DEVELOPING A LOWER-RIGHT TYPOLOGY AS AN INTEGRAL SUSTAINABILITY LANGUAGE

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ABSTRACT This article introduces an experimental typology and its application to the horizontal development of Integral Sustainability. The typology, PatternDynamics™, is derived from observations and experiences of natural and social systems and the study of scientific, ecological, and economic systems disciplines. It is composed of a set of graphic symbols representing natural organizing principles, or recurrent dynamic patterns of relationships, important for sustaining ecological and economic health in the Lower-Right quadrant. Developing a sustainability pattern language creates three strategic opportunities: 1) it extends a now commonplace set of objective systemic insights (Lower Right) to facilitate a less common but essential set of mutual understandings in the Lower-Left quadrant; 2) a graphically-based pattern language provides the opportunity to communicate sustainability perspectives as neutral visual symbols containing different levels of meaning for different levels of altitude, giving an integral initiative a novel means of enfolding, accepting, and enacting intra-level meaning; and 3) it facilitates sustainability leadership by providing a strategy for communicating and coordinating sustainability from an integral perspective. Climate change is discussed using Integral Theory and PatternDynamics™ as an example of how any topic within the greater context of sustainability may be approached more comprehensively using tailored AQAL methodologies and tools.

KEY WORDS: AQAL model; language; patterns; sustainability; types

> In extreme times the entire universe becomes our foe; at such critical times, unity of mind and technique is essential—do not let your heart waver!
>
> *– Morihei Ueshiba*

> The central claim made by the evolutionary systems sciences is that, whatever the actual nature of these three great domains, they are all united, not necessarily by similar content, but because they all express the same general laws or *dynamic patterns*. [emphasis added]
>
> *– Ken Wilber*

Perhaps the defining feature of our times is an underlying "anxiety of collapse" created by a clear-eyed view of unsustainable behavior, on the one hand, and on the other, the helplessness we experience as initiatives for change are swept aside by the forces of seemingly intractable global complexity (Diamond, 2005; Homer-Dixon, 2006; Tainter, 1988). This anxiety is not generated from a lack of understanding—a

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powerful minority understands the ecological realities and the challenges ahead all too well (Brown, 2006; Meadows et al., 2004)—and it is not from a lack of solutions. In fact, it is entirely possible that we understand our ecological situation well enough, as we have successfully tested enough environmental, technological, social, and economic initiatives to succeed (Holmgren, 2002; Odum & Odum, 2001). The problem is that these solutions are, for the most part, small in scale, uncoordinated, and unintegrated. After 40 years of environmentalism, policy traction is currently too small in light of the size of the problem (Shellenberger & Nordhaus, 2004). We shout for global action and relatively few people listen—even fewer act. The lack of change creates frustration, making it appear that our only option is to fight for our perspective (mostly by fighting other perspectives).

Our anxiety, then, is born of a fundamental failure to communicate, and it is reaching a fever pitch. In desperation we may resort to extreme positions, manipulation, or force to get large-scale action on sustainability, but this will ultimately be an unsustainable approach in itself, accelerating breakdown rather than coordinating action. Therefore, facilitating effective communication and widespread mutual understanding is now a critical strategy in sustainability.

What is missing is not more "exterior" technologies or more evidence about the nature of the exterior world, but a critical mass of "interior" agreement about how to proceed based on what we already know. One of the keystones to sustainability at this stage is the development of its cultural meaning. This is the essential prerequisite to widespread action, as sustainability is now as much a cultural phenomenon as an ecological one—it requires mass collaboration on a global scale. This in turn will require an evolution in communication, understanding, leadership, culture, and action. Will a unity of mind and technique allow us to facilitate enduring health and evolution? Or will we flounder, applying partial and fragmented approaches to complex challenges?

The Integral Approach

In this article I will review the Integral framework briefly, examine sustainability generally, and climate change specifically. Then I move on to explore some important features of integral typologies and to review the origin of contemporary pattern languages. Lastly, PatternDynamics™ is introduced and used to discuss climate change in order to build *cultural meaning* from an integral perspective.

Quadrants

The AQAL model, as developed by Ken Wilber and colleagues, provides us with a realistic foundation for integrated and coordinated planetary action in sustainability. The five elements of the framework (quadrants, levels, lines, states, and types) represent a comprehensive and therefore, at this stage, eminently useful means of developing strategies in sustainability. Quadrants are the foundation to an Integral approach. They represent "primordial perspectives" through which we experience the world. Figure 1 illustrates how the perspectives are generated using a simple matrix. The matrix integrates the primacy of *interior* (subjective) and *exterior* (objective) realities as well as *individual* and *collective* realities. Where the individual and the interior intersect is the "intentional," subjective experience of the self, found in the Upper-Left (UL) quadrant. The individual and the exterior give us a "behavioral" perspective, with the material characteristics and activities of individual organisms in the Upper-Right (UR) quadrant. The interior of the collective represents

the cultural domain: shared perspectives of meaning, values, and beliefs are attributed to the Lower-Left (LL) quadrant. Exterior and collective domains intersect to form the social or systems perspective of ecologies and economies within the Lower-Right (LR) quadrant (Fig. 1).

In Integral Theory, the universe is often described as being fundamentally composed of *holons* (Koestler, 1969). A holon is defined as something that is simultaneously a whole in its own right and a part of larger systems. In addition to its simultaneous partness and wholeness, a holon also has both subjective and objective aspects. From atoms, to molecules, to cells, to organs, to organisms—everything in the universe (or more properly in integral terminology, the *Kosmos*) can be viewed through the four quadrants. In the domain of Integral Sustainability, the Integral framework includes standard ecological systems perspectives (LR), while not excluding or marginalizing less common behavioral perspectives (UR), cultural/intersubjective perspectives (LL), or experiential/subjective perspectives (UL).

The four-quadrant approach actively explores many critical perspectives not currently considered with the same weighting as LR ecological and economic concerns (Wilber, 1995). The Integral framework is, of course, ultimately only partial itself in relation to further developments in human understanding, but it appears to be a leading (and quite likely *the* leading) theoretical and practical approach inclusive enough to provide integrated solutions capable of avoiding the failures of current, more partial, and less coordinated attempts to foster sustainability (Esbjörn-Hargens & Zimmerman, 2009).
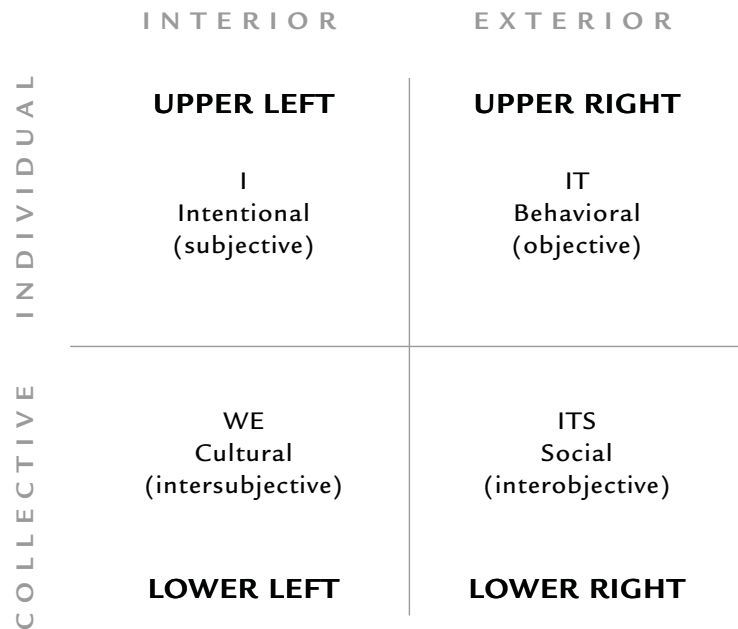
	INTERIOR	EXTERIOR
INDIVIDUAL	**UPPER LEFT** I Intentional (subjective)	**UPPER RIGHT** IT Behavioral (objective)
COLLECTIVE	WE Cultural (intersubjective) **LOWER LEFT**	ITS Social (interobjective) **LOWER RIGHT**

Figure 1. Diagram of the four quadrants. From Wilber (2000); used with permission.

