Towards an Evaluation Framework for Community Learning Networks

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Introduction

This paper reviews recent research into the evaluation of community technology initiatives, specifically what are called in Canada Community Learning Networks (CLNs). CLNs are a government-funded program designed to ameliorate digital divides by “preparing citizens for learning and working in the digital era.” CLNs are Community Networking initiatives that are intended to enhance the development of community capacity and new social and economic benefits by encouraging people to learn about new technologies and their potential effect on their lives. Key CLN components include:

- the use of ICTs as tools to support and enable learning and networking;
- a strong community participation or community control at the local level; and
- the promotion of individual and community development.

The Canadian government has spent millions of dollars on programs such as the CLN in an effort to encourage citizens to make use of information and communication technologies (ICT). CLNs are physical, social and electronic public spaces that foster community values and technological literacy as well as offering a supportive learning environment, especially for those without computer access at home, to develop new skills enabling active participation in a “knowledge-based economy/society.”

There has been little research to date that has evaluated the effectiveness of the CLN program. This paper represents the first such significant research into how CLNs function, and how they can best be evaluated. For the past year and a half, we have been working with a CLN program at St Christopher House (SCH), a social service agency in Toronto, Canada. In this paper we review how CLNs function within the Community Informatics (CI) context. We then provide an overview of our research process of participatory design and action research and the initial results of the CLN design and development phase. A discussion of how the CLN is being incorporated within community-based initiatives designed to encourage learning with and about new technologies is then followed by an overview of our initial, formative outcomes of the evaluative frameworks we are developing.

Community Learning Networks in Context

Community organizations like SCH, and the learning that they encourage, are situated within social contexts that are continually changing. SCH must continually adapt to the changing terrains of government funding regimes, policies, and social realities, often themselves influenced by government policies. What becomes important in this process is the context of education, and the context in which meanings are read into the educative experience. CLNs, as enabled by ICT, follow the CI model: “Community Informatics is fundamentally about empowerment of individuals, communities and societies by effective use of information and communication technologies appropriate to their social environments.” CLNs are fulcrums for citizen engagement with new technologies and the “new economy” that is defined as using ICT meaningfully within social and learning structures. Aspects of informal learning are key, and are seen as fostering innovation.
within communities of interest. CLNs are technologically-mediated access points for government services; they are conduits for community development and learning.

A CLN, by definition, involves the creation, encouragement, or enhancement of Communities who are engaged in Learning activities, enabled by Network technologies, but more importantly, forming Networks that learn together, share resources, and encourage broader participation within aspects of what is called the knowledge-based economy or society. Understanding the ways in which these dynamic variables interact can enable organizations to more effectively leverage capabilities within both individuals and the organization. This is especially important within CLNs that seek to enable community learning. Public participation within public or community ICT systems is essential if these systems are to be relevant and essential to community empowerment.

The SCH CLN is a portal. It is intended to act as a conduit for communications within and without the organization. The project goals of the SCH CLN portal are to fashion “a meeting and virtual learning/teaching facility that will test and push the horizon of the Internet’s capacity to provide relevant online content for a diverse client population with a multiplicity of needs.” Their specific objectives are to:

1. create an interactive community learning network;
2. establish a coordinated community-based training methodology that builds the capacity of the St. Christopher House Community to use the Internet and work together online;
3. provide information and resources that are up-to-date, locally relevant, and accessible to participants who may face a variety of barriers to accessing information, social services and support to employment.

SCH is determined to use the CLN as a conduit for staff and program participants from the community to learn about using ICT, specifically the internet, for locating resources, communication and accessing SCH and other program or governmental services that may be available online. Their goal is to create an online portal where digital literacy skills can be taught and applied. This includes the ability to access technology, but also to critically evaluate information found online, a common agenda for CI projects. The stated intent is to extend the mandate of SCH as a learning organization onto the internet: The St. Christopher House Community Learning Network will allow for interactivity and community participation whereby staff, clients, program volunteers and the greater St. Christopher House community can easily participate in online discussions, share suggested news, events and resources, and engage in interactive online learning opportunities together. It will encompass a wide range of online services directed towards the dissemination of information and knowledge that originates from a number of different sources ranging from staff at St. Christopher House to participants, volunteers, tutors and other social service organizations.

