Systems **2013**, *1*, 66-84; doi:10.3390/systems1040066

OPEN ACCESS

systems

ISSN 2079-8954

www.mdpi.com/journal/systems

Article

One Way Forward to Beat the Newtonian Habit with a Complexity Perspective on Organisational Change

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Received: 11 September 2013; in revised form: 14 October 2013 / Accepted: 16 October 2013 / Published: 23 October 2013

Abstract: We face a global crisis of un-sustainability—we need to change trajectory, but have so far displayed a collective inability to do so. This article suggests that one reason for this is our entrenched approach to change, which has inappropriately applied mechanistic Newtonian assumptions to "living" systems. Applying what has been learned about the behaviour of complex adaptive systems, we develop a pragmatic model for students of sustainability, who want to facilitate profound organizational and community change towards sustainability on the ground. Our model, "one way forward", does not purport to be the only way but one possibility, grounded in a different understanding of the nature and dynamic of change as seen through the lens of complexity. In this way, it challenges more conventional change management practices. One way forward is a model facilitating evolutionary change in a social ecology—one possible expression of a "culture of community self-design" as expressed by Banathy. Its theoretical foundations and its practical application (it is designed for practice) both have their source in a systemic view and in the principles that reflect the paradigm of complexity. Four central components of this new model—envisioning, core messages (values), indicators of progress, and experimentation—are explored in more detail.

Keywords: sustainability; systemic change; paradigm shift; complex systems; envisioning; values; indicators; strategic experiments

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"*If you do not change direction, you may end up where you are heading*".

Laozi

1. The Case for a New Approach

In a recent article Starik and Kanashiro refer to Academy of Management meetings "in which numerous scholars proposed various justifications and aspects of one or more new sustainability management theories" ([1], p. 11). They go on to explore the challenge of developing management theory that can truly influence practice—that enables individuals, organizations and society to make the shift towards "sustainability" in its most profound expression. They pose a question that reflects that challenge "How can social and environmental sustainability management phenomena be integrated for "total" or "holistic" sustainability approaches, whether through integrated sustainability indicators, approaches, policies, values, strategies, programs, or results?" ([1], p. 24). What follows is one response to that question, specifically in regard to the dynamics of the organizational and community paradigm shift to sustainability, and how students of sustainability can learn how to exercise their leadership by better understanding and engaging with the dynamics of that profound change.

Organizational literature on change reports the "success" rate of conventional planned change initiatives as between 70% and 90% failure [2–4]! We might expect that this lack of success would have propelled us collectively to inquire more closely into the nature and dynamic of change, but it seems we have been exhibiting what has been described as "insanity"—doing the same thing over and over and expecting different results.

If for no other reason than that planned change initiatives appear to fail so often and so comprehensively, we should be looking at new ways of perceiving, being and doing—but our global state of unsustainability provides a further and urgent imperative. What prevents us from bringing about the necessary transformation of ourselves and our organizations? This paper seeks to explore that question and propose, not the "correct" approach, but one possibility—*one way forward*.

2. The Paradigm Shift—From Newton to Complexity

Thomas Kuhn, in his account of the way in which scientific "revolutions" have taken place in the past, provides a useful starting point, in the form of one precious insight. He describes how an existing "paradigm" perseveres even when the evidence from nature suggests that it is flawed. The disconfirming evidence mounts, but instead of abandoning the paradigm, scientists make changes at the margins of their existing theoretical framework—so that it appears to accommodate the new data. Kuhn observed that the shift away from a flawed paradigm only occurred when a new paradigm was articulated (and sometimes when the major leader of the old paradigm passed away!)—a new paradigm that explained the evidence better. Revolutionary change did not take place to escape inadequacies in the established paradigm, but to embrace a new possibility [5].

This article attempts to draw on Kuhn's insight in two ways. First, the model described here itself reflects a paradigm shift, a new possibility in terms of how we understand and engage with transformational change. Second, the way in which the model proposes that we exercise our leadership to facilitate that change—the actual dynamics of change—reflects Kuhn's observation that profound

shifts in thinking and action are the product of embracing a beckoning future, rather than eschewing a flawed present.

What is the old paradigm? Many writers have described it, and it permeates management training and education in our organizations as pervasively as it has permeated our wider society for three hundred years [6–10]. It is referred to as the "Newtonian paradigm", or the "mechanistic paradigm". On one level, this paradigm has undeniably worked well for the modern Western world. It has helped to generate living standards that even our grandparents' generation is astonished by, but like so many worldviews, its strengths are also its Achilles' heel—it has created its own problems and, with them, the imperative to explore an alternative [11].

As a new paradigm emerges, however, it is useful to pause and reflect upon the assumptions, often unconscious, that characterize the Newtonian paradigm, and to consider how those assumptions underpin the demonstrated failure of the majority of conventional planned change management initiatives.

Sir Isaac Newton believed that the universe was a piece of clockwork—a machine. The rules or laws that governed how the machine operated were assumed to be fully discoverable and it was inferred that if we understood them, we could then understand, predict and control the behaviour of the machine. In this certain and predictable world, causation is "linear"—cause and effect are related consistently, predictably, on a commensurate scale and in one direction, from cause to effect. These assumptions have reinforced the desire to control processes in order to deliver the desired or preferred and predetermined outcomes—to provide a sense of certainty.

