A Pattern Language for Living Communication

A Global Participatory Project

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ABSTRACT
This is the first report on an ambitious participatory project, currently in work, whose goal is the construction of a "pattern language," a large structured collection of knowledge that represents the "wisdom" of a widely distributed, very loosely knit community of activists, researchers, policy-makers, and technologists. This report provides an important first step as it outlines our hopes, expectations, planned tasks, and research hypotheses. A second report in late 2002 or early 2003 will bracket this report with a discussion of actual activities, evaluation, and recommendations.

Keywords

Pattern Language, patterns, participation, democratic communication, collective knowledge base, constructivism.

INTRODUCTION

"All of my life I've spent making living structure in the world." –Christopher Alexander (1996)

In November 2001, CPSR's DIAC-02 symposium program committee embarked on an ambitious participatory project whose goal is the construction of a large structured collection of knowledge that represents the "wisdom" of a widely distributed, very loosely knit community of activists, researchers, policy-makers, and technologists from around the world. This collection will ultimately be a "pattern language," a somewhat complex theoretical structure which is based on the insights of professor emeritus Christopher Alexander and his colleagues at the Center for Environmental Design at the University of California, Berkeley. Alexander's book, *A Pattern Language* (1977) is a classic in the area of architectural design and theory.

The domain of our pattern language project is "civic and community information and communication." This is a descriptive phrase that contains too many syllables; "democratic communication" might be a better characterization, but *Living* communication, adopting Alexander's characterization may be the simplest and best. The core concept is that certain forms of information and communication systems are likely to be more effective at promoting conviviality in the human and environmental spheres. These systems are also more "authentic" and more equitable; unlike, for example, commercial television whose product is designed to sell merchandise, constructed by professionals with commercial – not civic or community – allegiances, fosters damaging stereotypes, is often unanswerable to the public, and is likely to be the conduit of propaganda. Thus the systems we hope to promote are more likely to be equitable and participatory. They will support what I've called in my book (Schuler, 1996) the six "community core values," conviviality and culture; education; strong democracy; health and well being; economic equity, opportunity, and sustainability; and information and communication.

We hope that the resulting pattern language will be educational as well as inspirational for current and potential information and communication researchers and activists. The construction of the pattern language, however, is not the sole goal; if the participatory process unfolds "correctly" the community that collaborated in the process will be stronger and smarter and therefore better equipped to deal with the issues before them.

CONTEXT FOR THIS PROJECT

Tomorrow's information and communication infrastructure is being shaped today...

But by whom and to what ends?

- Call for pattern submissions, Shaping the Network Society Symposium

This project is explicitly intended to be socially ameliorative in a profound way. The context is global. The environmental crisis, war and militarism, and the stark, growing disparity between rich and poor provide the backdrop. These acute maladies have come to a head at a time when more-or-less unimpeded capitalistic ideology holds sway over much of the world's economic activity and, indeed, ways of looking at the world itself.

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Within this framework a massive communications infrastructure is spreading rapidly into all reaches of the world (unevenly and not without scattered resistance) to a truly unprecedented degree of global concentration. This vast global actuality and potential represents an opportunity (to many) and a threat (to some). As the product (and by-product) of the vast economic forces (largely corporate but governmental as well) this infrastructure is unlikely to consciously or unconsciously promote the type of information that supports social amelioration and transformation. Unfortunately these commercial systems are intended primarily to sell products and make money for their owners and stockholders: entertainment is preferred over news, racial and sexual stereotyping is common. It's interesting to note that until about a century ago nearly all communication was local and unmediated.

Our work is motivated by an acute need for responsive, useful, informative life-affirming communication systems whose existence is threatened by hegemonic, stultifying, and distracting systems. We feel the need to help promote the consolidation of knowledge, creation of shared agendas, and the building of community among the world's advocates for living communication.

WHAT IS A PATTERN? A PATTERN LANGUAGE?

A pattern is a careful description of a perennial solution to a recurring problem within a building context, describing one of the configurations which brings life to a building. - Alexander et al, 1977

A pattern language is a network of patterns that call upon one another. Patterns help us remember insights and knowledge about design and can be used in combination to create solutions. - Alexander et al, 1977

Christopher Alexander's groundbreaking book "A Pattern Language" (1977) is an ambitious collection of interrelated architectural and urban developmental "patterns" which can be used to design and build towns and dwellings which are both beautiful, life-affirming. and *timeless*. Since the book's publication in 1977, it has been a perennial favorite and is used in architectural classes all over the world. The book actually sells more copies with each passing year.

We realize that the meanings of patterns and pattern languages aren't immediately apparent; it's fair to say also that the ideas are not made clear by looking at conventional meanings of "pattern" nor of "language." We are using those terms to acknowledge their intellectual origin and because there are no obvious substitutes that are preferable to the originals. Christopher Alexander and his colleagues at the Center for Environmental Design at the University of California at Berkeley developed these concepts as a framework for their work in the architectural design process.

