

Towards greater systemisation in CI research: An exploration of social development as a framework for comparison and understanding

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Abstract: The theme of complexity alludes to the difficulties community informatics (CI) researchers face when analysing use of ICTs by communities. In response, de Moor (2009; 2009) and Stillman (2010) identify the need for greater systemisation of CI research that enables complex socio-technical processes to be analysed over multiple cases. The principle by which such systemisation should occur is open to debate. It seems improbable that a single theoretical approach, at least in the short term, is going to satisfy everyone as greater systemisation is pursued. The paper suggests that, as a first step, efforts should be devoted to better appreciation of philosophical principles that underpin theories and their often-unarticulated assumptions. In a spirit of inclusivity, the paper therefore argues that efforts to systemise CI research should seek to include a variety of cases in the study of CI and relate such cases on the basis of a common framework. As an example of such a framework, the work of Hall and Midgley (2004) in social development is provided to demonstrate the means by which different cases can be understood and compared in relation to three dominant areas of discourse in social development: populism (communitarian), Enterprise and Statist. The paper explains this framework using research carried out in relation to community technology centres (CTCs) in regional New South Wales, Australia. While Hall and Midgley's framework reflects three areas of discourse, they leave the way open for additional areas of discourse to be included, namely those derived from indigenous knowledge.

Keywords: community informatics, theory, social development

Introduction

This paper makes a contribution to ongoing debate about the theoretical basis of Community Informatics research and practice. One significant aspect of this debate is perhaps the realisation that a sizeable number of people feel that this, indeed, is an issue worthy to address (Gurstein 2008). The challenges in developing an agreed area of research and practice in Community Informatics is reflected in the variety of disciplines that are brought to bear in the study of communities and their use of ICTs. It appears that the concerns of CI theorists may be shared with social development theorist Midgley (2003, p. 832) who observes that development practice is marked by an "eclectic and pragmatic set of activities driven by good intentions rather than well-defined theoretical principles". The paper argues that a first step in gaining greater theoretical clarity in CI is to develop a comprehensive understanding of CI projects in the broader social context. It demonstrates this by acknowledging the strengths of various philosophical approaches and as well as their sometimes hidden assumptions.

The work of Midgley, with his colleague, Hill, is presented here as an example by which competing philosophical approaches can be described and assessed in relation to CI projects (Hall and Midgley 2004). Three philosophical approaches to social development, namely Populist, Enterprise and Statist, are explored. Each perspective respectively emphasises the

role of community, private sector and government as major actors in social development. The paper will demonstrate the use of these three perspectives to 'locate' selected case studies relevant to CI in order to recognise varying influences from these actors that in turn give these cases their unique character. In doing so, this style of analysis can be seen to systemise the analysis of multiple cases in relation to these three philosophies. While the paper argues that these approaches to social development are, of themselves, worthy of consideration for CI theory development, the purpose of the analysis is primarily to demonstrate a method to systemise multiple and diverse cases and to use this systemisation as a foundation for theory development. To that end, these three philosophical approaches should not be considered as mandatory elements of a theory of CI (even though the paper argues in favour of their efficacy for the cases analysed) but, as argued by Midgley (2003), provides an example which other non-Western philosophies that claim to lead to social development can be used.

The paper begins with a brief discussion of the complexities associated with CI research and practice. The paper then explains the three philosophical approaches to social development that Hall and Midgley (2004) outline. The paper then moves on to case studies that are drawn from research into NSW CTC Program in Australia in the period 2000 to 2008. This includes a background to the program and the research design that was employed to analyse the cases. This part of the discussion concludes with an explanation of how Hall and Midgley's ideas are operationalised as constructs within the research. The paper proceeds to describe the analysis of 17 case studies using the constructs demonstrating how the three approaches to social development and their assumptions draw out different aspects of the case study accounts. The paper concludes with a discussion about this approach with suggestions for further development of this method.

Towards greater clarity in CI research: The complexities of ICT research

A common feature of studies that seek to understand the use of ICTs in social settings is the challenge of dealing with complexity. During the 1990s, Kling (1995) pioneered research which demonstrated that the use of ICTs in organisations generated a complex array of social interactions where the potential for controversy were numerous. When the term "digital divide" entered common usage he noted similar confusion in the way that the provision of ICTs were held up as a panacea to a range of social problems (Kling 2000). Kling (2000) argued that such conceptualisations of the digital divide oversimplified the relationships that exist between technology and people. Labelling this approach as the "tool model" he described its misconceptions as being related to the assertion that predictable and beneficial outcomes could be predicated on the introduction of ICTs. By characterising ICTs as a tool, Kling (2000) stated that many important social influences on the adoptions of ICTs are ignored such as incentives, social relationships and knowledge. Kling outlined the "socio-technical" model of ICT adoption that seeks to engage with the complexities of ICT use in real world situations. Further, Kling called for systematic research that is able to respond to such complexities in order to inform public policy and professional practice.

