Notes Towards an Integrative Agenda and Community Informatics Theory

Michael Gurstein
New Jersey Institute of Technology

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About CRACIN

The **Canadian Research Alliance for Community Innovation and Networking (CRACIN)** is a four-year partnership between community informatics researchers, community networking practitioners and federal government policy specialists, funded by a grant from the Social Sciences and Humanities Research Council (SSHRC). CRACIN brings together researchers and practitioners from across Canada, and internationally, to undertake case studies and thematic research on enabling the uses of new information and communication technologies (ICTs) by communities and through community-based organizations, and to investigate Canada's national programs and policies for promoting the development and public accessibility of digitally enabled activities and services.

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Introduction

As we drive forward into the "Information Society" the overwhelming force of globalization not simply as a metaphor but as a defining condition of the dominant structures of the emerging economy become increasingly evident. Globalization in this context means the creation of centrally coordinated networks of producers and consumers, of supply chains and distribution networks. And necessarily and crucially these processes in their current late 20th and early 21st century manifestations are enabled and empowered by Information and Communications Technologies.[1] The very rapid rise to national and increasingly global dominance of a select number of massively electronically enabled corporations of which the most visible (and successful is Wal-Mart (in the retail sector) is the defining example of these processes.

In this context, Wal-Mart is less a company than it is an electronic infrastructure for managing the flow of goods from producers in low cost countries to consumers in higher cost countries while extracting profit from the "arbitrage" between these two sides of the equation[2]. The defining characteristic of Wal-Mart is the efficiency, scope and depth of its IT infrastructure and the continuous internal drive within its IT processing to enhance these efficiencies. By creating a relatively seamless supply chain internally and low overhead relationship between producers and consumers it has mastered the central elements of a consumer economy.[3]

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[1] "Globalization" as a term has no standard and universally recognized definition. Rather it can be understood to occupy a general conceptual space and is adapted to particular circumstances as required. A fairly typical definition as applied within the context of Information Systems would be the following. "globalization of business refers to a qualitative departure from traditional approaches to doing business internationally. An important distinction if the size of the new business entities.* Another, and significantly more interesting aspect is the attempt to set up such entities in various countries functioning as single, "seamless" business operations. For example, while a corporation's market in the international trade is usually considered to be composed of many, country-defined markets, in the globalized approach it is defined as one, huge globe-encompassing mammoth. Closely related to this notion is global business corporation's approach to management of business operations in various countries, as elements of a unified system, regardless of the location and the national boundaries.A significant implication of this approach is the expected ease of transfer of goods, services, capital and labor across the globe, unencumbered by excessive local and national regulations. http://aabss.org/journal2002/Mahdavi.htm A further and more Information Systems and less academic definition would be the following: "We define globalization as the responsible development of a geographically balanced network of business units that are fully integrated within both our worldwide business structure and within the local societies in which they operate." http://www.st.com/stonline/company/annual/fy01/p07a.htm A further and this time a more scholarly definition

[2] The technical and management literature on Wal-Mart's supply chain is large and of course extremely laudatory. An interesting example is http://www.almc.army.mil/alog/issues/janfeb97/ms046.htm which examines what the US Army can learn from Wal-Mart's logistics! The significance of these global supply chains and specifically Wal-Mart in the area of Management Information Systems cannot be over-emphasized to the point where a colleague in private conversation suggested that all MIS research now was in one form or another concerned with the management and deployment of the Wal-Mart infrastructure! Cf http://www.semiconfareast.com/supply-chain.htm .

[3] There is a very large technical and commercial literature on Supply Chain Management. Usable and accessible introduction can be found at http://en.wikipedia.org/wiki/Supply_chain_management

Information Systems and Globalization

What is characteristic of Wal-Mart and all of the companies linked into the Wal-Mart web of alliances, suppliers and sub-suppliers as well as the companies whose own drive for globalization emulates or parallels that of Wal-Mart is the very high degree of centralization and centralized control which they exert even through their highly dispersed operations.[4] It is this control as exerted through the direct use of Information and Communications Technologies including their networks which is characteristic of the modern age and of the role of ICT in the current globalizing economy.[5]

A notable characteristic of Wal-Mart as well, is not only is it a "globalized" enterprise but it is also a "globalizing" enterprise and not only in the reach of its business activities but also and even more tellingly in the drive of its technology systems to create ever more efficient structures for information flow and information management along its supply and sales chains and of course towards an ever-smoother integration of the two.[6]

The very fact of this integration coupled with the intensive centralization and overwhelming drive to expansion has meant not only that Wal-Mart has integrated its suppliers into its "value chain" but in addition it has put significant pressure on its suppliers to integrate their suppliers into their value chains as well, similarly using the electronic platform and integrated information systems. The overall effect of this is that a very significant and increasing component of the overall US economy and elements of the global economy are becoming integrated into a single ever-increasing technologically driven and efficiency seeking electronic infrastructure and process of cost-reduction and profit maximization all cascading into the Wal-Mart retail behemoth.

Parallel, although not as extensive electronically-enabled supply chains, can be found in other industrial segments and particularly the automotive and the electronic industries. And of course, the banking and financial industry is of its essence and electronic infrastructure lacking of course a material supply chain as a physical counterpart.

These technology drivers at the core of the contemporary advanced economies equally have their organizational, management and "human resource" counterparts. At the organizational level, the structures that emerge, on the one hand, and as we have

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[4] This "control" takes the form of either contracting or not contracting i.e. either a company conforms to the technical requirements and standards of Wal-Mart or it doesn't do business with Wal-Mart and given the massive significance of Wal-Mart as a purchaser this means that conformity is not voluntary but a compulsory aspect of staying in business. http://www.ladlass.com/ice/archives/007533.html

[5] Much of the conceptual insight into the role and operations of Wal-Mart and other electronically enabled enterprises comes from the very useful introductory to e-Business volume by Kalakota and Robinson. *e-Business: Roadmap for Success,* Addison and Wesley, 2002.

[6] The integration of the sales "chain" with the supply chain is probably Wal-Mart's most significant single innovation. Developing the capacity to directly link sales with supply has allowed it to achieve massive efficiencies by effectively eliminating the need for inventory and warehousing. The "joke" in the industry is as follows: Q. Where is Wal-Mart's warehouses? A. The US Interstate highway system.

already noted, have highly centralized core decision-making—primarily concerning technological and financial issues.