We are unable to make the same strong claims about the pattern language that we are building as Alexander makes about his. For one thing, it's difficult to say that some of our patterns relating to computer user are "timeless" when computers are a very recent addition to our communication sphere. Maintaining a intellectually skeptical perspective compels us to think of this as a research project with multiple hypotheses; our optimistic spirit holds on to the hope that this work will hold some of the power that Alexander's work has.

There is nothing particularly esoteric about a "pattern." It can basically be thought of as a semi-structured chunk of information (Malone, 1987) that has four main parts: problem, context, solution, and discussion. It is through the use of this common (though minimal) structure that the power and usefulness of the "pattern language" can emerge. Alexander's use of the word "language" is also simpler than it first seems. The "language" is simply the way that the patterns are related to each other and how patterns are used in conjunction with each other much as words are components of spoken or written language.

Below (Fig. 1) is one of the patterns (# 159) in Alexander's book, "light on two sides of a room" taken from the pattern language web site. This shows an illustration of the pattern, the title, a short description of the problem and a brief recommendation.

Fig. 1. Light on Two Sides of Every Room

The patterns in Pattern Language are related in two basic ways. The first is that the 253 patterns are numbered sequentially; number 1 is the most general, and number 253 is the most specific. The patterns are groups within smaller categories as well. Patterns 1-7 are global patterns ,for example, and patterns 35-40 deal with housing that that is "based on face-to-face human groups." The patterns are also linked conceptually to each other. Using the pattern

above, right under the main title, in the paragraph that begins, "...once the building's major rooms are in position" there are references to other patterns that come before it, namely WINGS OF LIGHT (107), POSITIVE OUTDOOR SPACE (106), etc. Then, at the end of the chapter, there is a paragraph that describes which of the patterns this pattern is related to that follow the pattern. Thus, the patterns are all conceptually linked to each other much as web pages are conceptually, as well as actually, linked to each other.

OUR APPROACH

Many people outside of the architectural community have also fallen under the spell of the pattern language. The wide range of interrelated ideas gathered together through the simple organizational power of patterns and the language of patterns has been borrowed, particularly by those in the computer field who have begun developing "pattern languages" in object-oriented programming (Tidwell, 1999) and in HCI (Human Computer Interaction) (Gabriel, (1996); Gamma, Helm, Johnson, and Vlissides, 1995). Working with Alexander, Stuart Cowan of the ECO Trust Foundation has developed an impressive pattern language of 72 interrelated patterns which defines " which is a comprehensive and consistent map of a sustainable region, one which may be adapted to the infinite variation of local circumstances." (www.conservationeconomy.net/)

Our project also takes much of its intellectual underpinnings from the basic model that Alexander and his colleagues developed for the architectural domain. We are hoping that we will be able to obtain some of the benefits from this approach that Alexander did, notably a compelling way to organize a large amount of intellectually related material. While Alexander and his colleagues were dealing with architecture, our project explores and constructs patterns in a different domain: The patterns we advance will not focus on physical structure that is beautiful and timeless but on information and communication technology that is democratic and useful. Beyond that are planning to help strengthen the research and activist communities by involving them in a participatory project that uses a combination of electronic and face-to-face venues. We also hope that this effort will help build the community by uncovering deep connections between people and projects that have been unknown to each other. In other words, we are attempting to do for communication systems what Alexander and his colleagues were doing for architecture. When I proposed our basic concept to Alexander in the summer of 2001 he was very enthusiastic; we immediately began discussing the opportunities and challenges that such a project opens up.

This project has the inherent risk that all of its ultimate objectives might not be attained. The aim of constructing a compelling and coherent "pattern language" may be too complicated and too ambitious. On the other hand we believe that the project is designed in such a way that every product and event along the way will have value that will permeate the community and persist in its influence. This project capitalizes on several notable aspects of our era.

- Intense interest and influence in civil society worldwide.
- Increasing penetration of the Internet and the World Wide Web with attendant potential for global collaboration.
- Need for a "network-based" representation of the wide variety of thoughts and approaches related to community and civic uses of ICT worldwide.

We believe that a useful and compelling pattern language is possible (Alexander's "A Pattern Language" is an existence proof) and that we can develop one in an efficient collective, participatory way. Our strategies (below) for developing and disseminating the pattern language are intended to meet our objectives while being specifically cognizant of the capabilities listed above.

- Use patterns as an orienting theme for a conference and information structure.
- Use a common format to facilitate pattern integration.
- Develop and refine social processes (combining in-person and virtual interactions) that support the development of patterns and the pattern language.
- Develop an easy-to-use web application that supports every aspect of the process including pattern submission and review, and pattern language development, access and use, and evolution.
- Publicize the web site and encourage people to post their patterns.
- Provide a scholarly avenue for pattern development and presentation (while also making the project accessible to a non-academic audience).
- Employ web-based and print-based dissemination.
- Build on successes of previous DIAC symposia and the worldwide community that has evolved over the past several years.