The machine's function was understood to be no more than the sum of its parts. To understand the function, the machine could be reduced to its parts, and each part reduced to smaller and smaller parts, viewed in isolation from each other. This "reductionist" approach has helped us in mechanical systems, but it is becoming apparent that when it comes to helping humanity to deal with systems that are "living" and non-mechanical, it has serious limitations. Indeed we now may view these mechanistic assumptions, applied inappropriately to environmental and social systems, as having created more problems than they have solved [12,13].

Knowledge and understanding of living systems has been accumulating since scientists started exploring the "ecology" of natural systems in the 20th century. The world of complex systems is as uncertain as Newton's world was certain. (We use the term "systems" here as a way of recognizing areas of focus or concern that are bounded for practical problem solving purposes—the "system of interest"—but we also recognize that given the "incompressibility" of complex systems, the notion of boundaries between different social and environmental "systems" is conceptual. It could be argued that there is but one, all-encompassing system [14]).

Small changes in a starting point can produce wide fluctuations in outcome—"sensitivity to initial conditions". It is often impossible to track the path from cause to effect and the effect may not be at all commensurate with the cause—"non-linear causation". The popular story of the butterfly flapping its wings on one side of the world and creating a tornado on the other side—Lorenz's *butterfly effect*—describes this dynamic of causation that contributes to the inconsistency and unpredictability of complex systems [15]. We cannot hope to predict the precise nature and timing of outcomes by modelling these systems. Modelling can explore scenarios, but not certainties [12]. Reductionism does not help us when it comes to understanding the behaviour of complex systems. In breaking them into parts, we lose the very quality that makes them what they are, that makes them "whole"—we lose the

relationship between the parts. If we are to understand them, we must understand them as a whole, while surrendering any pretension to prediction or control.

The paradigm shift from a mechanistic to a complex systems view can be tracked in the organisational change literature. In 1995, John Kotter published a Harvard Business Review article on leading change that was to become the darling of management educators and consultants, and the touchstone for "best practice" [16]. It could be argued that Kotter's model was the epitome of the mechanistic paradigm—certain, linear, controlling. Just follow the eight steps in order and you can unerringly navigate your organisation from point A to point B.

(1) Establish a Sense of Urgency
(2) Forming a Powerful Guiding Coalition
(3) Creating a Vision
(4) Communicating the Vision
(5) Empowering Others to Act on the Vision
(6) Planning for and Creating Short-Term Wins
(7) Consolidating Improvements and Producing Still More Change
(8) Institutionalizing New Approaches

In 2012, Kotter published another HBR article about the need for a second "operating system" that "accelerates strategic change" [17]. It builds on the original eight-step model, but we can see in his eight "accelerators" the unmistakable signs that the science of complexity and living systems has begun to influence Kotter's thinking:

> "*There are three main differences between those eight steps and the eight "accelerators" on which the strategy system runs: (1) The steps are often used in rigid, finite, and sequential ways, in effecting or responding to episodic change, whereas the accelerators are concurrent and always at work. (2) The steps are usually driven by a small, powerful core group, whereas the accelerators pull in as many people as possible from throughout the organization to form a "volunteer army". (3) The steps are designed to function within a traditional hierarchy, whereas the accelerators require the flexibility and agility of a network*" ([17], p. 95).

Meanwhile, the systems community, while not yet occupying the orthodox centre stage still dominated by Newtonian linearity, was already coming to grips with the profound implications of complexity for how we understand and engage with change. Donella Meadows was encouraging us to "dance" with systems:

> *Systems can't be controlled, but they can be designed and redesigned. We can't surge forward with certainty into a world of no surprises, but we can expect surprises and learn from them and even profit from them. We can't impose our will upon a system. We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone.*
>
> *We can't control systems or figure them out. But we can dance with them!* ([18], p. 2).

We can envision what we really want, not what we are willing to settle for ([19], p. 4), and then learn how to bring that vision "lovingly into being", in a world of systems that requires "our full

humanity—our rationality, our ability to sort out truth from falsehood, our intuition, our compassion, our vision, and our morality" ([18], p. 2).

Bela Banathy was writing in very similar ways about vision as "design", and emphasising the role of conversation in co-creating the design of our future:

> *What do we do in communities and in education that will lead us toward conscious evolution? In other words, what approaches will help us make connections, find common ground, create images of desirable futures, and select and plan to make those images come to life?* ([20], Chapter 6, p. 7).

Banathy contrasted the process of self-design in a complex environment with our objective, logical, linear inheritance:

- Designing is different from planning or trying to fix what exists. It involves imagining new possibilities.
- Designers use reason and intuition, depend on judgments rather than decisions, are proactive rather than reactive, and embrace diversity of viewpoints.
- Most situations of importance are dynamic and complex and require systems thinking.
- To be able to work together we need to uncover and understand our own and each other's assumptions, beliefs, and values...
- Conversation represents a new way of being together. It is a powerful tool for designing, systems thinking, and uncovering assumptions, beliefs, and value. It offers much to the development and ongoing work of communities and education.
- Conscious evolution might be manifested in a global culture of community self-design ([20], Chapter 6, p. 9).