Contrary to "industrial" production processes however, the actual physical production can be highly dispersed and decentralized with the centre maintaining a coordinating role. Very often this coordination is done less through specific direction and more through the establishment of targets (production, cost, quality) and standards with local or dispersed "nodes" being responsible for achieving these targets or responding to these standards in ways that are reflective of and responsive to local conditions, opportunities and resources. In this way the technological infrastructure is more of an enabling environment than a control environment, i.e. enabling those at the local or dispersed levels to execute their own responsibilities in the most efficient and effective manner taking into consideration local conditions while at the same time ensuring that their actions are consistent with the requirements and standards (including both quality and profitability) as established at the center.

What this means in practice is that local "nodes"—suppliers, producers, retail outlets—have considerable autonomy in how they achieve their results as long as the results are achieved. This of course, means that a considerable degree of "localism" can enter into management at the local level and equally that the kinds of "abuses" which have most recently come to light concerning Wal-Mart, Nike and other globalized corporations can occur at the local level without necessarily being the result of a central policy directive or even directly accessible to centralized corporate oversight.

Equally, the core of employee relationships and of work activities are not necessarily externally coordinated or framed in an aggregated fashion i.e. a context such as an assembly line where all employees are being treated alike and equally subject to external coordination[7] as was of course, the basis for earlier processes and drivers for unionization. In this case, the central direction is towards individuation of employee direction and of the relationship of the employee to the employer. The "employees" in these enterprises are not "workers", or even employees, rather they are "Associates". In this way, at least nominally, the illusion (and to some degree the reality) is presented of employee autonomy within the larger coordinated framework. In the current iteration of course, this coordination takes an increasingly technological form (rather than for example management coordination through direct oversight).[8] In the current formulation, each employee/"Associate" has their separate "Associate's" contract (and output quotas) with the employer maintaining the right to monitor against these quotas (technology given the employer increased opportunity for such individualized monitoring) rather than for example, the more traditional collective output requirements leading inevitably to collective labour agreements.[9]

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[7] Cf. Wal-Mart's position on unions http://www.Wal-Martfacts.com/Wal-Mart_and_unions.aspx

[8] This coordination is done through continuous monitoring of employee behaviour and particularly through the monitoring of employee outputs against norms cf. Kalikota and Robinson concerning this type of employee "management" as being the characteristic form for electronically enabled business cf. pp.

[9] cf Castells,

"Networked Individualism" and the Politics of the Consumption of Intangibles

How then are we to understand the status and mode of "being in the world" of these "Associates". In the earlier formulations, notions of "individualism" and the creation of individualized identities and methods of participating in the various activities and realities of daily and collective life were formulated by amongst Locke and Hume.[10] In this earlier formulation, the origin of this individualism can be seen as deriving from the breakdown of feudal modes of production and social relationships and the rise of individualized contract based relationships through industrial production and the end of legal and religious ties to the land and to central religious value systems.

We can perhaps see a direct parallel here with the evident rise of individualized relations between employer and employee as characterized by Wal-Mart's "Associates" status but we can also see it in the formulation presented by Barry Wellman and his colleagues[11] concerning the nature of the status and relationships between individuals within electronic networks in his notion of "networked individualism"[12] The Wal-Mart employee is presented, structured and compelled to a form of individualism quite unknown in earlier management employee-relationships and the reason that this is possible and the basis for its occurrence and the strength of these structures in relation to individual employees is that rather than managers and management organizations providing the basis of work coordination and organization it is the electronic infrastructure, the "network" which provides this coordination and structuring of labour activities.[13]

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[10] For an outstanding discussion of these formulations from the perspective of Political Philosophy see C.B. MacPherson, "The Political Theory of Possessive Individualism", Oxford…

[11] B Wellman, A Quan-Haase, J Boase, W Chen, K The Social Affordances of the Internet for Networked Individualism, … - Journal of computer Mediated Communication

[12] Van Dijk presents a very useful explication of Wellman's theory as follows: This means that the individual in one of its roles increasingly is the most important node in the network and not a particular place, group or organization. The social and cultural process of individualization is strongly supported by the rise of social and media networks. Using them the individual creates a very mobile lifestyle and a crisscross of geographically dispersed relations. Every mobile phone user knows that (s)he does not any longer reach a place, but a particular person in one of its roles. This practice may be very liberating and self-empowering, but there also is a less positive side to it. Less and less people have a view of us as a whole person: one only knows one or a few sides of our personality playing a particular role (Wellman, 2000). Presently, the last refuge where one is supposed to know each other more completely, the family household, is dispersed also. In families husbands and wives, parents and children are engaged with ever more different activities in other social and media networks. Effects to be observed might be an increase of loneliness, alienation, uncertainty and the feeling of not being understood by others. This might happen in spite of, or because of (?) the virtual explosion of means of communication available. http://www.gw.utwente.nl/vandijk/research/network_theory/network_theory_plaatje/a_theory_outline_outline_of_a.doc/

[13] In this as in other areas when we are discussing exsternally-driven networks based on centralized decision making, we should include as direct parallels the processes of the transfer into electronic format of Government services (e-Government) without the parallel development of enhanced means for enabling

Wellman's notion of "networked individualism" as the way in which identity manifests itself in the "networked" society is a useful one in that it highlights both the manner in which the network links into the individual in an unmediated fashion and the manner in which the individual both experiences and interacts with the dispersed and (from his/her) perspective centreless network directly, rather than through the mediation of social groupings or other social constructs. It also gives a sense that the individual, in the context of an environment where she is engaged in multiple electronically-enabled networks, is in turn a construct linking together fragmented identities/individualisms structured, created or responsive to and within each of the only partially, if at all overlapping, networks. Thus creation of the self in this context may (and is generally understood) as an act of individual will which may take different forms for different individuals or even on different occasions.[14]

Following from this, it should be understood that individual action within this context takes place not in a social context but within and through the individual networks where the self is able (or available) to act (or interact) with others but only within the very limited areas of linkage or interconnection that are presented by the specific network. As an example, individual game player, part of a Massively Networked Multi-Player gaming (MMPG) network is able to interact with her fellows and act within the game but only in ways and with actions that are prescribed and circumscribed within the specific parameters of the network and thus the rules (and defined identities of the game). Similarly the individual buying or selling on E-Bay, performs their respective actions within the parameters defined by the interaction between the individuals as per their "profile" within E-Bay and within E-Bay's prescribed and technologically enforced rules of interaction or "policies"[15].