Resonating with Kling's views are CI researchers de Moor (2009, 2009b) and Stillman (2010), who also see the need for systematic research to address the complexity of CI projects. The issue of complexity in CI is based on a similar premise to Kling's, where complex socio-technical relationships develop when ICTs are deployed within social settings. The focus of such social settings in CI research is the community (de Moor 2009; Stillman 2010). The CI concept of 'effective-use' defines a broad range of requirements that CI researchers see as important in the goal to support communities through their adoption of ICTs (Gurstein 2003). These include "local economic development, social justice and political empowerment; ensuring access to education and health services; enabling local

control of information production and distribution; and ensuring the survival and continuing vitality of indigenous cultures” (Gurstein 2003). Coupled to the desire to see transformations within communities through the use of ICTs, CI also recognises the challenge of achieving viability of economic and institutional arrangements that give support to community-centred ICT projects. This, by definition, includes developing capabilities to assimilate ICTs in ways that empower them to achieve higher levels of development (Gurstein 2007). It is in response to the variety of problems that communities face when using ICTs where de Moor (2009) comments that this process can be ‘messy’ but has the potential for what Stillman (2010) describes as innovative and unanticipated outcomes.

The response from CI researchers to this complexity has been a multidisciplinary effort where a number of theories and methods have been used to describe and rationalise the challenges of ICT use within community settings (de Moor 2009). Recent calls for greater theoretical clarity within CI research can be seen as a logical “next step” in order to advance the stature of CI within academic research (Gurstein 2008) as well as to achieve higher levels of effective-use within CI projects. However, such next steps contain an element of risk should a desire to achieve a single theoretical perspective in CI undermine the cooperative and multidisciplinary effort that has marked CI research to this point. In seeking to avoid such an outcome the paper outlines a way in which the strengths and assumptions of alternative approaches are better codified as a necessary step in better enabling dialogue between practitioners and researchers for theory development.

Theories of Social Development

The work that Hall and Midgley (2004) have undertaken in creating a theoretical framework in which to consider social development policy is argued to provide an avenue by which to systemise cases in CI research. In seeking to better clarify the attributes of various social development strategies, Hall and Midgley (2004) identify different values and objectives at play. As values and objectives that underpin these strategies may not be immediately obvious they argue that rational assessment and debate of these issues cannot be achieved without normative theories that identify fundamental areas of belief about “how the world works” and the influence this has on social development initiatives. This leads Hall and Midgley to propose three normative approaches to social development.

The three normative approaches Hall and Midgley (2004) define are: the Populist approach; the Enterprise approach; and the Statist approach. At the heart of their investigation is the identification of ideologies that give voice to the values and assumptions of each of these approaches. The three ideologies that are described are populism, individualism and collectivism. By articulating the values and assumptions of each ideology, they argue that informed debate about theory development is facilitated.

In explaining these three approaches it makes sense to begin with the Statist approach to social development because, in a historical sense, it is antecedent to the two other approaches of Populist and Enterprise. The Statist approach was most prominent in the decades after World War Two (Hall and Midgley 2004 p. 29). The primary attribute of the Statist approach is the central role that governments play in improving social conditions by “introducing a range of social services to meet social needs and raise living standards of ordinary people”. The underlying ideology that Hall and Midgley identify is collectivist which holds the view that “the best society is one in which people cooperate to meet their common needs”.

Criticisms of the Statist approach challenge the assumption that governments always act in altruistic ways to better the lives of individuals within society. Two themes to such criticisms have emerged. On the one hand critics argue that government development programs do not sufficiently encourage personal responsibility and in many cases has led to laziness and

indolence. Other critics argue that government bureaucracies are often found to be indifferent and insensitive to the needs of their citizens. These two streams of criticism are significant in that both gave impetus to the emergence of Enterprise and Populist approaches to social development respectively. Hence, an unarticulated assumption of the Statist approach is that governments are naturally motivated to promote the most effective social development initiatives for its citizens.