One way forward seeks to take the next step on the path lit up by Meadows and Banathy. In fact, we hope that it does not break stride. In presenting a practical model for exercising sustainability change leadership, *one way forward* proposes vision or design not as the starting point in a linear planning process, to be followed by a quite distinct implementation process, but as a container, deftly cradling the components of a dynamic that reconnects "planning" and "implementation" and honors the behaviour of complex systems. All the components of this dynamic are in a continuous process of interaction and refinement. There is no beginning or end, but a constant becoming. It is a model for facilitating evolutionary change in a social ecology—one possible expression of a "culture of community self-design".

3. Engaging with Complexity

In order to grapple with challenges like climate change, pollution, poverty, social dysfunction and organisational sustainability, in its broadest sense, humanity must learn the lessons of complexity. Delivering predetermined outcomes by controlling complex systems is not possible—this becomes more apparent as we expand geographical and temporal horizons. Does that mean we give up and metaphorically "turn out the lights"?

We could choose that response, or we could attempt to *influence* outcomes proactively, by engaging with the challenges in a different way. It is no coincidence that the contemporary champions and

exponents of systems thinking have been drawn inexorably, and seamlessly, to these challenges of sustainability. Nowhere do the qualities of connectedness and complexity come more naturally to the fore than in attempts to nourish those complex living systems that both encompass human community and in which human life on earth is embedded. And it follows that the dynamics of transformational change for sustainability, in particular, are best influenced from that same perspective. We cannot control complex systems, as the mechanistic paradigm assumes we can, but we can, as Meadows proposes, learn to "dance" with them [18]—to interact with them in a spirit of humility, patience, experimentation and learning. Where we cannot predict, we can still learn how the system behaves by trial and error—or "trial and error, error, error" as Buckminster Fuller described it (in [18]).

Further, we suggest that, rather than accepting our lack of control reluctantly, grudgingly, we can joyously surrender the desire for direct control, because it is self limiting—limited by the capacity of our stand-alone efforts and by the boundaries of whatever specific outcome we are seeking to dictate—whereas the art of influencing systemically involves recognizing and learning to work with the powerful self-organizing forces already operating within the system. If we can learn to work with those forces, in a spirit of humble facilitation and liberation, we gain access to the transformative power of the system itself, so much greater than the power of our own (illusory) control. The surfer and the gardener know what it is to encounter forces that cannot be controlled, but which can be learned about and worked with in a way that renders the desired outcome more likely, and which open the door to possibilities that could not be contemplated as the end point of control, even if control were possible.

The notion of managing and exercising leadership in a way that influences rather than controls is a challenging one for managers, not least because they have been trained, educated and "performance managed", in alignment with the assumptions of the Newtonian paradigm, to believe that they *should* be able to exert control and deliver predetermined outcomes. One of the most challenging implications of the shift from a mechanistic to a complexity perspective lies in recognizing the ways we have been socialized, within the Newtonian paradigm, to think about the nature and dynamic of change itself. Within this paradigm, which favours the objective and concrete world, change has come to be thought of as an object, leading to a future state that can be predetermined, planned, scheduled, implemented and achieved. Corporate language reflects this way of thinking, with phrases such as "driving change", "rolling out change" and "shifting the levers of change".

Within the paradigm of complexity, however, change may be understood as a response of the system to a stimulus, and better thought of as an emergent quality of the living system itself. It is intangible and occurs when participants (agents) within the system make sense of new information [21], and decide to act differently based upon reference to the system's "DNA" or, in the context of an organization, its organizational vision and values [10]. This different perception of "change" demands a different type of leadership and management—one that can shape a human environment in which desirable change may emerge.

We suggest that the perception of change as an object within the mechanistic paradigm, failing to grasp the real nature and dynamic of emergent change, is a significant contributor to the poor success rate of planned organizational change initiatives. The perception or assumption that change is an object leads to the design of change initiatives best suited to incremental change or change where little learning is required to be undertaken—"technical challenges" in Heifetz's language [22].

In developing the following model of transformational change for sustainability we have honoured the "adaptive" quality of the challenges [22], and the nature and dynamic of emergent change as perceived through the lens of complexity.

4. One Way Forward: A Model for Proactively Facilitating Systemic Change

How *do* we go about "influencing" systemic change—without submitting to our Newtonian habits of thought and self-limiting, mechanistic assumptions?

Our "*One way forward*" has emerged from an abductive process of engaging with the literature, building a conceptual model, trying things out in practice and reflecting critically on what does and does not work. Its very development has been an exercise consistent with the proposed model itself, in that our actions have been consistently informed by the principles of complexity, and we have tried not to be seduced by the allure of the familiar—by the "old" paradigm. We present this overview as one organizational expression of the emerging paradigm of complexity.