Levels

Levels provide insight into the developmental, evolutionary aspects of sustainability. Developmental unfolding takes place in identifiable levels (also referred to as *stages* or *waves*) in each quadrant. For instance, we

could look at the big picture of evolutionary systems on planet earth (LR) from physical matter (physiosphere) to living ecologies (biosphere) to financial economies (noosphere). The general progression is from less complexity to more complexity. Or, we could look at a representation of levels at a smaller, human time scale called *altitude*. Altitude is a general marker indicating similar levels of development that can span both the interior consciousness of individuals (UL) and the interior of groups of people or cultures (LL) as well as correlative development in the other quadrants (Wilber, 2006). Altitude is expressed using a color scheme related to the spectrum displayed in a rainbow. Eight or more levels of consciousness are commonly used (Fig. 2), but for our purposes we need to discuss only five of the most relevant to sustainability. Three of these levels are *first tier*, indicating that individuals or groups associated with these levels identify exclusively with their level of altitude. From any first-tier perspective, people at other altitudes with different values are seen as misguided or simply wrong. A defining characteristic of second-tier altitudes is that there is a willingness to include, balance, and integrate truths from other levels. The five levels discussed in this article are:

First Tier

- *Amber altitude* refers to the conformist self, sometimes called the *mythic self*. People at this level are rule-oriented and driven by conformist values; they rely on sacred scripture to provide unifying truths, purpose, and codes of conduct. Culturally, they are ethnocentric and traditional in nature, espousing family values based on religious edicts. They have a strong sense of community through moral purpose, and they revere structured social hierarchies.

- *Orange altitude* indicates the conscientious or achievement-oriented self. Individuals at this altitude are objective thinkers, valuing autonomy, material wealth, and achievement. Culturally, they are worldcentric modernists, valuing liberty, universal rights, and humanist thinking based on ideals of the Enlightenment.

- *Green altitude* represents the sensitive self. People at this level express individuality and value sharing, communication, and the recognition of culturally-constructed contexts. Culturally, they are postmodern, worldcentric, and egalitarian, valuing multiculturalism, web-of-life systems views, environmentalism, and social justice.

Second Tier

- *Teal altitude* represents the holistic self. At this level, people are autonomous and through that capacity are conversant with a multidimensional reality of shifting contexts, chaos, and spontaneous systemic adaptations. As the first stage of second-tier consciousness, teal altitude accepts the value of all previous levels of human development. Culturally, they are holistic, valuing exceptional leadership, body-mind integration, and life service in the resolution of complex systemic social and cultural dynamics.

- *Turquoise* marks the integral self. Individuals at this level demonstrate compassion, open-heartedness, and wisdom in their commitment to action. Joy and suffering are held equally as radiant expressions of a Kosmos infused with divinity, energy, and beauty. Culturally, they are Kosmoscentric, valuing the care of all beings. They have a deep acceptance of the world in all its manifestations and they revere the generation of health and evolution at all levels, in all domains.
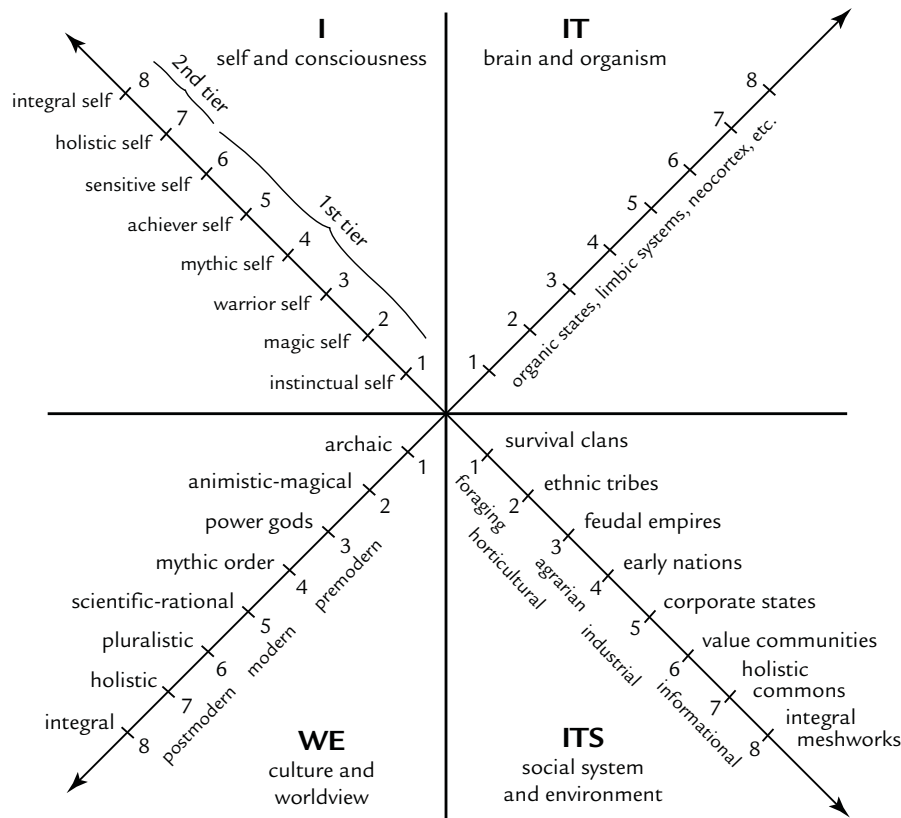
Figure 2. Diagram showing altitude "correlates" in each quadrant. From Wilber (2000); used with permission.

Lines, States, and Types

Lines represent different aspects of development in any quadrant. For example, if we are talking about the interior of a person (UL), then a line of development could be their musical line, their cognitive line, or their emotional line (sometimes referred to as intelligences). States are temporary movements from a more stable stage of development in any line to a temporary peak or regression. A person learning music may have a state experience of virtuosity during intensive practice, but it will not last, and they will settle back to their more stable stage of development after the moment passes.

With the first four elements of the AQAL framework we can experience phenomena within the widest possible set of perspectives, and we can investigate them with a similarly comprehensive set of perspectives (Wilber, 2000). PatternDynamics™, the subject of the remainder of this article, relates to types, the fifth element of the AQAL model.

Sustainability

Before delving into the nature of pattern languages, I will explore some important dynamics at work in sustainability and climate change. How accurate is our understanding of the imperatives and priorities in sustainability? Why is scientific understanding not matched by global action? How have we failed to communicate? The key to this "action conundrum" lies in an integral analysis.