There are five primary activities associated with this project.

- An international symposium (the eighth in CPSR's "Directions and Implications of Advanced Computing" series) which will be convened in Seattle in May, 2002. http://www.cpsr.org/conferences/diac02
- The development of a large, collective, shared knowledge base (the "pattern language") through an open online process and face-to-face discussions before, during, and after the symposium.

• The dissemination of this material in both electronic and print-based form.

• Evaluation of process, exploration of issues including a preliminary history and analysis of the social and technical processes.

• Development of a loosely connected worldwide community of researchers, activists, and others who are working in this area.

A central idea behind the common structure is that, while individual patterns are compelling and useful, their structure will make it easier to integrate them (where each is, in essence, a small theory about some part of the communication and information universe) into a collective body. Since they are stored in an online database many interesting possibilities for computer mediation are raised. In addition, we hope that this overall project will inspire scholars to think about their research in terms of social implications and actual social engagement. We also hope that the common enterprise will help build social networks that include research, practice, and advocacy.

All of these activities are devoted to giving shape, direction and power to an interdisciplinary topic that's becoming increasingly popular – and important – throughout the world – that of community and civic uses of information and communication technology. At the same time, however, the simultaneous rise of worldwide civil society (Runyan, 1999) and transnational advocacy networks (Keck and Sikkink, 1998) accompanied by advances in ICT are tempered by other, less positive phenomena: the "digital divide", terrorism, persistence of poverty worldwide, and severe environmental problems. This project directly advances one plausible and direct approach to thinking about and linking our resources and our issues in a new way.

PATTERN LANGUAGE DEVELOPMENT

...towns and buildings will not be able to come alive, unless they are made by all the people in society, and unless these people share a common pattern language, within which to make these buildings, and unless this common pattern language is alive itself. (Alexander et al, 1977)

Although there are many interrelated activities associated with the overall effort I have to chosen to focus on the pattern language itself and the participatory processes we are taking in order to build the product that meets our needs within a satisfactory amount of time.

The pattern language development process consists of six main steps (pattern collecting; pattern discussion and deliberation; pattern language development; pattern presentation; pattern language use; pattern language evaluation). The steps, starting with pattern collecting, are intended to be traversed basically in that order, although some revisiting of previous steps is acceptable and expected.

1. Pattern collecting

Nearly all pattern solicitation has been done via email. In late 2001, the DIAC-02 program released a "call for submissions" which was sent to various electronic lists. The committee contained 34 people from Argentina, Bangladesh, Canada, England, Germany, Ghana, Italy, Japan, Mexico, Netherlands, Russia, Sweden and the US. Nearly all committee members were academics involved in research and activism related to ICT. The call was also included in *Spectra*, the monthly publication of the National Communication Association. The call was designed to appeal to a wide variety of people and to broadly describe the issues that we were interested in addressing. The open-ended nature of the appeal and the introduction of Alexander's pattern related ideas were, unfortunately, somewhat confusing. Alexander presented his ideas in two volumes using thoughtful deliberate step-by-step discussions accompanied with numerous photographs and figures. Our written solicitations, on the other hand, were intended to be brief and explanatory at the same time – a task that proved to be quite difficult. The easiest way to describe our work was to describe it to people who were familiar with Alexander's work. I was frequently asked by people unfamiliar and/or skeptical of this approach how I was *sure* that the patterns we received were valuable, the pattern language we will hopefully construct would be useful, and that a pattern language would – or even *could* – capture the "wisdom" (or a meaningful subset) of a community.

Although we are working to ensure that useful products are created throughout the process, the ultimate success will depend on the continued effective participation of the community. This venture, as mentioned before, is innovative and experimental; there are few examples – if any – to be examined that share our broad objectives and global participatory approach. The success of Alexander's theory and books provide our best reference point: patterns and pattern languages have proved to be compelling and worthwhile to a large number of people.

As for individual patterns (currently unexamined and not having been subjected to a "patternization" process), they will have to stand alone – they will only be as good as the author's ideas and the dexterity with which they were presented. The structure imposed by the pattern exemplar could, we acknowledge, provide conceptual barriers to potential authors.

To encourage the collection of patterns from all over the world, to be able to display these patterns easily and

inexpensively, to facilitate the creation of a pattern language, and to keep the administrative burden as low as possible we devised a pattern management system. This system (discussed below) was specified by Doug Schuler and implemented by Scott Rose using Perl, CGI, and MySQL. The system allows people to basically start their own "author accounts" in which they could manage any number of patterns. Authors can edit their patterns at any time and they can indicate which of several options they'd prefer for their pattern including whether it should be reviewed for presentation, whether it should be made public, and whether identifying information or email address should be displayed on the pattern.