The model described here is informed by what we understand about the behaviour of complex systems. It has emerged from a deep inquiry into the challenge of catalysing transformational change for sustainability. Its apparent simplicity conceals an appreciation of how adaptive change emerges—a fundamental shift in perspective that challenges much received wisdom, reflected in models like Kotter's eight steps as previously described, and institutionalized in activities like strategic planning, change management and organizational communication. In practice, this framework requires that those employing it be prepared to "unlearn" many things previously held to be true—and step into a sometimes impenetrable world of ambiguity that demands new learning and "adaptive work" [23]. In his Adaptive Leadership Framework, Heifetz indicates that one characteristic of an adaptive challenge, in which fundamentally new learning is required, involving shifts in orientation, is that the people with the problem, are the problem,… and the solution [23]. Our model and the accompanying facilitated process incorporate the principles of adaptive change.

Students of management may be *assisted* and guided in this process by developing an understanding of the principles underpinning the complexity paradigm. That involves not just a conceptual understanding, but also appreciating the practical importance of timing and the practical value of personal qualities like trust, patience, and humility. Combined with emotional intelligence and the interpersonal skills to work with and through people, these qualities shape the capacity to exercise leadership, which will enable the whole system (community of interest or organization) to bring a shared vision into being.

The *one way forward* model provides an understanding of how to engage in transformational change for sustainability, building on the special characteristics of complex adaptive systems. It simultaneously encompasses conventional "planning" and "implementation", which are seen as separate activities in the Newtonian paradigm. Planning and implementation become one dynamic and converge with management practices that generate a "sense of ownership" of solutions. This approach is also consistent with our understandings of autoepoietic (living and self-generating) systems, where change may be viewed as a response made by all agents within the system, when they make sense of the need for a different response. System wide participation is a fundamental principle that emerges from this

understanding [10,21]. *One way forward* emphasizes the importance of *genuine* ownership and the acceptance of appropriate responsibility within the system.

Consistent with the principles of complexity, our approach reflects notions of working with the whole system and employs *holarchy* rather than hierarchy as an organizing principle [24–26]. Within the holarchy, the design of Figure 1 assumes a temporal dimension of "now". We might view all time as being present in only one moment—this moment, or "now". Past actions reflecting the path that has brought us to this moment and our current state; choices and actions we might take in this moment; the future that we really want as it exists in us at this moment; and the various choices available that will lead to that "future moment" that are already present within this moment, but not yet unveiled.

Figure 1. One way forward.

We have deliberately avoided the depiction of our process as a linear progression over time, because we are seeking more appropriate ways of expressing the new paradigm. Using "old" paradigm flowcharts and arrows may have made the process seem more familiar (and therefore acceptable), because it encourages the employment of entrenched linear, mechanistic and reductionist mental models—these need to be opened to the air if we are to explore new possibilities [7]. Another important reason for framing our model within the "now" is the recognition, emphasized by Stacey and others, that complex adaptive systems (the metaphor for organizations and society that Stacey employs) are inherently unpredictable [8,27]. As soon as we develop a planning process with pre-determined, concrete outcomes determined for a future time, we are falling back into the Newtonian world.

Within complex systems, across the longer periods of time and greater spatial spans that are characteristic of sustainability challenges, predetermined paths, goals and milestones are a mirage, even though we may be deeply socialized to believe they are the only way to plan. Our model explores another way. In complex systems the future unfolds unpredictably. Our model honors both that unpredictability and the impulse to influence the emergent future, proactively.

4.1. One Way Forward

4.1.1. Revealing a Shared and Responsible Vision: "What We Really Want, Not What We'll Settle for"

The most obvious place to start is envisioning, because a shared vision, once created, has embedded within it all the other elements we propose are useful for moving forward. It cradles the entire model, and prepares and sustains a group (organization, community or team) that is seeking to influence the unpredictable unfolding of the future. It is the rich soil in which the other elements are planted and with which they exchange nourishment.

In her presentation on "envisioning for a sustainable world" [19], Donella Meadows highlighted the absence of vision as a major source of failure in addressing environmental issues and there is no evidence to suggest that this absence has since been addressed [28]. Possibly drawing on the work of her Dartmouth colleague, Elise Boulding [29], she went on to describe the principles and benefits of envisioning a *responsible* shared vision. In doing so she inspired our current approach.

The idea of vision and of leaders being visionary is not uncommon in leadership literature, but there is a fundamental difference between that type of top-down vision that the followers "buy into" [30], and the vision that we are describing. *One way forward* begins with the co-creation of a vision that brings together all the relevant stakeholders within the system.

In a paper primarily focused on two questions—what constitutes a vision? and how does a vision work?—van der Helm identifies seven different types of vision, one of which is community based and designed to "produce a common ground from which to build programmes of action" ([30], p. 98). The vision we are describing is of this type.

Visions, as they are understood in *one way forward*, are also values-rich stories, rather than the pithy one-sentence "vision statements" that have come to pervade the corporate world. They are stories, capable of reflecting complexity, that describe what we really want to experience, and because values are central to decision making and behavior, vision of this kind also stirs energy within people and prompts the translation of energy into action. It is precisely because the vision is values rich and idealistic that it moves people with a sense of "divine discontent"—compelling action and change. In this sense we argue that idealistic shared visions are the most "realistic" and "pragmatic" way forward.

