Research and Action toward the Upside of Down

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Introductory Summary

Understanding that new times require new ways of thinking, this essay is addressed to "thought leaders" in various fields, but especially futures research, citizen activism, and the new types of social networking media. It is both methodological and substantive, introducing a new typology of disruptive surprises ("wild cards"); and focusing on one in particular believed to have high probability of occurrence, but low credibility for most observers–the emergence of a new historical era, initially involving a systemic downturn toward societal disorder, disintegration and perhaps even collapse, before some type of reformation and/or restructuring.

After reviewing the literature on the prospect of systemic disintegration and/or restructuring, this essay moves to new approaches for proactive research and action uniquely appropriate for this time of transition. In this way, the essay seeks to contribute to what Homer-Dixon (2006) termed "the upside of down": the achievable positive potential if significant crises are anticipated, prepared for, and effectively responded to; thus avoiding deep collapse. At such points important "moments of contingency" exist which provide far greater potential for change than normally exists (Homer-Dixon, 2006). Of central importance is the promotion of resilience, as both a new guiding image - challenging the existing dominant image of economic growth and efficiency - and keystone systems variable on which much else depends. The essay ends by recommending a non-profit Cooperative Clearinghouse for sharing of proactive intelligence on STEEP [1] Surprises.

The three main sections of the essay are:
I. A New Type of Futurist Methodology for a New Type of Era
II. Visions and Models of the Emerging Era
III. Promising Pathways for Futures Research, Communication and Action.

A companion article for the journal *Technology Forecasting & Social Change*, "A New Methodology for Anticipating STEEP Surprises" (Markley, Forthcoming) is methodologically-oriented, in contrast to this more substantively-oriented essay. Being drawn from the same research base, a few essential details are common, but otherwise both stand alone.

I. A New Type of Futurist Methodology for a New Type of Era

A new type of era

A popularized way of characterizing the historical development of contemporary civilization is by means of a series of major eras (Toffler, 1980). Figure One below schematically summarizes this progression, portraying the exponential growth pattern that appears to now have exceeded a sustainable level. Although there are many alternative future themes of importance regarding how things may unfold and evolve from "now," for reasons of rhetorical clarity this essay focuses on only one: a falling away from the historically exponential growth pattern, forced by systemic disintegration and decline, leading to a bifurcating "hinge point" thereafter toward a new era characterized by either civilizational collapse or reformation and renewal.[2]

Figure 1. Two idealized alternative futures after a "Civilizational Tipping Point" (Markley & Porter, 2010)

The avoidance of ongoing civilizational collapse and entry into alternative future possibilities, where resiliently sustainable socio-ecological systems can flourish, will be strongly shaped by the extent to which appropriate new guiding images become an essential part of the zeitgeist (dominant "spirit of the times"). However, as persuasively argued in penetrating essays recently published in the Proceedings of the National Academy of Sciences (Beddoe, Rachael, Robert Costanzaa, Joshua Farleya, Eric Garzaa, Jennifer Kentd, Ida Kubiszewskia, Luz Martineza, Tracy McCowenc, Kathleen Murphya, Norman Myerse, Zach Ogdenc, Kevin Stapletonc, & John Woodward, 2009) and the New York Times (Homer-Dixon, 2010), such shifts are

unlikely to emerge unless profound crises–disintegrating the orderly functioning of major societal systems–occur first.

A second graphic way of representing a "meta" viewpoint on epochal change is Figure Two, which portrays a hypothesized cyclical lead/lag relationship between the operational guiding images of a society (i.e., an ongoing community of practice or an entire culture) and the actual societal conditions that emerge. The type of transformational change modeled by Figure Two can also be thought of as a socio-ecological "regime shifts".[3]
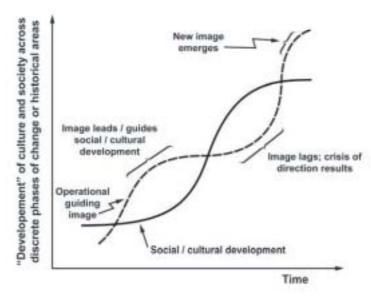

Figure 2. Hypothesized time/phase relationship between guiding images and social/cultural development
Note: Adapted from Markley & Harman (1982. p.5). The original is due to the work of Duane Elgin.

As made clear by the SRI study on "The Societal Consequences of Changing Images of Man" (Campbell, Joseph, Duane Elgin, Willis Harman (Project Supervisor), Arthur Hastings, O. W. Markley (Project Director), Floyd Matson, Brendan O'Regan, & Leslie Schneider, 1974; later published commercially: Markley & Harman, 1982), the dominant image which led to the flowering of the Industrial Era was one of economic growth and exploitation of the environment. Now, with the continued flowering of the Information Era, the STEEPly systemic growth based on the earlier image has badly outstripped the ability of that image to provide wise guidance for the next era. The *Changing Images* study derived a provisional list of some six characteristics that a new image must possess to be adequate to the challenges lying ahead (Chap.5, pp.113 ff): (1) provide a holistic sense of perspective on life, (2) entail an ecological ethic, (3) entail a self-realization ethic, (4) be multi-leveled, multi- faceted, and integrative, (5) lead to a balancing and coordinating of satisfactions along many dimensions, and (6) be experimental and open-ended.

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In light of literature reviewed below, I now hypothesize that yet another characteristic–that of *resilience*–is emerging as a keystone concept around which all the other six are embedded. In contrast to the older guiding image, this new image embraces new understandings about complex, non-linear, self-adaptive systems that have natural cycles of growth and dissolution, with systemic resilience as opposed to exploitive growth and efficiency, as the keynote for pursuing ecological and socio-cultural sustainability and well-being.

The transformation into a new era may not be the tough "self-denying prophecy" of precipitous decline and then recovery portrayed by Figure One.[4] The surprisingly large movement of simpatico citizen activist groups forming at this time (Hawken, 2007) and guiding images of "graceful decline" promulgated by authors such as John Michael Greer (2008 & 2009) and Bill McKibben (2010), coupled with the rapidly growing influence of online social networking technologies, may provide a "softer" and more resilient transformation. The methodology introduced next is put forward toward this end.

A new methodology for wild cards (a.k.a. "STEEP surprises")[5]

Futurists have traditionally given the name of *wild card* to designate possible disruptive surprises that have a low probability of occurrence but which would have a high impact (usually negative), if they occurred. This definition carries an unstated assumption that virtually everyone agrees about the possible event having a low level of probability. Thus, what we can call a *Type I* Wild Card has *low probability, high impact and high credibility*.