The notion of identity and through this individual action as a "networked individual" is thus a peculiar one in that while the individual may define their specific "identity" within the context of the specific network (the definition of the individual's "profile" within that network), the manner in which that identity may in turn execute or perform actions within that network are directly a function of the centrally determined and prescribed standards, regulations, i.e. "code" of that network[16]. The individual may control their profile (identity) but they can do so only within rules over which they have no direct influence and which they can resist or ignore only at the risk of being de-networked and thus de-linked or *erased* from participating in the network which in

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citizen participation and control at the community level of these services (e-Governance). For a further elaboration of this discussion see M. Gurstein, D. Schauder, and W. Taylor "E-Governance and E-Government", for *International Conference on Engaging Communities*, Brisbane, Australia July 2005

[14] B Wellman, K Hampton, "*Living Networked in a Wired World*" Contemporary Sociology, 1999 - chass.utoronto.ca
[15] http://pages.ebay.com/help/policies/hub.html?ssPageName=home:f:f:US
[16] cf. The extremely interesting discussions which are emerging concerning the notion of "code as law" for example those by Lawrence Lessig in his electronically published book "Code and other Laws of Cyberspace" http://www.code-is-law.org

network terms is tantamount to being obliterated—i.e. not simply killed or destroyed, in which cases traces may be allowed to remain within the network—but obliterated i.e. removed including all historical traces or fragments.[17]

In the case of Wal-Mart, the individual's relationship to the network is a result of the employment contract that she has with the company… Once that contract is terminated, the individual (and equally the company) has no residual connection or involvement with one with the other (and no residual responsibility or contractual, paternalistic or other linkages). The example here, of course, is less striking perhaps in the case of Wal-Mart than it is in the case of the more evidently (electronically) networked individual employee or business operator (in the case of eBay), when, having ceased to be a member of the "network" (as for example having been fired or suspended), the act of firing or suspension) immediately triggers a series of electronically (and network)-enabled actions particularly the changing of passwords – which deny individuals access to information networks, work premises (including both physical and increasingly electronic), email accounts, files and so on – and all of the related elements of identity (and selfhood) in a networked and electronic environment.

Resistance

In this context, the individual is truly powerless to resist this more or less complete (network) obliteration since the network itself is centrally controlled and this capacity to "block" or "delete" or "suspend" is a centrally managed function or feature of such networks. Even prior to such a measure, the capacity to resist or to "organize" within the network is in itself a feature determined and circumscribed by the network's code which in turn determines in what manner "individuals" are allowed to individually interact and coordinate their behavior outside of the centrally prescribed coordination as determined by the rules and standards of the individual networks.

It is only by stepping outside of these networks and drawing upon or creating an "individualism" which is outside of these networks or a non-networked identity, where the type of interaction through which non-(centrally) "networked" inter-individual interaction and thus collaboration or non-network subordinated organizing" can begin to take place. But in environments or for individuals whose identities are largely structured

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[17] cf. eBay op.cit. A person suspended from eBay loses all membership privileges. A suspended individual is not permitted to participate on the eBay site using any existing account, or to register new accounts with eBay. A suspension from eBay may be for a fixed length of time, indefinite, or permanent. Suspensions remain in effect until removed by eBay. http://pages.ebay.com/help/policies/rfe-previously-suspended.html It has been indicated that currently some 250,000 individuals and businesses are now deriving a majority of their livelihood from transactions on eBay. Thus being *suspended* from as described above, without right of notice or appeal is potentially an extremely significant sanction and gives those enforcing such rules enormous economic and social power.

in relation to these externally driven networks—those for whom employment, gaming, purchasing networks—are the sum of their "individualism", little may be left as a residual base of identify on which to form such non-externally coordinated inter-relationships (ie. non-externally dependent networks) as a basis for resistance.

And yet, we are seeing manifestation of resistance and even coordinated resistance to these networks and their impacts on individuals and particularly in the context of the impact that Wal-Mart is having both on its employees and particularly on physical communities throughout the US and elsewhere.

Notably, the only effective resistance to the Wal-Mart juggernaut and including competitive resistance in the market place has come initially from place-based communities and in general, integrated relatively small communities which have mounted active resistance to the location of a Wal-Mart store within their immediate environment. The basis of the resistance here is the competitive pressure and ultimate destruction of locally based small enterprises who, lacking Wal-Mart's electronic infrastructure and the competitive (and price) advantage which it gives them, find themselves unable to compete with Wal-Mart and going out of business very soon after Wal-Mart enters the local marketplace.

It is at these local, face-to-face community levels that the most successful resistance to Wal-Mart as a global intensively networked financial behemoth has been successful (notably of course, not spectacularly successful) i.e. where the only evident successes in resistance to Wal-Mart have taken place even though for example, a variety of unions have spent very large amounts of energy and money attempting to organize Wal-Mart employees with notably little success.[18] Equally, the current mobilization against Wal-Mart's employee practices owes a great deal to Greenwald's documentary move "Wal-Mart: The High Cost of Low Price"[19]. This movie has in turn sparked a unique phenomenon of community based showings of the movie and local labor mobilizations around the movie in community centers, church halls and individuals inviting their neighbors in thousands of locations around the US.[20]

From Resistance to Theory

The electronically enabled network that is Wal-Mart and the parallel centrally-controlled electronically-enabled networks that underpin the contemporary advanced economies and cultures are, at their very core, "totalizing" systems in the sense in which thinkers such as Hegel and Marx understood "totalizing systems". That is, they are systems whose inner life is one of extreme and even cancerous and explosive growth and through this to the

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[18] http://walmartwatch.com/

[19] http://www.Wal-Martmovie.com/

[20] cf. The several hundred church groups, union locals, schools and small businesses which have arranged for community screeing of the Wal-Mart documentary complete with discussion kits local promotions and so on. See especially the communities of faith http://www.walmartmovie.com/faith.php

absorption or transformation of ever wider circles of production (and consumption) into extensions of these ever-expanding network chains.

