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Converting Research Findings into Action-Able Pattern-Languages

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Abstract

This paper describes an approach to developing and formatting research findings with the aim of making those findings easily understood within the wider “lay” community to encourage take-up and action. It is of value to researchers seeking to extend their findings beyond the immediate research participants and the academic literature. There are similarities with action research, but with an intended wider potential audience. The approach formats research findings as “instructive advices” able to be used by others beyond the research, drawing on similar work first developed in the field of architecture—wherein they are referred to as “patterns.” This is the second of a pair of papers published in The Qualitative Report describing the use of this approach in a particular research project. The first paper described a purpose-designed tool developed to obtain and structure the research data via interviews with the research participants. This second paper describes the subsequent conversion of this data into these instructive advice “patterns.” This involved a workshop where the research participants themselves wrote a set of such patterns based on a theme from their earlier interviews. Because the process was unfamiliar, it was found the participants could not fully complete the intended work. This paper also explains the revised process then adopted and includes a reflective review of its efficacy to assist use by others.

Keywords

Pattern, Pattern Language, Collaborative Research, Action Research, Research Implementation

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Converting Research Findings into Action-Able Pattern-Languages

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This paper describes an approach to developing and formatting research findings with the aim of making those findings easily understood within the wider “lay” community to encourage take-up and action. It is of value to researchers seeking to extend their findings beyond the immediate research participants and the academic literature. There are similarities with action research, but with an intended wider potential audience. The approach formats research findings as “instructive advices” able to be used by others beyond the research, drawing on similar work first developed in the field of architecture—wherein they are referred to as “patterns.” This is the second of a pair of papers published in The Qualitative Report describing the use of this approach in a particular research project. The first paper described a purpose-designed tool developed to obtain and structure the research data via interviews with the research participants. This second paper describes the subsequent conversion of this data into these instructive advice “patterns.” This involved a workshop where the research participants themselves wrote a set of such patterns based on a theme from their earlier interviews. Because the process was unfamiliar, it was found the participants could not fully complete the intended work. This paper also explains the revised process then adopted and includes a reflective review of its efficacy to assist use by others.

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Unless a specific action research methodology is adopted, most research projects tend to be considered complete once the findings are published, generally for the specific readership of academic or other professional journals. It is then up to practitioners, hopefully keeping abreast of the latest in their field, to pick up this work and translate it into ways which will assist in their day-to-day problem-solving activities. Further, the outcomes of even action research projects, by their nature, tend to be limited to the particular project participants.

However, and as referred to in a previous paper (Paine, 2015), we now often have no shortage of information about things. Rather, the need is to structure and translate that information into ways that encourage and stimulate the uptake of research findings by the wider non-research community. Increasingly, such structures also need to deal with and accommodate the complex (or “wicked”) interactions and relationships that now characterize many contemporary issues, and in ways that are easily-understood by all.

This paper describes an approach adopted to address these needs within a specific research project. This research sought to develop useful lessons about personal behavior—in this case about the practice of living more sustainably at a household level—which could then be applied by others in their own lives. The research utilized an environmental education project (“Living Waters–Living Communities” – for details see: <http://www.environment.nsw.gov.au/stormwater/casestudies/livingwaters.htm>) being conducted by a local government authority. The project involved a series of discussion groups based on the learning-circle methodology wherein volunteer participants who had

resolved to try and live “more sustainably” in their everyday lives worked together to resolve the practical dilemmas that then arose from this commitment. The research (as different from the environmental education project itself) sought to distil and express in an open easily-understood way practical lessons for others from the participants’ experiences.

The research adopted an extended view of how pattern might be applied in research; specifically to move beyond the familiar attributes of pattern as used in analysis and synthesis of data and embrace additional attributes associated with other meanings of pattern. Educators and environmental scientists, Brown and Harris (2014) suggest for instance that the identification of the recurring patterns inherent within contemporary “wicked” problems (with their networked and recursive processes of cause and effect) will generate far more insightful understandings than those gained by more traditional inquiry, based as it is on linear and sequential causes and effects. Brown and Harris also include the idea of “pattern languages” in a list of tools they see as necessary to achieve a required more robust “trans-disciplinary imagination” and “collective knowledge” able to address these types of problems and issues.