Sustainability has developed as a topic of the Right-Hand quadrants: essentially it has been an ecological understanding about the "functional fit" between the systems of the human economy (LR) and the systems of the biosphere (also LR). To a lesser degree sustainability has also included the conservation and protection of plants and animals as individual beings (UR). If human socioeconomic systems undermine the health of the biosphere to the point where it can no longer sustain us, we will falter. In other words, having transcended the biosphere through the development of the noosphere, we also need to *include* the biosphere. More specifically, we can design our societies and economies using the same patterns of organization and activity that arrange the enduring ecological workings of the biosphere, and we need to do it on a global basis (Mollison, 1988). This is a great and important truth, and it is critical for our survival and prosperity, but it can only be seen in this way from perspectives capable of a systemic view (i.e., green altitude or higher). To successfully implement sustainability strategies on a global basis, two things need to happen: first, the people who understand ecological realities—and the need to reshape socioeconomic systems to fit with them—need to generate agreement on how this should happen. Secondly, we need to communicate this effectively to people who do not see sustainability as a priority.

The action conundrum can only be resolved if we learn to "see" the importance of communication that will generate global cultural meaning (LL) to the same extent that we have learned to "see" systems as the key to enduring health in the biosphere (LR). From an integral standpoint, focusing on the LR quadrant in sustainability leaves out most of one-half of reality and a substantial part of the other. The Left-Hand quadrants are very much underdeveloped in sustainability (Esbjörn-Hargens & Zimmerman, 2009), and the UR is often ignored as the province of an outdated positivistic scientific materialism.

This "quadrant absolutism" represents a serious glitch in an AQAL matrix. It holds up essential progress in sustainability and it increases underlying anxiety. To gain the necessary global political policy traction and worldwide community acceptance, we need to address perspectives at all quadrants and all levels as well as find strategic leverage points using lines, states, and types. Given the slow progress using current more limited perspectives, it is difficult to see how anything short of an Integral approach will be comprehensive enough to resolve the complex global challenges in sustainability.

PatternDynamics™ is designed to leverage an Integral approach by creating a system of simple symbols based on enduring patterns displayed in the biosphere (see Appendix I). We can have conversations and build meaning (LL) about sustainability in a more comprehensive and inclusive fashion using these patterns. Also, we can demonstrate clearly the ecological foundations of our understandings, and we can scan other perspectives in sustainability for the same. The intention is to create a rich field of dialogue, understanding, agreement, belief, and ultimately values that facilitate a culture of Integral sustainability. Before moving on to the patterns themselves, I will look more closely at climate change as a perspective in sustainability.

Climate Change

The weakness in communicating the meaning of sustainability, and the historical lack of acceptance by the global community to make it a priority, gives us some insight into the rise of climate change as *the* major environmental issue of our time. Its emergence is based on the view that the Earth's climate is currently becoming hotter and changing for the worse because of carbon dioxide emissions by human industry (i.e., the

anthropogenic global warming [AGW] hypothesis) (IPCC, 2007). The AGW view, however, only gained substantial traction when it was widely promoted that AGW could cause catastrophic and irreversible warming, making human life vastly more difficult or impossible (Hansen et al., 2007). It is not my purpose to debate the veracity of the evidence supporting this more extreme view *per se*, only to evaluate it in proportion to the reaction it has garnered. Evidence to support the extreme AGW view is not as strong as it is often portrayed, and major supporting arguments have more recently been critiqued and considerably weakened (Plimer, 2009).

This is not to say there will not be substantial evidence to support the extreme AGW view in the future, or that some level of AGW is not in fact occurring. However, in light of our integral analysis, we need to investigate the nature of this popular but partial perspective and to understand why it has become the leading environmental priority given the long list of worthy alternatives (see Zimmerman, 2009, pp. 13-14). For example, perceived limitations on the continued growth in supply *from* the environment (e.g., hydrocarbon energy supplies, water, essential minerals like phosphorus) and their combined effects on agriculture, global food supply, and industry are thought by many to have much stronger supporting evidence and much better claims to top priority in sustainability (Heinberg, 2004). To understand sustainability more fully, we may need to discuss the "inputs" to the economy as well as the "outputs" like carbon dioxide gas. The input/output pattern is indeed one of the fundamental patterns exhibited by all living systems and is included in the PatternDynamics™ typology (see Appendix I).

Climate of Fear

It is proposed here that climate change, at least in significant part, has gained such high priority because it is an environmental issue that, despite failures in the past, *is* proving to generate widespread meaning globally. It is also proposed that it is doing so primarily through the generation of fear. For a movement not yet well developed in generating widespread meaning and action, anything that does will be seized upon regardless of how it generates that meaning. Whatever the quality of the evidence supporting the extreme AGW argument, it is clear that the *effect* of this extreme view is largely based on tapping into the underlying anxiety about sustainability among those who feel it (e.g., large sections of the media, the scientific community, and government and policy makers at green altitude). There is a palpable feeling of urgency and fear associated with climate change that has sent it to the top of the list at this altitude. This is not necessarily a bad thing in-and-of-itself if it is warranted, but as we shall see, there is a fine balance between health and pathology in all types of dynamics.

The "climate of fear" approach has been critiqued as an unhealthy extreme in environmentalism (e.g., Crichton, 2004). A lack of supporting evidence has also been seized upon as a weakness in the case for acting on climate change more generally by those who oppose it as a policy priority (Marshall Institute, 2007). The promotion of the fear of "climate collapse" has seemed to provide a much needed powerful, albeit blunt, means of getting large sections of the global community not at green altitude to also acknowledge the importance of sustainability. If an intersubjective circle of meaning (LL) is an important key to collective action, then tapping into the fear and anxiety among individuals (UL) is a tried and true method of generating it. Generating fear, then, has the capacity to create powerful, intralevel meaning (LL) that changes individuals' behavior (UR) and by extension social systems (LR).

The problem with this approach is that although it may appear to work well in the beginning, it is not sustainable, and it has a habit of losing effect, requiring the generation of more and more fear and anxiety. There are limits to holding this extreme position without correlating extremely supportive evidence. If the underlying phenomenon is not realized, or its supporting evidence is weakened further, this strategy can cease to work altogether. If this happens, credibility is lost, undermining other important initiatives in climate change and sustainability. Whatever the truth of AGW, clearly it is necessary to develop more skillful methods of identifying, evaluating, prioritizing, and communicating climate change issues.

Types

The above analysis of meaning-making in sustainability provides us with a relevant context for our exploration of types, typologies, and pattern languages. Understanding these important elements will help us work more effectively, particularly via the Left-Hand quadrants. In Integral Theory, types are described as "items that can be present at virtually any stage or state" (Wilber, 2009, pp. XXX) or as "horizontal styles available to any developmental level within the quadrants" (Rentschler, 2006, p. 35). Types are also described as "stable and resilient patterns," and that "by becoming more aware of them and their role in whatever you are attempting to do, you are more able to infuse sustainability into your efforts by linking to existing enduring patterns" (Sean Esbjörn-Hargens, personal communication, December 12, 2009).

Types as items, styles, or patterns may be unique within a location such as Carl Jung's eight psychological types (UL); William Sheldon's body types (ectomorph, endomorph, mesomorph) (UR); researcher Jeffrey Sonnenfield's types of corporate culture (academy culture, baseball team culture, club culture, fortress culture) (LL); or generically recognized types like economic systems (traditional, market, command, and mixed) (LR). In each of these examples a type of form or process is identifiable because it recurs—a type of corporate culture is only identifiable (and useful as a concept) because it appears more than once. For my purposes, this stable repetition of form and activity is the first property of types to be of interest. The second is that repeated forms have a consistency that allows us to know something about a thing's experience, culture, or nature via its type. Third, types are generalized or generic expressions, describing a class of form or process, not the details within it. The fourth characteristic of types, as noted in the quotations above, is that they may appear at any level of altitude. For example, an ectomorph body type is a recurrent, consistent, general pattern of human form that occurs at all levels of UR quadrant bodily development, telling us that someone with this body type will be thin, rather than muscular or heavy.