But there are situations where experts with specific relevant knowledge can state why such a possible event has a *high* probability of occurring, even though common thinking [suggests]is that its probability is low. Thus, a *Type II* Wild Card is one having (if present trends continue), *high* probability and impact, but low *credibility*.

In addition to the Type II designation, it is also useful to distinguish two additional wild card types:
• Type III Wild Card: high probability, high impact, disputed credibility
• Type IV Wild Card: high probability, high impact, high credibility.

The case of the global warming paradigm makes the reasoning behind this typology clear:

When initially introduced as a threat, there was insufficient general knowledge to know the magnitude of the threat. But the science behind it was such that no one considered the possibility as being uncredible. Thus: *Type I Wild Card*.

When early studies indicated that there was a problem, if current trends regarding use of fossil fuels and other anthropogenic factors continued, few know of it as this contingent forecast had yet to be widely promulgated. As a result the need to significantly limit growth in fossil fuel use was not credible to many: *Type II Wild Card*.

When the contingent forecast was widely promulgated, the new view was strongly disputed in a variety of ways, including propagandistic advertising, political lobbying, and in the view of many, "junk science": *Type III Wild Card*.

Now, for most informed people, although many details are as yet uncertain, the reality of global warming as a major threat to the sustainable well-being of social and ecological systems is generally accepted: *Type IV Wild Card*.

From this example, it should be easy to also see the plausible emergence of the viewpoints shown by Figures One and Two from Type II phenomena to Type III, and perhaps Type IV phenomenon in the months and years to come. This could hopefully contribute to a healthy "great turning" with only minimal disintegration before reformation brings an era more conducive to sustainable well-being.

The new typology can also be quite useful as an aid to monitoring and influencing the shift in perceptions throughout the body politic, and in such futures research tasks as scenario generation, and contingent risk assessment. This topic is returned to at the end of this essay.

The origins and current status of this research

An early version Figure One was drawn fifteen years ago (Markley, 1995) for a NASA client who wanted a long-time-horizon look at the future having significant strategic implications for the agency as well as the larger society. Because it was then assumed that the "ecological load"[6] of humanity had not yet exceeded the carrying capacity of the planet–but was threatening to[7]–I began the project white paper with the following leitmotif:

The ecological challenge of humankind

> *"When one species [or one culture] attains a position of dominance over all the others in the ecology of its planet, if it is both egocentrically greedy, and has a powerful set of technologies through which to amplify the expression of that greed, then unless that dominant species can find a way to limit or to transform itself and its greed-based systems into something more wholesome, it will foul its planetary nest as surely as the night follows the day ... perhaps even to its own extinction."*

<div align="right">Based on the writings of eco-anthropologist, Gregory Bateson
and visionary science fiction writer, Olaf Stapledon</div>

Thereafter, I kept a lookout for evidence that humanity might be nearing such a systemic downturn. Recently it has seemed imperative to go public with the idea of Type II Wild Cards. Thus, I circulated my idea among a number of leading futurists, including colleagues at the Association of Professional Futurists where I conducted a pilot study. In this study I asked:

- What significant wild cards–but especially of Types II and/or Type III–do you see in the 2015 ± 5 year time horizon–*especially as regards Wild Cards that point to an as yet unrecognized "new paradigm" of sustainable well-being for humankind?*
- Please comment on the whole idea of Type II Wild Cards and Wild Card Monitoring as a futures research methodology?

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The results of this pilot test were reported in the APF Compass, a proprietary online APF newsletter. This report is available upon request from the author.

II. Visions and Models of the Emerging Era

Regions of plausibility and wild cards in alternative futures forecasting

In alternative futures forecasting, it is useful to distinguish between possibilities probable enough to constitute a "region of plausibility" and improbable but still important possibilities. Important examples of the latter have come to be called *wild cards* (Petersen, 1997 & 2008).

These concepts can be illustrated from the perspective of history. Figure Three depicts a set of alternative future histories produced the author and colleagues in the early years (1969-1973) of the Educational Policy Research Center at the Stanford Research Institute (now SRI International) and Figure Four depicts both the plausibility region and broader possibilities for the year 2000. The later outcomes could then have been called potential wild cards.
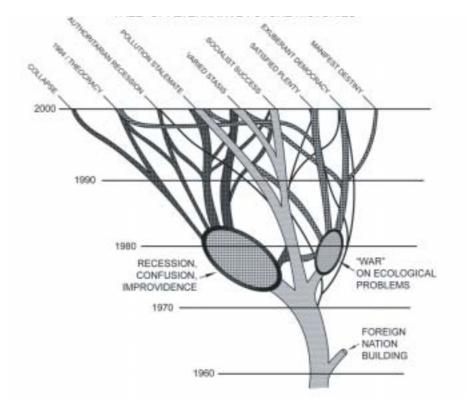

Figure 3. Tree of Alternative Future Histories
Note: From "The Forecasting of Plausible Alternative Future Histories: Methods, Results and Educational Policy Implications," by Willis W. Harman, O. W. Markley & Russell Rhyne (1973), Long Range Policy Planning in Education, p.334.

Figure 4. Slice of The Tree of Alternative Future Histories at the Year 2000
Note: From "The Forecasting of Plausible Alternative Future Histories: Methods, Results and Educational Policy Implications," by Willis W. Harman, O. W. Markley & Russell Rhyne (1973), Long Range Policy Planning in Education, p.334.
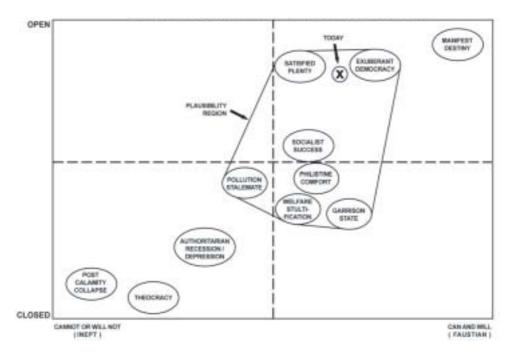
It is interesting to note that these figures depict a relatively accurate spread of issues faced by our society in the four decades since then, however, they also deeply under-estimated the timing of various emphases. For example, the trajectory toward "war on ecological problems" resembles what might have happened if Al Gore had been elected president in the year 2000, rather than appearing more than twenty years earlier. However, this also could have happened, had policy recommendations made since the first Earth Day in 1970 been followed.

