of telehealth or telemedicine systems. Rather, we should recognize firstly that existing material regions of care feature significant unevenness, inequalities and inequities with regard to accessibility, and second, that the impending integration of telehealth applications into everyday health care practices will create new, hybrid virtual-material geographies of uneven and unequal care. The ‘virtual spaces’ populated by telehealth users are of course ‘bounded’ by the physical properties and frontiers of the network architecture; telehealth networks may not be able to achieve the same ‘areal’ stretch achieved by a given, material medical coverage pattern. As Cutchin (2002: 26-7) puts it, “There is a geographical nonconformity of material and virtual regions – many places are left out of the region defined by such networks”, and thus that, “Many places currently fall in between the ‘spokes’ of the telemedicine network.” (ibid: 26-7). Even the most deeply-penetrating telehealth networks may *not* in fact be sufficiently diffuse or otherwise accessible to meet the health care and information needs of the greatest number of potential users. The problem extends beyond the domain of patient needs into the field of telehealth activity involving remote decision support for providers and electronic continuing medical education.

If telehealth implementation is to be achieved in a manner akin to that whereby other, more ‘ubiquitous’ communications media like the telephone gained their prominence in everyday use, we should properly recognize that many remote sites will

not be granted access to the networks. Every lesson we can possibly draw from the history of communications media development would indicate that there is a considerable disparity between the pace whereby communications infrastructure penetration is achieved in urban as against rural settings, for example⁴⁰ Urban infrastructure investments promise the most immediate and numerous profitable returns for firms who own and control networks of all types, from telecommunications networks to railway transport networks. The problem of uneven development is particularly acute for telehealth programs and their participants because the sustainability of the networks, and the cohesion of both the material and virtual regions of care will come to depend not upon the adoption of the innovation *per se* but on the implementation of telehealth and telemedicine services at the remote, referring sites most likely to lack sophisticated telecommunications connectivity. Virtual care systems, in the final instance as Cutchin (2002: 27) argues, are likely to be selective in their inclusion of material care locations and providers.

If it is taken as given that a ‘virtual’ telehealth region must be formed in such a way as to integrate the utilities of a tertiary care center with those of remote sites existing elsewhere, we find the resultant service provision arrangement to be one in which the virtual care system is dependent on the capacity of the material care system to provide an adequate dimension of health care supply. In turn, the utilization patterns at the remote

⁴⁰ What is more, according to Dawson and Foster (1996: 42): “The entire history of communications should warn us against the view that the technology will be determinant; rather much will depend on the political-economic system and the struggles around it ... [E]very technological revolution in communications – no matter what its potential for democratization has been – has lent itself to the growth of new monopolies of information when inscribed within existing systems of social and economic power.”

sites will be determined by their differentiated degrees of integration with the available services on offer in the material regions of the tertiary care centers. Standards of care are difficult to ensure in such an arrangement, since some patients will use locally-based services where others gain access to those on offer from the network hub. It is of course difficult to assess which group of patient users is better-served, and indeed somewhat beyond the point if we take more equitable access to needed care *for all groups* as our goal for telehealth-related policy. Inequities in access, I will suggest in relation to the final effect of telehealth application use, can only increase, rather than decrease, with the globalization of care systems made possible through informatics proliferation.

The emergent economic geographies of care are those constituted through the increased use of modern communication and transportation technologies as an aspect of the global economy. The role of information and communications technologies in particular is an important causal (though not necessarily deterministic) variable in global economic change, and telehealth and telemedicine systems are positioned among those technologies that most profoundly enable firms and other entrepreneurial entities to both produce and command space more efficiently and profitably. But it is not only the globalization of economic relations that is effected through the deployment of ICTs; we would do better to conceive of the technological utilities involved as bringing global forces into a more tightly-imbricated relation with the local – what I, following Foucault, elect to term the production of ‘sites’. Sites are the spaces produced by network architecture, and are the outcome of what I describe as perhaps the crucial features of (post)modern time-space relations – compression coupled with ‘speed-up’. Where

localized places had signaled relations based on the principle of proximity, modernity heralded the creation of universal space through the principle of extension, or time-space distantiation. Where the former were associated with the local, the particular and the centralized, the latter have tended to be associated with global scales and with the dissolution of hierarchies.

But the two poles of this binarism fail to sustain themselves, with the coming of late (post?) modernity – their boundaries are irrevocably blurred. I consider the production of sites to be a process distinctive to modernity for the reason that it re-creates and re-positions new hierarchies in the place of those torn asunder, albeit at different spatial scales. Innovations in transportation and communications technologies are the media whereby this process is effected, working to define the ‘site’ itself by new relations of proximity between points or elements; time-space compression, not distantiation, is on offer in this process, and as Foucault (1986: 23) argued, the site thus becomes a problem in the oversight and coordination of technical work⁴¹ – human relations to technology become concretized as series, trees and grids, or as I argue, networks. Technological innovation and its forms of coordination have long been known to political economists as causal forces in the exertion of downward pressure on wages within localized sectoral or industrial sites, and indeed as a potent contributing factor in the creative destruction and

⁴¹ Foucault most directly likens the problem of ‘siting’, or of spatialization, to the processes of coordination of technicized interdependencies, citing: “... the storage of data or of the intermediate results of a calculation in the memory of a machine; the circulation of discrete elements with a random output (automobile traffic is a simple case, or indeed the sounds on a telephone line); the identification of marked or coded elements inside a set that may be randomly distributed, or may be arranged according to single or to multiple classifications.” (Foucault, 1986: 23).

re-construction of regional economies (cf. Cutchin, 2002: 21). It is for this reason that I think we can properly regard network utilities and ICT applications as the distinctively modern communications infrastructures that allow the multiplicity of sites to achieve interconnectivity in regional economic geographies.