And remembering that the characteristic mode of human participation in these networks is through a necessarily fragmented participation as an individualistic networked electronic "profile", it is not surprising that the resistance to this totalization comes from opportunities and frameworks which enable the individual to overcome this fragmentation and to integrate their identity and more importantly to find the means for entering into collaborative relationships with others. This process of re-integration or overcoming contractually structured and fragmented "networked" relations in favor of organic and wholistic coordinated relationships is in fact what takes place in "communities" and is in some senses the defining characteristic of communities—where *Communities* are places "where others know your 'name' and not just your 'sig' (electronic signature) and where others interact with you as an integrated person not simply as an electronically mediated "profile".

Thus the structure of "resistance" to the totalizing forces of technology and networked-enabled capitalist accumulation as per Wal-Mart is necessarily and theoretically (as well as in practice) the discovery or rediscovery of "community" and of organic and integrated inter-individual relationships rather than purely contractual and electronically fragmented inter-networked connections.[21]

And these relationships of resistance can be seen not simply as resistances in themselves, but also as dialectically produced and structured resistance (in struggle) with the networked structures being invasively engendered by the Wal-Mart and similarly structured technology platforms. In fact, the relationship here is a "dialectical" relationship between "community" and centrally-controlled, distributed electronic networks which are the characteristic form that capitalist production is currently taking.

Open Source Communities of Production

Equally of course, there are direct parallels here between these "communities of resistance" and the "communities of production" within which Open Source software is being produced. Parallel to the creation of a totalizing (monopolistic) retail structure of distribution though Wal-Mart built on a centrally-controlled electronic infrastructure is the monopolistic and totalizing infrastructure-production control systems presented by Microsoft through its Windows Operating System.

Microsoft, in a way similar to Wal-Mart uses internal networks for production and as a progenitor of globalized IT-enabled production and networking provides *closed* i.e. centrally structured and controlled access software code whose use and application is widely, even universally distributed (and enforced) through Microsoft's monopolistic control of Windows. Even though the individual uses (instantiations) of the application

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[21] cf. Wellman's references to contractual or "gemeinschaft" relationships as per Durkheim's notions as the defining characteristic of his "networked individualism" postulate. Wellman and Hampton, op.cit.

are highly individualized (contextualized), nevertheless the *code* is highly controlled by Microsoft and. through the invisible networks of PC producers and their OEM relationships with MS, MS is able to maintain and reproduce this centralized control for its own monopolistic gain.[22]

The opposition (resistance) to MS and the only effective competitive force that has arisen is the Linux/Open Source community of non-centrally-controlled dispersed electronically enabled "communities" of software code writers who have created a framework of production and of more or less competitive products to the Microsoft software suites and offerings. In some sense these "communities" present a clearly identifiable model of electronically enabled (networked) "communities" as resistant to centrally controlled electronic networks. Most notably as well, rather than being centrally controlled and based on contractual linkages these communities are based on relationships of voluntary participation and work within an organizational form based on distributed (and to a degree consensus) decision making and management (control) rather than top-down centralized decision making and management.[23]

The structure here rather than being one of "networked individualism" is in fact one of "networked communities" which quite interestingly and evidently have the resilience, breadth, depth and persistence to represent a (in fact "the") most significant competitive threat to perhaps the world's most powerful Information Age corporation.

Resistance and Ontology

Ontology has to do with the nature of fundamental "being"[24]. What is the primordial base from which other phenomena derive or which provide the basis for the continued persistence of other phenomena or activities. In this context, the question would be what are the ontological foundations for an understanding of the current structure of action/reaction, extension (propagation) and resistance within the domain with which we are concerned.

Within Wellman's model of "networked individualism", the only ontological mover (independent agent or source of independent action/agency) is the *network* itself. The *individual* in Wellman's formulation is simply the sum of the fragments of her participation in the various externally driven networks (of production, consumption and even socialization) of which she is a member or with which she has contractual relations. In this world, the *network* is all and everything.

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[22] This of course, is the basis of the recent finding by both the US government and the European Union that Microsoft is guilty of monopolistic practices. Cf.
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/382&format=HTML&aged=1&language=EN&guiLanguage=en
[23] cf, L Torvalds - Communications of the ACM, 1999 - portal.acm.org The Linux edge, Volume 42, Number 4 (1999), Pages 38-39
[24] cf. http://www-ksl.stanford.edu/kst/what-is-an-ontology.html

However, in the real world, the externally driven network is only one element of reality. In addition to this, there are the self-initiated (self-organized) and participatory networks which inter-link individuals not on the basis of fragments of identity but on the basis of self-initiated and self-realized identities. These networks function as "communities" through which action may be undertaken, projects realized, reality confronted and modified.

The argument of this paper is that these "communities' both as physical and electronically-enabled represent an additional (and structurally oppositional) ontology to the "network" ontology as presented by for example, the business press and as described by Wellman. These communities provide a basis or foundation element for the construction of an alternative reality—a set of organizational, economic and social structures operating independently of the centrally controlled networks and capable of opposing and creating different structures and realities to those being produced (and being forcefully reproduced and extended) through the centralized/individualized networks as discussed by Wellman (and Kalakota and Robinson among many others) and as realized by such corporate agents as Wal-Mart and Microsoft.

The conclusion that "communities", whether electronically- or physically-enabled have an ontological status is a significant one since within much of the social science and technical literature 'communities" are regarded as phenomena secondary to either individuals, groups or corporations. The assertion here is that "communities" can and should be seen as free-standing and primordial and as the platform or conceptual agent of the basis of which for example, one could (and should) undertake technical i.e. hardware and software, design. In this way, one can (and this is the conceptual foundation for a "Community" Informatics) specifically develop Information, Communications and Networking systems which can provide the means for their being enabled and empowered to effect action in the world directly parallel and in a similar to the use Information, Communication and Networking technology enable and empower "corporations" and "individuals".

What this means in practice is that the requirements which reflect inter-individual i.e. community (collaborative) characteristics can and should become a coordinating and integrating assumption for hardware, software and networking design. In this way community ICT use and application will be enabled meanwhile with these processes reflecting significant differences from the assumptions built into management or corporate-oriented information and technology systems.[25]

The Ontological Nature of Networked Communities

Networked communities may take either of two forms. They may be communities which only exist in and through the electronic networks which enable them or they may be

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[25] *Cf. M. Gurstein & T. Horan. "Why Community Information Systems Are Important to the Future of Management Information Systems and The Field of Information Science (IS)"* The Gordon Davis Series on the Future of Information Systems Academic Discipline: Opportunities and Directions*, 2005*

physical communities which are enabled both internally and in their relationship with the outside world with Information and Communications Technologies (ICTs).