The second approach defined by Hall and Midgley is the Enterprise approach. The Enterprise approach stresses “the primacy of the market in social welfare” (Hall and Midgley 2004 p. 31). What this means is that social development policies are designed to be in harmony with the theory of the market economy. Hall and Midgley describe people who subscribe to the primacy of the market as “neo-liberals” (p. 31). Their fundamental ideology is that all individuals are primarily motivated by selfish desires. Social development projects based on the Enterprise approach emphasise entrepreneurship, commercial activities and the private sector.

Criticism of the Enterprise approach is partly motivated by ethical concerns that people will be locked into unequal power relationships. Also of significance, particularly to this study, are situations of ‘market failure’ which refers to situations in which the working of the market undermines the attainment of a desirable social outcome. Hence, an unarticulated assumption of the Enterprise approach is the belief that a viable commercial market will exist that is able to deliver the desired social development outcomes.

The Populist approach to development is characterised by attempts to make development responsive to the needs of people. Hall and Midgley define the Populist approach in terms of:

active community mobilization mediated via a range of institutions as a means of articulating people’s needs and enhancing their participation in the process of policy design and implementation (p 36).

In seeking to focus on people, the underlying ideology of the Populist approach is one that values individuals and their immediate personal relationships with other people. Consequently, it stands between selfish individualism of the Enterprise approach and the impersonal nature of government institutions found in the Statist approach.

One important and relevant manifestation of the Populist approach to CI research is the emphasis placed on community. Described by Hall and Midgley as “communitarians” they believe that

community is the prime locus of people’s activities and they stress the importance of communities in promoting a sense of belonging, fostering integration and meeting social needs (p. 33).

Criticism of the Populist approach stem from unsavoury manifestations of community cooperation. These include misguided nationalism where “other” nationalities or ethnicities are targeted in negative ways or the kind criminal activity associated with South American drug cartels or the Sicilian Mafia (Fukuyama 2001). Hence, an unarticulated assumption of populism is the belief that communitarian activities invariably lead to social development.

In reflecting on the three normative theories to development, Hall and Midgley state that the three approaches differ in their perceptions of how “the world works and how its problems are best tackled”. Similarly, perceptions of what constitutes success will also be coloured by the philosophical perspective that purport to explain how the world works. They map out a vision for a “holistic social policy” that brings together the strengths of each of the normative approaches that they have defined and reduce the effect of their negative effects. This holistic view for social development provides a rationale by which CI theorists may engage with the work of Hall and Midgley.

The immediate significance of these three approaches for this paper relate to the ways in which CI projects can be “located” within (see Figure 1). Each approach purports to address social needs through alternative means. In combination, the three perspectives define a framework by which comparisons between different cases in CI can be made.