Cutchin (2002: 27) observes that, “Maps of existing networks ... exhibit virtual regions much larger than those of the material care system ...”, which means simply that traditional, materially-grounded patient and/or provider travel and referral patterns may still figure prominently in the burgeoning new virtual regions of telehealth system use, but that cost-savings, efficiency and increased participation from remote communities may be considerably more difficult to achieve than we find suggested in the telehealth literature at present (cf. Darkins and Cary, 2000; Field, 1996; Reid, 1996). As I have said, it is not insignificant that yet larger telehealth networks are being promoted in simultaneity with articulations of policy reforms aimed at regionalization, insofar as national and even global network architectures are held to be capable of graphically mapping and grafting the localized material regions of health care service delivery onto the virtualized territories of global electronic networks. The belief is that as telehealth networks and their regionalized contexts of use are subsumed beneath ever-larger health care and health information regions, so will the technology allow for similarly-immense gains in the levels of care access, effectiveness and cost-efficiency.

The degree to which telehealth use is enmeshed into the material context of health care service delivery, determines the network’s degree of coherence, and this achievement is tied closely to the potential for the region’s time-space integration at

larger network scales. Thus, Cutchin (2002) differentiates between two types of integration: the *internal integration* of telemedicine regions, and the *external integration* of the virtual regions with material regions. The internal integration of telehealth regions is dependent mainly upon the integration of telehealth use into everyday social practices, and we find that truly 'seamless regions' of health care service delivery are difficult to secure in light of constraints related to, firstly for example, the licensing requirements for telehealth practitioners. In Canada, for instance, physicians and most other categories of health care providers are permitted to practice only in those provinces for which they hold a required license. The fact that a physician can ordinarily only consult with patients within his or her own state limits, restricts both the specialist and the telemedicine network from expanding their region beyond state boundaries. A second problem for internal integration is related to legal liability. It is necessary to determine who is to be held liable for failures to meet medical standards of care, as well as how such cases are to be litigated, before the implementation of a telehealth or telemedicine program.

A third problem endemic in the debate over the broad-scale use of telehealth applications is the protection of individual privacy. Clearly this is an issue relating more inherently to the use of electronic health records (EHRs) and administrative telehealth utilities than to the transmission of continuing medical education, but it remains an issue with regard to teleconsultation and telementoring in clinical applications insofar as the privacy of patients' medical data must be securely stored and maintained across the expanse of the network they use. A fourth potential barrier to internal integration is the

problem of provider remuneration and agency or organizational reimbursement, relating mainly to what Cutchin (2002: 28) terms the ‘subissues’ of, “... who gets reimbursed for services provided, [and] in what proportion, if at all ...” A fifth concern affecting the internal integration of telehealth regions is its very capacity for connectivity to the wider system architecture – the issue of interoperability, or of flexibility.

This lattermost, the lack of network flexibility and system interoperability, poses particular challenges to the regional-geographical framework in which telehealth and telemedicine networks have been developed – leading, in turn, to problems relating more intrinsically to the potential for external integration. Firstly, Cutchin (2002: 28) identifies the problem of the multiple and shifting medical cultures within the more expansive region connected via the telehealth network:

The variation in medical practices – medical cultures as defined by the way practitioners think about and treat different illnesses – is distinct from one hospital service area to another ... With the growth of telemedicine networks into larger regions, clashes in medical cultures are more likely to disrupt the smooth functioning of telecare. The reality of medical beliefs and practices on the ground will not be subsumed easily into a network environment ... [T]elemedicine networks will thrive only when organizations and individuals both want to use the technology and use it with each other ... This means that cultural difference will certainly act as obstacles to the development of ‘seamless regions’.

This ties back more directly to my designation of telehealth-enabled virtual geographies as implying unequal power relations insofar as they are characterized by ‘core’ and ‘peripheral’ regions, given the prohibitive problem of the uneven existing resource distribution between different places implicated in the network architecture. Regional telehealth systems are almost always coordinated through a large urban core (or ‘hub’)

with peripheral, mostly rural sites acting as the remote ‘nodes’, as I have argued elsewhere.

The deleterious effect of the virtual region for the material is not so much an effect as it is a failed effect, a promise to colonize the material region that, in the final instance, is simply left unfulfilled. The *auteurs* of the technical and policy-oriented literatures endorsing telehealth growth, are cognizant that the constraints that exist against enhanced health care opportunities are associated with users’ placement in typified remote spaces – cultural, rural or otherwise, but materially underdeveloped in any case. The boundedness of place, they argue, can be eradicated with the ability to use the virtual network, allowing access not to improved health care or information opportunities where users are, but rather by ascribing to them a nomadic subject-identity in the liberatory space of electronic networks, free to access the telehealth services on offer in lieu of ‘real’ services. I don’t think it is universally the case, however, that the constraints on action stemming from one’s position in the material world can be simply swamped, or colonized, by any ‘virtual order’ of resources purportedly activated through the medium of new information and communications technologies.

Telehealth regions often do not share the same dimensions as the material regions of care upon which they are overlain, and the future integration of the two is unlikely to yield matching or improved levels of access to care for everyone beyond those centralized hubs and their better-supported nodes within the network. Moreover, as Cutchin (2002: 29) argues, “[T]he political and economic interests underlying medicine and telemedicine signify that the deployment is strategic”, and that while most recent

telehealth and telemedicine networks are designed to flexible and scaleable, that is only the technological side of telecare systems. Telehealth activity everywhere is both managed and governed within the existing, wider structures of health care and information delivery systems, and this is, as Cutchin allows, a decidedly unsteady and changing environment.