Now, in 2010, we in the USA appear to be well into the region labeled "Recession, Confusion and Improvidence," and many today might well assert that our society has already landed in the state labeled, "Authoritarian Recession/Depression" which was well outside the projected region of plausibility. Thus, it could be said that–as viewed by early futures researchers–we are now actually "living in a wild card future."

Systemic downturn: A Type II disruptive wild card forecast of great significance

During the same period a very different, but complementary, set of views of the future were generated by the Systems Dynamics Program of Jay Forrestor at MIT: the computer simulations published as *The Limits to Growth* (Meadows, Donella H., Dennis L. Meadows, Jørgen Randers, & William W. Behrens III, 1972). A singularly notorious aspect of the study was the possibility of humanity so greatly overtaking

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ecological carrying capacity that what is known in systems dynamics theory as "overshoot" toward system collapse would occur. Although the authors went to great lengths to position their results as other than a predictive forecast, their projections were precisely what many Type II Wild Cards manifest as: a *self-denying prophecy* – like the hand writing on the wall – telling *what will happen if we don't change our ways*.
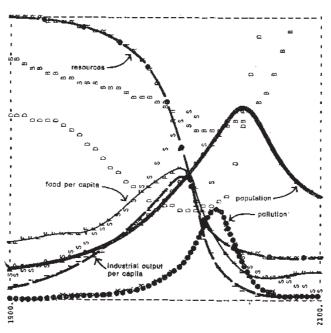

Figure 5. Computer printout showing overshoot and collapse
From: Meadows, et al. (1972)

There have since been continuing attacks on this work (e.g. see the Wikipedia entry), in spite of updates (Meadows, Donella H., Jørgen Randers, & Dennis Meadows, 1993/1994). The conclusion portrayed in Figure 5 went immediately from being a Type II to Type III wild card because their conclusions so radically opposed the guiding image of continued growth and were highly publicized. This is where it remains in spite of recent supporting evidence, such as reported by McKibben (2010):

"In June of 2008, an Australian academic, Graham Turner [2008], looked at every system that the original Limits to Growth had actually examined–population, agriculture, industry, pollution, and resource consumption–and found that 'for the first thirty years of the model, the world has been tracking along the unsustainable trajectory of the book's business-as-usual scenario.' The curves, he said, matched the standard model, the one that ended in economic collapse sometime before midcentury. 'The contemporary issues of peak oil, climate change, and food and water security resonate strongly with the overshoot and collapse displayed' in the Limits to Growth model, he said–adding, with the always-a-silver-

lining of a true academic, 'It's been a rare opportunity to evaluate the output of a global model against observed and independent data.'... Basically, it turns out that they were right. The Club of Rome, E.F. Schumacher, the MIT crew with the whiz-bang program on their 1970 computer...They were right."

Panarchy theory and the cycle of adaptation

A complementary type of analysis is provided by panarchy theory (Gunderson & Holling, 2001; Garmestani, Allen & Gunderson, 2009), the relatively new paradigm of inquiry developed in large part under the auspices of the interdisciplinary "Resilience Project" (www.resilienceproject.org). At the core of panarchy theory is a four-stage *adaptive cycle* which portrays how it is in the nature of such systems to go through what most people think of as "boom and bust" cycles, as three key dimensions wax and wane in a synchronous fashion shown by Figure 6.
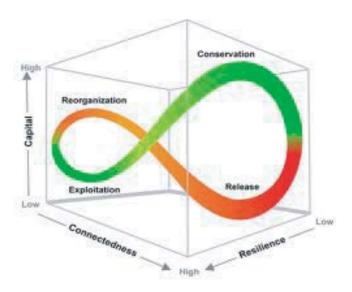

Figure 6. Resilience: The adaptive cycle of Panarchy Theory
Note: From "Introducing Hybrid Thinking for Transformation, Innovation and Strategy" (Gall, Newman, Allega, Lapkin, & Handler, 2010). Due to the nature of its intended audience, this depiction uses the term capital for the vertical dimension of the adaptive cycle, whereas the usual panarchy label is potential. [Used with permission from Gartner, Inc.]

There are three properties that shape the adaptive cycle and the future state of a system:
- The inherent *potential* of a system that is available for change, since that potential determines the range of future options possible. This property can be thought of, loosely, as the "wealth" [capital] of a system.
- The internal controllability of a system; that is, the degree of *connectedness* between internal controlling variables and processes, a measure that reflects the

degree of flexibility or rigidity of such controls, such as their sensitivity or not to perturbation.
- The adaptive capacity; that is, the *resilience* of the system, a measure of its vulnerability to unexpected or unpredictable shocks. This property can be thought of as the opposite of the vulnerability of the system.

These three properties–wealth (potential), controllability, and adaptive capacity–are general ones, whether at the scale of the cell or the biosphere, the individual or the culture. In case examples of regional development and ecosystem management (Gunderson, et al., 1995), they are the properties that shape the responses of ecosystems, agencies, and people to crisis.

The adaptive cycle comprises two loops. The front loop (green) is the growth phase where opportunities are exploited–the well-understood S-curve of sustaining innovation, and represents the slow process of incrementally rising systemic complexity and types of connectedness that lead to system rigidity–represented by the curve leading toward declining resilience.

Resilience thinking focuses on what to do when such progress inevitably comes to an end. Eventually, a system reaches a phase where some sort of failure or other trigger causes a rapid shift into the much less well-understood back loop. This back loop is composed of two phases: a creative destruction phase (Red) and the often painful reorganization phase (red-orange), before the cycle begins once more.

The Cycle of Adaptation thus reflects in the systemically structural nature of complex adaptive social/ecological systems to periodically go through cycles of growth and disruptive disintegration. Thomas Homer-Dixon (2008), describes an interview with Holling:

> *"...for a variety of well-established natural systems principles, [Holling] thinks that the world is reaching "a stage of vulnerability that could trigger a rare and major 'pulse' of social transformation." Humankind has experienced only three or four such pulses during its entire evolution, including the transition from hunter-gatherer communities to agricultural settlement, the industrial revolution, and the recent global communications revolution. Today another pulse is about to begin."*

Other lines of evidence

Many additional studies have offered supporting conclusions about the prospect of a systemic downturn, if not collapse, notably including:
- *The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization* by Thomas Homer-Dixon (2006)–an anecdotally rich historical treatment of how empires collapse and contemporary societal stresses, including an introductory discussion of Hollings work with panarchy theory.[8]
- The Plan B series of studies by Earth Policy Institute founder and head, Lester R. Brown (Plan *B: Rescuing a Planet under Stress and a Civilization in Trouble*, 2003; through to *Plan B: 4.0 Mobilizing to Save Civilization*, 2009-a)–and (as reported by Brown, 2009-b), with the *Plan B3.0* in 2008 anticipating a Tipping Point Toward Civilizational Collapse within the foreseeable future if current trends continue.