This extended view draws initially on the substantial on-going work of an architect, Christopher Alexander (1979; Alexander et al., 1977), who has worked to distil the complexities of our built and social environments into a series of manageable-scale lessons for the way we construct and manage those environments via necessarily small, individual, and on-going actions (i.e., construction activity). There are two related elements to this work. One is the conceptualization of issues and problems themselves as a pattern—being the tensioned relationship between each of the contributing or causal factors of that issue. In this conceptualization the solution to the issue also comprises a pattern, now the “shape” of those causal factors when “re-patterned” into a resolution (see Paine, 2015). The second element in Alexander’s work is the “translation” of such solutions into another type of pattern—pattern as a guide or “lesson” for action, drawing on the familiar everyday notion of pattern as a mold or recipe or template (Alexander, 1979). Individual patterns are designed to address discrete elements of larger issues *and* to interconnect and relate to other patterns so that the larger, connected “whole” of that issue is simultaneously addressed. Alexander actively seeks out those patterns that make us comfortable, and thus are meaningful and conducive to uptake by the wider community. As such, his ideas are potentially useful in other fields where research seeks to initiate, encourage and support sustained behaviour change. The approach has now been adapted within other fields including programming for computer interface design (see for example, www.enteract.com/~bradapp/docs/patterns-intro.html), the establishment of a structure for a sustainable regional economy (www.reliableprosperity.net), and the use of new media technologies for socially-useful outcomes (www.publicsphereproject.org/patterns/).

My research also comprised two broad components, roughly equivalent to the two elements in Alexander’s work. The first involved observation of the “Living Waters Living Communities” participant group discussions, and then the conduct of one-on-one interviews with 29 participants. This component included the development a purpose-designed tool to assist the interview process. Drawing on Alexander’s conceptualization of problems and solutions as “tensioned” patterns, the tool was designed to specifically draw out any tensions in the day-to-day experiences of the participants, as well as advice as to what worked to minimize or resolve such tensions. It was also intended that structuring the interview data in this way would assist the second component of the research—the development of the intended “lesson” patterns from the experiences of the participants. This part of the research included a workshop with 10 participants who volunteered to further work with the observation and interview data (after analysis by myself as the researcher) to develop these patterns. The development of the interview tool was described in a previous paper in *The*

Qualitative Report (Paine, 2015). The process to develop and write the “lesson” patterns is the subject of this current paper.

Pattern as “Lesson” to Promote Wider Usage of Research Findings

A “lesson” pattern in this “Alexandrian” sense (hereafter referred to with a capital P), combines both our understandings about something (our thinking) and instructions as to how those understandings might be implemented to our benefit (our doing). Such Patterns have been described by one user as “named nuggets of instructive information that capture the essential structure and insight of a successful family of proven solutions” (Appleton, 1998, p. 2). A further key attribute is that such Patterns not only tell us what to do but also usefully include an illustration of the intended outcome. As an “everyday” example consider for instance this description of the structure of a dress pattern:

I could tell you how to make a dress by specifying the route of a pair of scissors through a piece of cloth in terms of angles and lengths of cut. Or, I could give you a pattern. Reading the specification, you would have no idea what was being built or if you had built the right thing when you were finished. *The pattern foreshadows the product: it is a rule for making the thing, but it is also, in many respects, the thing itself.* (Appleton, 1998, p. 2)

It is in effect a composite entity. *Conceptually*, Patterns comprise the resolution of the inherent tension within the components or “forces” that comprise a problem, being in effect the solution to that problem (as described above). *Practically*, Patterns “translate” this resolution into an easily-understood rule or process about how to achieve that solution. This rule is in three parts: the context of the problem, a statement of the problem (within that context), and the solution. Critically, the solution is expressed in an open not closed way, essentially capturing a “principle” so that it can be implemented in different ways by different users but still achieve the desired effect. *Physically*, it is the document by which this information is conveyed to the wider world. Patterns are written in a succinct standardised way with research notes, diagrams, pictures, advice as to connections with other patterns, and a catchy (memorable) title. The connections between individual patterns means that they are never in effect simply single entities. Rather, and critical to addressing the interconnected nature of complex issues, individual patterns interact and can be grouped so that they form a “pattern language,” in the same way that words are interrelated with rules to create a spoken or written language. Alexander himself has prepared such a language, based on 253 Patterns, designed to describe the workings and development of whole cities from the scale of the city region down to and including the design of individual rooms (Alexander *et al.*, 1977. Refer also <http://www.patternlanguage.com>).