As of February 1, 2002, approximately 150 patterns had been submitted. People from Ghana, India, UK, US, Mexico, Australia, Germany, Sweden, South Africa, Malaysia, France, Brazil, Japan and other countries have submitted patterns (170 or so thus far). The program committee reviewed the approximately 110 which were submitted for review and selected 64 for presentation. All submitted patterns, whether accepted by the program committee or not, are being considered for the pattern language. We have been at least partially vindicated by the patterns submitted so far as the sense that the submissions are beginning to form a coherent set that "belong together." There is also a sense that many implicit conceptual links tie the pattern submissions together in useful ways. There are, for example, several submissions which deal with deliberation -- from the town to the global level -- and with the mechanics for making it happen.

I intend to subject this first set of patterns to further analysis: what countries are the authors from? What themes and categories are represented? Those will help us in evaluating the ongoing pattern language development and in additional pattern solicitation.

2. Pattern discussion and deliberation

This phase and the next (pattern language development) are co-evolutionary and are difficult to separate: progress (or lack thereof!) in one phase often has a direct influence on the other.

The first discussion of the patterns took place among the reviewers (see "Participation by Phase," Figure 5) which was held at a fairly general level. Reviewers, also, only reviewed 12 or so submissions so discussion on specific patterns was rare. (Pattern submissions were not publicly available at this point.) The "discussions" related to the patterns in this early phase were limited to anonymous feedback to authors. Reviewers also indicated scores on several attributes (see "Pattern System" section) which were used to select the 64 presentations for the symposium.

The conference itself afforded many opportunities for participatory development of the pattern language. These activities were facilitated using Owen's "Open Space Technology" (Owen, 1997), although the symposium's many objectives (and, therefore, many activities) present some barriers to optimum use of OST according to Owen. We looked at three major areas (Fig. 2).

Patterns
Develop general criteria for patterns
Identify new pattern ideas and add to system
Merge patterns or split into multiple patterns
Eliminate patterns
Refine patterns
Add / remove / alter pattern attributes
Add suggestions, evidence or citations to patterns
Improve graphical content and quality
Pattern Language
Determine broad categories and order
Determine sub categories and order
Order patterns within categories
Establish links between patterns
Entire Project
Publicize effort
Improve web site functionality (support for pattern links or feedback, for example)
Solicit more patterns
Critique process and/or project objectives or approach
Develop / refine development process
Develop guidelines about using the language

Fig. 2. Project development tasks at symposium

It was hoped that participants would produce a set of roles and responsibilities that would realistically balance efficiency and timeliness with equitable participation for the future stages of the project.

These sessions all took place in a single room. There were three notebooks containing the entire pattern set in order of submission. (Each pattern is originally assigned a unique number in order of submission.) The walls of the room were used for the display and re-arrangement of patterns. The patterns were presented in a one page abridged version (showing title, author, problem, and solution) that authors or volunteers developed. Ordinary tape was used to affix the cards to the wall. Postits, string, and other aids were available and the postits were used to supply labels for pattern clusters. New patterns, submitted via the web site from off-site or on-site via wireless laptop computers, were printed and added to the collection in near real-time.

3. Pattern language development

Grouping the patterns into "families" of patterns that share certain attributes is an important part of this phase. The grouping is likely to help the development of the pattern language. It is also -- of course -- intended to help people actually *use* the pattern language. The first use is the development of the individual patterns (as the relate to each other): members of the same family are more likely to be integrated together into new patterns based on the information in the various patterns and, also, are more likely to be linked to each other.

There are three major ways of categorizing the patterns: (1) use the "built-in" themes and categories that submitters indicated when they submitted their patterns; (2) computer-generated; and (3) human guide, either through an ad-hoc, "constructed" or using an existing scheme such as the Dewey decimal system used in categorizing books.

Since the patterns are stored as part of the pattern system there are several potential capabilities that we could obtain from additional computer programming. For one thing we can present the patterns in order from most general to most specific (in terms of themes or categories) as in "A Pattern Language." To accomplish this we just have to specify the ordering of the themes or categories and stipulate a rule that says that the more categories or themes that are checked, the more general that particular pattern is. This could be a substitute for arranging the patterns "by hand" in a participatory way by the DIAC-02 attendees. It could also be used as a set of suggestions or a draft, for the actual ordering. Of course, this approach more-or-less tacitly assumes that the categories (or themes) already established (by the program committee) are the de facto classification / ordering plan.

The automated system could also provide a number of searching approaches. For example, a person could search for all patterns which had "organization" for one of its categories and "education" for one of its themes. One could also search for specific authors or for text that existed within a pattern – in its discussion or context, for example.