Horizontal Development

The features of types outlined so far help us understand recurring patterns and thus facilitate horizontal development. They help us "flesh out" things we observe or experience, and they can lead us on a journey of more comprehensive enactment: we can come to *know* more about a thing by seeing its general type. In this way we can understand more about our subject than just its address within the AQAL framework. For example, Carl Jung (1921) identified four main functions of consciousness: sensation and intuition (perceiving functions) and thinking and feeling (judging functions). He also identified that they can have introverted and extroverted forms. By combining the functions with both their introverted and extroverted forms, eight possible configurations, which he termed *psychological types*, are created. Jung proposed that these are stable and recurrent types or patterns of personalities. This approach is useful because it helps psychologists understand

the general character of their patient (but not the details of their personality or behavior) and to understand, for instance, the kinds of general responses their patient is likely to have in a given situation. This is true regardless of the patients level of development (i.e., they will express this general type of personality no matter what level they are). As well as location (e.g., UL quadrant, orange altitude) a psychologist can also assign a type (say, introverted thinking), giving a more fleshed out, more comprehensive, horizontal understanding of a patient.

Correlates and Types

It is proposed here that types not only help us understand more about phenomena at various levels of a particular quadrant, but that they also give us insight into their correlates in other quadrants. The feminine/masculine typology is an example of this feature of types: it can be observed as a matter of biological gender (female/male) (UR), seen as kinds of societies (matriarchal/patriarchal) (LR), revealed as different values within a culture (communal/individualistic) (LL), and felt as different textures of experience (feminine/masculine) (UL). There are some characteristics shared by these examples in relation to their general pattern such that, despite their occurrence in different quadrants, we can assign them a common essential quality. This quadratic nature of types is the fifth property we need to understand to design an Integral Sustainability pattern language.

Health and Pathology in Types

Yet another feature of types is that they can be healthy or unhealthy. Ken Wilber (2000), speaking about masculine and feminine types, outlines the importance of this feature:

> Using IOS [the Integral Operating System], you will find ways to identify both the healthy and unhealthy masculine and feminine dimensions operating in yourself and in others. But the important point about this section is simple: various typologies have their usefulness in helping us to understand and communicate with others. And with any typology, there are healthy and unhealthy versions of a type. Pointing to an unhealthy type is not a way to judge people but a way to understand and communicate with them more clearly and effectively. (p. 89)

Here Wilber points out two things: types in-and-of-themselves are not necessarily good or bad, healthy or pathological, but their *expression* can be. Having a proclivity towards a masculine, agentic, behavioral type may be a simple reality for an individual. If that individual expresses their masculinity by operating in a driven, self-absorbed, overly agentic way that undermines their own health or the health of their group or the world around them, then we could say their masculinity is "sick" or creating a pathology within the system (self-system or ecosystem). In another instance, or expressed in a way that *does* serve themselves or the group, we could say the same pattern or type of behavior is healthy. For example, perhaps a hard working, focused, independent person is essential for completing a difficult, time-sensitive task.

It is not the general quality of masculinity as a type that is important—the importance lies in its expression. This "health and pathology" approach allows us to communicate more effectively about our world. We no longer need to exclude essential aspects of reality. In the above example we can resist the reactionary impulse

to generally reject masculinity because of specific examples of its pathological expression. Rather than arguing about which aspects of reality should stay and which should go, we can realize that some things show up as types, and rather than throw them out all together, we should keep them and work out how to adjust their type for health.

Review of Types

In summary, we have explored six properties of types that make them useful: recurrence, consistency, generalness, intralevel capacity, quadratic capacity, and healthy/pathological expression. Types allow us to know recurrent, consistent, general qualities about phenomena and how to balance them for health. Before we go any further, it should be stated that there has not been a great deal of work done on types in Integral Research (Esbjörn-Hargens, 2009). Therefore, any work here beyond what we currently know about types is speculative and hypothetical. At this stage, the use of types in the development of an Integral Sustainability typology like PatternDynamics™ is experimental and forms a process of action research as integral praxis.

As to the actual nature of the dynamic patterns observable in nature, we will largely have to leave this for another time. Although they are not individual physical elements in-and-of-themselves (the elements can transit through the system, but the dynamic patterns—like a candle flame or a whirlwind—remain the same), relationships between elements should not be seen as metaphysical phenomena (as in Platonic ideals). They are enacted through the perspective of the exterior collective quadrant (LR). Although they may seem ethereal by virtue of their organizational nature, these elements should be objective and material. In this regard, Rupert Sheldrake has made progress in describing organizational patterns affecting the growth and development of form with his hypothesis of formative causation and the idea of morphogenetic fields (Sheldrake, 1981).

Pattern Languages

The application of types to communication and meaning-making leads us to the concept of pattern languages. Firstly, a language is a system of communication. It is composed of signs and symbols (verbal, physical, or drawn) that allow people to understand one another. This is a mysterious and powerful process. How is it that the inside of me finds a space to resonate with the inside of you? How do we know that when we communicate something that it has the same "meaning" for both of us?

Integral Semiotics

According to Integral Semiotics, any symbol refers to a referent, a phenomena within a worldspace, or more colloquially, a thing in the real world (where the real world includes not just physical things, but also interior things like thoughts or feelings or values). A symbol itself has correlates in each quadrant: "By way of quadrivia, Integral Semiotics associates the signifier with the Upper-Right quadrant, the signified with the Upper-Left quadrant, semantics with the Lower-Left quadrant, and syntax with the Lower-Right quadrant" (Rentschler, 2006, pp. 25-26). Again, more colloquially, the *signifier* is the physical symbol—the actual ink on the page or the vibrations in the air—and the *signified* is what arises in my consciousness when I receive it; its semantics relate to the meaning it has to collectives and its *syntax* is the rules of the system of communication or how all parts of language form a whole "language system." An integral language should honor all of these aspects.

Christopher Alexander

The idea of a "pattern language" was first introduced, at least in the contemporary setting, by architect Christopher Alexander. He created an architectural pattern language based on the idea that people should design for themselves their own houses, streets, and communities. This idea may be radical (it implies a radical transformation of the architectural profession), but it comes simply from the observation that most of the wonderful places of the world were not made by architects but by people:

> At the core of the books, too, is the point that in designing their environments people always rely on certain "languages," which, like the languages we speak, allow them to articulate and communicate an infinite variety of designs within a formal system which gives them coherence. (Alexander, 1977, pp. XXX-XXX)

Alexander rightly understood that for people to design for themselves, they need a means of communicating about architecture that allows them to form mutual understandings—understandings about the nature of good design and agreements on how to go about creating it. In doing this, architecture is brought forth from a command and control function by professionals toward a directed collaboration capable of working effectively in far more complex circumstances. The strength of this approach lies in its capacity to coordinate more perspectives, an important capacity to which I will return.

For the basis of his new language, Alexander chose patterns where, "Each pattern describes a problem that occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice" (Alexander, 1977, pp. XXX-XXX). The basis of this idea, that recurrent "design solutions" or what could be thought of as types of "architectural habits" can be drawn as graphic diagrams, or what he termed "patterns," and that these patterns can form a language has been explored in a range of disciplines since Alexander's original formulation, most notably in computer programming and education.