SCH is seeking to foster greater citizen awareness and comfort with ICT, and to foster self-sufficiency and community capacity to engage meaningfully with ICT. This is an important function of the educational use of any technology. The CLN is after all a
Community Learning Network—ICT are to be used to facilitate lifelong learning and the acquisition of digital literacy skills.

The CLN project is resulting in changes to SCH that are in line with what Wellman calls “the ‘social affordances’ of technology: the possibilities that technological changes afford for social relations and social structure”. The SCH CLN online portal will be a multi-faceted online presence that will combine basic information transmission about SCH programs with online learning opportunities that will be designed to encourage community members to learn about internet services. The CLN portal will function as a community enabler – offering links to services offered online by SCH and other agencies relevant to the communities served by SCH, as well as linking community members and staff across the organization itself. The SCH CLN portal fits the mandate of what has been called a civil society portal that is an attempt by SCH to bridge digital divides within their community.

SCH senior administration hopes that by giving community members access to the online world and the attendant digital literacies, that there can be meaningful changes in the social relationships of community participants insofar as it relates to ameliorating digital divides and encouraging widespread participation within an increasingly technological world. This is particularly important for social service agencies. With an anticipated increase in the digitization of government services, those seeking to access those services – including organizations like SCH as well as the people they serve – will need access points and skills with which to do so. Community and social service agencies will be important conduits for this avenue of access.

Developing the Community Learning Network

There are three main aspects of the SCH CLN with which we are concerned:

1. Development Phase
2. Implementation/Integration Phase
3. Operational Phase

We have to date followed the Development Phase aspect of the project. We have come to several preliminary conclusions about this aspect, and are keenly awaiting the implementation phase to continue to gather data. The development phase has consisted of the participatory design of the needs assessment and basic information architecture that the CLN will eventually take. We have been measuring:

- Identification of key stakeholders
- Level of staff and community participation and Satisfaction with participatory process
- Satisfaction with outcomes, and
- The development of social capital within SCH as a whole with respect to generating wide buy-in to the CLN project

This has included the appropriateness of the mechanisms that were used to engage staff and community members: information sessions; focus groups; interviews; document analysis; other participation and observation of activities as appropriate.
We have conducted focus group sessions in conjunction with the formative needs assessment that have involved every program area at SCH, as well as four groups of community participants (members of the public who access SCH services). Our research agenda about evaluation frameworks for CLNs has been merged within the larger structure of the CLN construction process, reflecting how we came into fitting in within their already underway process within a participatory design framework. We have worked closely with the programming group contracted by SCH to do the actual software development. Because we were able to join them when they were at the early stages of their project, we have been able to observe the overall institutional processes, get to know the staff, administration, community members and programmers, and have been able to learn from seeing how SCH as an organization is embarking on a substantial change process that will have significant impact on their entire organization.

We have asked SCH stakeholders what thought they would get out of the CLN. Answers ranged from the development of volunteer pools and the simplification of administrative tasks, to access to relevant resources and learning and networking opportunities. We have found that the initial participatory process has been successful in engaging the SCH staff. Our observation and other field work have shown significant interest and buy-on to the project. It should be said that this is due in large part to the targeting of “early adopters” and those keen to experiment with new technologies in the delivery of social services. However, several informants have been skeptical and reluctant to commit to the CLN project.

Our research is serving a dual purpose of aiding SCH in the formative evaluation of the project, and in providing accountability to the government funder. A symbiotic relationship has emerged from which the researchers are able to glean valuable data on the effectiveness of a CLN project and the relationships of non-profit community organizations and government funding programs designed to encourage ICT use. SCH is able to acquire credibility for the project in the eyes of the government funders, their staff and their community participants. SCH has also been able to access knowledge about online learning and portal construction from the research team, thereby increasing the knowledge of their organization in this area. The research process is therefore mutually beneficial, though there were initial tensions in designing the scope of the interventions with staff and community participants.