In many industrialized Western countries, health care financing, service allocation, management and delivery are being privatized. Even where such decentralized decision-making and allocatory structures realize their potential to be more efficient and cost-effective, the absence of centralized planning in such contexts does not serve in the interests of broad-scale, interoperable, flexible and scaleable telehealth systems. Telehealth equipment manufacturers, for instance, have little incentive to produce interoperable systems in a marketized system, for reason that the larger manufacturers will produce less expensive software and hardware outlays, thereby achieving greater market shares and forcing the smaller manufacturers and vendors out of the market altogether.⁴² Quite aside from the issue of centralized planning of common

⁴² Toward this end, Light (1995: 36) observed: "The corporations that make up the medical-industrial complex want to maximize profits both short-term and long-term through constant product innovations and improvements, consumer fetishism (usually of doctors not patients), cornering markets, expanding current markets, creating new markets, large mark-ups, collusion and tying relations with doctors and medical centres that lock in business. (Many neo-classical economists seem to forget that the goal of competitors is to minimize competition by any means possible, that is, to undermine or distort the basic conditions for a good competitive market[]) ... These corporations seem to be the allies of the [medical] profession, and in all countries the medical profession has welcomed medical supply, pharmaceutical and medical equipment companies. Their innovations significantly enhance professional power regardless of how effective various procedures, machines, drugs and tests turn out to be. When they do not enhance the scientific base of medicine, they enhance its scientific image. These allies, however, are exploiting the profession for high profits."

equipment standards, we find that the organizational models for health care institutions are changing. Cutchin observes that, “In thought and practice, hospitals are being recreated as servant organizations, rather than dominant ones”, and that, “In both function and management, some hospitals are beginning to move away from their role as hubs and changing their relationships with physicians, the clinical process and communities ...” (Cutchin, 2002: 29). Physicians are acting more and more like entrepreneurs, lured away from practice in hospitals with the attractions associated with autonomous, individualized practice in urban settings. Light (1995: 36) noted, for example, that the protected internal markets that physician professionalism creates, are seen as a haven for capital accumulation, and that “... health product corporations support many professional activities, from journals to continuing medical education, until the profession is deeply dependent on and corrupted by their interests.”

Economic restructuring in the health care industry, both within and outside hospitals, we find increasingly organized according to a principle of enhanced flexibility, as I said earlier. While efforts at restructuring Canadian hospitals usually are aimed at achieving a goal of diminished hierarchies and decentralized decision-making structures, collaborative arrangements between facilities often fit closely alongside the policy rationale for managed care systems, wherein the end goals are to reduce risk and

eliminate the duplication and costs incurred by providers⁴³. I emphasize this tendency towards privatization because, as Cutchin (2002: 30) argued analogously, “Virtual care regions appear to be going in one direction as material care regions go in another.”

Telehealth networks remain both hierarchical and centralizing in their form, promoted as capable of forming and presiding over ever larger regions of needed services, while real, existing hospitals and their allied institutional settings are being decentralized, purportedly again either in response to the demand for greater sector-wide flexibility, or in an effort to locate in such a way as to better meet localized needs.⁴⁴ Some telehealth and telemedicine networks are ‘sold’ on the basis of having ‘universal’ applications (i.e. the utilities involved are broadly useable across most health care specialties and are not specialty-specific), ensuring a comprehensive scope of use, but in geographical terms the telehealth and telemedicine networks of which individual telehealth platforms are part,

⁴³ Of integrated networks at the level of individual communities, Cutchin (2002: 30) notes that they may in fact allocate greater power to locally-based or regional agencies, but that local providers thereby see their autonomy diminished in the process. Decentralization of authority over health care delivery can therefore happen through privatization or through enhanced local control, but the decentralization moniker is misleading insofar as both types of decentralization will imply a recentralization of authority, albeit at an ‘intermediate geographical level’.

⁴⁴ Provider organizations may hereby (albeit inadvertently) drive up the costs of wider access to needed health services, by pursuing their non-economic goals of providing the best clinical practice to all of the sick patients in their catchment areas (cf. Light, 1995: 35; 38). In Light’s (ibid: 35) own terms: “Pursuing ‘the best clinical medicine for every sick patient’ leads to technical elaboration and specialization. The profession [sees] ... the organizational density of its practice increase... [This may] drive up costs rapidly, make doctors dependent on those who can bankroll the large capitalization, require complex organizations which then spawn a new corps of professional managers, fragment political power, and inflate demand beyond what doctors can deliver, prompting law suits and other actions. Add to this a fierce insistence on independent practice, and a nation gets increased maldistribution by geography and specialty of services to needs. Greater variations of practice arise, with no rational defence of more costly patterns.” Conversely, commercial telehealth service vendors can potentially reduce the costs associated with larger catchment areas with what may be comparatively fewer variations in practices, but that involve more or less common standards for the provision of what are in actuality only second-rate, telehealth-enabled services for their patients.

retain a highly-structured and inflexible character, with only selected locales and providers participating.

Decentralization may not always enhance access, and as I have said, local control does not immediately imply local ownership. The interpretive boundaries that distinguish decentralization from centralization, local control from global ownership, time-space distantiation from time-space compression, are never fixed; they are forever shifting, and aspects of each side of such binarisms frequently interpenetrate the conceptual field of their other's. Reproducing the fissure between the oppositional poles in the binarism is at best a superficial analytic move if we desire to conceptualize the relations between centralization as against decentralization, local control against global ownership, or time-space distantiation as against compression.

The globalization of telehealth systems may stimulate a wave of deregulation, or of protectionism (cf. Darkins and Cary, 2000: 139-40). I would suggest that the former scenario is more likely – that the deregulation of health care services would be brought about, with three main implications: first, that increased mobility would be afforded to the category of specialized health care labour; second, that greater inequities in access to care would result; and third, that international markets for certain services would diminish the quality of health care services on offer from medical care organizations struggling gain a competitive advantage in ever-larger virtual regions. This scenario finds virtually-existing networks of telehealth and telemedicine platforms as somehow impelling trends in managerial and organizational change in material health care institutions that do not yet exist. By deploying telehealth and telemedicine systems

strategically, large and significantly specialized tertiary care centers can achieve expanded territorial power over both their established patient bases *and* future referral patterns, working cyclically to expand the territorial reach of their telehealth networks.

As Cutchin (2002: 34) notes, “The patient stream from peripheral areas of a territory adds increasing income while infrastructure costs decrease through the implementation of more efficient telemedicine technology.” Health care organizations can wield sufficient social power to facilitate and in fact impel public and private investments in, for example, the telecommunications infrastructure penetration needed to link the most remote of sites into the telehealth network. This is a process wherein the organizational needs of health care agencies, public and private, reflexively feed back into the construction of a political-economic context wherein new information and communications technologies are imputed with political value and wherein their development is based on the goal of producing and controlling spatial arrangements and thereby gaining greater social power for the technologies’ controlling interests.