There are also several ways in which the computer application aided by human judgement could assist in the evolution from a set of patterns to pattern language. Researchers are now beginning to use text analysis and network presentation techniques to show similarities between texts (Smith, 1999; Sack, 2000). These techniques, in theory, by revealing strong similarities (and differences?) between patterns could help us as we scrutinize, integrate, and edit our patterns. A similar end could be achieved if every pattern proposer would consent to indicate which patterns were strongly related (complemented) to their pattern(s) and / or which ones were actually antagonistic to their patterns. This approach would likely yield useful information. If, for example, multiple patterns were strongly linked to each other (forming a cluster) there is a higher likelihood that these patterns belong in the ultimate pattern language.

Similar approaches to this could be done with context, problem, etc. As shown below (Fig. 3) comparing two patterns in terms of their context, problem, solution, etc. while done by human or machine suggests plausible approaches to pattern reconciliation and, therefore, further development of the pattern language. (An analysis of the *collective* context, problem, etc. would be very useful and interesting whether done "by hand" or by machine.) While this work would be very useful, it's unlikely that the pattern authors would be willing to put in the requisite amount of time to do this exhaustively. In a pattern system of 200 patterns, each pattern author (and some authors have *multiple* patterns) would have to compare their pattern(s) with *all* of the others. In a system of 200 patterns, 39,800 comparisons would be done in total. An important question therefore is how many comparisons along these lines would it take to actually be *useful*; presumably there is some approach that doesn't require total participation (or, even, say, 20%) nor large numbers of author comparisons to yield some useful data.

Context	Problem	Solution	Possible Action
0	0	0	Disparate patterns
0	0	1	Generalize context and/or problem
0	1	0	Resolve solutions Resolve contexts Decompose problems
0	1	1	Generalize context
1	0	0	Group around context
1	0	1	Expand problem
1	1	0	Resolve solutions discrepancy
1	1	1	Merge into one pattern

1 = close match 0 = not close

Figure 3. Comparing two patterns

It is important to note that we are planning other pattern related activities at the symposium including panel discussions by people with pattern language experience.

4. Pattern presentation

Currently the system allows patterns to be listed in order of submission, alphabetically by author's name, alphabetically by pattern name, or in order of invariance. Other methods are, of course, possible, including showing the names of

patterns that met some search criteria.

One reasonable, default for displaying patterns would be for the computer to use the pattern "themes" [list them] as a way to order them from most generality to least generality. If we agree that the more themes that are checked, the more general the pattern is and if we agree on a ranking among patterns then an implicit general-to-specific ordering exists.

"Civic Intelligence" (Fig. 4), "Synergies of Fusion: Social Integration of Voice Video Data," and "Community VPN Portals," for example, all have all five "themes" checked indicating (probably) wide generality. "How to survive once the government funds run out" and "Using Internet to develop learning environments," on the other hand, have only one theme checked.

We also plan to develop useful ways of presenting the language as a whole both graphically and non-graphically. Since the pattern language is inherently a network approach to information representation, a graphic interface showing all patterns and the links connecting them seems like an obvious approach. This has been accomplished to good advantage by the "Conservation Economy" site mentioned earlier. That site, however, has only 72 patterns and we are expecting 150 - 300 patterns ultimately. Nevertheless the computer offers potential advantages for interactive exploration that are not available in printed form and that we will be investigating soon.

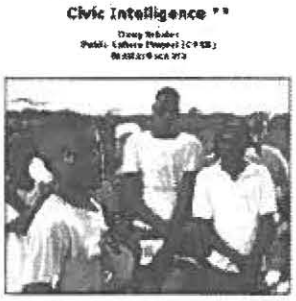

Fig. 4. Sample pattern submitted to symposium

5. Pattern language use

Since the "pattem language" is embryonic at this point, it's not possible to make any observations in regards to its actual use. As before, we will take our initial cues from Alexander. In "Timeless Way" and in "A Pattern Language" Alexander suggests that people select a small subset of the language that they believe they should work with. These should probably be those that have links to other patterns as called out in the patterns. Using that subset, the "builder" should then deliberately, using *one pattern at a time* build the structure. Our domain, while containing concrete elements (computers, books, or libraries, for example) is, in general, more abstract than Alexander's. Also, in our quest for a more effective characterization of our domain for policy, research, activism, etc. we have consciously expanded our sphere to address / engage the broader societal forces that Alexander's original approach (by his own admission) did not include. We may learn that these other factors may necessitate changes in our recommendations for use. At any rate we will strive to solicit comments from people using the pattern language, share these with others, and revise our recommendations as necessary.

6. Pattern language evaluation is discussed below.

PATTERN SYSTEM

As part of our effort to involve large numbers of people and leverage existing opportunities afforded by the new media we are incrementally developing a web accessible environment for the patterns. This environment is ideally intended to help encourage the cultivation and development of "immature" pattern proposals into a living "ecosystem" of patterns comprising a pattern language.