As Peter Senge quotes Kazuo Inamori of Kyocera, "It's not what the vision is, it's what the vision does" ([7], p. 207) and Meadows is more specific when she describes how a vision at the level of feeling (values) unites people rather than dividing them over less important "concrete" details [19]. She observed, and our own work has consistently confirmed, that at the level of fundamental values—"what we really want"—there is a great deal in common among people who might otherwise be at odds.

The *one way forward* envisioning process addresses the need for "emancipation", one of the central focuses of critical systems thinking—"denouncing situations where the exercise of power, or other causes of distorted communication, are preventing the open and free discussion necessary for the success of interaction" ([31], p. 141). Perceived differences in priority or "agenda", and perceived power differentials operating outside the envisioning process, succumb to the leveling impact of story-telling, in which each voice is equally honoured and every story is "gathered up" in the process of shaping a shared story or vision that is not "consensus" or "lowest common denominator", but tells everyone's story in one.

Nevertheless, facilitators need to be alert at the point of invitation that perceived power imbalances do not discourage some stakeholders from accepting. Every effort should be made to encourage participation by all stakeholders—invariably, the experience is one of surprise at how little such power issues persist into the envisioning process. There are a few points in the process where established power dynamics might try to assert themselves, but this can be readily forestalled by a watchful facilitator simply re-establishing the primacy of the story-telling process, in which all voices have equal weight.

On one occasion, we facilitated an envisioning workshop for a group of about 50 diverse stakeholders in the NRM (natural resource management) space—from state government policy makers and federally funded agencies, to scientists and consulting practitioners. We had been warned to expect conflict and potential implosion, such were the perceived differences. The entity funding that research sent an "observer" (he intended to observe, but could not help participating in the process). He was unaware of the political, philosophical and personal tensions that had been at work in this group before the workshop. As he left, he observed that it was impressive how smoothly the process went in a group of such like-minded stakeholders, but it would be interesting to see how well it performed in the regions where there were starker differences of perspective!

Of course, there will still be disagreements about the actions to be taken—the "strategic experiments"—in order to bring the shared vision into being, but the common ground, established at the most basic level of meaning making, provides a constant orientation for the debate and ensures that the dynamic is one in which differences enrich rather than diminish.

A shared vision channels the collective energy for change, for trying something new. In complex circumstances where we want to assume a proactive attitude, yet cannot predict or dictate a defined path to our desired future, a vision provides a light or touchstone to orientate and guide action [30].

The reason we seek to envision a new possible state is because we are dissatisfied with the existing one but, referring back to Kuhn, we recall that the emergence of a clearly articulated new paradigm is the trigger for change that enables most people to let go of the old and move to the new. So, in any transformational change initiative, the creation of a shared vision is important.

Without detailing here how this envisioning is most effectively facilitated, the central characteristics of the process are as follows:

(1) An invitation to be a part of the envisioning extended to as many as possible of the stakeholders within the system of interest.
(2) Broad participation by everyone who accepts the invitation.
(3) A facilitation process that by-passes the more analytical thinking and encourages more heartfelt, "feeling" responses.
(4) A vision of how we want to *experience* sustainable living—for example, how we want to experience working together—rather than the concrete details of what everything will actually be like (that is, a dynamic and evolving state—there is no definitive, concrete end point).
(5) Articulating individual visions through conversations about *what we really want*, and progressively generating shared visions that are also responsible (e.g., recognizing the physical limits of our resources).

(6) An inclusive conversation that gathers up everyone's heartfelt desires and does not leave anything or anyone behind, ensuring that the end result is truly reflective of every participant's vision—not a process of consensus, compromise or lowest common denominator.
(7) A story rather than a sentence, that details a rich picture of how we really want to experience the environment or the activity under consideration.
(8) Pictures or other art that help to bypass our habits of analysis may prompt and accompany the story.

Most of these characteristics are consistent with practice emerging within the discipline of *future search* since the 1990's [30].

In the case of forming *sustainable* communities or organizations, we would suggest that there is an additional reason for the importance of creating a shared vision. Envisioning *what we really want* consistently produces shared visions that appear to be inherently interconnected, integrated and "sustainable". It may be that these heart-felt stories reflect an innate capacity to respond systemically to a complex environment.

When we began our own journey of experimenting with groups of people and facilitating envisioning processes for sustainability, we anticipated that the act of envisioning would be "adaptive", as proposed by Heifetz [23], since people reprioritized values aligned with their current way of experiencing life to those required for a newer sustainable way in the future. But our observation of people engaging joyously, without hesitation or confusion and, on nearly every occasion, without serious disagreement, suggests that the work is more "technical" in nature—there appears, both through observation and interviewing participants after the envisioning, to be no reprioritization of values taking place, just a spontaneous and unselfconscious re-cognition of how people really want to experience their lives and work—a rediscovery of what they already know.