Ours dual development process of developing the SCH CLN portal and the evaluation instrument has led us to conclude that participatory design is a viable strategy for undertaking these sorts of development projects. Our observation has been that of a “reflective practitioner.” We have actively participated in the development process while we are seeking to ascertain how best to evaluate the processes we are engaged in, all the while being conscious of our own role(s) in the overall processes. This has led us to conclude that, at this point in the development process, the participatory process itself has been an effective way to implement change, as well as to learn about and with the community organization we are studying. To this end, we have conducted our research with SCH as research partners, rather than research subjects, reflecting the mutual learning we are collectively engaged in with all concerned.
Encouraging Formal and Informal Learning

Formal and informal learning are important aspects of what CLNs are designed to be and do. They are, as discussed above, avenues for citizen engagement with issues relevant to an increasingly technological society, as well as access points for these technologies themselves. While SCH plans to construct formal learning opportunities with their CLN, and link their constituents to formal learning opportunities offered by other agencies, the CLN itself also is a conduit for informal learning. The CLN is being designed as a citizen built initiative. Key features of the CLN include the following six core “modules” or components:

1. Text
2. Image
3. Bookmarks
4. Search
5. Translate Me
6. Tutorials

These six modules form the core functionality of the CLN. CLN members are given the ability to have their own personal area of the CLN in which they can add pages, and text and image blocks to these pages (a page can be divided into blocks for layout purposes). A bookmarks section lets members post lists of their favourite sites. These pages or areas can be personal (for individual members) as well as program-specific (for programs offered by SCH). There are four distinct roles in the CLN:

1. Owner
2. Publisher
3. Collaborator
4. Viewer

These sometimes overlapping roles are part of a complex permissions management system that controls who has access to edit specific pages (both personal and program). These roles are designed to give access to creating the CLN content – and so the CLN network itself – by encouraging wide participation among staff and community participants of SCH in general. Members can be given permission to post pages or blocks onto program sites, an important feature given that SCH is a community-based and driven organization that relies heavily on volunteers to conduct many of their programs.

The search function is self-explanatory, but the Translate Me and Tutorials section are worth noting for their encouragement of informal community learning and capacity building. The Translate Me feature is a mechanism by which community members can sign up to translate a particular page of resource. SCH serves a diverse population in an urban environment that serves people of varying languages – from English, Portuguese, Chinese, Spanish, French and Vietnamese. While SCH is committed to making as much of its resources available to each community or language group, it does not have the resources to undertake this for its entire CLN site. The Translate Me feature was seen as a mechanism to enlist the volunteer pools at SCH to do the translation work, and thereby give this back to the community as a whole. The Tutorials tool is a mechanism that will be used to construct sequential learning paths, and will contain some elements of instructional design. Community members and program staff can construct learning
routes according to need. These could cover any aspect or need that exists, and the fact that this tool will be widely available means that staff and community members alike will be able to construct – and co-construct – curricular materials relevant to specific and targeted community needs.

In addition to the six core modules or functions, there are seven other modules that will be developed as the CLN progresses. These include:

1. File Storage/Virtual Locker: a place for members to store their own files
2. Events: an announcement area for events
3. Calendar: standard calendar application that can be both public and private
4. Quiz Engine: a mechanism for those constructing tutorials and learning paths to create simple quizzes
5. Discussions Forum: a crucial aspect of online learning, the asynchronous threaded discussion forum, will be added so that it can be linked to specific learning and other community activities
6. Form Engine: an interface for designing and creating forms for information gathering, also a useful feature in the construction of online learning

The driving philosophy of the SCH CLN is one of a community archive that is continually updated according to needs of the community. The CLN portal itself is a means to participate within this larger archive structure that is continually adapting, growing and evolving to meet the needs of the community. The participatory process has enabled SCH to take advantage of the wide range of skills and abilities that exist across its organization. This form of organization learning includes the formation of community intelligence, and is based on the principles of Open Source computing. For SCH, the development of the portal software as Open Source is also an opportunity to share with other CLNs or community organizations the skills and knowledge needed to enable community organizations to adjust to the internet. A social context within the technology is created that reflects the needs of the community and invites ongoing participation and a form of “conspicuous contribution” that fits within the overall mandate of an open organization. It also has much in common with the Open Source philosophy.