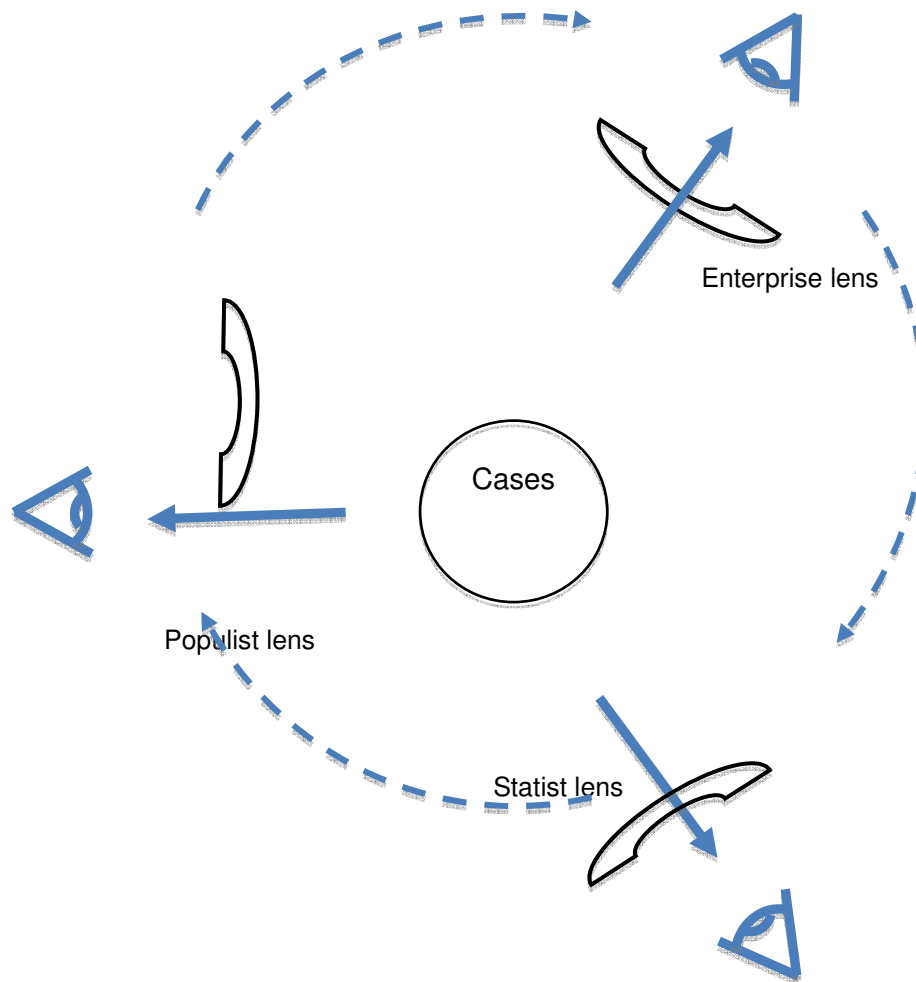


Figure 1: Developing a comprehensive understanding of cases through the application of three different approaches to social development

The NSW CTC Program

The application of the three approaches to social development derived from Hall and Midgley's work is demonstrated in relation to research carried out into the NSW CTC

Program in the state of New South Wales (NSW) in Australia. The NSW CTC Program was funded primarily by the Australian Government and to a lesser extent the NSW State Government. The purpose of the program was to provide small communities of generally 3000 people or less in regional NSW with public access to modern information and communications technologies (ICTs) and the Internet (NSW DoC 2004). The program was notable for the desire by government to limit the period of funding until 2005 after which these CTCs were expected to be self-supporting independent businesses. The research investigated these CTCs from the time when government funding for the program ceased in June 2005 to June 2008. At its peak in 2005, the NSW CTC Program had 89 CTCs listed on its books.

The conduct of the research was based on an interpretative research design (Myers 1997; Walsham 2006). Two primary methods were employed to investigate the NSW CTC Program: document analysis and case study methods. Document analysis was used to obtain the annual membership details from the umbrella organisation that represented the majority of CTCs in regional NSW called the Community Technology Centres Association (CTCA). The second primary method used to gather research data was case study method (Stake 1995; Myers 1997; Creswell 1998; Remenyi, Money et al. 2002; Yin 2003). The application of the multiple case study method was designed to develop what Remenyi et al. (2002) describe as a “global perspective” about important factors in local communities that were germane to the operations of their CTC but not represented in the documentary evidence from the CTCA.

In order to analyse the significance of Hall and Midgley’s three approaches to social development to the research it was necessary to define relevant constructs. Referring to Table 1, it can be seen that each of the three approaches to social development that Hall and Midgely outlined were operationalised through a series of statements that defined key features about each approach as well as key assumptions. In line with the interpretative research design, the purpose of these statement was to focus the investigation of cases studies to determine whether there was evidence that resonated with the statements as a basis for analysis (Walsham 2006). For example, in relation to Populist approaches, evidence was sought that supported the idea that social development is predominantly achieved through groups of people working cooperatively for the benefit of their community. In the case of the Enterprise approach, evidence was sought for entrepreneurialism and private sector activity in the provision of commercial services as being key to achieving social development. In relation to the Statist approach, the analysis was directed to look for evidence of social development was met through active involvement of government in sponsoring and managing the provision of services to the community through the CTC.

When considering each philosophical approach the analysis adopted two perspectives when analysing case study data. One perspective endeavoured to promote understanding of processes that related to the management of internal relationships within the CTC and the second promoted understanding of the relationships the CTC had established with the broader community. To that end, Table 1 summarises factors that were identified as important to each factor and used to probe case study data.

Results

Over a period of four months in 2007, 17 CTCs were visited where interviews were held with managers and volunteer staff. Surveys were also made available to customers. The demographics of the 147 respondents to the survey were characterised by an average age of 40 years and favoured females in all age categories except in the under 20 range where the gender balance was approximately equal. Out of these respondents, 137 were local to the

community in which the CTC was located. The paper proceeds to report on the 17 cases using the three perspectives outline in Table 1.