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- "The collapse and transformation of our world" (Taylor, Duncan M. & Graeme M. Taylor, 2007) and *Evolution's Edge: The Coming Collapse and Transformation of Our World*, (G. Taylor, 2008).
- *Eaarth: Making Life on a Tough New Planet* – in which Bill McKibben (2010) warns that ecologically we have already surpassed a tipping point beyond which the ecology of Earth is irremediably altered.
- *The Empire of Illusion*, in which Chris Hedges (2009), details how the culture that has evolved in the United States during the last century has become what can be characterized as a "bread and circuses" society; led by short-sighted moneyed interests virtually buying legislative and sometimes even judicial decisions through campaign contributions, and a mass media that serves the masters of the empire by systematically filtering out transmission of information needed for an informed citizenry. The implication is that without a deep-seated cultural reformation, it is unlikely that such calls of alarm will be much heeded until after a precipitous decline.

In addition to these works based on the intellectual paradigm of empirical research and rational analysis are supporting views by visionary psychics.[9] Of these, the most credible to this author *as regards a near future downturn* (but not necessarily all else these sources assert) are *Robes: A Book of Changes* (Kelly, 2001), *Earth Changes 2012: Messages from the Founders* (Rachele, 2008), and *Facing the Future* (Spangler, 2010).[10]

In light of the above, it is reasonable to conclude that an incipient major downturn is credible–even if the degree of credibility of this view to most intellectual and political leaders lies, at best, somewhere between Type II (not credible) and Type III (disputed, but worthy of exploration).

Unexpectedly rapid social system collapse

It is also necessary to consider how *unexpectedly rapid* systemic social collapse or near collapse has occurred. This section briefly outlines this and the reasons why such a possibility is likely to be discounted by the leaders who could prevent such a catastrophe.

Many theorists have considered how complex adaptive systems (CAS) can rapidly transform or disintegrate (e.g. see Ferguson, 2010; Linstone, 1999-a; Ramo, 2009). Two recent, and particularly instructive, examples of rapid and unexpected systemic social collapse or near- collapses have occurred are the fall of the Berlin Wall and US sub-prime mortgage crisis.

In the autumn of 1989, an NPR Radio panel of foreign affairs experts was asked to estimate "How long before the Berlin Wall comes down?" Just under half said "never." The estimates of the rest varied between five and twenty years. In fact, the Wall began to fall the very next week. Looking back, the relative rapidity with which the Soviet Union collapsed stands in stark contrast to prevailing beliefs held a priori.

A more recent example is the collapse of housing and credit bubbles and the sub-prime mortgage crisis in the U.S. that rapidly spread to global financial markets and came very close to causing an implosion of the U.S. banking system. Much has been

made in the media about how such a thing could have happened with little or no advance warning.

It is instructive to consider the fact that after Elliot Spitzer, then governor of New York, tried to warn about the problem and the Bush administration's role in it (Spitzer, 2008), the FBI disclosed evidence of Spitzer's sexual improprieties, which ended up driving him from office. Although the timing may have been coincidental, at least one investigative reporter, who also provided warnings, said that almost none of his sources were willing to be quoted due to fears of institutional reprisal (Taibbi, 2009).

With an increasingly concentrated corporate control of mass media, together with the recent Supreme Court decision to grant corporations the right of ordinary citizens to make political campaign contributions, it is not unreasonable to expect a great increase in the already large influence that financial institutions have on the life of the body politic. Because these same institutions are strongly driven by short-term profits, often to the longer term detriment of the larger society, the prospect of an *unexpectedly rapid* triggering point event unleashing systemic disintegration toward collapse is more plausible.

In this regard, two books by Wiedemer and colleagues are noteworthy. The first, *America's Bubble Economy: Profit When it Pops* (2006), predicted the subprime meltdown and near-collapse of the global financial system. The second, *Aftershock: Protect Yourself and Profit in the Next Global Financial Meltdown* (2010), presents detailed fundamental structural reasons why another collapse is highly likely–with the authors forecasting this in the next one to three years.

Prudence dictates that futures research and strategic planning now include the possibility of sudden decline toward collapse, although we may hope that a less drastic outcome occurs. It may be possible, as suggested by Greer, that "the transition from today's economy of abundance to the scarcity industrialism of the near future...will likely be just as slow and ragged as the rise of mercantilism" (2009, p.74) or as McKibben advocates that we *"choose ...to manage our descent* aiming *for a relatively graceful decline* (2010, p.99).

The problem of "Discounting" critical future challenges[11]

It is a well-clichéd truism that "Where you stand depends on where you sit." Or, more bluntly, "It is hard to fully accept problems whose solution might end your job."

As discussed at more length in my wild card methodology article, from which the following is adapted (Markley, Forthcoming), Harold A. Linstone's (1999-b) landmark book, *Decision Making for Technology Executives: Using Multiple Perspectives to Improve Performance*, was a significant methodological breakthrough. The book (reviewed by Coates, 2000), lays out why the prophetic warnings outlined above will almost certainly be ignored by many of the very people we most need to grasp their significance and take proactive actions to avert them.

Linstone's explanation of why future threats are minimized is *discounting*–the tendency to devalue both threats and opportunities more greatly, the further they appear in either time or space. "Future problems are discounted in contrast to near-term problems; [i.e.,] short-range consequences for the organization and its actions are given priority" (1999-b, p.39). Linstone identifies three complementary perspectives, termed

Technical, Organizational and *Personal*–each of which typically discounts future challenges to societal well-being very differently, leading to different planning horizons:

- Technical (T) with low discounting and a far-distant planning horizon typical
- Organizational (O), moderate discounting, intermediate planning horizon
- Personal (P), high discounting, short planning horizon for most.