Open Source and Community Learning

The Open Source computing movement has created communities of practice that share information, knowledge and resources (computing expertise and languages/architectures/programs) as a form of public good. Open Source software has emerged as a viable economic model, and fits the service provision type of activities that Community Networking centers provide. SCH is making use of Open Source tools while engaging in knowledge sharing across and within institutions as a way of working collaboratively towards a common purpose. SCH functions as an Open Source Learning organization. Open Source Learning (OSL) is “the theory of knowledge sharing and production in both formal and informal settings, [and] typifies how the free availability of information and the sharing of knowledge can benefit communities.” For SCH, OSL has meant embracing a participatory process that seeks to engage all stakeholders in the
organizational change processes in order to ensure that all members of the organization can learn from and with each other. This results in more cohesive change across the organization. It also reinforces “change from within” rather than change imposed from without.

Staff and community members at SCH are being actively encouraged to participate within the CLN project and to provide input at all stages in the design and development of the CLN. This participatory process has led to greater staff buy-in to the SCH CLN project overall. Moreover, the mutual learning between developers, staff and community participants with which our project has been fortunate to engage has shown that there can be meaningful mutual collaboration between researchers and community organizations when there is effective participatory processes in place to enable the transfer of knowledge and skills. The relative effectiveness of this mutual learning between a community organization and academic researchers is evident in the way that we have collectively been able to approach various design and development issues.

One key aspect of the Open Source model used has been the development of a larger community around the CLN programming. This involved the CPU—the Community of Practice Understudy group. The CPU is made up of community volunteers who are technically proficient, and who will assume control of the CLN once it is completed by the software engineering firm contracted to build the CLN. In addition to the SCH CPU group, the online Open Source software site Source Forge was used to post updates, releases, bug reports and fixes on the CLN development. Source Forge is an Open Source programming community space or “software development site with the largest repository of Open Source code and applications available on the Internet. SourceForge.net provides free services to Open Source developers.” It is a public resource where developers can post and share code, coding tips and practices, and work together to build better Open Source projects. Taken together, these two distinct yet interconnected communities played an important role in the overall participatory development of the CLN.

While the use of Source Forge presented some problems for the overall workflow and relationship/perception management of the project, it did represent a significant aspect of development that reinforces the value of formal and informal learning and networking. The CPU understudy group is a loose collection of volunteers who will undertake to transition the CLN into mainstream operations at SCH once the core programming has been completed by the firm contracted to do the initial build. The CPU is thus an important staple of SCH’s mandate to include volunteers in the development process, as well as in the overall sustainability of the project as a whole. SCH is an organization that has little financial capital, but large amounts of social capital in the form of willing and eager volunteers. SCH is able to recruit volunteers from new immigrant populations. Often, these volunteers have very sophisticated technical skills, and are looking to get job experience in Canada. These people form that CPU community, and are a significant aspect of the sustainability plan – to continue to encourage volunteer participation within an Open Source Learning framework that in turn builds the larger community capacity of the online CLN itself.
The ongoing content development enabled by the CLN is further buttressed by the social and technical development by the CPU group. There are problems with this model, including the high turnover rate of volunteers, and the need for some sustainable funding to keep at least one core staff member employed full time to continue to coordinate these activities. But the basic premise of encouraging community participation and “conspicuous contribution” is a significant step in realizing sustainable models of ongoing community participation in the larger operation of the CLN itself. The use of online communities and tools like Source Forge opens up this reflective practice to a much wider community. This could potentially encourage wider diffusion of the CLN application on the one hand, and the encouragement and development of wider community-based learning paradigms on the other.

Evaluating Community Learning Networks

In seeking to construct evaluation frameworks for CLNs, we are reviewing the social-spatial “interactive process between technology, economic strategies, social interests, cultural values, and power struggles” and examining how these determinants of ICT can be used within a particular community context. Canada’s innovation agenda can be seen as congruent with what Castells calls the “geography of innovation” and the myriad ways in which complex social forces can cohere into relevant economic impulses that should benefit all aspects of the country as a whole. This argument is supported by work on economic development and CI. Congruent with economic models of ICT and CI sustainability are notions of wide diffusion of ICT in the first place, within a community-based framework that can sustain interest in the ICT initiatives.

The design of ICT enabled community networking systems must be iterative and drawn from the everyday experiences of the participants who will use these systems. It is necessary to attend to the technical to social aspects of community networking. Any evaluation methodology must feed back into the community network itself, but also into the policy arena so as to inform effective policy and lay the foundations for future iterations of successive CI initiatives.