But there is a lingering dilemma for others wishing to take up Alexander’s work. Although his writings are extensive, he has produced no concise workbook for practical assistance. As such, my research project sought to generate not only examples of Patterns as advocated by Alexander (related to sustainable development) but also a series of conclusions about the process itself to assist others interested in using Alexander’s theory.

The Outcome of the Data-gathering Component of the Research

The initial analysis of the interview data, as undertaken by myself, revealed some 20 patterns about participants’ experiences which were then distilled into a more manageable set of seven (although they are inherently inter-linked). Note that the reference to pattern here is

not to the type of Pattern promoted by Alexander. Rather, it is to the “traditional” meaning of the word in analysis to denote a theme or repetitive occurrence that has “stood out” from the background of all the data, or, as Kellehear (1993) describes, an ordering “that allows us to make sense and digest things in the *several* or *myriad* worlds that *make up the world* and yet does not so structure that world, the lived-in place, that it becomes beyond reality, accurate description, or modeling that does not reflect [its] many attributes. . .” (p. 1). The seven patterns were:

- ❑ Time
- ❑ Community
- ❑ Consumption/guilt
- ❑ Mindfulness
- ❑ Knowledge/education
- ❑ Degree of control
- ❑ Personal development

Conversion of these patterns into “Alexandrian” Patterns necessitated further work. An intention of such Patterns (and, when grouped, the resultant “language”) is that they are easily-understood by users—to encourage up-take, in the manner of a “lingua-franca.” In Alexander’s work this involves a necessary close collaborative working arrangement with those users. In my research project this comprised the initial one-on-one interviews and the subsequent workshop with participants. As it turned out and described below final development of the Patterns also required additional unexpected work by myself as researcher. Given timing and other limitations of the research, only one of these seven “theme” patterns was chosen to take to the workshop—mindfulness. The reason for this choice is not critical here; in summary:

- the need to keep the overriding objective of “sustainability” constantly in mind when making even mundane everyday decisions was commonly cited in the participant interviews.
- the attribute of mindfulness appears to receive little attention in the field of change management and sustainable development.
- it was thought the topic would be unusual and unexpected, and thus interesting to the workshop participants.

The Pattern-Writing Exercise

The intended outcome of the workshop was a set of Patterns in the Alexander model developed collaboratively and hence grounded in the experiences of these particular practitioners. Here it was also intended to move the research beyond what Fine (in Creswell, 1998) has described as comprising merely “the researcher as ventriloquist.” The workshop was held after the earlier observation and interview data had been analysed by myself. It took place on a weekday evening between 6.00pm and 9.00pm in a meeting room at the local government authority sponsoring “Living Waters–Living Communities.” Those attending appeared to enjoy the experience and were not in a hurry to leave.

The workshop began with an exercise to familiarise participants with the chosen theme. The word “mindfulness” was written on a whiteboard and “mind-mapped” (see Appendix A). Participants called out words which were written on the board by a volunteer. At times, clarification was sought as to where the words should be located relative to others. The resultant mind-map was consistent with the previous interview data and emphasised the

diversity of opinion that can often surround any particular theme key-word. The participants were quite forth-coming in their contributions, which I took as confirmation of an interest in this particular theme, and support for its initial distillation in the data analysis and then its choice for the workshop.

Next, a short background explanation of the intent and format of Patterns was given, similar to the advices earlier in this paper. Because it was likely that no participants were aware of Alexander's work I was initially hesitant in using the word "pattern," choosing instead "sustainability principle" and "lesson" (I have also used "lesson" up until now in these papers given the likely lack of familiarity with Alexander's work by readers). However, this turned out to be unnecessary. The participants appeared to quickly grasp the meaning and intent of the intended Patterns—fortunately, because "lesson" is not really consistent with the idea of an "Alexandrian" Pattern. It is too closely associated with teaching, and sounds like an instruction from on-high when the intent is that Patterns are developed by and with those who will use them—and in so doing achieve such "good fit" with the problem that their use will come naturally with no need for instruction or coercion.

For the exercise to write the Patterns itself each participant was handed three cards each divided into three sections. Thick notation cards were used to suggest substance and worth. Participants were asked to fill in each card with details relating to a discrete aspect of "mindfulness" of their choosing. Participants were free to use something that was on the mind-map (still on display), or to choose another aspect. They were asked to fill in each card fully before moving onto another. The information sought in each section was described on the cards (Appendix B) and was

- (i) the description of some tension apparent within the chosen aspect of "mindfulness"; something needing resolution, a problem;
- (ii) a solution to that problem, described in an open manner such that it could be resolved in more than one possible way depending on the user;
- (iii) finally (but placed first on the card) a catchy title (something like a "T-shirt slogan" was suggested by one participant).