Table 1: Constructs used to analyse the case studies

<p>Populist</p> <p>Social development is best achieved through the actions of groups of people working cooperatively for the benefit of their community.</p> <p>Assumption: community-based processes invariably lead to social development</p> <p>Things to look out for: cooperation; interdependent relationship; active community mobilisation; participation in decision making.</p>
<p>Enterprise</p> <p>Social development is best achieved through the commercial provision of services by the private sector.</p> <p>Assumption: a viable commercial market exists for services that promote social development</p> <p>Things to look for: managing the CTC as a business; operation of a commercial market; commercial provision of services; competition; entrepreneurial activity; market failure; exploitative commercial relationships.</p>
<p>Statist</p> <p>Social development is best achieved through the provision of services by government</p> <p>Assumption: governments invariably work to achieve social development outcomes for its citizens.</p> <p>Things to look for: government sponsorship of programs; government management of programs; indifferent bureaucracies; high dependency by individuals on government.</p>

Application of Populist constructs to the case studies

The Populist perspective of social development theory was applied to the case study accounts to determine how relevant these principles were to these cases. The paper will firstly consider internal processes within the CTC as they related to individual customers. It will then consider the role of the CTC as an organisation in the broader community.

Unsurprisingly, use of the Internet and computer applications were valued highly by half of the customers who responded to the customer survey. Related to this was the identification of training (10%). Having access to office technologies such as facsimile and printing laminating was also identified as a valued service by respondents (8%). While technology-use was rated highly it was interesting to note that social interaction (18%) was rated as a valued aspect of the services offered by the CTC. The vast majority of people (90%) nominated the CTC as a place in which they had learnt new knowledge and skills. Strongly represented in this data was IT skill development (80%). Once again indicating the social character of CTC operations, 71% of respondent indicated that the CTC had been a place where they had learnt skills in community group participation.

The ability of CTCs to respond to the needs of the community extended beyond providing individuals with access to ICTs and a friendly social environment. The link that can be drawn between local problems and CTC services indicates that the CTC, as an organisation, reflected Populist values. The most obvious example of such problems is the one of isolation that, by definition, affect regional towns in Australia. CTCs were found to provide a range of

alternatives to needing to travel to major centres. Examples ranged from providing access to job search websites, undertaking correspondence courses, form-deposit services on behalf of government departments and so on.

The provision of training in the use of ICTs can also be seen to serve the needs of people who have previously had little exposure to ICTs. This was particularly apparent in the different kinds of opportunities CTCs provided to seniors. In one location, formal training courses were provided on a fee-for-service basis while in other places training was delivered through less formal means such as computer clubs for seniors. It was also apparent in the training that was provided to unemployed people under “work-for-the-dole”¹ programs.

Seven of the cases were found to have developed a number of initiatives to counter the problem of youth boredom by developing LAN parties and movie nights. In response to declining economic conditions, one CTC had developed a sophisticated e-commerce community portal that was designed to assist the region’s adjustment away from forestry and cattle farming to cottage-based industries.

In summary, it can be seen that all of the case studies enjoyed a significant degree of freedom to pursue initiatives that were aimed at addressing local problems. This freedom was apparent in customer surveys where it was found that individuals were able pursue a variety of interests that would not have been possible if the CTC had not been established. It was also reflected in the way CTCs were able to develop appropriate responses to local problems. However the case study accounts indicate that this freedom was not unbridled because the initiatives were shaped by contingent circumstances. Such circumstances were associated with the expertise and attitudes of managers and management committees, the nature of organisations that originally auspiced CTCs in their early stages of development as well as economic conditions, which was found to limit opportunities for income generation.

Therefore the case study data resonate strongly with the descriptions that Hall and Midgley associate with Populist values. Case study accounts reflect positive interpersonal and reciprocal interaction between staff, volunteers and customers within a CTC. These cooperative relationships are found to be of critical value because most of the case study CTCs would not have been able to remain operational if such cooperation was absent. It was also found that the broader community appreciated the contribution that their local CTC had made to the community. Even though the CTC was a relatively new institution in the town CTCs had quickly been accepted as a significant source of information in the community in matter related to ICTs. Hence, it can be seen that Populist values were partly responsible for the positive contributions the CTC had made to social development in their respective communities.

¹ ‘Work-for-the-dole’ is a colloquial term in Australia that refers to the requirement of those who receive unemployment benefits from the national government to undertake steps to find work. Participation in recognised training at a CTC was considered an acceptable activity that benefit recipients could cite in support of their fortnightly application for ongoing payment of benefits.