Our evaluation framework is concerned with separating how SCH as an organization (and as a learning organization) is constructing a public portal that will encourage community participation and learning, and consolidate and enhance community and social capital across the institution. The evaluation framework is being constructed within the context drawn up in a recent overview of evaluation frameworks conducted by O’Neil. O’Neil surveys the present state of community networking within the CI context, drawing particular attention to the social contexts of informatics use within communities so that “CI research can build on social informatics research that considers the social factors influencing ICT utilization.” Understanding the social context of ICT use is a common theme in the research documenting the use of community technology centres. O’Neil offers a breakdown of assessing the impact of CLN projects that includes the following five broad areas:
1) strong democracy – the impact ICTS have on citizens participating meaningfully in civic life;
2) social capital - mechanisms that allow citizens to enhance their relations (social and economic) in communities;
3) individual empowerment - creation of digital literacy;
4) sense of community - use of ICTs to enhance and sustain local community; and
5) economic development - use of ICTs to encourage and sustain economic opportunities.

These five elements can be fit into the three-part CLN structure outlined above. We are raising questions and issues for discussion to fully examine how CLNs can function as they are supposed to, and how best to measure their effectiveness.

These can be matched to the three aspects of CLNs that include:

1) **The Community and/or individuals within the organization:** Human elements of social organization and community capital that directs the learning and reinforces what is desirable to know, learn and acquire in terms of knowledge.

2) **Learning technologies/media:** Media systems and technologies for enabling learning and delivery of instructional material to participants (staff and community). Of course, learning is a much more diverse topic, but for the purposes of a CLN this delineation will suffice given the focus on technologically-enabled learning, as well as learning about technologies more broadly.

3) **Networks and community context:** The wider social context of learning.

<table>
<thead>
<tr>
<th>strong democracy</th>
<th>Community/individuals</th>
<th>Learning/technologies</th>
<th>Networks/community context</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do individuals in the community organization participate in democratic processes? Are these people involved in the governance of the community network? Are they encouraged to participate in this way?</td>
<td>Do available technologies enable people to easily find relevant information on issues of interest? Do these technologies enable easy participation in the community organization? Are these technologies affording two-way communication with the organization?</td>
<td>How is the community served by the engagement of individuals mediated by the technology? Are community ties strengthened (or not) with the use of ICT?</td>
</tr>
<tr>
<td>social capital</td>
<td>Are people able to participate meaningfully in community organizational activities or events?</td>
<td>As above – do ICT enable community participation, and is this productive for the community/organization? Is</td>
<td>Are social ties strengthened by the use of ICT? Are they weakened? Are new forms of community participation emergent</td>
</tr>
</tbody>
</table>
The above generative table is informative insofar as it enables a broad view of the kinds of social benefits that might occur within a community networking initiative. However, in order to refine this into a useful and useable evaluation framework, it is useful to make certain assumptions about these benefits, and generate hypotheses about them as follows. These assumptions will then generate the following indicators:

<table>
<thead>
<tr>
<th>Community/individuals</th>
<th>Learning/technologies</th>
<th>Networks/community context</th>
</tr>
</thead>
</table>

**If this**

<table>
<thead>
<tr>
<th>Community/individuals</th>
<th>Learning/technologies</th>
<th>Networks/community context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Then (indicator)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>strong democracy</td>
<td>Individuals in the community will participate in the community organization, both in person and online</td>
<td>ICT systems will be easy to use; enable people to find useful and relevant information; enable communication within the organization (P2P; M2M; B2P/B2B\textsuperscript{30}); enable community participation and engagement/interaction</td>
</tr>
<tr>
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</tr>
<tr>
<td>social capital</td>
<td>Individuals in the community will participate in the community organization, both in person and online; participation will result in increased social ties among individuals; forms of “conspicuous contribution” will emerge as viable mechanisms for sharing information, resources and expertise</td>
<td></td>
</tr>
<tr>
<td>individual empowerment</td>
<td>Individuals will acquire useful new skills that are relevant to the “new economy”; these skills may assist people in obtaining new employment</td>
<td></td>
</tr>
<tr>
<td>sense of community</td>
<td>People will feel a part of the community organization (CLN, CN) and will participate actively; people will report a sense of belonging to the community organization and identification with its program goals (as applicable/ of interest)</td>
<td></td>
</tr>
</tbody>
</table>
New forms of work will emerge that utilize ICT applications; new economic opportunities will be created by individuals who use the system and/or skills learned in the community organization.