As indicated earlier, a Pattern also includes a statement as to the context within which the problem, and its solution, arises. However, a context statement was not included in the template used here given the context of the exercise overall was already established and known—the household endeavours of the participants themselves to live more sustainably. It was thought that it may be confusing to require such further statement. On reflection though, it may have been better to issue the cards with an additional section with this context already entered.

A Pattern also includes statements as to its relationship with other Patterns. Logically, this cannot be discerned until the individual Patterns are written and grouped (into a language). In anticipation of this the final part of the workshop involved an ordering of the responses that had been written, and general discussion of the completed work. Participants were requested to place their cards onto three sheets of paper mounted on a wall and denoting three levels of scale: the individual, the family, and society. Blue-tac was used so the cards could be re-located if necessary. These categories were prompted by my earlier literature review which identified these as typical foci of action that have been applied to sustainable development. Participants were also invited to draw lines between the cards to show any links they saw once they had been categorised. However, it was found that participants were reluctant, not necessarily to *undertake* this part of the exercise, but to be constrained by the categories that had been established (by myself). To address this, an extra "open" category was then added. Half of the total number of cards ended up being placed in this category. The

reluctance of the participants to order their Patterns in the manner sought, and the alternate orderings they proposed proved an important outcome in itself and is further discussed below.

Appraising the Success of the Pattern-Writing Workshop

Most participants appeared more intrigued than daunted by the exercise. Only a few seemed to struggle with the task and only one person sought extra specific guidance. Her question suggested that her confusion originated from an understanding that what was being sought was her interpretation of my earlier explanation of findings from the interview data, rather than (as was actually intended) her own feelings about “mindfulness.” The exercise resulted in a set of 30 responses positioned in either the three categories set prior to the workshop or in the additional “open” category.

It was reassuring, in the context of the possibility of such responses being used by the community at large in the manner of a lingua franca, that the participants appeared to have no difficulty in understanding the Pattern concept. However the 30 workshop responses also presented a dilemma. Many did not achieve the particular quality of an “Alexandrian” Pattern. There was often no particular “tension” within the problem statement that would then require resolution—and hence often no sharp distinction between the problem statement and the solution. Further, some solutions were either too vague to be useful as day-to-day “rules,” or too specific—so that one could not implement them in different ways to suit different users. These responses were more in the manner of descriptive ideas—useful in themselves, but not yet generating the wider potential of an Alexandrian Pattern.

A Further Exercise—The Synthesis of a Set of Patterns on the Theme of “Mindfulness”

An initial response to these limitations was to consider convening another workshop to develop what had been written in the first, in the manner of an iteration. A prompt for this was again Alexander with his comment (in Shipsky, 1984) that one should not expect the process to be easy. However, this option was not pursued. Alexander has also noted the process can take many years to learn. Instead, and for the purposes of the research, I undertook the second iteration myself. In doing so, and as further discussed below, I found that my “intervention” could be a valid part of the process given I was the only current holder of the combined information (from the literature review on sustainable development, my observations of the discussion groups, and *all* the interviews) essential to derive the gestalts that would lead to the Patterns sought.

I found that by integrating the statements on the various workshop cards with information from the other components of the research I could generate the tensions that were missing in many of the workshop responses, thus forming the basis of an Alexandrian Pattern. Thirteen Patterns have been written. Others are still possible. Titles for additional Patterns which came to mind at the time were *Structural Support*, *De-Institutionalise Time*, *Knowing Where to Find It*, and *Physical Objects as Reminders*. In addition, one workshop participant commented on the greater mindfulness she had developed when becoming a new mother and offered: “Maybe the pattern is to *have kids*.” However, the 13 written Patterns are considered sufficient to give a “taste” of what such a pattern language might comprise and to then derive conclusions about the process and about such Patterns themselves.

The 13 Patterns can be considered as a “sub-whole” of a larger language on sustainable development: both complete and actionable in their own right, and part of a larger language still possible to develop. The titles, many of which came directly from the workshop participants, are as follows:

- ❑ Small steps, integrated with life.
- ❑ We don't know it all: make best guesses and then review.
- ❑ Count me in.
- ❑ The people who are there at the time, are the right people.
- ❑ Extend the family.
- ❑ The air is in aware.
- ❑ Think with friends.
- ❑ Both sides of the coin: love the shadow as well as the light.
- ❑ Don't mess your nest: knowing where things come from and go to.
- ❑ Look ahead, look behind, think of humankind.
- ❑ Self as example: be seen being green.
- ❑ Earth=Life=Us. Love it or lose it.
- ❑ Humerosis (about the role of "trickstering" in inducing change).