The Pattern Management System (diac.cpsr.org/ conferences/diac02/patterns.cgi) contains five major subsystems (pattern Submission, pattern Reviewing, pattern language development, pattern language presentation, and pattern language administration). The system was developed sub-system by sub-system incrementally on an as-needed basis rather than as a comprehensive set of specifications at the onset. If a new version were created (for, say, the evolution of pattern languages in other domains) the specifications would be largely based on the current system plus what we have learned from the development of this system.

Pattern Submission Subsystem

The pattern submission subsystem allows people to enter patterns into the system, which they can edit as they see fit over time. The pattern attributes include: name, invariance, problem, context, discussion, solution, descriptive image, summary image, categories (orientation, organization, engagement, social learning and intelligence, products and projects, and resources), themes (theory, social movement, education, economics, social critique, media critique, research for action, case studies, community action, digital divide, policy, globalism and localism) and references. Each author "account" is accessed via a user e-mail address and a password. Each author can have any number of patterns under development. The editing screen for an individual pattern allows the author to control whether the pattern is reviewed by the program committee (during the period

before submission for committee review was closed) and whether the pattern was ready for public display and whether author name and/or e-mail address was displayed. (All submissions were kept private until patterns were reviewed.) Unfortunately we did not develop a good approach towards dealing with multiple authors. Ideally all the authors of an individual pattern would be able to access that pattern and edit it. This approach would greatly complicate matters (access model and access control) and we did not pursue it. At a more superficial level we plan to add fields to our pattern template where additional authors can be entered and, hence, would be displayed with the pattern.

The pattern information is stored in a database which allows for selective retrieval (e.g. all patterns which indicate as "media critique"), search (potentially), algorithmic manipulation of patterns (e.g. to identify similar or dissimilar patterns), and, finally, to display the patterns in a consistent way.

Pattern Reviewing Subsystem

The reviewing subsystem allowed virtually all reviewing functions to be done via the web. There are two basic roles: administrator and reviewer. The administrator is able to add and remove reviewers and to assign reviewers to specific patterns. Only those patterns which were marked as intended for review were reviewed. The administrator is able to mark a pattern "closed for review" which disallows additional reviewing.

The reviewers do not see names or other identifying characteristics of pattern authors when they review the submitted patterns and reviewers are able to see the reviews of other reviewers. Each pattern was rated by each reviewer according to the following criteria: significance to advancement of knowledge, clarity, innovation, social implications, and suitability as a pattern. The reviewers could also provide information on the proposals they review. There is a textbox to include comments to other reviewers (which are not given back to authors). There is a textbox to include comments which are given back to authors. Reviewers are also able to edit their reviews online. This means that reviewers have "accounts" and the ability to log in.

Pattern Language Administration

The administrator has a global view of the entire pattern system and can inspect and delete patterns (if, for example, a clearly inappropriate pattern had been entered). There are also several report capabilities related to the reviewing process. The system shows each pattern and whether its reviewers are done and which reviewers still need to review. It also shows all the pattern proposals ordered by the averaged scores of the five criteria. Both reviewer and author comments will be shown on these reports. Each pattern has a radio button with four choices (recommended for acceptance, not recommended for acceptance, accepted, not rated) which can only be set by administrator. The system generates different messages depending on this choice and the administrator uses these messages to send to each submitter. The entire database is also downloadable as a spreadsheet.

RESEARCH OBJECTIVES AND ISSUES

The bricoleur produces a bricolage, that is, a pieced-together, close-knit set of practices that provide solutions to a problem in a given solution. (Denzin and Lincoln, 1998)

This project is qualitative research. It's non-repeatable in the sense that we could never repeat the exact circumstances under which this project was carried out. We won't have the opportunity to do it all again with a slightly different set of variables. We therefore necessarily will have to strike a balance between planning, participation, flexibility, efficiency, the need for results. Additionally the "subjects" are all contributors of both the content and directions of the process. Therefore this project is participant-observer oriented; every participant is likewise an observer. This project is designed to "give voice" to a large number of people who are, in turn, attempting to "give voice" to a still larger group. This project is an open-ended participatory program to collectively "grow" a shared vision that combines theory and practice.

This project has important research goals. We intend to learn, for example, how computer support and mediation can help -- or hinder -- the creation of a community largely through the collective construction of a rich resource bank (of patterns) that describes their particular body of shared knowledge. Communities, like this one, are unlike traditional, geographical communities. These "communities of interest" are formed in various ways. A scholarly community forms basically as a side effect of its efforts in developing a shared knowledge base of data, texts, precepts, goals, and methodologies. In this project we hoped to leverage the increasing accessibility of the web worldwide to help develop this community more rapidly (while, at the same time, not rushing to judgement or pre-empting deliberation or equitable participation).