Luke (1999: 33) appears to have concurred with my contention that the cyberspaces of virtual reality (VR) interweave with the material processes and places of real life (RL), adding that this process of integration generates, “... telemetries of surveillance information about territorially located factors of production”, enabling mass customization in the place of the mass standardization involved in the economic operations of the post-World War II industrial economies. Health care organizations using network utilities are able to virtualize their services in such a way as to add value for their corporate partners. While it is the case in Canada that most large-scale regional

telehealth projects are financed and implemented by the public and non-profit sectors, this is likely to change everywhere in favour of private interests.

What is more, the delimitations of the state as-set-against capital, public/non-profit against for-profit binarisms are difficult to sustain in light of the increasingly bureaucratic-entrepreneurial nature of both non-profit and for-profit medical care organizations. Having entered also that in the Canadian context physicians are private practitioners remunerated by way of public payment, it remains the case that greater territorial power for organizations may lead to the probability of monopolization and the palpable loss of consumers' power (Cutchin, 2002: 34). Yet remote care delivery systems are often promoted as a more consumer-friendly approach to the organization of health care services, a cultural shift to an ideology of empowered consumerism brought about by what Darkins and Cary (2000: 25) describe as firstly, new pressures deriving from government regulation and legislation; second, patients' demands; and third, the dictates of market-based health care systems themselves.

Because telehealth systems are increasingly using web-based user interfaces, the telehealth promoters argue that more and improved health care information is on offer to patients, and that in consequence, marketized telehealth technologies can actually play a role in the definition of patient/consumer rights and expectations. But the subjectivity of

patient users becomes a strangely atomized, 'elsewhere existence', in this formulation⁴⁵; it seems that even where telehealth programs enable the delivery of locally-accessible and consumer friendly services, and hence promise to potentially reduce patients' reliance on specialized tertiary care hospitals, patient-users are at the same time encouraged to go shopping. Darkins and Cary (2000: 29) suggest that telehealth vendors have traditionally concentrated on selling services and equipment to large, tertiary care institutions and organizations in relatively low volumes and at high costs. As an alternative, telehealth vendors might direct high-volume, low-cost sales strategies towards patient and provider users directly – in the primary care sector and in the primary/secondary care interface instead of in their traditional reliance on large institutions. Insofar as patients are increasingly able to access telehealth services more closely to where they live and work, private telehealth vendors argue that the marketing of telehealth services to large institutions actually leads to lower utilization rates than could be achieved with the emphasis on marketing services directly to patients at the levels of self-care and primary care.

In turn, the regional level of analysis is of particular salience to the analysis of the formation of telehealth's virtual geography in the Canadian health care context. This is

⁴⁵ The late modern subject, from this view, no longer resides in the era of massified, Fordist-modeled institutions (cf. Murray, 1990), nor does he or she need to inhabit these institutions in light of the considerably more liberatory power implied by sites designed to enhance dimensions of consumer choice. Telehealth promoters have enthusiastically incorporated euphoric and approving visions of a 'postindustrial' order into their endorsement of more 'consumer-friendly' sites of health care consumption; consider, for example, the following authored by Darkins and Cary (2000: 28-9): "There was a clear rationale in the industrial age to concentrate capital investment, achieve economies of scale, and focus processes in large institutions. The large factory, the department store, and the hospital were prime examples of these large, Victorian-inspired institutions. Are these appropriate for the information age? Alone among these large institutions the hospital seems to survive unscathed ..."

because we can envisage a thoroughgoing interlacement of virtual health care regions with material health care economies, derived from the fact that the present wave of interest in the development of health informatics systems in general, is happening in ‘temporal connection’ with common trends in the restructuring health care geographies both in Canada and elsewhere in the industrialized capitalist world. Telehealth networks can be viewed as an essential element of the regional economic development pattern of medical care organizations. As Cutchin (2002: 31) argues, after all, it is the case in most countries that, “The medical care sector has lagged behind other sectors in the economy in its implementation and use of ... new communications and information technologies”, and that, “... some of the most in-depth texts on telemedicine (e.g., Field, 1996) explicitly focus on business and economic factors of telemedicine.” Telehealth and telemedicine are argued to make good economic sense for the financiers, decision-makers and users of health care and health information all at the same time, since even the most early-developed of applications are still felt to generate significant cost-savings. That two-way communications links have the potential to transport health information and clinical care to remote or otherwise hard-to-reach sites, is not a new idea, and the imperative for technological change in health care will in all likelihood implicate telehealth applications as everyday aspects of health care infrastructure and practice. In the conclusions that follow I speculate as to what I believe to be the unfulfilled promise of large-scale telehealth networks – the in-fact minimal degree to which telehealth growth may contribute to the dissolution of materially-existing health care hierarchies.

Concluding Remarks

The single most crucial development to stimulate the second wave of interest in telehealth applications has been the discursive tethering of the considerable potential benefits of telehealth technology use to the proliferation of electronic networks. Electronic networks, unlike the stand-alone telehealth and telemedicine applications developed since the 1950s, are new insofar as they have enabled all those non-clinical telehealth applications that are inherently value-added, like continuing medical education or public health education bought and sold for profit. The owners of telehealth systems can also partake in commercial transactions like the sale of network-based advertising space, or the on-line marketing and sale of pharmaceutical products and medical devices. It is envisageable to share the network infrastructure with agencies outside of the health care industry – firms, government, and educational institutions are some suggested partners for the sharing of system outlay costs, and it is suggested that the mere availability of network access in a geographical region will stimulate localized growth in jobs, markets, products and services.

By keeping health care and health information ‘close to home’, within the rural community rather than at a distant urban medical center, telehealth applications are promoted as being able to stimulate levels of employment in health care locally and hence contribute to the vitality of communities (Lehoux, Battista and Lance, 2000: 279). Hospitals and community health institutions, in this view, would retain their status as major employers within regions and communities, while the growth of expertise in clinical diagnosis and management, made possible through CME for example, would hold the potential for the increased number of locally-based clinicians to export their

knowledge via the same telehealth architecture. Telehealth applications are in this sense, too, more purportedly ‘democratizing’ of relations between different medical care communities.