Of the three perspectives, it is the O perspective that is of most concern as regards treatment of Type II wild cards by thought-leaders. As Linstone points out: "As regards the Organization perspective, 'There is great concern whether a new policy will threaten the organization's rights, standing or stability, whether it fits the current *standard operating procedures* (SOPs) and parochial priorities' (1999-b, p.36)...The O perspective also reflects the culture and myths that have helped mold and bind the organization group or society as a distinct entity in the eyes of its members" (p.38).

There are additional psychological reasons why such long-range threats are discounted by many: the political psychology concept of *system justification* (see e.g., Feygina, Jost & Goldsmith, 2010; Feygina, Goldsmith & Jost, in press). The psychological need to maintain a positive view of the existing social order, whatever it may be, has been found to lead to the denial of problems such as climate change. Nordhaus & Shellenberger (2009) further suggest that with the combination of "low sense of imminent threat (what psychologists call low threat salience) and system justification–what you get is public opinion that is highly resistant to education or persuasion. Most Americans aren't alarmed enough to pay attention" to such socio-ecological problems as climate change – even though cogent evidence suggests that they should be. As Rechmeyer (2010) reports, discounting of global warming in the short-term will surely lead to higher costs in the long-term.

Discounting of frightening socio-ecological crises: An "Ostrich Effect?"

Moreover, recent research evidence by Feinberg & Willer (2011), takes the above reasoning a step further, showing that

> *"Dire or emotionally charged warnings about the consequences of global warming can backfire if presented too negatively, making people less amenable to reducing their carbon footprint. ... Our study indicates that the potentially devastating consequences of global warming threaten people's fundamental tendency to see the world as safe, stable and fair. ... The scarier the message, the more people who are committed to viewing the world as fundamentally stable and fair are motivated to deny it. But if scientists and advocates can communicate their findings in less apocalyptic ways, and present solutions to global warming, most people can get past their skepticism."*

Thus, "threat communication" about Type II wild cards using fearful imagery such as Figure One represents may well be a decidedly counter-productive strategy *unless credible solutions are communicated at the same time*, allowing receivers of the communication to retain their belief and trust in "destiny control." Otherwise people acting in what Linstone terms the O and/or the P perspective will act like the proverbial ostrich, who sticks its head in the sand in response to threat, unthinkingly diminishing

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the credibility of the threat communication. Professionals using the T perspective, on the other hand, may be expected to use only minimal discounting–which is why Figure One may be suitable for a technical article like this, but not for general public consumption.

In a sense, Feinberg & Willer's finding replicates the early experience of the nuclear disarmament activist, Joanna Macy (1983), who, in the 1970's, found that many potential citizen activists were so deeply disturbed about the threat of a nuclear holocaust that their sense of despair had turned into a type of denial, making them unresponsive. After much experimentation, Macy developed a powerful workshop designed to bring potential activists from "despair to empowerment"–an approach that after years of successful replication, has subsequently been updated with socio-eco-logical crises in mind (Macy & Brown, 1998; Macy, 2006).

By way of summary, Section II has reviewed various lines of thinking on the like-lihood of systemic disintegration and restructuring in the relatively near-term future, as well as the myriad reasons why such warnings are likely to be discounted and/or ignored by people acting in a personal or an organizational role, unless they "can see light at the end of the tunnel."

III. Promising Paths for Futures Research, Communication and Action

We move now to some emerging and proposed research and action strategies that may help futures researchers, and others supporting informed citizen activism, to become more effective in dealing with the new era. As shown by publications such as the *Sustainable World Sourcebook: Critical Issues, Viable Solutions, Resources for Action* (Sustainable World Coalition, 2010), there are many good ideas waiting for implementation. Eight strategies that fit with the thrust of this essay are:
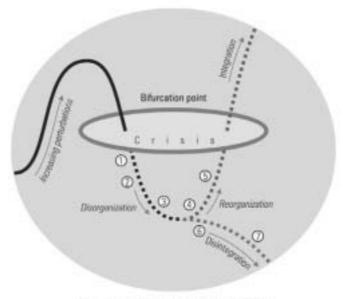 • Post-downturn alternative futures research
  • Resilience promotion
  • Hybrid learning
  • Action research and anticipatory action learning
  • Integral citizen activism
  • Identifying STEEP surprises
  • Selling ideas whose "time has not [yet] come"
  • A Cooperative Clearinghouse for "STEEP Surprise" scanning and assessment

Post-downturn alternative futures research

Although it was once a best practice to project alternative future *histories*–such as is portrayed in Figure 3–the norm appears to have become using sets of scenarios that are more formulaic. These later forms are more or less *cross-sectional* as regards time, and conforming to a structured protocol specifying the range and types of alternatives to be chosen.

In this new type of era it is important for scenario methods to include differing types of triggering events toward systemic disintegration and, perhaps even more importantly, a set of "near collapse" and/or "post-collapse" alternatives that explore

different ways in which a systemic downturn might fare. Figure Seven (which gives additional detail to the bifurcation shown in Figure One) is an example of moves in this direction.

The springboard effect helps systems reorganize

① People lose faith in the industrial system as crises worsen

② Human and economic resources are released from the system

③ Support increases for both inclusive (sustainable) and exclusive (ethnocentric) solutions

④ If sustainable solutions are supported, constructive reorganization begins

⑤ The reorganization of the global system accelerates

or

⑥ If ethnocentric values and structures dominate, conflicts over scarce resources intensify

⑦ Global civilization disintegrates

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Figure 7. Articulation of Post-Collapse Bifurcation Paths
Note: From Diagram 7 of Taylor & Taylor (2007); Used with permission from the authors.

Perhaps, though, an even deeper rethinking of the futures research enterprise may now be needed. The principal thrust of most client-oriented professional futures research is to project, analyze and draw strategic implications from alternatives that

are all based on an assumed continuation "society as we know it." If that assumption no longer holds, then the whole deal needs to be rethought. This might even be a thought-exercise in resilience promotion for the field of futures research itself.

Resilience promotion

Resilience theory is a systematic methodology for understanding the dynamics of coupled social-ecological systems (SESs) that has been developed by the Resilience Alliance. It is a subset of the adaptive cycle of panarchy theory. A special 2006 issue of *Ecology and Society* focused on "Exploring Resilience in Social-Ecological Systems", provides a rich bed of resources on this important topic (e.g., Anderies, John, Brian Walker, & Ann Kinzig, 2006). These authors, along with Cascio (2009) and Pincus & Metton (2010), make it clear why the concept of resilience should be central to thinking about the promotion of sustainability and sustainable development.