This notion that people have an innate understanding of how to act and live best in complex environments is consistent with Hämäläinen and Saarinen's notion of *systems intelligence* [32]. Systems Intelligence is the product of eons of human evolution. Humans are born with it and may develop it further as they live out their lives in complex adaptive systems. Viewed in this light, it makes sense that people already have a "feel" for how to engage with complex systems and indeed have "knowledge", at some level, of the conditions in which they are most likely to thrive. Through this innate understanding, the paradigm shift to a sustaining state is available to us, even if our dominant mental models reflect the existing or old paradigm ("Sustaining" is a term coined in the organizational literature by Dunphy *et al.* [33]. It describes an organization that has moved beyond reducing harm, to one that nourishes and nurtures the environmental and social ecologies in which it is embedded. It also reflects the paradigm shift). And so it is that *one way forward*'s envisioning process, appears to display the characteristics of "technical" work—at some level, we already "know" all that we need to know in regard to the new paradigm.

Although the process of envisioning does require careful introduction and framing to put some participants at ease in revealing and sharing "what I really want", within the *one way forward* model, envisioning presents as one of the easier activities.

4.1.2. Embedded in the Vision: Values Expressed as Core Messages

Because the vision is about the things we care most about, it is a values-rich story. Once the group has revealed its shared vision, it is possible to identify the values already embedded in the vision as core messages. As with the envisioning, this is a collaborative exercise.

Values are important because they direct our individual and collective actions and participating in a process that makes the shared values explicit provides a stronger foundation—both in awareness and social bonds—to undertake the tough decisions that a group will need to make. These values or core messages, once identified, can be used to build a bridge between the vision and actions on the ground that seek to bring the vision into being.

From a facilitative perspective, this process is gentle on both facilitators and participants. It is possible that this reflects prior participant experience of working with values—it is not unfamiliar territory in a "strategic planning process" or in "team building" work. What is worth noting in the *one way forward* model, however, is that the values are identified directly within the vision, not separate from it. This ensures that they are relevant to the future state—the values identified are "strategic" in themselves.

Our practical experience suggests that having the participants aggregate the core messages into a workable number, between five and seven, helps to crystallize and clarify their thinking, and to focus the efforts of the group in identifying the indicators of progress.

4.1.3. Indicators of Progress: A Concrete Reflection of the Core Messages of the Vision

The core messages extracted from the values-rich, co-created vision provide a springboard for identifying indicators of progress—what will we observe as we successfully bring our shared vision into being?… "lovingly" into being, as Meadows describes it [18].

In undertaking any action, it is natural to seek to understand if what you have done has moved you towards your desired future or not. Traditionally, managers employ a range of quantitative measures—founded upon a received wisdom that "you can't manage what you can't measure". Measures *lag* outcomes. They are about what has already happened.

Indicators, on the other hand, monitor what is unfolding—they *lead* outcomes. They tell us how much progress we are making—whether we are on track. They focus on what we will observe in the tangible world as our vision is coming into being. As the vision is by its nature heart-felt and does not come with its own definitive pathway, complete with measurable milestones, the indicators of progress are also usually (although not necessarily) qualitative and unapologetically subjective, but they are observable, and the group is able to review whether they are seeing more of this particular indicator as they act to bring their vision into being.

By reflecting upon the presence or otherwise of specific indicators of progress as a group, there is some reassurance to those who are more comfortable with measures, that these subjective assessments do not reflect only one person's perspective. In all this work, "bringing the system together" in conversation is a fundamental principle [10] and in the context of identifying indicators of progress, the group provides a system wide and "responsible" perspective.

Of utmost importance is the recognition that the measures and indicators we choose may actually influence the system of interest and create potential for perverse outcomes—we must choose indicators wisely [34]. This is especially true if our indicator is, in fact, a measure—measures tend to measure the outputs in one or other *part* of the system, whereas qualitative or subjective indicators can attempt to capture the behaviour of the whole system, without submitting to the reductionist assumption that the whole is merely the sum of the parts. A numerical Key Performance *Indicator* (KPI) for example, may focus the energies of the organizational system on delivering that particular number in that particular part of the system, without regard to the "side"-effects on the system as a whole. The number—the measure—might be achieved, but there may be unexpected and unwelcome impacts in regard to creativity, collaboration, the success of the whole, and so on. A measure often constrains, rather than liberating, the self-organizing power of the system.

The lure of the measure is in great part a product of its accessibility and our collective, deeply socialized belief in the supremacy of "the objective" over "the subjective"—if something *can* be measured, it is tempting to convince ourselves that the measurement will be useful and important—like the driver who searches for his car keys under the street light, even though he dropped them somewhere else, because it is the only place with enough light to make searching easy! The forgoing is not to denigrate all measures—some are systemically useful, but measures should be "handled with care" because of the reductionist assumptions that often ignore their unseen systemic impacts.

Identifying indicators of progress appears to be *adaptive work* as there is "unlearning" and new learning to be grappled with [35]. This is the time when the group of stakeholders needs to identify what they might observe if the vision were being realised in the here and now. The identification of indicators can be seen as building a bridge between vision and action. These conversations are crucial and need careful facilitation to ensure the adaptive work is undertaken and not "avoided" by the group. It is tempting and easy to slip back into familiar "technical" solutions [23], such as existing approaches, or mechanical measures, that require no new learning… and risk the health, or wholeness, of the system.