But this would hold only if commercial service and equipment vendors are able to achieve interoperability between clinical telehealth systems – something they may not in fact be concerned to do. Likewise, commercial outfitters do not desire to become locked into what are termed ‘closed information systems’ – the proprietary information systems of health care providers, an arrangement that telehealth firms excluded from any potential role themselves as the primary providers of patient services, and hence prohibits the firms’ abilities to provide care and information for profit. What ‘open’ network architectures and common standards for telehealth technology enable, as a basis for comparison, is the entry of firms as care providers into newly-created markets. Telehealth vendors have argued that their ability to be cast in the role of care and information providers would be greatly enhanced were they to be granted access to the sorts of health information presently stored as the preserve of regional health authorities – mainly epidemiological data – helping the firms to ‘map’ the incidence and prevalence of disease in a given market and thereby helping to define the ‘needs’ of patients.

The distinctively late modern practice of network formation involves a double-process, first of definition and then of design of the object-inhabitants of networks’ virtual spaces. It is my position, as I will argue, that the practices of network formation do not so much signal the creation of a ‘cyberspace’ for the popular assertion of identificatory politics, as they serve to reproduce and embolden recurrent governmental

discourses shaped by universalizing and subsuming modernist-humanist epistemologies. In elaborating the duality of effects of the use of ICTs in health care service delivery, I have insisted upon the need for telehealth evaluation and assessment methods that account for the multiplicity of who precisely the users of telehealth applications *are*, for a recovery of the methodological precepts implicit in ethnographic studies that incorporate the concept of positionality as related to the formation of the shifting and multiple epistemic subjectivities of telehealth system users.

The creation of network architecture is symbiotically bound up with the multiplicity of modern cultural practices through which definitions of subject-positionality are produced and then reproduced, or alternatively, rearticulated differently. An example of such a cultural practice is that of racism, which according to Bauman (1989b: 65, emphasis in original), “... *combines strategies of architecture and gardening with that of medicine – in the service of the construction of an artificial social order, through cutting out the elements of the present reality that neither fit the visualized perfect reality nor can be changed so that they do.*” This is a profoundly *spatializing* process, implicating political authorities or other hierarchies of bureaucratically-organized expertise in the practical work of assembling the socio-topographical models of persons and collectivities needed in order that specific groups can be defined and taken up as the object populations of governance through state programmes, entrepreneurial or other expert systems. The ground-level operatives who, in the fields of health and social services report the pressures of current needs and deliver the services in the real, material locales, increasingly cope with original acts of definition issued from significantly

distant, higher authorities that operate in virtual isolation from moral-affective considerations.

What is more, the practice of stretching moral affectivity only so far as the limits of the co-present, optical-visual field risks the introduction of what Gillian Rose (1993) describes as the sometime colonizing and subsuming fetishism of the optical-visual perspective, into the distribution of medical responsibility – wherein caricatured feminine qualities (i.e., ‘fertile’, ‘supple’, etc.) tend to be imputed to the features of exotic, unmapped landscapes. It is in this manner that masculinist or ethno-racist discourses work to permanently situate certain sites of marginalized, radical or otherwise contestatory knowledges at the very horizons of the visual field, obfuscating their essential form at best and at worst banishing them altogether beyond the demarcations of what Bauman (1989b: 192-3, emphasis in original) termed the ‘vanishing point’:

[T]he effects of human action reach far beyond the ‘vanishing point’ of moral visibility... The notorious success of modern civilization in substituting rational criteria of action for all other, and by the modern definition ‘irrational’ criteria (moral evaluations looming large among the latter), was in decisive measure conditioned by the progress in ‘remote control’, that is in extending the distance at which human action is able to bring effects. It is the remote, barely visible targets of action which are free from moral evaluation; and so the choice of action which affects such targets is free from limitations imposed by moral drive.

Distance medicine then, suffice it to say, introduces altogether amoral but decidedly instrumental and technical protocols and directives for patient care, which also are thereby rendered increasingly amenable to the processes of commodification in the form of product lines on offer to paying consumers. The ethical bases of telemedicine practices will become more rather than less visible to its surveillants, but this may not

always protect patients or referring practitioners from unethical behaviour. Iserson (2000), for example, outlines a model code of ethical conduct for telehealth practitioners which includes injunctions against use of the telemedicine equipment to promote unnecessary transfers to base institutions and against the receipt of exorbitant reimbursement for getting or giving referrals. The regionalization of health services through decentralized authority structures contributes to this state of affairs, as does the transition from centralized and specialized institutional care to that provided in community-based settings. Thus we find that the further away that we see the sequence move from the original act of definition, the more likely it is to be guided by purely rational-technical considerations.

The exclusion of morality from rational-bureaucratic settings and the social relations that are enacted therein, signals what is in effect a radically reconfigured process of the 'social production of distance' (Bauman, 1989b: 194). This emergent processual form subordinates the moral constraints formerly imposed by proximity to the new-found mastery over space achieved through the sped-up pace of spatial conquest associated with modern information and communications technologies. Sociality itself is, in this process, *mediated*, and the implication is that we are now observing the introduction, on a larger-than-previously-imagined scale, of mediated action and mediated actors into technologized, and instrumentalized patterns of social relationships. Social responsibility for the pursuit of collective causes is abstracted away, bureaucratically and geographically distanced from those ground-level sites of collective resistance wherein contestation was once an envisageable possibility.

Not unlike Bauman's gardener, the goal for political elites becomes one of differentiating and setting apart those useful elements destined to live and thrive in the coming order, from those that are morbid, parasitic or otherwise harmful (cf. Bauman, 1989b: 70). This manner of 'social mapping' establishes the tactility of the modernist garden culture, its social topographies discursively pinning the points of contact of what Bauman termed the modernizing 'design' to the metaphysical grounds of real and imagined, familiar and exotic spaces. The process involved accounts, in at least some measure, for what Bauman (1989b: 95-6) identified as, "[T]he remarkable success of the etiological myth which, in one variant or another, Western civilization has deployed over the years to legitimize its spatial hegemony by projecting it as temporal superiority."