As for possible negative manifestations of CTC autonomy it was noted that a code of behaviour, mandated by the CTC Association (CTCA) for its members, required managers to take a number of steps to ensure a safe environment for all, particularly children. This code included statements prohibiting bullying and violence and limiting people's access to sites that promoted violence, pornography or gambling. To that end, managers were keen to ensure that CTCs did not facilitate unsavoury or criminal activities.

Despite the good intentions and cooperation of many in the community to make their CTC a success it was clear that this was not sufficient in itself to ensure the ongoing operation of the CTC. The following analysis of these cases using Enterprise and Statist approaches provides insights into the limitations of the Populist model of social development.

Application of Enterprise constructs to the case studies

The paper moves on to address the Enterprise approach to social development perspective described by Hall and Midgley. Referring to Table 1, Enterprise approaches to development emphasise entrepreneurialism and commercial activity of the private sector as the primary forces for social development. It is interesting to note that the NSW CTC program was most closely aligned to the Enterprise approach described by Hall and Midgley. In the NSW CTC Program, CTCs were envisioned to become independent businesses in which the private sector was reasoned to play a central role which was consistent more generally with Australian government policy at that time (Pusey 1991; NSW DoC 2004; De Weaver and Ellis 2006). In seeking to explore the relevance of the Enterprise approach to the cases, the paper proceeds to, firstly, to detail information about the internal challenges of managing CTCs as a business. It will then describe relationships CTCs shared with other private sector organisations in the local community.

One important insight developed during the course of interviews with managers was the value of their business plan. Business plans were a necessary requirement when CTC management committees applied for funds to initially establish their local CTC. Managers had commented that the business plan had been useful in guiding them when developing new initiatives as well as monitoring costs using a monthly budget. This was apparent across all the case studies where managers displayed a strong commitment to cost containment.

Despite evidence that managers were employing responsible financial practices, the majority of managers were quite pessimistic about the future commercial viability of their CTC. The major cost area for all of the cases was the employment of the manager. In fact, some CTCs had adopted a model where the manager's position was filled on a voluntary or part-time basis. In addition to the cost of employing a manager, other significant costs were rent and utility costs. As will be detailed in the next section, local governments were active in supporting CTCs either through grants or subsidies for salaries, premises or utility costs.

Managers displayed a willingness to integrate their CTCs into the town's economy. For example, two of the case study CTCs provided a niche small-run printing capability which was offered in cooperation with the local printery where each would direct business to the other if jobs were respectively too large or too small. In some cases, because CTCs were closely associated with local government, competitive neutrality requirements had limited the development of business opportunities. The management skills required to develop the CTC as half-business and half-public service presented unique challenges, even to managers who previously had held high level managerial roles in the private and public sector.

CTCs were found to have made a significant contribution to the integration of modern ICTs into local businesses. CTCs were often a source of advice for business owners wishing to purchase new equipment or for those who were experiencing problems with their computing equipment or software. In some cases, CTCs arranged for the purchase of computers from suppliers on behalf of these businesses. Itinerant business and government

workers also figured in the accounts of managers as users of CTC facilities. Though not great in number they were reported to need access to the Internet and other CTC facilities such as printers.

Broadband technologies were a catalyst for new modes of business in some locations. For example, the development of a sophisticated e-commerce portal described in the previous section brought together local council, business and community groups to one central web location. However, the general tenor of case study accounts indicates that local business had not embraced the opportunities the CTC had provided for web hosting services. The optimism surrounding the availability of video conferencing facilities had largely not materialised into significant revenue extremes except in the case of one case.

In summary, the review of the cases indicate that the goal of developing CTCs as viable independent businesses as originally planned in the NSW CTC Program was not fully realised. The emphasis on business development in the NSW CTC Program had given impetus to a wide range of idea generation that generally addressed local needs. Thus, the connection drawn between private sector activity and entrepreneurialism by Hall and Midgley is consistent with the case study accounts here.

Despite the disappointment of insufficient income, it can be seen that the services that generated this income were, nonetheless, beneficial and important to the community. Rather than managerial failings, the evidence from the cases suggest that underlying assumptions based on the Enterprise model of social development, led the program planners to ignore the prospect of inadequate income for which there was no contingency plan. It was difficult to see how CTCs could avoid the obdurate forces of economic decline that were closing down many businesses in regional areas.