Neighborhood Boundary Pattern

I have included two illustrations of a neighborhood boundary pattern from Alexander's book, *A Pattern Language* (1977). The first is a picture of a group of cells and their cell walls (Fig. 3). The second is a pattern illustrating two kinds of street layouts, one that creates an effective neighborhood boundary and one that does not (Fig. 4). Alexander's description of this pattern outlines how an appropriate boundary is needed to protect and nurture a healthy neighborhood in the same way a cell wall is needed to protect the interior elements of a healthy biological cell. It then goes on to describe how a weak boundary will undermine the identity that defines it as a neighborhood. A good boundary will be balanced: strong, but not so strong that it shuts off a neighborhood from its surrounding neighborhoods. There are a few things here worth investigating. First, a neighborhood boundary is identified and drawn as a pattern diagram, making it available for communication; second, it is described; third, it is presented as representing a generic "design solution" that comes up again and again in architecture; and fourth, it is communicated that a balanced use of the pattern in design, in a given context, will give the best outcome.

From an integral perspective, the combination of the above four features takes a *type* of architectural "design
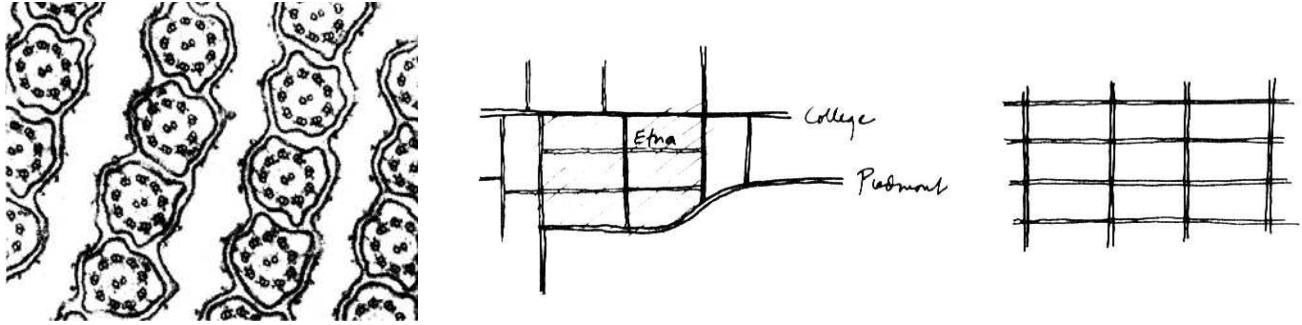
Figure 3 and Figure 4. Drawing of biological cell walls (*Left*). Drawing of a street layout in two different neighborhoods (*Right*). Adapted from Alexander (1964).

solution" (LR) and enacts a *principle* (its correlate) in the domain of culture (LL): it is now understood that, "Appropriate boundaries are necessary for beautiful and functional neighborhoods"—a balanced neighborhood boundary is now a principle of good design. This provides a simple but powerful foundation for discussing the creation of good neighborhoods. It allows for discussions that create firm intersubjective meaning about an important aspect of architecture previously so general and abstract that even professionals may only recognize it intuitively and communicate about it haphazardly. In Alexander's book, some 253 patterns are comprehensively outlined. They are widely used to communicate the tried and true design solutions that make up good architecture, and a method for exploring their various combinations is now used in collaborative architectural design processes all over the world. For theoretical discussions supporting Alexander's work in architecture, interested readers should consult his book, *A Timeless Way of Building* (1979).

In an earlier book, *Notes on the Synthesis of Form* (1964), Alexander states, "I found that the diagrams themselves had immense power, and that, in fact, most of the power of what I had written lay in the power of these diagrams" (pp. XXX-XXX). In this same book he displays patterns supporting design work for a village in India that give us insight into a method where individual patterns may be related in a hierarchical manner and combined to form a *language system* (Fig. 5).
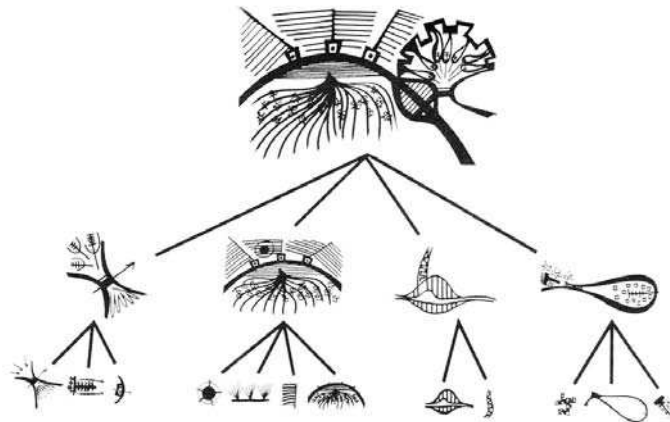
Figure 5. Individual architectural patterns combined into a composite diagram.

PatternDynamics™

PatternDynamics™ (PD) is a typology designed to help everyone understand and communicate about the natural patterns of organization that lead to sustainability. The patterns are recurrent, consistent, general, types of dynamic organization observable through a LR perspective. They can be thought of as nature's *deep design principles* or as fundamental *Kosmic habits* that get used again and again in the creation and maintenance of natural systems. In PD, each pattern in nature is represented by a graphic symbol (also referred to as a pattern—context should allow the reader to distinguish which definition is being used) and a one-word description (Appendix I). Both the symbol and the word give an indication of the nature of each pattern.

PatternDynamics™ assists in the horizontal development of sustainability through what is referred to as quadrivia (the exploration of a topic through all four quadrants): "ecologically sustainable" patterns (LR) are transposed into "ecologically sustainable" principles (LL). In turn, discussion of these principles leads to sustainable sensibilities (UL) that drive sustainable behaviors (UR). Also—and I think this may prove to be very important—the patterns themselves must be considered from the perspective of ongoing evolution. How do the patterns develop over time? How are they enacted by different levels of altitude? Which patterns or sets of patterns resonate most fully with different levels of altitude? Which ones do not? I think the evolutionary aspect of the patterns holds a key to widespread communication, and I am currently investigating this area to improve the way PD can be used in sustainability work.

Once the patterns can be generally recognized across various specific instances, we can use them to touch base with more aspects of sustainability issues, to communicate on a new level about those same issues, and in fact to think differently and act more effectively on those issues. As with learning any language, deepening levels of acquaintance over time give us a greater capacity to use it. Our knowledge of these patterns is introductory, but like any good introduction, I hope to give you a feel for the language and its potentials.

Structure of PatternDynamics™

The PD patterns are arranged into a hierarchical structure with three levels. The first level is composed of one pattern, Source, representing the oldest and deepest Kosmic organizing principle. Its symbol represents an integral holon: a part/whole with interiors/exteriors integrating and dynamically evolving. Put simply, the first and deepest organizing principle to evolve in the Kosmos is that the Kosmos self organizes and evolves. To go further, we do not have to agree on how this process takes place, we only really have to agree that it happens.