If it is accepted that the garden was the template for the prevailing modern cultural form, then the assemblage of network infrastructures that we periodize as being particular to late modernity have in fact similarly effected a supremely instrumental-bureaucratic differentiation of those places and identities that are to be afforded inclusion from those either whose particular characteristics are to be objectified and problematized in particular ways or which are to be excluded altogether. A significant aspect of what we regard as the high modernist sensibility was a desire to effect precisely the differentiation and exclusion of certain individuals and collectivities, not to simply subsume their differences beneath the absolutist fictions of atomized national cultures. I think it highly unlikely that modernity ever appeared so juggernaut-like or monolithic as is portrayed in the more reactionary of postmodern critiques of the past four decades. Modernism sought to fragment and to liquefy (cf. Bauman, 2000) as much as to render

whole and solid. While the modern spirit was liquefying from its inception, it was so in the sense of being aimed at exploding the sacred traditions and outmoded aspects of social life that thereafter would have their ties severed from the economy as the new basis of collective life. Modernity can in that regard be seen as a historical trajectory traveled along more, rather than less, in concert with the cognitive-aesthetic imagining of the historical process of commodification. If it is the case that the defined and territorialized domain of society was the container of social power peculiar to modernity's solidification, what are the containers inhabited by power in the late, post-, or liquid modern age?

In the now prevalent discourses on health care reform, analogously, power is considered equivocally with management. Reforms at the level of health service delivery are described in terms of increasingly 'integrated' structures of authority and decision-making, whereupon in point of fact a double-movement can be identified by which many of these 'integrated' infrastructures coordinate the activities of highly-differentiated settings and practices. Browne (2000: 35) notes that:

[F]ull integration of the health care system would require the creation of centralized management systems able to handle and co-ordinate huge quantities of information and resources ... [T]here are moves in this direction in Ontario – one need only look at the studies produced by and for the Ontario Hospital Association on ways of building networks of hospitals, indeed, of transforming hospitals into geographically and institutionally diverse networks serving a variety of populations across the full spectrum of acute care and beyond.

In northern Canada, for example, problems associated with geography, climate, communications and transportation continue to limit access to health care services in

spite of the development of materially-existing health networks. The maldistribution of health care workers between the north and the south works to compound these problems, and in a related way, the conventional measures used to assess the effectiveness of health care services demonstrate marked differences in health outcomes – mortality and morbidity – between northern and southern Canada. For several decades now, feasibility studies on the potential uses of telehealth technologies have emphasized that settings like the rural North stand as the single most significant target areas of health service delivery upon which telehealth and telemedicine can have a major effect (cf. Conrath and Dunn, 1975: 90).

The achievement of interoperativity with wider, electronic network configurations requires significant time and resource expenditures – such are the costs of escape from territoriality, into exterritoriality. But interoperativity is also a crucial (post)modern technology for the reformation of the distinctively spatial practices of political rule. The secure national contexts of social governance of the past age, were designed to govern either market- or bureaucratic-based reforms, and have proven ill-adapted to the task of shifting in synchrony with aspects of the post-industrial social landscape. For the purposes of my argument, I concede that the emergence of new markets for telehealth equipment and services is not a phenomenon given rise to be either public or private interests alone, by either market- or bureaucratic-based reform strategies. I do not for a moment believe that it is universally the case that when the private sector expands, the public sector contracts and vice versa.

That is one potential outcome that I view as a reactionary uptake of medical

technologies, however, and it remains rather unsurprising that the emergence of private medical markets and high-technology product lines in the delivery of health care services coincided with a sea-change in the prevailing political and economic discourses on the untenability of the social wage in both the United States and Canada in the 1970s. The profitability crisis of that period stimulated significant interest in curbing health care expenditures, a goal neatly compatible with a cultural shift towards broader understandings of the determinants of health and of illness.

The new health promotion discourses were also influenced significantly by the emergent discipline of health services research, and by the population-based approach to the academic and professional study of public health issues. The discourse noted two main developments. Firstly, that there are limits to the change in health outcomes that can be directly attributed to wider access to medical care. Previously, the belief had been that the sick will need more resources than the healthy, and that to reduce differences in health status, one must spend more on the sicker group (Caplan et. al., 1999: 854), in institutional settings *wherein choice medical men* could perform curative, one-off medical procedures with sophisticated, expensive medical technologies. The evaluation of medical acts as discrete units accounted for in terms of their number, had been an important impetus for the implementation of fee-for-service provider remuneration schemes in health care in many Western countries.⁴⁶ Secondly, and relatedly, many health policymakers recognized an apparent incompatibility between fee-for-service

⁴⁶ The allopathic model of western biomedicine in this way lent credence to the conception of medical 'treatments' as being standardized, measurable, and ultimately saleable commodities – as Colin Leys (2001: 72) wittily put it, as 'magic bullets aimed at a bestiary of disease'.

medical care and the philosophical precepts of Fordist-modeled controls over provider remuneration. This would mean in turn that universally accessible and comprehensive public health care might prove economically untenable in the long run.

The Canadian provincial governments of the 1980s began to release reports containing recommendations for the reform of their public health insurance plans and care delivery systems. In concert with the academic and lay condemnations of the biomedical model of health care, the implication of most of the reports was that the health care reform agenda of the coming years would reflect newfound commitments to the continuity and integration of services, disease prevention, and health promotion (cf. Mhatre and Deber, 1992; Armstrong, 2001). An enhanced quality of care would be developed based upon better standards of evidence of the effectiveness and limits of medical interventions, in turn making providers and policy-makers alike more genuinely and publicly accountable for the quality and cost-effectiveness of care provided.

These reform strategies reflected the newly-twinning themes of bureaucratic and market-based reform discourses that were likewise preaching the virtues of integrated continuums of accessible care. As Pat Armstrong (2001: 121) observed, the reforms were, “[F]ramed within the determinants of health literature, [and] promise[d] to deliver better quality and more appropriate, lower-cost care closer to the community, primarily by adopting managerial strategies taken from the business sector and by practising evidence-based decision-making.”

That decision-making at the macro-level of federal Medicare, the meso-level of care delivery systems, and the micro-level of clinical decision-making, would all be

subject to the discipline of better evidence, was not lost upon the critics of the reform agenda who argued that evidence-based decision-making signalled an effort on the part of policy-makers to treat the decommodified domain of health care like a business.