We should also expect the process of developing good and effective indicators to be one of continual adjustment and refinement… learning which indicators are most effective to monitor progress in bringing the vision into being—indeed the vision, itself, may be refined as more is learned about the larger system and as the larger system itself evolves.

4.1.4. "Strategic Experiments": Indicators Prompt Concrete Action and Learning

In a complex environment, marked by "irreducible uncertainty" [18], where the shared vision orientates us, but the path only emerges as we tread it, we are dependent on a process of continuous learning, but the challenge is to decide on which pathways to try next. Indicators of progress based on the core messages of our shared vision help us to monitor our success in bringing the vision into being, but they are also, themselves, prompts to action. They provide another way to keep the vision alive, so that choices, decisions and actions remain informed by and connected to the vision. The indicators of progress prompt a group to experiment with different activities on a strategic basis to see what works and what does not—*what can we do that might give rise to the progress we are seeking?*—and to learn more about the complex system with which they are engaging. It is *strategic experimentation*,

because these actions are taken to explore the most important and challenging facets of the vision—the core messages—as identified by the group.

Because we cannot predetermine or dictate outcomes, each *next step* is an experiment to learn what works within the context of our current experience of the complex system. The process is an iterative cycle of *action and learning*. The learning phase is a critical reflection upon what has eventuated as a result of the action, with reference to the shared vision, its core values and the indicators of progress (recognizing that long feedback loops may constrain a complete appreciation of the outcomes).

Importantly, the first phase is observing and learning—rather than action. Before rushing in to act, the initial learning involves gaining a collective understanding of, or feel for, the whole system and its possible leverage points, where interventions achieve the most impact for effort [35]. Meadows called this *getting the beat* of the system [18]—sensing, without analysing, the underlying dynamics and rhythms that are driving the behavior of the system. In the same way, the surfer sits on the beach and gets a feel for the surf, gets a sense of the frequency and shape and direction of the "system", before seeking to intervene. Organizationally it is not uncommon to hear managers talk about the quality of "energy" in their group—this is one example of "getting the beat" of the system.

The next steps are a continuous process of learning. In an ongoing iterative cycle, the action taken informs future strategic experiments, and is also likely to feed back into the vision, which evolves as more is learned—the model is dynamic and the vision is never final. The process of iteration is an important one as, in the non-linear world, it allows the system to fold back upon itself, amplifying novel ideas and unsettling the status quo. As Margaret Wheatley explains, "iteration helps small differences grow into powerful and unpredictable effects". ([10], p. 122). The process of iteration is not a "clean" one—it is a process that brings the system to the edge of chaos from which the new order emerges, and it will be experienced as "messy".

4.2. Loving the Messiness

The *one way forward* described above appears simple and easy to implement, but practice suggests that, like all change, it is not at all neat and is, indeed, messy. And that is a good thing, to be embraced. If the process is not experienced as messy and occasionally uncomfortable, we suggest that the adaptive work, the unlearning and learning, and reprioritization of values, is not taking place or that we are not "dancing" with the real complexity of living social systems. This involves exposing mental models to the air [7], letting go of, or "un-learning", past certainties, so that new possibilities can be explored and new learning undertaken. Those challenges confront everyone involved in the change, and it is no surprise that differences in the willingness to engage and in the rate of adaptive work, reflecting in part the self-preserving response of the established "system", will add to the experience of messiness.

The messiness requires, and is reflected in, our learning to surrender to the unknowable and to work deftly with events as they unfold—allowing "the answer" to emerge from people representing "the system" both at any one time and over time. As Meadows describes it, "It is to let go into Not Knowing" [36]. We suggest that one needs to surrender the desire for "neat" and "tidy" and "in control"—these are illusions anyway. If we are attempting to render everything nicely ordered and controlled, we have slipped back into the mechanistic paradigm whose inadequacies, in the context of

change, were the starting point of this discussion. We need to learn to love the messiness! The journey, or process, is no less important than the deliverables in this case.

4.3. Joy and Leadership

Our research also suggests that the sense of joy is critically important. People need to be attracted to the process of change and if it is not one that is joyous, they will devote their time and energy elsewhere. Change agents then, become both provocateurs and nurturers of human spirit. Thinking about process and conditions that nourish the human spirit is perhaps one of their most important roles. One of *our* indicators of success as facilitators of *one way forward* is the amount of laughter we hear in the group along the way. The great tangible "payoff" of this way of being, which we recognize both conceptually and from experience, is that when we are able to catch the wave of change, when the timing is right and people are carried by the wave, systemic change is only a heartbeat away—we just cannot predict which heartbeat.

Time is important, as mentioned earlier, and so is patience; watching, influencing with a word of encouragement or challenge at the appropriate time and waiting for the wave of change. The power of "who" you are being in these circumstances can never be underestimated. This includes how you interact with people and how you continuously give the work back to those involved, how you self-regulate and let go of your own "solutions" so that they are free to emerge from the system.