The full text of the first Pattern is included at Appendix C. The full set of 13 Patterns can be accessed at: <http://handle.uws.edu.au:8081/1959.7/664>. The title, *The People Who Are There at the Time, Are the Right People*, is taken (with acknowledgement) from the Open Space Technology process for conducting workshops and meetings (see www.openspaceworld.org).

The Patterns draw on and include as far as possible the actual words of the participants from both the in-depth interviews and the workshop. As in Alexander's Patterns, they also draw on supporting external knowledge, here sourced from my literature review. An intention of Patterns is that they should be clear and concise. As such, the Patterns developed here are designed to be written one each to a page, so each can be seen in one glance, in a standard format. Two versions were created. One includes footnoted references to quoted material and supporting external work to meet the academic requirements of the research. The second was edited to stand-alone without this reference material and worded for the "lay" audience for which the Patterns are ultimately intended.

The ultimate usefulness of the Patterns will by definition be improved through an on-going iterative process with users. However this was beyond this particular research project given time limitations. It was also not part of the original protocol established with the participants. The completed Patterns were given to the participants, but further comment was not sought as part of the formal research. As discussed below, validation for the purposes of the research itself was achieved by an alternative means comprising review by colleagues and others working within the field of sustainability within my university.

Lessons from the Process of Writing the Set of Patterns

As the writing of the Patterns progressed it became evident the process is necessarily disciplined. Although there is as yet no dedicated workbook on how to develop Alexandrian Patterns, initial assistance was gleaned from Alexander's writings and from published comment by others who have worked with or been taught by Alexander (sourced as part of my literature review). These sources plus my own reflection on the writing process I undertook revealed a number of lessons. They potentially form the basis of a future workbook for others wishing to utilize Alexander's approach to dealing with complex matters in a usable collaborative way. The following and essentially interrelated points provide a summary.

1. A Required Concentrated, and Grounded Effort

It was found that the process of achieving the format of a Pattern as envisaged by Alexander and sought by the research project was not easy. This surprised me at the time given my degree of immersion in the subject. However, particular effort was required to:

- (i) define the scope and thus boundaries of each individual Pattern so that they were self-contained and able to stand alone, and not “muddled” by extraneous material or issues that better belonged in another, albeit related, Pattern.
- (ii) envisage the resolution of the particular tensioned relationships that characterized each problem—into a solution.
- (iii) form that solution so it was specific enough to be meaningful and actionable, but open enough so that it could be action-ed in different ways by different users to suit their circumstances.
- (iv) provide sufficient background to explain the content to a new reader (and give voice to the research participants), but within a concise format.

These difficulties appear similar to those inherent in making phenomenological descriptions, which is not unexpected if one sees both processes as being about an “essence.” And here, as van Manen (1990, p. 10), defines it, an essence (as well as, one could say, a Pattern) has a substantial task: “The essence or nature of an experience has been adequately described. . .if the description re-awakens or shows us the lived quality and significance of the experience in a fuller or deeper manner.” This requires a necessary grounded approach. In turn, Patterns need to be grounded in the practical experiences of the participants, reflecting their hopes, experiences and dilemmas in order to maximize their uptake by their intended users.

Ideally, and as initially envisaged by the research project, this grounding would be achieved via the participants themselves writing the Patterns. The willingness of the participants in the workshop to write their own Patterns seems to confirm that people do understand and would potentially use Patterns. When Alexander’s concept was explained at the workshop it appeared to be well-understood, with one participant commenting that “people feel secure with patterns.” Nevertheless, as described above, the resultant work fell short of the intended nature of a “Pattern.” Resolution of this limitation required additional action.

2. The Necessary Intervention of a “Pattern-Writer”

The limitation of the workshop raised the question: to what extent can a group of people write their own Pattern languages unaided, or does there need to be some outside assistance acting, as suggested by a colleague, like a mid-wife?

The conclusion from this component of the research is that a dedicated “Pattern-writer” is necessary, at least until participants themselves gain more experience in the task, given:

- (i) the outcome of the workshop, where many of the attempted Patterns were limited to the descriptive.
- (ii) the difficulty I myself found in writing the Patterns subsequent to the workshop, even given my background in the subject. It would likely take some time for other participants in such an exercise to become similarly familiar with the processes.