In the first instance, these communities may also be known as "virtual" or "electronic" communities indicating their origins in the act of networking and of inter-individual communication as between peers. In many cases these communities reflect a repurposing of top-down centrally driven e-networks where individuals as end users/participants in these networks begin to by-pass the central authority and enter into direct peer to peer communication. Centrally driven networks are almost universally structured so as to preclude the possibility of peer-to-peer connections recognizing that this type of "organizing" would be of little advantage to themselves and could potentially present threats.[26]

In the second case physical communities are enabled in a variety of ways and for a variety of purposes through the use of ICTs. In these instances, the "community" as on-going peer-to-peer connections may exist over a long period of time. However, the application or introduction of ICTs as supportive of these processes and particularly as supportive of the various outcome oriented activities of these communities may be relatively new.[27]

Further as the use of ICTs to support electronically enabled communities becomes common and as experience in enabling physical communities with ICTs is acquired there is emerging a convergence or an over-lap between these where for example electronically enabled communities begin to seek out ways of becoming linked more directly into physical interactions and physical processes and where ICT enabled physical communities begin to enhance and extend their activities and reach by incorporating elements of virtual relationships as aspects of the on-going physical and face-to-face relationships

Characteristics of Networked Communities

"Networked communities" (equally with community networks) have a variety of "essential" characteristics which differentiate them from other and centrally determined networks and networked individuals.

1. __Bottom-up__

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[26] A number of companies in the DotCom and period immediately after created on-line forums giving customers the opportunity to present feedback to the company and with the intention of creating "communities" around the various products or brands as is promoted by Hagel and Armstrong in their very influential book, Net Gain: Expanding Business Through Virtual Community. Most of these were quickly shut down when the customers began to interact with each other to form groups of customers many of which were directly critical of individual company offerings. A number of these eventually re-emerged in the "xxxsucks.com" phenomenon as in http://www.mycarsucks.com/ for example.

[27] These processes have been quite well examined as for example M. Gurstein, Community Informatics: Enabling Communities With Information and Communications Technologies and the variety of articles in the Journal of Community Informatics http://ci-journal.net

Networked communities are "bottom-up", that is they are derived and developed by the users or participants themselves rather than being centrally initiated or externally driven. What this means is that users or participants are actors in the networks and these networks in turn are community-based developing through pre-existing or self presented individualisms rather with the inter-individual connections being externally defined and elicited. In this way participation in a community is rather more rounded and integrated from the participant's perspective than the fragmented and largely "contractual" or rule based relationships of the individualism based networks as defined by Wellman. This in turn gives the nature of the community participation a stronger and fuller grounding in the lived context. (This is significant when one is concerned with community networks/networked communities from a Knowledge Management i.e. knowledge creation and knowledge distribution perspective since the knowledge that is being created and transmitted is grounded in the lived reality and experience of the individual knowledge creator/transmitter.)

2. **Voluntary**

Participation in networked communities is voluntary and self-initiated. Individuals participate in networked communities on a voluntary basis, that is they choose to participate (in the case of physical communities it is rather in the form of choosing not to not participate) and this participation is based on individual decision and volition rather than through entering into contractual relationships., There may be an exchange of "value" (in the form of cash, goods or services) through a networked community, in fact there is very often quite a considerable such exchange, but that is not the basis of the participation in the community and the relationships are with the community as a whole rather on a bi-lateral basis where there is an enforced or enforceable structured value exchange relationship.

3. **Goals and methods collaboratively determined with the community partners**

In communities the goals and methods for achieving these goals are the result of collaborative decision making processes. These processes of course may differ significantly from context to context but in each case there is an element of participation by those involved and responsiveness to the decisions made. In practice these processes for the most part reflect some form of "consensus" position on the part of the participants although the achievement of formal consensus may or may not occur and in many communities there are many more formalized structures for decision making.

4. **Autonomy vs. dependency**

Networked community structures are autonomous and capable of the independent initiation of action. In this context, networked communities function as the "edge" of the various larger networks in which they are participants. As in the Internet itself, the notion is that the intelligence (and relatedly the capacity for autonomous action and independent i.e. non-coerced participation in the network) is found at the edges of the network. In

coercive, top-down, centrally coordinated networks, only the center is capable of autonomous action while those at the edges are capable only of action within a coordinated centrally determined set of parameters, standards and code.

5. **Emergent**

Networked communities are "emergent" in that they come into existence (rather than having a formal substantive reality over time), often in response to some external condition or circumstance. That they are "emergent' doesn't mean that they don't or haven't persisted over time but rather that they may have lain nascent until called forward into formalized existence by the external stimulus or by internal processes of, for example "social entrepreneurship" or self-initiated problem solving. In the same manner "networked communities" may and do evolve over time and move into and out of "existence" in formalized terms. That no formal external structures of a "networked community" can be externally identified does not mean that "the networked community" does not exist, but rather that the networked community in its structured form is still nascent waiting to be called forth.

This approach provides a means to understand the "sustainability" paradox which is that while the formal structures of communities may or may not be "sustainable"[28] over time, nevertheless the "community" itself is sustaining and may "spring to life" i.e. re-emerge in the form of formalized structures at a future but as yet unpredictable occasion. This suggests the obvious but frequently overlooked conclusion that "communities" are not defined simply by their structures, but rather are the connections which persist over time as between members of the community, with structures being simply formalizations of these connections.

Research and Networked Communities/Community Networks

1. **Introduction**

Research has played a very significant role in the advance of centrally facilitated networking. The development of the technical systems including the basic network infrastructure, the hardware on which it resides, and the software which enables it are all the products of Research and Development activities and to a considerably degree of university supported engineering and computer science research.

The basic paradigm of this research has been that of the design and development of "Management Information Systems" (MIS), that is, information systems designed so as to enable concentrated and centralized decision-making by (primarily) corporate management. In addition these systems are used as a means for achieving efficiencies in

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[28] Cf. Lyn E Simpson, "Community Informatics and Sustainability: Why Social Capital Matters" Journal of Community Informatics *Volume 1, No. 2, 2005*

business applications and increasingly for managing and controlling the various inter-relationships which corporations have with those outside the corporation with whom they have on-going relationships whether as customers, suppliers, lenders, regulators and others.