Superficial assessments indicated that improved health information and evidence were valuable resources, and that “Decision-making based on evidence promises quality and accountability, equity and appropriateness as the result of the application of value-free technologies and techniques.” (Armstrong, 2001: 121).

Thus, and importantly I think, the goal of critical analysis of the processes whereby expert systems and techniques of information storage and transmission, is a potentially useful orienting framework to understand the frequent interrelation and mutual dependency of market-based and bureaucratic approaches to the formulation of policy reforms. As Browne points out, “[T]he notion of integrated health care delivery sits at the intersection of competing ideologies of health care”, and that, “The result ... is an ideological ambiguity that can provide a cover for political and economic forces pushing a privatization agenda.” (Browne, 2000: 36). The blinkering effects of policy initiatives implemented *a priori* to the identification of the actual existing needs they are designed to meet, is accomplished easily and without friction in policy contexts wherein the only imperatives for information effectivity are the speed of transmission and the facility of technology uptake.

And yet, the advent of network architecture is heralded as having brought to the fore a profoundly democratizing shift in national political and cultural life. In point of fact, the respective histories of all of the technological and communications innovations

of the twentieth century, lend credence to the argument that irrespective of the market logic that endorses competition within industrial sectors, the net effect of innovations brought to market is that of ownership concentration.⁴⁷ This vision is premised upon an assumption that the ownership and control of technological innovations is unimportant to the patterns and pace of their uptake and dissemination, since the power of technology is derived from its amoral and neutral character. Following Nikolas Rose (1993), we would do well to conceive of the exercise of power in advanced liberal democracies as a distinctively substantiating and actively constitutive – not neutral – programme of rule – as Barney (2000: 51) terms it, a, “... politics of getting-out-of-the-way of technological mastery and the material progress it always promises and sometimes delivers.”

While national governments in many countries appear willing to invest public expenditures in the telecommunications infrastructure required for network proliferation, the lion's share of financing continues to be demanded of private industry. For example, the main barrier to high-bandwidth infrastructure remains the settling of questions related to which of government or industry should bear the costs of its construction, how and by whom those outlay costs should be recovered, and who should set the standards for its use. The end goal for monopolistic interests is to secure control over the future

⁴⁷ Luke (1999: 34) argues: “Cyberspaces are not easily constructed by solitary individuals, even on a local area network basis, without considerable support for network connectivity from corporate and/or government telecom services. Consequently, the third nature of cyberspatial hyperreal estate gives private firms and/or public agencies an extraordinary capability to exercise a form of private tyranny or public authoritarianism in setting the conditions and costs of entering, using or traversing the cyberspatial domains. These are the stakes typically celebrated in discussions of the ‘information superhighway’ with its mystified use of ‘roads-and-bridges’ infrastructure metaphors to discuss these communicative structures. This language fits only inasmuch as such systems often are monopolistic networks of tollways, tollbooths and tollrates that impede traffic as much as they facilitate it.”

formulation of standards and protocols of product and service delivery and development, and as telehealth firms attempt to gain market share and ownership concentration, equipment standards and true interoperability are unlikely to be forthcoming until such time as a competitive advantage is secured by the largest and most diversified of media monopolists. In a perverse way, market forces can achieve a standard whenever one provider achieves capitalized dominance; the question remains open as to what requisite quality that standard will be tied to.

Markets, in their most basic of articulations, are differentiating mechanisms that work to sort out this category of object from that, precisely to the ends of excluding some objects from account, and designating which are to be accorded value. Computer networks operate in a fashion not all that unlike this, literally mapping and grafting certain satellite terminals onto their material architecture without regard for the contexts inhabited by users at the remote sites. It is the dimension of interactivity imputed within new information and communications technologies that subvert traditional mechanisms of discipline and domination, but that simultaneously contributes to a reconstitution of the world wherein the production of modular subjects of a particular type becomes electronic communication's designated goal and social end. In a manner akin to this, Luke (1999: 38) argues that we might properly, "[A]nticipate an entirely new political economy emerging in the digital zones of telemetricity[:] one rooted in the production, circulation, consumption and reproduction of digital beings." Different modes of digital being signal a reformulated conception of human agency, contingent on a person's capacity to hang his or her subjectivity on the post of a simulated positionality in

cyberspace.⁴⁸ The governance of virtual spaces and their resident subjectivities is problematical in liberal democratic societies, given how difficult consent can be to secure in the absence of territorial demarcations.

The prevailing reform discourse in the domain of health care policy has sought to embolden the conditions under which private markets for telehealth services will undercut the ability of public authorities to regulate the use of various applications. This is itself a calculated and intentioned, strategic move on the part of telehealth's promoters. I hope to have demonstrated in this thesis that the commodified spaces of software and networks do a great deal more than simply carry electronic signals or transmit information. As Luke (1999: 46) argues, these geographies of virtualization:

[G]enerate and sustain spaces, or hyperreal estates, which need to be rethought as spatial domains for human activity with their own unique properties of accessibility/inaccessibility, boundedness/unboundedness, underdevelopment/overdevelopment, security/insecurity, publicity/priva[cy], openness/enclosure or commodification/collectivization for the various cyber-subjectivities now beginning to inhabit them ... as digital beings.

Thus, I believe that there are decidedly oppressive potentials inhering in social relations wherein the material basis of space itself is increasingly made up of electronic exchanges. It is the case, certainly, that no single place or site is constituted solely of itself, but rather its position in the world is relationally-defined by the exchanges of flows between it and other sites in the electronic network in which it is now implicated.

⁴⁸ As Luke (1999: 38) elaborated: "The fusion, or (con)fusion, of (wo)man/machine in computer applications creates many new positionalizations of subjectivity – as hardware-based, calculator, reader, viewer, writer, composer, designer communicator as well as software-driven worker, voter, debater, inventor, observer"

The geographical dimensions of access to telemedicine and telehealth's virtual regions are defined, in the final instance, by network architecture's controlling interests, and their content is determined by the prevailing power relations in the society in question. Electronic exchanges conducted in cyberspace are constitutive of a distinctively late-modern social structure, implicated, as I have argued, in the typification and subsumption of individual and collective subjectivities in such a way as to define the needs of health care and information users according to what resources will be made available, rather than the inverse process. The multiple and shifting subjectivities populating real places are typified and sorted in the virtual spaces of electronic networks, defined and designated for inclusion or exclusion from access to needed services.