- (iii) comment by Alexander himself that the task requires the development of necessary skills, based on intuitive processes founded on a thorough knowledge of the subject matter.
- (iv) a realization by myself when thinking further about Alexander's work that he himself appears to take on this role (while also working closely with the end-users).

In addition, Patterns also necessarily draw on a larger body of evidence relating to the matter at hand as a way of ensuring substance and rigor. In the case of this research project this body of evidence came from sources only I had immediate access to—my earlier review of the literature on sustainable development, my observations of participants' discussion meetings, and my interviews with individual participants. One outcome of this was the addition by myself of two Patterns which came out of the interview material as I saw it: *The people who are there at the time, are the right people* and *Extend the family*. This material had not been raised again in the workshop by the participants themselves. However it did appear to me, as the principal researcher (and now Pattern "mid-wife") to be relevant to the theme of mindfulness.

In concluding that a knowledgeable "mid-wife" role is valid it is also noted that it is necessary that the person undertaking this role acts as an "honest-broker," in conjunction with the other participants. It also needs to be noted, as in phenomenological research in general, that it is not possible to fully "bracket" oneself from the life-world experiences one is seeking to understand; one needs to recognize that an element of the self will always intrude (van Manen, 1990). The research sought to minimize this by:

- (i) writing the Patterns with constant reference to statements from the workshop and the interviews, to give as much voice as possible to the experiences of the primary research participants.
- (ii) seeking iterative reviews of the resultant Patterns by others. In this project this was undertaken by colleagues given it was not possible at the time to further engage with the primary research participants.

3. Patterns as More than a Homily

In carrying out the role of Pattern-writer I did though retain a lingering concern: that I might merely be reporting (and repeating) information we already know. Could the resulting Patterns be criticised as mere "homilies," potentially lulling users into a comfort zone of inaction when a key objective of Patterns is that they generate action and change?

However, and as addressed in the Pattern *Small steps, integrated with life* (Appendix C), the complex nature of sustainable development (and of other contemporary issues likely to be the focus of a research project) can only be dealt with via smaller, more manageable (but still necessarily connected) portions. As such, each Pattern takes on a bite-sized aspect of sustainable development; in this case things that assist the retention of a mindfulness of this larger objective when undertaking day-to-day household actions. Bringing matters down to this scale will often mean that the subject matter may appear mundane. Each Pattern though needs to be read and understood in relation to the larger whole, or group, of connected Patterns within which it sits. Further, and as discussed below, another key attribute of a Pattern is that it should bring to the fore our intuitive understandings about the matter at hand. This too can potentially make the Patterns appear, at least at first glance, ordinary or even trivial, particularly given our current tendency to de-value the role of felt awareness in research and other practice. However, as McGilchrist (2009) for instance, amongst others,

now demonstrates, we invariably make decisions about matters, including matters which are quite complex, based on how we *feel* about something not simply on what we intellectualize about it.

Full testing as to the usefulness of the Patterns written in this project will not be obtained until feedback from users is received. In the meantime, reassurance was taken from reviews of colleagues and others that the Patterns have captured an essence of the process of sustainable development, suggesting that they have moved beyond the homily.

4. An Empathetic Approach, and Keeping the Larger Whole in Mind

Patterns are about identifying, describing, and encouraging holistic solutions to problems, many of which have arisen because of past partial or fragmented responses. In this sense they seek to reverse the inadequacies of such previous practice. The processes involved resonate with grounded theory, phenomenology, and action research methodologies. There are a number of components.

One is a need for the Pattern-writer (whether as single person or a collective group) to maintain a commitment to this wider perspective, with a consequent need therefore to investigate, understand, and include contexts and factors likely to be beyond one's own field, time and place; and the discerning of the connections between elements. Invariably this will require diverse collaborative working arrangements from throughout those extended fields of knowledge and experience (refer, for example to Brown & Harris, 2014).

Another is the giving of equal value to both intuitive and analytical knowledge. Analysis assists in getting to know the intricacies of a problem; intuition assists in giving a view of the whole. Alexander refers to intuition as a *felt* awareness. But although intuitive knowledge is well-known it tends to be, unlike analytical knowledge, de-valued in our current processes. In developing Patterns, asking what one feels about something is as necessary as asking what one thinks about something. An effective Pattern will *feel* right, and is likely to result in people when reading or hearing it to nod quietly in agreement or give a quiet smile of recognition.