The nature of the research driving much of this advance has of course, been technical in nature. The basic managerial assumptions (centralization of decision making, exclusionary access to information and on) on which this technical research is founded are deeply embedded and taken as necessary and commonplace. Any suggestion that these assumptions are anything but necessary is viewed with suspicion and incomprehension. Even the research which is concerned with the application and use of Information Systems in not-for-profit enterprises makes the same basic assumptions concerning the nature and structuring of the organization and the necessity of empowering centralized management.

The research issues and strategies for networked communities are somewhat more complex than for managed networks in that networked communities require that the assumptions and characteristics of themselves as communities must be included as elements and assumptions within the context of the research. Thus, the research component requires an understanding and sensitivity towards the *social* elements of computing and communication in addition to the technical elements. In addition, there is a need to break away from received research designs and assumptions given that networked communities must be seen at some levels as being in a *dialectical relationship* with the dominant, intrusive and engulfing forces of the centrally-coordinated networks and networking.

In this context then, *research* is not simply about the nature of the activity or how it might be enabled using ICTs but it also must be informed as to the nature of its on-going and structured relationships with the dominant forces (and including the relationships of resistance or *struggle* which are necessary components of the relationship) if the community-based systems are to survive and provide the functionality and the enabling and empowering services which are anticipated.

However, in the context of Community Informatics, research is also of very considerable importance as providing a necessary and on-going link between practitioners, as a spur to technical research, as a means to link technical development directly into on-going practice, and as a means to link practice into policy. This latter issue in the area of community technology applications, has as very considerable role given the significance of policy and government funding support for specifically physical networked communities.

The practice of Community Informatics research will have certain characteristics which are different from those in other areas of IT or applications research. These will be discussed below

2. <u>Dialectical</u>

The concept of "dialectical research" is a relatively unconventional one in current research activities and one might suggest even less familiar in the context of "technical" or "Informatics" research. Nevertheless it is crucial as an element in CI research. The challenge of CI research is not simply to enable or empower "communities" as persistent formalized structures. In fact as we have already noted, "communities" in this context are neither permanent nor fully realized. Rather they are emergent and emergent in the context of responding to the presentation of opportunities (or threats) from the larger environment. Notably as well, the centrally driven networks in the larger environment operate with a continuous drive to encroach and engulf all areas of activity including whatever small areas of autonomous action communities might be able wrest from these pressures and encroachments. The "struggles" around these areas of enablement or empowerment are continuous and pervasive as the larger environment looks to integrate or absorb all aspects of communities into their larger externally driven supply and consumption chains.

The role and objective of CI research thus is to document these areas of struggle, identify those areas of small victory (where autonomous community-enabling activities and objectives are realized). Based on this research an identify those strategies which have achieved success and suggest means for replicating, reproducing and extending these

In this, of course, the area of technology and enabling technology is crucial and, designing, developing and implementing the technology as tools and supports for these types of developments is crucial. Additionally, the opportunity for appropriating, integrating and repurposing existing technology as community supports while equally facilitating the development of technologies which in their very design reflect the specific ontology of communities presents very significant challenges and opportunities for CI researchers.

In this of course, there is the real opportunity to make common cause with those supporting Open Source and Open Access research since so many of the elements of both of networked communities in the manner in which these are understood in the context of Community Informatics and through the dialectical nature of technologically enabled community action are similar to or inclusive of Open Source research and practice.

What a dialectical approach does is to provide the larger framework and context into which each of the individual initiatives might be placed nationally, globally and in terms of the broad development of Community Informatics initiatives overall. Thus rather than seeing the success or outcome of individual initiatives as being slight particularly when only looked at in their specific local environments; when seen in a different light as outcomes of struggle with the truly massive forces of the centralized and encroaching technologies of enforced dependency (including of course, the technologies of e-Government and e-Service delivery) they can be reinterpreted as being real successes. Further, when seen in this latter perspective and through the application of research and

analysis the basis of this success can be understood and made available elsewhere for similar communities equally seeking to exert an autonomous role in the midst of pervasive monopolistic centralization and corporate dominance.

3. <u>Iterative</u>

The networked community is by its nature iterative in that its nature changes—grows, evolves, shrinks, disappears—in a recurrent and responsive fashion. As well, the various instances of its substantiation (formalization) may, and very often do, grow from and on one another. Given for example that electronically-enabled networked communities are based on technology platforms it is not surprising that the communities which emerge and are enabled into existence by means of such platforms, will evolve along with the technologies on which they are based. Thus networked communities (and community networks) change over time, and design and analytical processes applied to these equally must recognize and make provision for such iterations and evolutions.

What this means is that CI research is always partial, and temporal and even context-specific, providing insight and direction for future developments and activities but necessarily reflecting and representing reality as based on a recognition and (interpretive) understanding of the nature of the local social and technology context and how this mediates any development or application. Thus, as findings and insights are realized they may have a value in guiding and informing future action, design and implementation which will in turn be the subject of further research and so on, but at no stage can it be taken as given that CI research has made a once for all "discovery" or identified results which are universally "necessary" rather than locally "contingent".

In addition, this type of iterative research implies a specific relationship between the researcher and the researched (one of partnership and knowledge sharing) and a certain humility in the manner in which research is presented and reported. Also, there is a necessary recognition that results will always be partial and in evolution and that ultimately their value will come from the insight they provide as a basis for future action rather than as a once-for-all development of universally applicable models or theories.

4. <u>Wholistic</u>

Community Informatics research is necessarily wholistic including paying specific attention to and being explicit concerning the particularities of the social context. This is in contrast to MIS research where the assumptions are buried and implicit and the it is assumed that findings or recommendations are universal and context independent.

Also, for CI the goals of the application are at least in part linked directly into the requirements of the networked community through the complexity of responding to the emergent requirements of communities in their diversity and the specificity of their functioning as communities. This is in contrast to MIS applications where goals are relatively straightforward in the sense of being concerned with ensuring efficiency of operation and thus profit maximization, while CI goals are necessarily more diffuse and

of course, include the various specific elements required to reflect and ensure the continuity of the "community" for which the application is being developed.