All other PD patterns describe different perspectives on Source. Rhythm, Polarity, Structure, Exchange, Creativity, and Dynamics are first-order aspects of Source (i.e., they represent the most fundamental sub-patterns of Source). Like Source, the first-order patterns also represent deep structures that emerged during the early development of the Kosmos. They are all general LR patterns of organization observable in the physiosphere and maintained as fundamental organizing dynamics into the biosphere and the noosphere. For the purposes of an Integral approach to sustainability, my focus will be on patterns that assist with the integration of the noosphere with the biosphere; however, there may be wider theoretical possibilities for the application of very general patterns like these in illuminating fundamental organizing principles that coordinate activities across the depth and span of the AQAL matrix (e.g., in the context of an Integral approach to climate change).
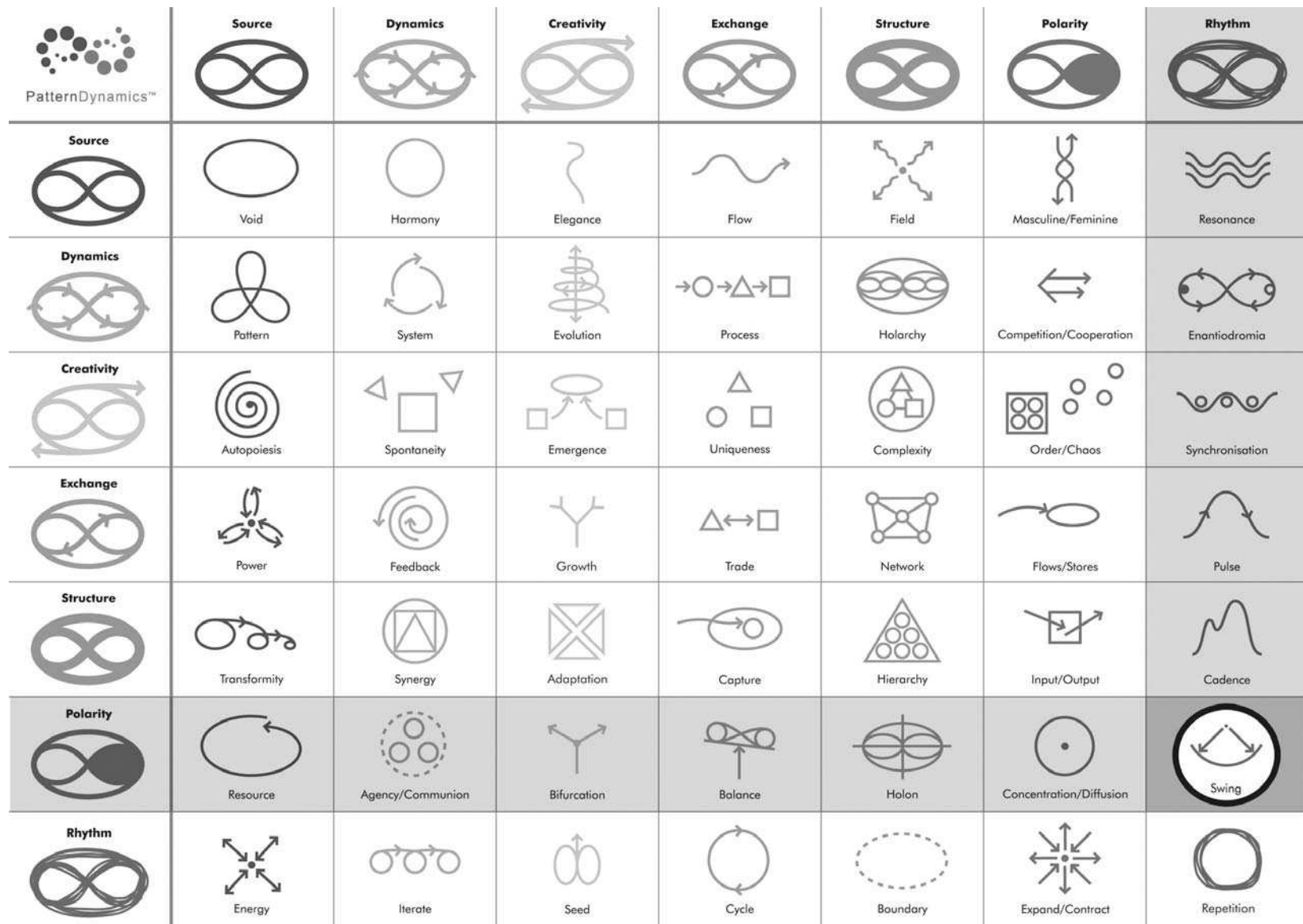
Figure 6. PatternDynamics™ (PD) chart showing derivation of a second-order pattern. For the full PD chart, see Appendix I.

The remaining 49 second-order patterns are all aspects of first-order patterns: seven second-order patterns are derived as aspects of each first-order pattern. For example, the seven second-order aspects of Rhythm are Repetition, Swing, Cadence, Pulse, Synchronization, Enantiodromia, and Resonance. To derive the second-order patterns, the first-order patterns are used to create a matrix (Appendix I). Where two patterns intersect the first-order pattern from the top represents a major aspect and the first-order pattern from the side represents a minor aspect of the second-order pattern created at that location. For example, Rhythm (top) intersects with Polarity (side) to create Swing (Fig. 6).

History of PatternDynamics™

Now that the structure of PD has been described, we can explore how to use it as an effective language in sustainability in general and climate change in particular. Before we do that, though, I should explain the development of the PD system, and why I think it is important apart from the theoretical reasons given so far. Up to this point, we have discussed, for the most part, concepts that existed before PD—ideas that other people have discussed, endeavored to prove, and formed opinions about. We have also gone through the basic organization of the PD system itself. These concepts form the theoretical and conceptual foundations supporting PD. From this point forward, though, we are venturing largely into the territory of my own experience. PD is a language I created to formalize a way of experiencing, understanding, and communicating about the world that I intuitively developed as an Integral Sustainability practitioner.

I created the pattern set by first locating the 49 second-order patterns. The selection of these patterns was straightforward and somewhat arbitrary—I simply wrote down the names of all the major natural patterns that I had learned to identify over my years of working in sustainability. When I put them into like groups, I realized that useful names for these groups were Rhythm, Polarity, Structure, Exchange, Creativity, Dynamics, and Source—the first-order patterns. Source was also the word I chose for the name best representing the common quality of *all* the first-order patterns. I think there are multiple ways of coming up with patterns for a sustainability pattern language, just as there are multiple sets of sounds used as the foundation of verbal languages. The set of patterns only has to be universal and comprehensive enough to build composite diagrams for patterns that are not included in the set. I will explore a few examples of this shortly.

I have spent the past 15 years deeply engaged in the practice of sustainability: experimenting in sustainable living, engaging in sustainability education, and working as a sustainability contractor, ecological systems designer, and consultant. I am constantly studying sustainability theory and observing the world around me to confirm principles I can rely on to rationalize and communicate my approach to sustainable endeavors. It is not possible to describe the nature of each pattern here as the required foundation for using PD as a language. (I am currently writing an introductory handbook to help with this task.) That given, more theoretical discussion will not be the most fruitful way for us to complete this article. To gain the fullest understanding of how the language works in this short introduction, perhaps the best way forward is for me to use a few easily recognizable parts of it to tell you a story—a story that ties back to the anxiety we can feel around issues in sustainability, its roots, and its resolution through the communication of more integral perspectives. This story is, in many respects, my own journey to a more integral approach.

Communicating Through Perspectives

Limited Perspectives

Looking back across my experiences in sustainability, it is clear that much of the time I was looking at the world from a limited perspective. This perspective served as a kind of lens. It was a lens that was fixed in one place, pointing in one direction, and, of course, I saw mostly the same things when I looked through it. Many of the people around me were looking through the same lens, and we told ourselves the same stories about what we were seeing. This lens, of course, was my worldview shaped by my generally green level of altitude, and it was focused on the ecosystems of the LR quadrant. The stories we told each other were my culture. What I saw contained a great deal of truth: the ecosystems of the Earth were being degraded by the activities of modern industrial economies; these industries were growing rapidly around the globe; and the limits to biophysical growth were close and getting closer. Needless to say, this fixation generated a lot of anxiety and fear. I believed that the planet was under threat and so was the continued existence of human civilization.