We feel that our online system can help advance this enterprise. The system helps primarily by providing an accessible public input and presentation system. As mentioned previously we believe that the web based system will ultimately offer a wide variety of pattern presentation and exploration approaches. Also, although we have not pursued this as vigorously as we had planned, our approach also suggests a number of avenues for deliberation and feedback. We suspect, on the other hand, that we could develop substantial resources this effort

which, in the end, would be underutilized. We do however, have a simple, informal way to allow feedback to individual pattern authors by including a "mailto" on their pattern page (if they've indicated that their address should be published with their pattern).

The urgency of this effort brings us to our second major objective: activism. We are consciously trying to spur interest and action. The project is intended to inspire activism in several key ways. The first is by raising the consciousness of the diffuse communities that already exist and the communities that are now forming and growing. This raising of consciousness is intended, of course, to provide many hints and ideas to the community, much like a how-to book in a given area; the pattern language is educational in the simple sense of providing useful information that will help people more easily achieve their objectives. Beyond that, however, this project -- through the process and the end result -- is intended to bolster civil society generally. First, it shows (ideally at least) that this phenomenon is a worldwide phenomenon in which active work is occurring in all countries with, we believe, an impressive amount of similar perspective and grounding.

Many questions will be confronted in this endeavor: what percentage of ideas put forth in the space of, say, one year, coalesce into something significantly useful? How is the problem of "who is in charge" to be handled, not just in this particular project, but as a general practice if online pattern languages become prevalent? What kind of end products evolve? What kinds of concepts seem to be most amenable to this modality for building concepts? What is the motivation of participants to be involved? How are issues of intellectual property and ownership of coalesced concepts resolved? Are their legal ramifications of use? If so what are they? How are they resolved? What kinds of ideas find this a useful medium for their development? What are the global or international implications of this kind of building of ideas? How do asynchronous (electronic) collaborative approaches reinforce with or detract from synchronous (face-to-face) collaborative approaches and vice versa?

Alexander's fundamental premise, largely implicit, is that the right type of built environment will necessarily lead to the right sort of behavior. While a discussion as to what degree of truth this premise may contain is beyond the scope of this paper, it can be pointed out here that Alexander himself was disappointed that widespread use of the pattern language did not perceptibly change society nor did it even result in houses and other structures that were more beautiful and possessed the qualities that Alexander desired. Alexander blamed this on the fact that the entire building enterprise is embedded in a larger system that dictates how building projects are designed, approved, financed, and constructed. When this larger system is left unaffected the pattern language has less chance of succeeding, according to Alexander: it's boxed in and prevented from realizing the inherent potential of the language.

How do we hope to avoid the pitfalls acknowledged by Alexander as well as the other doubts expressed by members of the civic and community ICT community? For one thing we have explicitly called for patterns that address the larger systems that current information and communication systems are embedded within. These patterns (effectively "meta-patterns") dealing with policy, education, or media critique, for example are explicitly intended to influence the conditions under which information and communications systems must exist.

As mentioned above, it's unclear (at least to me at present) how much influence the built environment has on the lives of the occupants that live within it. The same question can be raised about the hoped-for ameliorative effects of the current project. Like Alexander's, this project is utopian: it's attempting to move society into a direction that many current powerful social forces and ideologies are working against. This critical issue, along with the other important issue of whether progressive change can be institutionalized through words can't be answered here but shouldn't be left aside indefinitely. A parallel question raised by Peter van den Besselaar (personal correspondence) is whether pattern languages "inherently conservative" and inhibit progressive change.

Finally, as Alexander has stressed again and again a pattern language is intended as an abstract tool. It is not intended to be used in a precise, mechanistic fashion. He stresses that their volume opted for abstract (and generally non context specific) patterns and that people should invent new patterns and sub-languages as they desire. He also stresses that the language should evolve over time yet "A Pattern Language," after several printings, has not changed. Is the structure of the pattern language itself a barrier to modification? Most people would agree that the language should evolve. While structurally a pattern language can change over time (by modifying, adding, or deleting patterns) it's not a trivial activity for other reasons. For one thing, there is the "inertia" of the system itself; if the language is a coherent whole than modifying part of it may disrupt equilibrium that the system has. Also, since the system has presumably been constructed in a participatory way, it might not be obvious who is authorized to change the system and under what conditions. Finally, although our (online) system is set up to accommodate various "versions," it's not clear that a version-oriented "software release" model is best.

EVALUATION

Evaluation of this project is crucial and consists of two major inter-related aspects: process and product, especially as they pertain to meeting project objectives. If both aspects of this project are successful the community of living communication advocates will be strengthened and energized. If this community is successful, it will help in the creation of communication approaches that work for more people worldwide.