A further aspect of this necessary holistic approach is that the solution component of a Pattern, to be effective, is not to prescribe an actual design or other singular way of resolving the problem, but rather be open to the possibilities and needs of different user situations. And as such needs to encapsulate the intrinsic quality (or principle, or essence) underlying the intended action or outcome, rather than be a mere description of that outcome. One needs to ask: can the Pattern be implemented in many different ways, or does it, inappropriately, only define one particular response?

5. Grouping and Connecting Individual Patterns

An inherent part of any language is a clear relationship between its component elements. Alexander addressed this in his pattern language for built environments by arranging the individual patterns in a hierarchy from the coarse-grained (the city-region) to the fine-grained (buildings and rooms), and by including advice within each Pattern of how it connects with others. The ordering I had proposed in the workshop followed a similar scale: society, family and individual. However, as described above, this proved to be unsuitable. Nevertheless, some arrangement to assist in making individual Patterns legible was still needed. The experience of the workshop indicates that such groupings need to be tailored to each circumstance, in conjunction with the participants.

The workshop participants made a number of suggestions as to more appropriate structures. They tended to be quite complex, suggesting an understanding and acceptance of

the complexity of the task: a Rubik's Cube, a corkscrew, and a "continuous spiral moving through awareness, responsibility, discipline on each [individual, family, society] level." The participant making this last suggestion added: "I like the spiral—it's seamless, you keep coming up against the same place you have seen before, but you are seeing it from a different perspective."

Prompted by these responses I subsequently set out to order the 13 Patterns produced by myself in my role as Pattern-writer. Working with each Pattern title on a separate card and shuffling them around, six sub-groupings (some of which only contain one Pattern each) finally suggested themselves (Appendix D):

- (1) the individual self,
- (2) others,
- (3) the wider human and non-human community,
- (4) process,
- (5) understanding, and
- (6) almost out on its own, the "trickster" Pattern (*Humerosis*).

Looking further at this ordering, it was found that other arrangements at different scales and levels of "hierarchy" were also apparent (as further illustrated, in part, in Appendix D), including:

- (i) the "individual self," "others" and "wider human and non-human community" groupings could be further grouped in various arrangements on the basis of inherent connections between the self and the wider community.
- (ii) the "process" and "understanding" groupings have a similarity, and interact with the more "personal" Pattern groupings (as listed in (i) above).
- (iii) two Patterns ("self as example" and "humerosis"), although with some connection to others, also exhibit a distinct level of autonomy.

This simultaneous autonomy and connection between groupings suggests a nested arrangement, with each element independent but also working collaboratively with others. Instructively, it is not consistent with the image of a "tree" that influenced the ordering structure I had suggested at the workshop.

6. Bringing Patterns to Life: Necessary Practice, Testing and Feedback Loops

Ultimately, it is not the actual definition and presentation of a Pattern that is most important. Patterns must relate to the head, the heart, and the *hand*. Patterns come to life through their practice. As such the solution component not only needs to be inherently "do-able," it must also inspire and generate that "doing" action amongst users of the Pattern language. The development of Pattern languages therefore requires equal attention to the means by which they can become known and action-ed, and subsequently reviewed and improved. In particular, the generative quality that is sought is unlikely to be achieved after only one iteration. Alexander notes that each Pattern needs to be reviewed following practice, and that in the interim should be considered as a hypothesis.

This research project was only able to deal with some of these requirements. In respect to the need to make the Pattern language known to prospective users, this was achieved in the first instance by including the participants in the process and then by conveying the results to all those involved in the "Living Waters Living Communities"

project. It is hoped that an interactive website proposed by the author on the subject of pattern generally will present a wider venue, and will allow for review. As also noted, initial reviews, for the purposes of the research project, were undertaken by colleagues. As an example of this process, the Solution component as originally drafted by myself for the Pattern *Don't mess your nest: knowing where things come from and go read*:

Make visible the invisible. Understand all actions, and describe and name (label) things, in terms of their connections—where they have come from, and where they might go to.

However, it was suggested by reviewers that this solution needed greater “relativity,” more “sense of the interconnections within connections,” and a “notion of blurry boundaries.” Doubts were expressed as to whether one could “make visible the invisible” when links and feedbacks are often indirect, whether one could “understand all actions” when we cannot be comprehensive, and whether it was appropriate to “label” things because labeling is fixed and can prevent fluidity. As a result, the Pattern was amended to now read:

Bring what is hidden into greater consciousness. Think about all actions and describe and name things in terms of their connections—where they have come from, and where they might go to.