I still think this is true: true, but *partial*. And there is the rub. A partial truth held exclusively, it turns out, can be a terribly ineffective truth. The parable of a blind man feeling different parts of an elephant and then arguing over what an elephant was really like—from their limited perspectives—makes this all too clear.

Integral Perspectives

After a time, the limitations of the more dogmatic aspects of my worldview became apparent. For example, I observed in my forestry work that not all logging was a bad thing. Forest ecosystems could be harvested sustainably, even on an industrial scale, if it was done in harmony with natural processes. Participation in intentional communities also made it clear that a focus on Earth repair was not an adequate approach to organizational development or to creating effective cultures that supported intentional communities. I began to observe processes in nature like competition that were not seen or acknowledged because they did not fit with the story we told each other about the beauty and cooperation of nature. After a time, exclusive identification with the level of green altitude shifted and my worldview started to change. Integral Theory was immensely helpful at this time, as it helped me to see that I was stuck in one perspective and that by taking other perspectives I could resolve some of the incongruities and difficulties that were starting to emerge.

Simple strategies like including amber altitude capacities in structuring community and orange altitude abilities in economic achievement *as well as* green altitude creativity and sensitivity in my sustainability projects made a huge difference to their effectiveness and health. Recognizing that sustainability had to include perspectives and practices to nurture the self (UL) and culture (LL) in conjunction with Earth-care work in nature (LR) also resolved a lot of pain and dysfunction in my life and work.

After developing some familiarity with the integral practice of shifting perspectives, I uncovered a strategy for presenting my now somewhat unconventional views on sustainability by relating them to natural patterns. After all, these patterns had endured for billions of years as life evolved on Earth, so using them as principles for sustaining human society made a lot of sense. One of the most effective things about this approach was that it provided me with a way to talk about sustainability issues in a neutral, non-violent manner. Using this approach with regard to climate change, for instance, means that we can do away with the conflict associated with labeling each other "deniers" or "alarmists." This sort of conflict is rooted in people with limited

perspectives denying the truth of other perspectives. What we know, though, is that each perspective contains some truth, however small it may be, and that it is much more effective to include that truth for discussion rather than to eliminate it altogether.

Using PatternDynamics™

I will demonstrate some of the uses of PD by continuing my discussion of climate change. The PD pattern Boundary represents the principle that systems at all scales and in all domains have limiting edges that form interfaces and barriers with the greater systems around them (Appendix I). They also *contain* the elements of any system as a "whole." One of the important boundaries in climate change is the interface edge between the outer atmosphere and outer space. This boundary represents the outer edge of our biosphere or its *limit*. It is thought that we are approaching the *limits* of the biosphere's ability to deal with carbon dioxide as an *output* from the human economy. Boundary is therefore a critical principle for understanding and communicating about climate change.

Intralevel Communication

Because PD patterns are at this stage culturally neutral symbols, they can be associated with images and words that resonate with different altitudes. This gives us two important strategic advantages for talking about climate change. Firstly, it brings a principle like "boundary as limit" into the discussion. If everyone can agree that limits exist in principle, then we have a basis for discussion. In contrast, if limits are denied as a concept, then it is difficult to talk meaningfully about climate change on any level. Secondly, by illuminating the principles though the use of neutral patterns in association with images and words meaningful to different levels of altitude, we have the basis for intralevel discussions.

In my experience, people at amber altitude tend to relate to the principles represented by the patterns as common sense. As in, "It's just common sense that farms with animals need fences." People at orange altitude tend to view them in economic terms, as in the boundaries of a franchise area or the limits to budgetary expenditure. Green altitude marks the point where people identify the patterns primarily in nature (as in ecosystem boundaries and ecological edges), while those at teal altitude seem to see principles as conceptual realities at all levels of the domains of self, culture, and nature. Turquoise altitude experiences the patterns as glimpses of the subtle archetypal organizing habits of a Kosmos infused with living presence.

I do not have evidence to support the descriptions above except for personal observations and limited feedback from people conversant with PD. Nonetheless, my own intralevel communication attempts using the association method above seem to work quite effectively.

PatternDynamics™ Methodology

I have also developed a simple methodology so Integral Sustainability leaders can have comprehensive discussions about sustainability issues in combination with the AQAL framework. In this sense, the PD patterns could be thought of as a set of horizontal perspectives that can be applied to add more nuance and detail to sustainability topics located within the broader Integral framework. This methodology has a simple three-part formula: 1) we scan to identify the patterns related to the topic under discussion; 2) we evaluate and prioritize

the patterns for their relevance to the issue at hand; and 3) we balance and integrate for health.

Doing a PD scan helps to make sure we are touching base with all of the important aspects of a sustainability issue. Going back to climate change, scanning for all of the relevant patterns could include a multitude of patterns from the PD chart. I will include System, Energy, Cycle, Balance, Growth, Complexity, Flows/Stores, Inputs/Outputs, Swing, Pulse, Feedback, and Holarchy. Without going into the PD definition of each of these patterns, it should be clear that most of them have some relevance to climate change. Many of these words are used to talk about sustainability and climate change at conferences, in the media, and among sustainability professionals. Mostly this is done in an ad hoc way, except within a few specific systems disciplines where there is a consistency of terminology. There is a general, but inconsistent, systems "lingua franca" at work in sustainability, and part of what PD does is to provide a simple, consistent framework for communicating in sustainability using systems language. This is similar to how the AQAL model allows experts from divergent disciplines to share a language and have new kinds of conversations that were not possible before. The hope is that PD, or something like it, can be adopted widely enough to provide us with a kind of global sustainability literacy.

Scanning helps to make sure we do not get stuck in limited perspectives, but most of the time it is not useful to include all of the possible patterns. Evaluating the evidence supporting the importance of each pattern allows us to prioritize the most important ones. Everyone will read the evidence differently, but the important factor is that no important perspective has been ignored. In other words, we are having a comprehensive conversation with the intention of integrating truths in an effective manner. Having evaluated the evidence supporting the importance of the patterns listed above, I have chosen four to raise a point for discussion: Boundary, Input/Output, Growth, and Swing. I have combined them into a composite meta-pattern that illustrates a dynamic pattern that I think may be at work in climate change (see Fig. 7).

As discussed above, the Boundary pattern illustrates the principle that we live in a limited environment. The Input/Output pattern represents the principle that all systems are embedded in larger systems. In this case, it is the economy that is embedded in the biosphere; it is dependent on receiving inputs like oil, gas, coal, ore
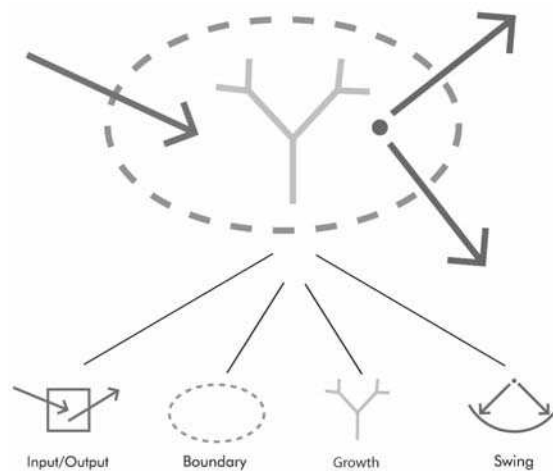
Figure 7. Individual PatternDynamics™ pattern combined into a meta-pattern.

bodies, water, plants, and animals *from* the biosphere and also for dispersing outputs like carbon dioxide, methane, heat, water vapor, other industrial pollutants, and sewage *into* the biosphere. The growth pattern demonstrates the principle of natural exponential growth, in this instance of the human industrial economy. The Swing pattern illustrates the principle of extremes (i.e., polarized situations that are often destructive and difficult to maintain).