Folke, Carl, Johan Colding, & Fikret Berkes. (2002-b) – see also Folke, Carl, Steve Carpenter, Thomas Elmqvist, Lance Gunderson, C.S. Holling, Brian Walker, Jan Bengtsson, Fikret Berkes, Johan Colding,Kjell Danell, Malin Falkenmark, Line Gordon, Roger Kasperson, Nils Kautsky, Ann Kinzig, Simon Levin, Karl-Göran Mäler, Fredrik Moberg, Leif Ohlsson, Per Olsson, Elinor Ostrom, Walter Reid, Johan Rockstr?m, Hubert Savenije, & Uno Svedin. (2002-a) – identify critical factors that interact across temporal and spatial scales which appear required for dealing with natural resource dynamics during periods of change and reorganization. Additionally, of the various recent studies on resilience, *Brighter prospects: Enhancing the resilience of Australia* (Cork, 2009) offers a particularly illuminating collection of viewpoints. About this report, Dr. Cork said

> *To those not involved in this development, resilience appears to be a new buzzword taking over from 'sustainability'. This is unfortunate for it is a very important development that needs to be understood, and this publication has been written to put the term into a wider policy context.*
>
> *In summary, this publication makes it clear that: Resilience in social-ecological systems requires diversity, connectedness, openness, capacity for quick response, reserves of resources, and overlapping institutions, so that issues do not fall between the institutions and any issue does not rely on just one institution for a solution. Efficiency is often the enemy of resilience.*

Conferences on resilience, from which there are many resources to draw on, include:
- The Australia21-sponsored Resilience Conference 2010–"Shaping Australia's resilience: policy development for uncertain futures" (February 18-19, 2010, Canberra)– (http://www.australia21.org.au/resilienceConference.htm);
- "Resilience 2011"–the Second International Science and Policy Conference (March 11-16, 2011, Arizona State University in Tempe, Arizona)–"on Resilience, Innovation, and Sustainability: Navigating the Complexities of Global Change" (http://resilience2011.org/)

Hybrid learning

Gall and his associates (2010) at Gartner research have incorporated panarchy theory and resilience promotion in their paradigm-expanding synthesis dubbed "hybrid learning," which is itself an expansion of the concept of "design thinking". The driving motivation and focus of hybrid learning is the handling of "Wicked Problems": those that defy conventional approaches to understanding, planning, design, implementation and execution because:

- The stakeholder interests are so diverse and divisive;
- Interdependencies are so complex and so little understood;
- Behaviors are so dynamic and chaotic (unpredictable).

Thus, wicked problems specifically include the challenges of promoting resilience in highly complex, highly stressed socio-ecological systems before, during, and after "trigger point" perturbations that lead to downturns, small or large; short-term or continuing.

Hybrid learning explicitly includes the Adaptive Cycle and has obvious overlaps with futures practice of Anticipatory Action Learning (which will be introduced next). It goes beyond these by synthesizing the practice of arts such those shown in Figure 8 below.

Figure 8. Hybrid Thinking is a "Discipline of Disciplines" for taking on wicked problems

Note: From Figure 2 of Gall, et all, 2010. [Used with permission from Gartner, Inc.]

As laid out by Gall, et al., hybrid thinking goes beyond design thinking by emphasizing a number of key elements for successful business outcomes:
- Integrative thinking
- Passionate thinking
- Transformation, innovation and strategy
- Co-creation
- Resilience[12]

Action research and anticipatory action learning

There is a multi-dimensional confluence between futures research and action research. This has been extensively explored by Ramos (2006) and others in the special issue of *Futures* on "Futures Studies and Action Research"–where Inayatullah (2006) describes anticipatory action learning (AAL) as a relatively new addition to the tool chest of futurists and proactive citizen activists. Both action research and AAL are, in their own way, highly relevant to the enhancement of resilience and thereby to promotion of sustainable well-being, even in times of upheaval; but AAL is the most relevant.

Inayatullah envisions the placement of AAL within its broader intellectual context as shown on Figure 9, and summarizes the core of the approach, the *Futures Workshop*, as shown in Figure 10.

Figure 9. The intellectual positioning of Anticipary Action Learning
Note: From Inayatullah (2006)

THE FUTURES WORKSHOP

Mapping the past and present (the genealogy of the present – key events and trends)
Mapping the future – the futures triangle
Anticipating the future – emerging issues analysis
Lengthening the future – macrohistory and macrohistorians
Deepening the future – causal layered analysis and four quadrant thinking
Creating alternatives – scenarios (not merely as lists or simulation models but via drama, song, art)
Transformation – visioning, backcasting and action learning

Figure 10. Agenda of the futures workshop
Note: From Inayatullah (2006)

Integral activism

An ideal way to mobilize many of the above ideas is with a pairing of "inner" and "outer" orientations for knowledge and action that I call integrative or *Integral* Activism. As yet unpublished (but described in the workshop video (Markley & Porter, 2010), a convenient way to characterize this pairing of orientations is by citing two foundational books: *Doing Democracy: The MAP Model for Organizing Social Movements* (Moyer, et al, 2001) for the "outer" perspective; and *The Intention Experiment: Using Your Thoughts to Change Your Life and the World* (McTaggart, 2007) for the "inner" perspective.

This integrative orientation is useful both for identifying STEEP surprises and selling "ideas whose time has not come," as will be shown below.

Identifying STEEP surprises – both "wild" and "mild"

My colleague, Dr. Katya Walter, after reading an early draft report of this research, observed that:

"You need to balance your language of a wild-card path involving a tipping point toward catastrophic civilizational collapse with that of a mild-card path to a soft landing from the epochal transformation that surely lies ahead, whatever the outcome may be. That way, your work as a futurist will more strongly lead to the good outcome than the bad. Otherwise, it may not."

By way of definitional comparison:
• Where *wild card* possibilities are expected to produce highly disruptive, often negative, impacts if they occur;
• *Mild cards* are possibilities that are less disruptive and/or more benign, at least in the long run.

But also recognizing that what is a positive disruption for some, may be a negative one for others (e.g., technological "killer apps" that are highly profitable, but also highly disruptive to "business as usual" for competitors).