Conclusion

Our inherent ability as humans to discern and work with pattern is an essential part of the research process, most usually in setting questions and hypotheses, in reviewing literature, and in the analysis and synthesis of gathered data. However pattern can be useful to research in other ways as well. When configured as a lesson or guide, pattern can assist in extending research into the critical realm of the practical application by structuring findings into meaningful “nuggets” of instruction able to be used by professionals and the lay population alike. This paper, one of a pair in *The Qualitative Report*, describes the application of one particular approach to this expanded use of pattern, first initiated by an architect, to a collaborative project dealing with the issue of sustainable development at the personal, household level. The lack of any concise workbook on this approach meant that the research was also required to develop its own techniques and tools. The pair of papers describe these in detail and give a reflective review. Together they provide a guide for other researchers wishing to undertake a similar extended approach to their projects. Practical lessons have been drawn in respect to (in the first paper) the initial collaborative gathering of data, patterned to have a “good fit” with its subsequent translation, again via collaborative process, into (as described in this paper) new “lesson” patterns designed to be accessed and used by all.

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Appendix A: The Results of the Mind-Mapping Exercise Around “Mindfulness”

Appendix B: The Design of the Pattern-Writing Cards

TITLE
Something catchy.
PROBLEM STATEMENT
A tension. Something needing resolution.
SOLUTION
Written so that it captures an “essence” so it can be achieved in many different ways.

Appendix C: Pattern: Small Steps, Integrated with Life

TITLE	SMALL STEPS, INTEGRATED WITH LIFE
PROBLEM	<p>The daily demands of living, as currently structured, do not allow the opportunity to re-consider everything we do in one go: [Its] ‘Complicated, everything connected.’[1]; ‘I would find it very difficult to go about my daily business if I thought about every single item.’[1] And yet, at some stage, we must.</p> <p>This is a dilemma of the systemic viewpoint of “seeing everything connected”: where do you start, and what should come first? It is the problem that Alexander [2] addresses by his ideas of sequential growth and centres: take things one step at a time, but make each step in itself a whole that then contributes to a larger whole. ‘A continual process throughout our lives. ...One weekly goal. Doing what I can rather than thinking of everything in a whole mass.’[1]</p> <p>By seeing environmental action as one and the same thing as our on-going everyday decisions about living, with each action seen as a holon, or sub-whole [3], small steps can become cumulative actions in the greater whole of our life. In turn, the flow of life will prompt the process to keep moving. ‘It’s dynamic... If we can hold within ourselves the idea of a caring use of the environment – that will determine our impact - rather than a high minded “I do this, I don’t do that”.’[1]</p> <p>Watch how your decisions change over time as you become more practised, knowledgeable, and intuitive, so that the greater whole unfolds: ‘Not just in my own backyard, but worldwide. Helping in Third World communities. It’s protecting the Amazon jungle. It’s so many things. It is ethical investing.’[1]; ‘Learning and improving by doing.’[1]; “Learning to be patient by working with the earth – solutions always bloom in their own time.” [1]</p>
SOLUTION	<p>Approach environmental action as a set of small steps derived from and infused into everyday living – an overall caring use of the environment, rather than a series of ‘external’ instructions on what should or should not be done. Consider and take each step in its own time and watch as the range of matters addressed increases.</p>
	<p>[1] Individual <i>Living Waters-Living Communities</i> project participants.</p> <p>[2] See Christopher Alexander (2002) <i>The Nature of Order: An Essay on the Art of Building and the Nature of the Universe</i>. Book 2: The Process of Creating Life. The Center for Environmental Structure. Berkeley.</p> <p>[3] As proposed by Arthur Koestler (1967) in <i>The Ghost in the Machine</i>. Hutchinson of London.</p>

Appendix D: A Possible Grouping of the Thirteen Patterns

Source: Author

Author Note

Greg Paine PhD. is an environmental planner with extensive experience in local government. His research sought to translate the “whole” of sustainable development into actions manageable at local and personal levels. Currently he works with the Healthy Built Environments Program at the City Futures Research Centre, The University of New South Wales, Australia. Meanwhile his work on pattern is being developed into a book manuscript and a forthcoming interactive website www.revealingpattern.com

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