Putting these patterns together into a larger meta-pattern represents my belief that people advocating the extreme AGW view may have an unhealthy fixation with destructive outputs of the economy. I state this for a few reasons. First, the extreme AGW view ignores some very good evidence about the decline in inputs to the economy as a major threat to civilization. Second, there is also good evidence to support the fact that there simply is not enough available oil, gas, and coal to output enough carbon dioxide to create the dangerous levels factored into the Intergovernmental Panel on Climate Changes climate models (Aleklett, 2007). Finally, I think that, like my own initial perspective in sustainability, the extreme AGW view is fixed on LR quadrant ecosystems from the perspective of green altitude. The mono focus, hypersensitivity, anxiety, and fear that are often generated from this view may be creating an unwarranted extreme position. You might ask why this is a problem if we need to curb industrial growth anyway?

The extreme AGW view, which is currently driving climate change discussions, is causing a culture war. I do not think the evidence is strong enough for a position this extreme, and I believe many people not at green altitude feel the same way. Leveraging this view could turn out to be a very destructive strategy. Moreover, we need to ask ourselves if there are possible downsides to being wrong about the extreme AGW hypothesis. What if the biosphere actually can tolerate higher carbon dioxide emissions? Is it then ethically tenable to stymie the developing world's use of coal? Will this eliminate an effective strategy for a sustainable future by condemning the bulk of the world's population to poverty and ethnocentric levels of altitude? I am not at all sure that my assertions based on the patterns above are correct, but I am sure that it is a better way to have the conversation—far better, I think, than reacting from the fear and anxiety of a limited perspective.
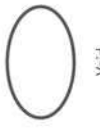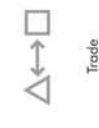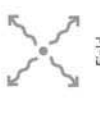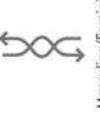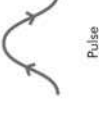
Conclusion

I will conclude with a few remarks about the fear and anxiety I have seen around sustainability projects. Foremost, I think our fears are rooted in an inability to predict and manage the level of complexity we have created in developed nations. Unmanageable global, dynamic systemic complexity and the threat of collapse are getting the better of us, and this uncertainty is generating unprecedented levels of underlying, existential fear. A key to dealing effectively with this complexity and alleviating our anxiety and fear lies in the last element of the PD methodology: balance and integrate for health.

Complexity by its very nature overwhelms the human capacity to know it and manage it. My proposition is that we do not have to deal with it that way. The systemic processes on planet Earth have been guided by an inherent systemic organizing capacity for health and development since the dawn of evolution. If this were not true, we would not be here. This process is natural and we can work with it simply by removing the blockages that hinder its development. The best way to do this is to learn to identify the natural dynamic patterns of organization at work in our world and then to balance them where they are unhealthy (by bringing them back from some extreme) and integrate them where they are missing. The rest will take care of itself. With an

Appendix I
PatternDynamics™ Matrix Layout ™

Integral approach, we have the capacity to make the sustainable transition an opportunity in the development of human culture and an emergence of evolutionary possibilities. I believe also that global pattern literacy has a role to play in the unity of action required for enduring health on our small planet.

R E F E R E N C E S

Aleklett, K. (2007). Global warming exaggerated, insufficient oil, natural gas and coal. Retrieved August 29, 2009, from http://www.energybulletin.net/node/29845.

Alexander, C. (1977). *A pattern language: Towns, building, constructions*. New York, NY: Oxford University Press.

Alexander, C. (1979). *The timeless way of building*. New York, NY: Oxford University Press.

Alexander, C. (1964). *Notes on the synthesis of form*. Cambridge, MA: Harvard University Press.

Brown, L. (2006). *Plan B 2.0: Rescuing a planet under stress and a civilization in trouble*. New York, NY: W. W. Norton & Company.

Crichton, M. (2004). *State of fear*. New York, NY: Harper Collins.

Diamond, J. (2005). *Collapse: How societies choose to succeed or fail*. New York, NY: Penguin Books.

Esbjörn-Hargens, S. (2009). An overview of integral theory: An all-inclusive framework for the 21st century. Retrieved August 22, 2009, from http://integrallife.com/node/37539.

Esbjörn-Hargens, S., & Zimmerman, M. (2009). *Integral ecology: Uniting perspectives on the natural world*. Boston, MA: Integral Books.

Hansen, J. (2007). Climate change and trace gases. Retrieved June 14, 2009, from http://pubs.giss.nasa.gov/docs/2007/2007_Hansen_etal_2.pdf.

Heinberg, R. (2004). *Powerdown*. Gabriola Island, BC, Canada: New Society Publishers.

Holmgren, D. (2002). *Permaculture: Principles and pathways beyond sustainability*. Hepburn, Victoria: Holmgren Design Services.

Homer-Dixon, T. (2006). *The upside of down: Catastrophe, creativity, and the renewal of civilization*. Washington, DC: Island Press.

Intergovernmental Panel on Climate Change (IPCC). (2007). Summary for policy makers. In: S. Solomon, D. Qin, M. Manning (Eds.), *Climate change 2007: The physical science basis*. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.

Jung, C. (1921). *Psychologischen typen*. Zurich, Switzerland: Rascher Verlag.

Koestler, A. (1969). *The ghost in the machine: The urge to self-destruction—a psychological and evolutionary study of modern man's predicament.* New York, NY: Macmillan Publishers.

Marshall Institute. (2007). Working Group (WG) I's contribution to the IPCC's fourth assessment report (AR4): A critique. Retrieved June 14, 2009, from http://www.marshall.org/pdf/materials/515.pdf.

Meadows, D. (2004). *Limits to growth: The thirty-year update*. White River Junction, VT: Chelsea Green Publishing Company.

Mollison, B. (1988). *Permaculture: Designers manual*. Sisters Creek, Tasmania: Tagari.

Odum, H., & Odum, C. (2001). *A prosperous way down: Principles and policies*. Boulder, CO: University of Colorado Press.

Plimer, I. (2009). *Heaven and earth: Global warming the missing science*. Ballan, Victoria: Connor Court.

Rentschler, Matt. (2006). AQAL glossary. *AQAL: Journal of Integral Theory and Practice*, *1*(3), 1-39.

Shellenberger, M., & Nordhaus, T. (2004). The death of environmentalism: Global warming politics in a post-environmental world. Retrieved June 10, 2009, from http://www.thebreakthrough.org/images/Death_of_Environmentalism.pdf.

Tainter, J. (1988). *The collapse of complex societies*. Cambridge, MA: Cambridge University Press.

Wilber, K. (1995). *Sex, ecology, spirituality: The spirit of evolution*. Boston, MA: Shambhala Publications.

Wilber, K. (2000). *A theory of everything: An integrated vision for business, politics, science, and spirituality*. Boston, MA: Shambhala.

Wilber, K. (2006). *Integral spirituality: A startling new role for religion in the modern and postmodern world*. Boston, MA: Shambhala.

Wilber, K. (2009). What type are you? Retrieved August 22, 2009, from http://integrallife.com/learn/types/what-type-are-you.

Zimmernan, M. (2009). Including and differentiating among perspectives: An integral approach to climate change. *Journal of Integral Theory and Practice*, *4*(4), 1-26.

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