The path on Figure One toward civilizational reformation and sustainability reflects this type of thinking, as did the pilot research question (posed to members of

the Association of Professional Futurists), which explicitly emphasized *"Wild Cards that point to an as yet unrecognized "new paradigm" of sustainable well-being for humankind."* Nonetheless, Dr. Walter's comment is well-taken, especially in the sense that a specific, easily envisioned and spoken guiding image concept is needed. However, as well be explained in the final section below, the term "STEEP surprise" seems preferable, and will be used henceforth.

The principal way in which I have found it useful to identify "STEEPly" disruptive surprises, both wild and mild, is through a combination of the "outer" and the "inner" orientations. The so-called "Molitor Curve" coupled with the "Snowball Survey" (outer orientation) can be used to identify specific types of experts and expertise (both general and specific) in the external environment. "Imaginal Visioning" (inner orientation) for complementary types of information – such as remote viewing, intuition, etc – is then useful in vetting "fringe" viewpoints that must be considered highly questionable. A brief summary of the steps for each is shown below.

Molitor's curve

Shown here as Figure 11 is a visual representation of how emerging issues are covered by the media on their way to policy legitimization. It was first publicized in 1977 by the futurist, Graham T.T. Molitor who observed that emerging policy priorities often go through a more or less regular S-curve/life cycle in which different types of media cover the issue as it emerges through various stages of public awareness and opinion.
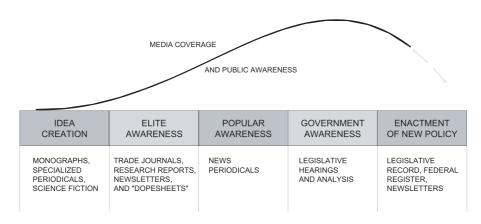

MEDIA COVERAGE

AND PUBLIC AWARENESS

IDEA CREATION	ELITE AWARENESS	POPULAR AWARENESS	GOVERNMENT AWARENESS	ENACTMENT OF NEW POLICY
MONOGRAPHS, SPECIALIZED PERIODICALS, SCIENCE FICTION	TRADE JOURNALS, RESEARCH REPORTS, NEWSLETTERS, AND "DOPESHEETS"	NEWS PERIODICALS	LEGISLATIVE HEARINGS AND ANALYSIS	LEGISLATIVE RECORD, FEDERAL REGISTER, NEWSLETTERS

Figure 11. Molitor's Issue Emergence Curve for precursor monitoring of emerging changes
Note: From Information and the Future: A Handbook of Sources and Strategies (Wygant & Markley, 1988); based on "How to anticipate public-policy changes" (Molitor, 1977).

Figure 11 illustrates how, as each specific new thing emerges, it is often first covered by specific types of media that specialize in such things followed by other media as it becomes more well-known. Finally, media coverage of it peaks–usually coinciding with some decisive policy action–after which it recedes from public awareness as an emerging issue, and is covered by archival media, or by other types of media covering the operational details. Molitor's Curve is exceptionally promising as a way to proactively monitor the emergence of Type II STEEP surprises.

Snowball survey

The specific steps of this process are as follows:
1. Start with a coherent question [about "X"], and a reason for wanting to know that is sufficiently credible that it will motivate potential respondents to share unpublished, and often sensitive information
2. Identify a small sample of particularly knowledgeable people
3. Ask of each:
   a. What do you know about "X"?
   b. Who else should I ask about "X"– in particular, really bright people at the fringes of or beyond the currently dominant paradigm?
➢ Reiterate, refocusing inquiry as needed, based on what is learned.

Imaginal Time Travel

This technique has six steps. Although the requisite steps may be clearly visualized from the following list unless you are an experienced practitioner in this type of art, you really need to read the full journal article (Markley, 2007) before expecting this process to work very successfully:
1. Choose focus of exploration ("X"), together with relevant contexts to frame the exploration
2. Relax and Center entire being into a "non-local" level of consciousness
3. Assume ("take on") specific context (e.g., a given strategy or decision) re: "X" to be explored
4. Using external guidance for navigation, imaginally explore the future of "X" assuming that specific context
5. Redo Steps 4 and 5 with each context of interest
6. Review all that was experienced, and draw conclusions for decision and/or action.

Selling ideas whose time has not [yet] come

Noted earlier was the problem of "discounting" challenges which either have a long time horizon to maturity, threaten strongly vested interests, or that challenge certain key beliefs. Because this problem is especially vexing for Type II STEEP surprises, it is important to identify best practices and practitioners for selling ideas whose "time has not come"–to use that old phrase.

The following are some promising approaches:
• Joanna Macy's Despair & empowerment work (Macy, 1983, 2006; Macy & Brown, 1998)

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- *Motivational Interviewing, 2ⁿᵈ ed*, Miller & Rollnick, 2002)
- *Doing Democracy: The MAP Model for Organizing Social Movements*, Moyer, et al, 2001)

A cooperative clearinghouse on STEEP surprises

Although there are a variety places where trends, forecasts and other futures research results are consolidated, none of them are dedicated specifically to disruptive surprises–either 'wild' or 'mild.' In the report of the pilot test described above, it was concluded that wild card identification and monitoring would be greatly facilitated by a cooperative clearinghouse where intelligence information (both research results and activist news) could be freely shared and used. Such a possibility is now becoming a reality, and should be attractive to a wide variety of users, including researchers, non-governmental organizations (NGOs), citizen activists, and investigative reporters.[13]

Regarding the name of its mission, however, for reasons in line with the above topic about selling new ideas, it was necessary to revisit the name "wild card" and to consider alternatives such as disruptor, disruptive surprise, STEEP surprise, etc. In addition to various clients expressing discomfort about the term "wild card", Jim Dator expressed an important contrarian opinion.[14] After much internal wrangling about this choice, for reasons such as the importance of "boundary crossing" research (Nelson, 2010), and because the Shaping Tomorrow platform uses the term "surprise" as a catch-all term for such things, I propose the term "STEEP surprise" as a boundary crossing term connoting a wild card having widely systemic impacts. This term could be tagged with a (+) or (-) as may be useful. Thus, the above name: Cooperative Clearinghouse on STEEP Surprises.

Concluding remarks

One way of summing up the message of this article is to paraphrase the great American patriot and statesman, Benjamin Franklin, who said at a time of great peril for the revolutionaries of which he was one: "We must all hang together, or assuredly we shall all hang separately." So too, it is important for all manner of concerned people to collaborate in "boundary crossing" research, analysis, communication and action aimed at navigating through the "Perfect Storm" of STEEP disruptions that appears to be heading our way.