Applying an Enterprise lens to the case study accounts enables an alternative perspective to the Populist perspective to be provided on the research data. It can be seen that CTCs were highly active participants in their town's commercial sector and in varying degrees demonstrated entrepreneurialism. In fact, the enthusiasm that underpinned entrepreneurial activity was difficult to separate from the cooperation of volunteers that were found when applying Populist lens to the cases.

Even though CTC managers and their staff were found to be applying professional practices insufficient revenue streams resulted. This apparent irony stems from an assumption about the sufficiency of commercial markets to enable social development goals to be achieved. On the basis of evidence from these cases, it is clear that such an assumption was false.

Application of Statist constructs to the case studies

The third social development perspective that is used to analyse case study data is the Statist perspective. The Statist perspective rests on the idea that governments are best placed to deliver services to achieve social development outcomes (see Table 1). Given the NSW CTC Program's reliance on the private sector to promote social development the Statist perspective represents, in many respects, the antithesis of the Enterprise perspective (and to some extent the Populist perspective). This is seen in the way that the NSW CTC Program mandated that government was to quickly move remove itself as a primary funder of the CTC Program to assume the role of "customer" to these CTCs. The application of Statist constructs to the case study accounts was useful in illuminating the confused and complex relationships CTCs shared with various levels of government.

The significance of the Statist perspective on the internal management of CTC is best reflected in the absence of government involvement in the day-to-day running of the CTC. Consistent with the underlying philosophy of the NSW CTC Program, CTCs were managed by local management committees. Managers enjoyed the freedom this provided and did not

indicate a need or willingness for government assistance in the management of their CTCs. Such was the strength of this sentiment, in one case, the manager opted to pay commercial rent rather than accept the offer of free premises from local government because they were able to enjoy full autonomy over the running of the CTC.

The program's goal of quickly transforming the role of government to one of customer was evident in the variety of service offerings CTCs provided on behalf of government departments. At the national government level examples included Centrelink (agency for government pensions), the Australian Tax Office and Medicare. As the level of state government, the most prominent was a service called Access NSW service where each CTC was given a computer and approximately AUD\$500 per year to provide this service. At the local government level, the CTCs provided a number of services such as tourist information, collection of rates and hosting of local groups.

Despite the intention of the NSW CTC Program to remove governments from direct operational responsibility for CTCs, the case studies revealed that many CTCs relied on local government for partial ongoing support. Out of the 17 cases, 12 received support from local government sources. Such support ranged from the provision of premises, the payment of utility and broadband costs to cash grants. Even though managers valued the independence of their CTCs these managers had resigned themselves to the need to work with local government in order to keep the CTC operational.

In applying the Statist perspective to case study data it can be seen that managers did not want a system where government support was exchanged for autonomous control of their CTC. Rather, a new form of involvement by government was suggested which recognised the efficacy of community cooperation and the unsustainable nature of the commercial model but did not require the overarching burden of government control. In effect, managers appeared to be calling for a new model of interaction with government that could benefit from the insights of CI theorists.

Discussion

Theorists argue that the systematic analysis of diverse cases is a necessary first step in developing robust theoretical principles for CI. The systematic probing of the case study data in this paper from the three perspectives of Populist, Enterprise and Statist establishes a locus for theory building (see Table 2). Hall and Midgely, in outlining a case for the development of "holistic" policy, suggest an approach that brings together the strengths of each of the normative approaches while simultaneously seeking to mitigate their weaknesses. Given the unique and diverse circumstances of the 17 cases, the following discussion seeks to distil a common understanding of the NSW CTC Program as a tangible step in the task of theory development in CI.

Table 2: Summary of findings after the application of three normative approaches

	Populist	Enterprise	Statist
Analysis of processes internal to CTC	Positive interpersonal and reciprocal interactions among staff, volunteers and customers	CTCs were managed in a cost effective way based on a business plan	CTCs valued their autonomy from government highly. Some were searching for assistance from government
Analysis of processes external to CTC	Broader community appreciated the role that the CTC as an important actor in the town	CTCs were active participants in the town's economy; entrepreneurial activities were evident	Governments was generally viewed as a commercial customer although some confusion about this roll was evident
Contradictions	Cooperative behaviour and volunteerism were not sufficient to sustain CTCs	Income streams were insufficient to sustain CTCs	Government priorities do not always work to achieve social development

In summary, it can be seen that CTCs have largely maintained a focus on problems of a local nature as determined by local CTC management committees and managers. The case study accounts reveal novel ICT based responses to challenging problems. The analysis suggests that Populist approaches to social development were strongly reflected in the case study accounts. While the autonomy of CTCs was not unbridled, it was clear that the centre of decision-making power resided in local communities and that these communities mobilised themselves effectively in response to problems of local concern. However, it was also clear that the cooperation that was at the heart of community mobilisation was not, in itself, sufficient to ensure CTCs were able to maintain their initiatives in the face of wage, utility, rent and other costs.