This "wholistic" approach requires therefore, a much greater understanding and insight into the broader social and even physical (as well as technological) environment within which the application is being introduced.

5.   Practice driven (not methods etc. driven)

It follows from this that the nature of the research conducted within the context of CI is primarily "practice" i.e. outcome driven rather than methods or theory driven. Where much of research in the academic world is driven by the (often spurious) attempts to identify or to validate "theory", research in the technical world and here one includes CI, is generally concerned with developing the means to achieve certain specific outcomes. In the academic context these "outcomes' may be somewhat less immediately practical but even here they are structured to link into practical or usable outcomes even if at a later stage.

In MIS research, the link to outcomes is in relation to business (or organizational) applications or business practice and the ultimate measure of success is the degree to which it provides usable and useful results in this context. For CI, the practice of research is parallel but here of course, the measure is the degree of usefulness or usability by end user communities. As above, given the emergent and impermanent nature of networked communities, there is a clear need for continuous and structured linkages and feedback (and feed forward) mechanisms between researchers and community users.

The notion of "partnerships" between community users and researchers is a powerful one as well, but also one with some difficulties associated. Differences in short-term objectives (and criteria of achievement—users looking for applications, while researchers requiring certain formalized institutional acknowledgement as for example that which results from peer review); differences in language and even in cultural norms and practices; incommensurable schedules and timelines (users looking for immediate results with researchers being to a considerable degree, governed by institutional commitments and calendars); and so on make the relationship between researchers and practitioners a somewhat difficult but not impossible barrier to working partnerships.

6.   Theory as pragmatic practice/theory as process

Theory in CI as in other areas of applied research has the role of informing and guiding practice, and of giving guidance to research in relation to practice. Specifically in CI research, theory is needed to provide insight into the particular areas where the community ontology presents design or application challenges which diverge from those which underlie other areas of applied technology. Thus for example, how can one understand, conceptualize and model dispersed and consensus based decision-making as

a basis for collaborative action and as a design criteria for technology systems to enable such processes.

In this context the deeper and more formalized understanding of collective and non-hierarchical decision-making and consensus-building and the effects of electronically mediated communication on these, all will inform the outcome and thus can inform the research in relation to the outcome as practice. In this as well, since there are deep interplays between the specific nature (affordances) of individual technologies and the related interactive processes, these understandings (formulations, "theories") are works in progress rather than once for all universal insights. These understandings as well, may as readily take the form of inductive constructs (models) as of deductive propositions leading to formalized conclusions.

And, as the ultimate test of theory in this context is its usefulness and appropriateness of fit in relation to on-going and evolving practice, theory itself has to be seen as an on-going and evolving set of formulations; and as well, these formulations are responding both to changes in the technology environment and to the specific situations/contexts of its application.

Some General CI Research Principles

Following on from the above it is possible to identify some working principles or general guides to CI research practice:

1. The use of the research is to be built into the research design itself

CI research is not generally done simply for the research itself. It is usually done in relation to a specific outcome or action in the world of practice and what this means is that the research use is generally to be built into the research design itself. Thus questions such as:
   a. what are the anticipated findings and how can these be made usable?
   b. who is the research designed to be used by and how do we include them as co-developers/partners in the research?
   c. what research questions are of interest to the practitioners currently and are there questions which they may not anticipate but which will be of value in the medium and longer term and how can this research inform those questions?
   d. is their a policy significance to the research and what specific type of research-based information will be required to inform and influence policy?
   e. who will be the "carriers" or distributors of this information, in what form? and
   f. who will be the anticipated end users/target of the information?

2. **Strategies for knowledge sharing and collaborative knowledge building**

A key element of CI research is the contribution that it makes to the larger CI research and practitioner community, thus an element of the research design must be the identification of a strategy for for contributing to and participating in knowledge sharing and collaborative knowledge-building strategy right at the beginning. What this suggests as well is that CI research is generally done in conjunction with the broader knowledge community of CI researchers and practitioners and that this community both contributes to and derives benefits from the on-going practice of the research and a recognition of this relationship should also be built into the research at its outset.

3. **Research knowledge as a "network" rather than as solitary "hero".**

The basic model of CI research is that of the research network (including academic researchers, practitioners and those involved in policy—all of whom contribute to the research in their own way and all of whom derive specific benefits from the outcome of the research). The research model is not that of the solitary "hero" researcher gathering knowledge and bringing it forth in authoritative pronouncements to an expectant universe. This approach is a difficult one to maintain since so much of institutional practice including research funding and the reward system for research (particularly for higher degrees) is designed around the model of the heroic individual researcher but nevertheless these pressures should be resisted to the degree possible.

4. **Non-researchers as research "peers"**

Similarly, the recognition and acceptance of non-researchers as research "peers" i.e. as equal partners in the design, conduct and analysis of research is a difficult and counter-normative position and yet in the context of applied research such as that of CI it is necessary at all stages if the research is to successfully achieve its goals.

5. **Research as "process" rather than "product"**

In this way then, CI research can be seen as a "process" rather than a "product" that is, it is an on-going and iterative engagement between the researcher and the "subject" of the research (or rather the practioner/partner in the research). The research thus moves back and forth in an iterative fashion between problem definition, information collection, analysis, engagement at the level of practice, assessment and feedback and then back again to problem definition and so on.

6. **The technology is an instrument of power**

The basis of the dialectical nature of networked communities is their struggle for existence/autonomy within the broader context of encroachments and external engulfments again through the use of the technology as an instrumentality of power. In that sense the technology is not "neutral". CI-oriented technology is technology which

enables communities to achieve a degree of persistence and a degree of autonomy in the midst of attempts to eliminate these zones of independence and autonomous action.

Thus while individual items of technology may in themselves be neutral for use by either side of these struggles, the broad force of the technology and thus the manner in which it is specifically instantiated either supports or undermines networked communities as discussed above. What this means for the researcher is that there is considerable pressure to redesign technologies according to the already mentioned community ontology or to redesign or repurpose existing technologies to provide similar affordances or to act as enablers in a similar fashion. Given that these are areas of continuing struggle as between the forces of encroachment and the forces of autonomy there is the added obligation on the researcher to be explicit and concrete in the formulation and presentation of their research design, methods and results. This formulation necessarily is constructed within the contexts of, for example, the community's struggles for social and economic power and autonomy as potentially enabled by the technology, and including for example the means to determine modes of operation, structures of decision-making, enforced dependencies, and so on.