And so we return to an underlying theme of this paper—personal and leadership development are critical for change agents and those working with them. Change agents need to learn not just about the system as an objective and disembodied thing, but about the system which includes themselves, their mental models and complexities as a person—and others within that "system"! This takes time—a progressive unfolding that may never seem complete.

4.4. Accountability

Practices such as "holding people accountable" by measuring their performance based upon delivery of outcomes, are neither fair nor practical when placed within the context of the principles underpinning a living system [37,38].

Accountability is best attached to the *process* that will influence the outcomes. This may be a "tougher" form of accountability, as it will include consideration of how people go about their work, the quality of their interactions with others, their commitment to learning and creativity and perhaps their influence on the indicators of progress. Members of the group committed to *influencing* outcomes in line with the indicators *hold themselves mutually accountable* for maintaining the integrity of the group *process*, always recognizing that direct cause and effect in relation to "performance" is an assumption of the machine metaphor, and will rarely be observed in the rich uncertainty of the living system. We view the accountability that we have started to explore here as a maturation of "performance management" as it has been practiced to date.

4.5. Time

In our modern, western, corporatized world, it seems there is no time for anything. We have become so attached to the idea of efficient, time-saving processes that we tend to baulk at the prospect of allowing a process to take the time it needs to take. Personal development and transformational change occur in their own time—not in accordance with our clocks, neat agendas, change management schedules or program funding milestones that demand deliverables by such and such a date. "Time is important, so a conversation may last a week or be continued over years rather than stay within the artificial constraint of an hour" ([20], Chapter 6, p. 7). We suggest that a major piece of adaptive work to be undertaken by those who wish to catalyze change for a sustaining future is to allow the processes to shape time, not the other way around—to allow enough time for the processes to get us to the future we really want. Maybe not days, but months, years and even decades... or maybe a heartbeat.

This involves the investment of sufficient time, not only for the initial iteration of envisioning and strategic experiment, but also for regular management processes that maintain the liveliness of the vision in the life of the organization, through its ongoing dialogue with indicators and action—"trying stuff". Without this continuing investment of perhaps an organization's most precious resource, the dynamic facilitated—midwifed—by envisioning can easily end up still born. This is at the heart of the adaptive challenge. *One way forward* is not a silver bullet, propelled by passion. It is a systemic response and requires a commitment beyond the first impulse. As all the "holistic", systemic traditions of healing proclaim, in one form of language or another, "Slow healing is good healing".

5. Conclusions

Implementing change systemically is not easy—otherwise we would see it done more often. But the traditional mechanistic approach to "change management" has proved itself inadequate and we suggest that the *one way forward* model may assist change agents who exhibit patience, humility, perseverance and a willingness to reconnect with their own wisdom, and the wisdom of the complex, living system.

Starik and Kanashiro have called for the development of management theory that addresses the practical demands of a shift to sustainability—"what theory of human management can account for (or otherwise address and/or advance) such an enormous change in human civilization?" ([1], p. 8). Responding to the challenge of shaping a truly sustaining organization with the capacity to influence the formation of a truly sustaining society and world requires us to unlearn much of what we thought we knew about "sustainability", "change" and how to facilitate it.

In this article we have explored the underlying assumptions made within the Newtonian paradigm about the nature and dynamic of change and we argue that this provides some insight into why 70–90% of all organizational change initiatives fail to deliver the intended results. Although many managers hold themselves (or their people) to blame for this poor track record, we suggest that it is the underlying assumptions being made about change and managing change that require review. When change is viewed and understood through the lens of complexity, a different way of catalyzing (rather than managing) change is revealed.

One way forward, has been developed employing an abductive methodology and the principles associated with the behavior of complex adaptive systems. We recognize it as just one way forward.

But importantly, it is one way that is internally coherent and consistent in both its underlying conceptual framework and its application in practice. It does not succumb to the temptation to return to old and familiar ways of doing things which are more controlling and linear in nature. It challenges institutionalised understandings of how things are done (culture) at the level of mental models and deep unconscious assumptions, a level just below what Meadows refers to as the ultimate level of system intervention – transcending paradigms completely [36].

One way forward is an addition to the growing family of facilitated processes, such as Open Space Technology [39], Appreciative Inquiry [40] and World Café [41], that bring a whole system together and allow the future to emerge, influenced by a collective vision of possibilities. A distinguishing feature of *one way forward* is its theoretical foundation and its application as an alternative to existing "strategic planning" and "cultural change initiatives" within organizations (and communities) that face complex and adaptive challenges such as "planning" for whole system responses. Rather than a linear process that leaves "planning" or "consultation" behind in the wake of "implementation", *one way forward* shapes an ongoing dynamic of integrated engagement, planning, reviewing, experimenting and learning. It is a whole of system dynamic, reflecting and influencing the social ecology.

The major challenge presented by our global and individual state of unsustainability is to provide students of sustainability with the opportunity and the means to learn not just how to reduce harm, but to liberate and express a human capacity to nurture socio-ecological systems so that they flourish.

Conflicts of Interest

The authors declare no conflict of interest.

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