Although not stated as such, a central purpose of this article is to give credibility to the position that the whole futures research enterprise needs to be rethought for a new era, as does the orientation of NGOs and citizen activist movements: both

- *Substantively*, as with the radical reordering of assumptions and priorities for navigating not only ongoing "white waters" of STEEP turbulence, but also for anticipating unpredictable "tsunamis" of rapidly engulfing waves of disruption, disorganization, disintegration, and in some cases, systemic collapse to ways of life that have become customary; and
- *Methodologically*, as with proactive experiments in boundary-crossing visioning, planning, and risk management, using new social networking "apps" that enable lightening speed communication and networking.

At a minimum, leading thinkers from traditionally separate sectors of society need to engage in "what if" conversations which are both radical and conservative:

- *Radical* in the traditional sense of "getting to the root of the issue" (as in the engineering concept of "root cause analysis"); and
- *Conservative* in the traditional sense of conserving what is most valuable from the past (of which the most important may be the embedded trust that is the foundation of true culture and can only be built up over generations, but can be destroyed quickly in uncontrollable difficulties.

The guiding image of *resilience*–not to replace that of *sustainability*, but as its complement, like the other side of the same coin–can help give shape to new directions for working. And a Cooperative Clearinghouse on STEEP Surprises can help make it happen.

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Notes

1. STEEP here is used as the standard acronym: Social/demographic, Technological, Economic, Ecological and Political change. For reasons to be given in the next to last section of this article, "STEEP surprise" will be recommended for use as a preferred alternative to "wild card" or "disruptive surprise" and as a way to connote generally unexpected events that would be systemically impacting with large magnitude on a number of different sectors. For reasons of historical continuity, however, the term "wild card" will continue to be used in this article.
2. In light of research results found after this essay was written it is now recognized that it may be counter-productive to use such stark "apocalyptic" imagery as Figure One embodies, unless: a) the negative effect of "system justification" is avoided by encouraging people to perceive environmentalism as a way of upholding (rather than threatening) cherished societal institutions and practices (Feygina, et al, 2010; Feygina, Goldsmith & Jost, in press); b) visions of future threat are strongly coupled with promising solutions that the reader finds credible (Feinberg & Willer, 2011).
3. The essay "Overcoming Systemic Roadblocks to Sustainability: The Evolutionary Redesign of Worldviews, Institutions, and Technologies" (Beddoe, et al, 2009) is–in the

opinion of this author–the single most analytically comprehensive and compelling reference cited herein.

It characterizes the type of transformation portrayed by Figure Two as a socio-ecological "regime shift," which is modeled as involving worldviews, institutions, and technologies that correspond to what Meadows (1999) called "leverage points"–"places within a complex system ... where a small shift in one thing can produce big changes in everything." In complementary fashion, Homer-Dixon (2009) suggests that the transformation must incorporate:

- a cognitive transition,
- an economic transition,
- a political transition, and
- a normative transition.

4. A self-denying forecast, like a prophecy of doom, is made so as to change behavior in ways that would keep it from coming true. A self-confirming forecast, on the other hand, comes true because it was made. Both lie at the heart of the mission of futures research, which is not to predict the future, but to influence the making of wiser, more proactive choices in the present.

5. The methodological summary in this section is adapted from "A New Methodology for Anticipating STEEP Surprises" (Markley, Forthcoming), with permission from Elsevier Press. A draft working paper containing these details is available upon request to the author.

6. Ecological load is formally defined as level of population times per capita consumption times an appropriate index of technology-based ecological impacts associated with consumption. As population biologist Paul Erlich (1992), has pointed out, this way of looking at ecology makes it clear that runaway population growth by poorer nations, although an emerging threat of major proportions to the "life support systems of Spaceship Earth," is outweighed by the consumption trends in richer nations. And it is these levels of consumption that set the growth goals of poorer and more populous nations. Please also note that a reduction in global carrying capacity is a probable impact if the Civilizational Tipping Point should occur in ways that accelerate the already appreciable despoiling of the natural environment.

7. The current version (Fig. 1), drawn in 2010, reflects the estimate that humanity currently needs the equivalent of 1.3 Earths to effectively sustain our collective way of life; moreover, according to the Global Footprint Network, we will need two Earths to sustainably support us by the mid-2030s if population and consumption trends continue (Kahn, 2009).

It is quite plausible, given the references to be cited in a later section–especially Wiedemer, et al (2010)–that the tipping point may fall in the 2020 + 8 year time horizon. However, it should be emphasized that the essence of Figure One is that of alternative future projections, not predictive forecasts; and that the shape of the shape of the actual trajectory will undoubtedly be quite different than the idealized alternative paths pictured here for rhetorical purposes of conceptual clarity.

8. This book also provides an explanation of essentially the same diagram shown here as Figure 6. It should be noted, however, that on p. 229, the diagram appears to have the directional orientation of the resilience dimension shown backwards.

9. It is part of the methodological foundation of open-minded alternative futures research to scan widely and include all manner of informative data for analysis; and even more important when scanning for Type II Wild Cards.

10. Please note that although Spangler strongly discourages "apocalyptic thinking," *Facing the Future* ends with a vision in essential agreement with the twin tipping points portrayed by Figure One.

11. The beginning of this section is adapted from "A New Methodology for Anticipating STEEP Surprises" (Markley, Forthcoming), with permission [currently being requested] from Elsevier Press, publisher of the journal Technology Forecasting and Social Change.

12. Each of these five topics is treated in some depth in the online presentation of Hybrid Thinking: http://www.gartner.com/resources/172000/172065/introducing_hybrid_thinking__172065.pdf.

13. Dr. Michael Jackson, founding principal of Shaping Tomorrow suite of futures research and monitoring services, has volunteered to make his ShapingTomorrow.com platform (http://www.shapingtomorrow.com/) available for this purpose–free of charge to academic programs, faculty and students, and with customary fees for general non-profit and commercial organizations. For more information on this yet to be designed "bootstrapping" initiative as it unfolds, and/or to become part of it, please inquire either to the author (oliver@owmarkley.org) or to Michael Jackson (shapingtomorrow@btopenworld.com).

14. In a personal communication, Professor James Dator, Founder and Chair of the Research Center for Futures Studies at the University of Hawaii, noted that: "I haven't used the term "wild card" for many years because it perpetuates the myth that there is some "normal" future from which wild cards are deviations. ... [and even] the term "disruptor" still implies there is something normal to disrupt."

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