Another avenue for evaluating effectiveness of CN initiatives, particularly the SCH CLN, would be to take the four outcomes that SCH has identified and cross-reference these with the three aspects of CLNs (Community/individuals; Learning/technologies; Networks/community context). The four outcomes/indicators from the SCH original CLN proposal are as follows:

1) To assess how plans matched the actual work -- did we do what we said we would do, given our resources? (compliance)
2) To ensure responsiveness to participants/community members -- what did the participants tell us worked and didn’t work? (client satisfaction)
3) To identify and analyze the impacts of the work -- what difference did our work make, given the resources used? (outcomes)
4) To build knowledge and expertise -- how do we continuously improve? (best practices)

These four elements should generate the following indicators:

<table>
<thead>
<tr>
<th></th>
<th>Community/individuals</th>
<th>Learning/technologies</th>
<th>Networks/community context</th>
</tr>
</thead>
<tbody>
<tr>
<td>compliance</td>
<td>Have participated within the design and development process of the CLN</td>
<td>Have been created, adopted, modified and put into use, on time and on budget</td>
<td>CLN reflects the diversity of the community, is useful and usable; is used; enables community participation and capacity building</td>
</tr>
<tr>
<td>client satisfaction</td>
<td>Are satisfied with their input; have seen their input as meaningful; see the CLN as a meaningful and relevant conduit for SCH</td>
<td>Are easy to use and is accessible; training is effective; maintenance is done from within</td>
<td></td>
</tr>
<tr>
<td>outcomes</td>
<td>Participate actively by generating content; accessing resources;</td>
<td>Are accessible and easy to use; are used</td>
<td></td>
</tr>
<tr>
<td><strong>best practices</strong></td>
<td>Can share expertise and resources; Peer learning is accomplished</td>
<td>Training is effective; methods for use are shared</td>
<td></td>
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</tbody>
</table>

These metrics formed to date reflect our initial field work with SCH, and will form the basis for our evaluation instrument to be used in a wider research program.\(^{31}\) We have linked our work to common themes of evaluation, which include: ascertaining user and staff satisfaction with services, the ratio of women to men in staff and participant populations, relative degree of program responsiveness, a review of program services offered and their relevance, the degree to which these services are utilized by community participants, the mechanisms for both input to and output of community-based programs, what the physical location is like and how accessible it is, staff and participant satisfaction with physical location and services, impacts of programs, issues and problems that arise, what kind of content is produced and how it is used.\(^{32}\) Developing indicators to respond to these metrics is being done as part of the iterative process of program development. Success factors include issues of management, establishment, use, leadership, educational programming relevance, and social and technical infrastructure.\(^{33}\)

**Conclusion**

What has been required at this formative stage is experimentation, involving the risk of failure, and the widespread sharing of results, both positive and negative. An important implication for the Evaluation Framework and our relationship with our research partners is that lower than expected performance by some CLN projects should not be treated as a negative reflection on the Program as a whole, especially if others have learned from such mistakes. Furthermore, the Evaluation Framework itself should reflect and contribute to this mutual learning. The potential role of the wider Community Informatics community in leveraging initiatives and learning programs may aid in forging sustainable facets of programs such as those built under the CLN rubric. Ongoing participation in this wider research and practitioner community will enable us to ensure we can effectively evaluate the level of engagement in citizen-based ICT initiatives such as the SCH CLN, once this is operational.

Once we have been able to test our evaluation framework, we will need to find ways to generalize this framework so that it will be useful to other community networking projects. We hope to find useful ways of comparing projects to locate similarities and differences. In so doing, we will refine an evaluation method and instrument that can be used to measure consistently across various projects and organizations, and aid in assembling useful best practices and findings that will relevant to all people who are involved in community networking.
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10 SCH CLN application.


14 Ibid.


19 http://sourceforge.net/