The evaluation of the process should focus on the quality of the participation as demonstrated by the openness or fairness of the process and its "efficacy" (effectiveness) in producing the desired outcome. This desired outcome includes both a "product," the patterns and their pattern language and a strengthened community. Obviously a process that failed to create a good product could not be considered a success. Perhaps less obviously is the fact that the development of a good strong pattern language in the absence of an open and equitable process would be likewise unsuccessful. If the process is not sufficiently open and equitable, it is unlikely that the product can be legitimate. We are planning to evaluate the process by the quantity and quality of the participation.

There are many interesting challenges and contradictions raised by this project. The first one is inherent in all "participatory" projects and programs (like "democracy"): what does it mean to participate? Who can participate and under what conditions? What are the *rules* and can they be altered?

Whether the "rules" can be changed or not it's undeniable that the initial parameters persist in their influence over the course of the project. As Langdon Winner (1986) states, "Because choices tend to become strongly fixed in material equipment, economic investment, and social habit, the original flexibility vanishes for all practical purposes once the initial commitments are made."" While nobody would quibble with the idea that people are free to set up a project any way they seem fit. If, however, the project is billed as "participatory" and the participants do not feel that their degree of participation was sufficiently genuine then the integrity of the project can be called into question.

Of course if the vast majority of participants believe the project is valid then it probably is. The fact remains that some submitted patterns do not belong in the finished pattern language. (This is simply shown by taking a pattern that is known to "belong" to the system – its antithesis does *not* belong.) If a pattern is judged to be "unsalvageable" by whomever is allowed to make that judgement and if the author(s) are unwilling to make any necessary changes then the pattern should be deleted. In a general sense any decision needs to be "authorized" in some way.

All of this leads to another challenge that this work exposes: that of preserving intellectual "ownership" of the ideas as the evolution from pattern set to pattern language transpires. At the onset the issue is minor; patterns have authors and they also refer to other authors, ideas, and sources in the patterns. Sometimes the pattern author is not the idea author. In my own case, for example, I submitted a pattern on "whistle-blowing" which was based on ideas put forward by the Government Accountability Project (Devine, 1997). This pattern makes explicit the importance – and risk – of publicizing information that powerful people and institutions would rather keep quiet. It also points out the importance of protecting the publicizer of the information; not turning the publicizer into a martyr. In this case I simply made it clear that the basic idea was not mine. I more or less *explained* the idea using the pattern structure.

One possible approach to "ownership" of the process is shown in Fig. 5. The phases are listed in the left column and proceed downward as the project progresses. Further evolution of the language is now listed explicitly in the figure but the process could begin again at practically any phase. All patterns submitted at all (and made public) along with their authors' names will be kept inviolate electronically and in print form. Although the form of the evolving language will continue to change it's important to preserve all original thoughts as well as the legacy of who did what as the project evolved. This dictum suggests that potentially complex authorship exists for each pattern that ultimately becomes part of the language. These contributions could be acknowledged on a pattern-by-pattern basis in an appendix or acknowledged generally.

Phase	Community	Output
Conceiving project	Doug Schuler, Erik Stolterman	Original project description
Developing and marketing project	Program committee	Discussion suggestions
Entering patterns	Anybody with web access	Patterns
Reviewing patterns for	Program committee	Discussion, rating
Reviewing patterns	DIAC-02 Open Space attendees	Discussion, advice, clustering
Reviewing patterns	Anybody with web access	Discussion / advice
Language development	"Official" community	Review, advice
Language development	Advisory committee	Recommendation
Final edits	Editorial board	Pattern language

Fig. 5. Participation by phase

The "product" of this enterprise is essentially the pattern language and evaluating it entails looking at it both as a

collection of individual patterns and as a coherent whole. The pattern language must also be evaluated in terms of what it's trying to accomplish. There is the question of whether a pattern language (or other collection of semi-structured information) is in itself even theoretically capable of meeting the objectives we've set before us. Perhaps more to the point there are questions specific to the pattern language that we develop: (1) does it meet the criteria of a "good" pattern language? It is "complete", does it help "generate" living communication, is it timeless? and (2) does it meet the objectives that we've set up for it: Does it provide a solid framework for effective progressive activities in the realm of information and communication and is this framework capable of adapting over time to maintain the usefulness? These three areas are, of course, interrelated: if structured collections of information are inadequate in general then our enterprise is also doomed; if our pattern language doesn't meet the criteria of a genuine pattern language we can't determine whether a pattern language is necessarily inadequate to the tasks of promoting progressive activity. (notes on product evaluation)

STATUS

As of this writing, the DIAC-02 symposium was concluded about this time yesterday (May 19, 2002). Within the context of the symp osium a 1 1/2 day "Open Space" session was conducted to further develop the pattern language. Several new patterns were generated, enhancements to the pattern resource system were suggested and many focussed discussions were conducted and recorded. One of the most visible steps forward was the clustering of patterns into several families of ideas. Unfortunately the process for moving the project forward was not determined (nor discussed adequately). On the other hand, several people who were present do appear to be ready to help push the process forward.

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