From the Enterprise perspective, it was found that involvement of the private sector in the operations of CTCs was important. On the one hand, the management of CTCs was characterised by responsible economic management that were guided by credible business plans with a strong emphasis on cost containment. On the other hand, program planners made an incorrect assumption about the amount of income that could be generated in constrained regional economies. In the great majority of cases, this income was not sufficient for CTC needs. This last finding gives voice to criticisms of the Enterprise approach, where the absence of an alternative strategy, should sufficient income levels not be attained, placed numerous CTCs in a precarious position.

The failure of private sector enterprise to provide sufficient support for CTCs brings into sharper focus questions about what role government should play in supporting CTCs. The need for local government support of CTCs provided *prima facie* evidence for the need for further work in developing strategies for government to better support CTCs.

It was apparent from the responses of managers that they were not advocating a return to a Statist model of social development where local autonomy would yield to centralised government control in return for gaining sufficient resources from government. In effect, CTC managers seemed to be outlining a challenge for CI theory development in that new modes of engagement with government were being called for. This mode of engagement appears as one that enables CTCs to gain some support for their operations, which did not require them to cede autonomy back to centralised government control.

Hence, in seeking to extract fundamental principles on which to base a theory of CI, a number of strengths of the three approaches to social development can be brought together to develop a holistic understanding of the NSW CTC Program. The effective-use principle, central to the concerns of CI theorists and practitioners, is well served by the Populist approach to development which acknowledges the importance of cooperative relationships among community members in seeking to address local problems through ICTs. This is best reflected in the importance that the analysis attaches to community autonomy and the need to maintain such autonomy in relation to the other significant actors of the private sector and government. Based on the cases detailed in this paper, the most urgent aspect of the theory development agenda relates to better clarifying a role for government in supporting CI projects in ways that recognise the short comings of the Enterprise approach but do not extinguish community autonomy and entrepreneurship. The author explores elsewhere Gurstein's (2004) contention that the innovative nature of community technology projects represents an avenue by which these can be supported (Tibben 2009). The paper argues that an innovation policy framework that encourages development at the technological frontier using a model of bilateral grants would also work to encourage innovation in community technology projects.

The paper recognises that the CI theory-building project is much broader than the NSW CTC Program. For those who feel that the three approaches to social development are not

fully cognisant of the lived experience of particular communities, Midgley (2003) responds by stating that the synthesisation of normative perspectives need not be limited to the three outlined in this paper. He recognises the need for theory development to “transcend established Western preoccupations” (p. 841). Given the numbers of people throughout the world whose normative perspectives are drawn from indigenous cultures and religions the need for a more systematic inclusion of such perspectives is evident. From these local perspectives, the philosophies that underpin concepts of community, private enterprise and government will arguably result in different outcomes and understanding when implanting CI projects. The fundamental approach remains the same, however, where the method is to articulate fundamental philosophies and expose hidden assumptions with a goal to better understanding the implications of CI projects in their local context.

Conclusion

Given the potential of ICTs to assist communities to achieve higher levels of development it makes sense to continue work on developing greater clarity within CI research. Recognising the complexities, effort is required to better systemise research in ways that enables comparisons to be made, dialogue to occur and greater efficiencies in the research effort to be achieved. The paper makes a contribution to greater systemisation by outlining a method that acknowledges that biases will exist within philosophies that claim to best promote social development. Rather than seeking to limit participation in the broader CI project by excluding such approaches, the paper suggests a way in which diverse perspectives can be incorporated and analysed. Using three approaches to social development the paper demonstrates the value of analysing diverse cases from these three perspectives in order to better appreciate the strengths and weakness of each. Ideally, the combination of strengths and elimination of weakness outlines a way forward for theory development in CI. However, this is dependent on the degree to which the outcomes of such theory development simplify the lives of those who implement CI projects. The paper’s method of triangulating the analysis using alternative philosophical approaches to social development need not be limited to the three western perspectives outlined here but can also incorporate alternative normative perspectives that are drawn from other knowledge traditions.

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