Research "issues"

1. Introduction

What then are the research issues of interest from a CI perspective? These have to some degree been dealt with particularly in the areas of technical research with respect to CI in an earlier paper.[29] In this context we will address ways gaining insight into of addressing some of the more common community networking or Information and Communications for Development issues from a CI Research perspective.

2. Sustainability

Discussions and research concerning *sustainability* of community based technology initiatives (networked communities) has primarily focused on the capacity of individual community efforts to find the on-going human and financial resources to persist over time. However, the issue of sustainability perhaps more usefully could be seen in light of the broader community objectives which the initiative is supporting and how and to what degree that initiative contributes to on-going community well-being and the creation of the local capacity for autonomous action in support of that well-being. Having identified these as issues, the question then becomes what are the relationships with the larger technology, economic and political forces which either enable or restrict these developments in this particular context. Thus for example, if a local community network is providing a service to the local community, who might be competitive suppliers of those services and what resources are they drawing upon to support their specific initiatives; further in the area of health information provision what are the alternative

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[29] Gurstein and Horan, op.cit.

strategies for providing this information, what resources involved and where are they coming from and what means are available for diverting some of those resources to support the local initiative.

3. <u>Local economic development</u>

Many of the initiatives utilizing ICTs have as their base the attempt to maintain or reinvigorate local economic activity. This necessarily must be seen and understood in the context of globalized economic forces and the encroachment of global competition into all of the networked world through centrally directed e-commerce activities. The central challenge thus for research in local economic development in the context of networked communities is how local efforts at economic activity can exist or co-exist in the context of this global competition and how, given the existing array of super-ordinate technology and political forces, can sufficient local autonomy be created to at least ensure a degree of local commerce if not commerce which attains a status of being globally competitive.

4. <u>Local cultural production</u>

Similarly in the area of local cultural production, the challenge of retaining a space of local autonomy for cultural production which gives voice to local concerns and local perspectives and history can only be seen in the context of the struggle which must be undertaken to resist and respond to external cultural material which is delivered into communities by means of the technologies. The on-going conflict between local and global is played out in the multitude of local efforts to find a means to realize local voices and in this, of course, ICTs have an increasingly significant role to play.

5. <u>Local decision making (and exercise of local citizenship)</u>

The role of local decision-making including in the area of local citizenship and citizen participation in broader local, regional, national and global policy determination is a key area for understanding the role and significance of networked communities. A significant aspect of networked communities is their aspirations towards a degree of autonomy and participation in decision-making particularly those that have immediate effect but also those which have broader and less direct influence on day to day life. The challenge that is posed to this by for example, the transformation of citizenship into e-(service) consumption which now appears to be the driving force for e-Government activities globally, is a very important area for CI research, revealing as it does the parallel forces and interests of global centrally-directed networks and governmentally directed networking activities.

The challenge here of developing and maintaining structures and processes of effective e-governance and thus electronically enabled citizenship in the face of the overwhelming thrust to transform citizenship into service consumption and government

as representing the will of the citizens into technologically enabled administration is the basis for CI research in this area. [30]

6. <u>Community cohesion</u>

A key element in networked as with other communities is the degree of community cohesion the community is able to achieve and how this cohesion may benefit (or not) the achievement of community objectives. In this context one can include issues concerning community formation, community persistence, strategies and effectiveness for community decision-making among others. In this sense then, one may develop a research strategy which 'problematizes' the specific characteristics of the community ontology as we have discussed this earlier and by doing so may find means to further enable communities (and design technology strategies in support of this).

7. <u>Community learning/education</u>

Processes of community knowledge creation and knowledge transmission especially to the young and through skill development is a very important component of community emergence and persistence and thus a subject of considerable interest to CI research. Community learning may be one of the significant contributors to community emergence and to the development of autonomy within broader networked relationships with the larger environment. Strategies for learning within a context of autonomy are of particular interest and value.

8. <u>Socialization and identity formulation</u>

A central task and responsibility of communities is the creation through socialization of individual identity. In networked communities this identity formation may or may not simply involve the young. In online or virtual communities this socialization may be a process of integration of newcomers into the values and processes of the existing community so that the individual will act in a manner consistent with and supportive of the emergent and persistent community. The role of IT in identity formation and maintenance is one where there is still much to be learned and knowledge in this area can contribute very much to the autonomy and persistence of networked communities.

9. <u>The role of leadership and "political consciousness"</u>

Animation and leadership, that is those forces that drive a networked community into existence and which provide the human energy and skill required to ensure its continuation is the role of leadership. The rise and fall of networked communities is clearly an area of active research interest and the role that individual action plays in this is clearly considerable. Of further interest would be the role and origins of the "political

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[30] M. Gurstein, "From E-Government to E-Governance: An Approach from Effective Use", paper prepared for Paving the Road to Tunis, Conference on Canadian Civil Society and the World Summit on the Information Society, Canadian Commission for UNESCO, Winnipeg, 2005.

consciousness" which is the basis for achieving and maintaining autonomy for networked communities. Note that this "political consciousness" need not be specifically "ideological" but rather the recognition of the relationship that the networked community has with the larger external technology, economic, social and political environments and further an understanding of and response to the need for maintaining and exerting autonomy within this.

Conclusion

Research is at the very core of Community Informatics; and the basis of CI research is a recognition of the dialectical role of networked communities within the contemporary environment. Where once communities were a necessary and taken for granted element of lived society isolated in themselves and only with precarious links to the outside world, in the modern world it is the external environment which is pervasive and communities exist precariously and in seized and struggled for spaces within and between globally pervasive and invasive electronic networks.

The "Wal-Mart" effect as a model of how the "new economy" and the new technology environment is being deployed is one where there is little space for community and where communities only exist through an act of assertion, will and ultimately struggle and notably a struggle against almost overwhelming odds. That there is an ever-extending structure of such networks both parallel and interconnected through e-governments, e-commerce systems, e-learning structures is a condition of our time and provides the framework and the backdrop for the development of Community Informatics as a critical discipline and for Community Informatics research as one of the tools in these overall efforts in responding to and resisting these encroachments.

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