It is precisely with regard to these multiple and shifting subjectivities that I find the existing telehealth literature to be wanting of in relation to the methodological assumptions taken aboard in more than one evaluation study. The commitment to 'institutional-ethnographic' methods of analysis around technology use on the part of authors like Lehoux (1999; 2000; 2002) and her colleagues is something I look upon approvingly, but such works in the area of telehealth evaluation have also elected to incorporate concepts from many of the most potentially oppressive and subsuming of self-styled 'reflexive' social theories like that of Giddens's structuration theory. Theories of this decidedly modernist variety, work precisely to subsume the importance of positionality, place and subjectivity to the object world of abstract space and its commitment to the reproduction of fixed social systems, regardless of how *dominatory those might be.*

In summary, I hope that in pursuing the implications of different theoretical trajectories in social theory I have been able to demonstrate that the prevailing modes of use and evaluation of telehealth and telemedicine systems are important harbingers of the ineluctable tension that binds a specifically late modern ‘circuit’ of knowledge production, to both the pace of the temporal rhythms and the structure of the spatial patterns peculiar to contemporary processes of capital accumulation. The formalized telehealth-promoting discourses have here been taken up in a critical analysis of the characteristic political valuation attached to the decidedly immaterial, purportedly emancipatory cyberspace produced through telehealth networks. I have argued that we have little reason to conceive of telehealth applications as affording greater dimensions of accessibility to health services for all, and therefore that the different communication needs of differentially-positioned telehealth users need be considered both the most resistant and indeed important of non-financial barriers to wider patterns of telehealth use. A ‘lack of users’ input’, after all, is often cited as an important factor in the failure of clinical information systems (Lehoux et. al., 2000: 482), and critical contributions to a theory of telehealth use and evaluation are in turn necessary to ensure that broad-scale systems are not implemented in a way that is purely technology-driven.

To say that the implementation of telehealth activity in Canada and elsewhere risks being technology-driven, is to say that telehealth uptake and dissemination unfolds in a manner that is *a priori* to the identification of actual health care needs, and that in this sense the telehealth applications under examination become a solution in search of a problem to solve. The need to find a ‘space’ for the applications in established,

materially-existing health care infrastructures and practices, is eschewed in favour of immediate implementation, owing to what Lehoux, Battista and Lance (2000: 277) termed the high ‘face validity’ enjoyed by telehealth applications in an historically specific health policy environment. In the context of the health care reforms initiated in most regions of most industrialized countries, telehealth applications have high ‘face validity’ insofar as logically, they *appear to* yield such profound benefits for clinical communications and access to expertise that there is no need to evaluate their effects on existing infrastructures and practices.

I have argued that far from enhancing the accessibility of health care and information for users, telehealth networks hold the rather dangerous potential to re-territorialize materially-existing health care networks. This profoundly geographical implication in turn signals already-apparent managerial strategies in health care delivery that facilitate shifts toward both the privatization of health services and the creation of internal markets within the emergent geographical hierarchies of telehealth networks. Theoretical traditions capable of leveling criticism at this state of affairs will continue to be called for, if it is taken as given that the proliferation of telehealth networks is an important exemplar of the transition within many industrial capitalist societies from health policy directives premised upon the principle of universal and equitable access, to policy initiatives that embolden and reinforce the conditions under which privately funded and delivered health care gain greater prominence – those are, inherently political programmes aimed at achieving enhanced flexibility, regionalization, and privatization – through which I suggest the goal of more equitable access to effective care is in fact

markedly undermined.

Even in a wider policy context tending toward the retrenchment of decommodified social programs, the comparatively greater promise of *telehealth* over *telemedicine* services is felt to lie in wider opportunities for revenue generation than were possible in the restrictive conception of telemedicine as the delivery of curative treatments for established disease. There has emerged a broad-based public health rationale for telehealth technology uptake and program implementation, a rationale that is historically-specific, and that demands the technologies' implementation irrespective of whether or not they can actually be demonstrated to improve health care communications in all places and at all times. Analogously, insofar as many of the new 'orthodox' traditions in social theory – Giddens's theory of structuration, for instance – still tend to denigrate the significance of space to social processes when compared to the significance of time, so are the geographical aspects of the political economy of telehealth implementation subordinated in relative importance to discourses centered both on the notion of temporal 'progress' and upon the widely-reported liberatory potential of contemporary innovations in telecommunications technologies – technologies proclaimed as the 'data-carriers' of a putatively new historical mode of sociability in cyberspace.

If we conclude that modernity is ushered in not by greater dimensions of time-space distantiation than have heretofore been seen in human societies, it becomes clear that increased time-space compression is instead on offer to the (post)modern subjects populating the nether-regions of virtual time-space that have, in the end, already been mapped for them. Rather than enabling a decoupling of time from space, the late modern

terms of sociability enable the recombination of time and space into a particular relationship. In this relation, as Harvey argued, capital continues to dominate by way of its superior command over space and time, even in the face of opposition movements. The postmodern politics of identity do work to animate the ‘heterotopias’, ‘other places’ and ‘regional resistances’ that work as place-based alternatives to the universally-fragmented and differentiated space of global markets. But as Harvey (ibid: 238-9) likewise emphasized, these places “[A]re all too often subject to the power of capital over the coordination of universal fragmented space and the march of capitalism’s global historical time that lies outside the purview of any particular one of them.” What I am suggesting, is that the users of telehealth applications see their identities decentered through the media of electronic networks, and that this decentering, more often than not, implies a re-emplacement in the typified and subsuming identificatory spaces of envisaged virtual regions. Against the claims of the technical and policy-oriented literature promoting the use of telehealth systems, I have argued that this is not a positive development, in all cases and in all regions.

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