Organizational and Management Dynamics in Foresight*

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The general discussion in this essay concerns foresight in organizational settings, including useful tools specifically designed for organizational work. It will include both design of foresight efforts and assessment of the work of others. The discussion is illustrated by a focus on business settings, including tools such as technology assessment. This is intended to stimulate interest and further exploration, and I am hoping these observations will be useful to readers.

In examining futures work, several qualifications can be helpful. First the process, tools and content of a forecast must all be integrated, interactive and relate to the larger policy context. Second, it is important to understand both the assumptions and the biases of a project's information resources – whether these resources are individuals, organizations or data sets. And third, it is critical to understand the organizational dynamics of the groups affected by the forecasts... for example, how will policy aspects of a foresight project actually be implemented?

Accordingly, the assumption here is that foresight analysis is being undertaken in an existing organizational or policy context. Good foresight should always include a sense of what would be involved in the implementation of specific recommendations or analysis. Within an organizational context, this might involve sequencing strategies, including coalition building, and multistage approaches, including shared data collection, joint problem definition and mutual development of solution options among potentially affected groups, including outside stakeholders.

Analytical perspective is a primary shaper of foresight outcomes. Differences in approach and philosophy may lead to different conclusions from the same data. These differences can also lead to different responses to the same set of options/situations. And the differences can be based on assumptions or in the large organizational culture. One useful technique in doing change dynamic analysis in an organizational setting is working back from a desired future (based on identified organizational goals) to the present situation in steps... Not only does it give a practical level of detail to the discussion, but it is useful to assess the level of consensus on "Where are we right now?"

While a focus on organizational dynamics is not a new approach, it is sometimes one new to future studies, which often has focused on analytical methodology issues more than the challenges of policy implementation, epistemology and change resistance. Accordingly, this article will draw guidance from several useful disciplines which address implementation issues, including Action Science, Field Analysis and Stakeholder Analysis. The final section will utilize these insights to examine a specific area of organizational implementation, i.e. foresight studies in a business setting. Additional analytical tools examined will include Technology Assessment and Industrial Ecology.

* The background of this article was a week of conference and seminar discussions held at Tamkang University in August of 2004 as part of the International Asia-Pacific Course in Future Studies and Policymaking. Accordingly, they are less a research paper than musings on 20 years of organizational experience with non-profits and private sector businesses of all sizes.

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Action Science

Action science began as a variation of the Strength/Weakness/Opportunity/Threats (SWOT) analysis used in strategic planning to identify complex problems and the action options for their solutions. It has proven especially useful for planning for needed change in response to a shifting environment, e.g. finding, correcting, reducing and eliminating threats to the health of an organization. This can include issues of leadership, innovation and participation, all of which are relevant to foresight implementation.

Action science developed from the need to understand change dynamics – both the quantitative or economic elements and the qualitative or group dynamic elements of change – e.g. the difference in impact from competitive versus cooperative approaches within an organization. Action science explores the gaps between presently available knowledge and ideally required knowledge and is aimed at the identification of these gaps and methods closing them. A typical action science approach is consideration of what is involved in reaching a specific goal... i.e. what would it take to get there. It is somewhat normative, but in a constructive way that helps to understand the way in which organizations move and change (or resist change).

Field Analysis

The discipline of field analysis was developed by Dr. Kurt Lewin. He believed that one must understand change in context of the group in which it takes place. This analysis involves both the internal and external "totality of coexisting facts which are conceived of as mutually interdependent." While this sounds much like environmental scanning, it is more complex, and adds the assessment of organizational goals and motives, outside social forces, available economic resources, etc. To quote Dr. Lewin, "If you really want to understand something, just try to change it." (Lewin 1997)

Field analysis involves developing models of change process within specified systems. One of its basic tenets is the idea that change, whether individual or group, involves unlearning and relearning, which explains a basic dynamics in change mechanics, which is resistance to change. This resistance is driven by the necessity to restructure individual and group perceptions and attitudes before change can successfully occur. One factor in change resistance is that a driver of change will often elicit a resulting counter-force that supports the status quo... this can be a group or individuals defending values or group norms. A good example the "Not In My Back Yard" (NIMBY) resistance to new development, especially in residential neighborhoods.

Resistance is a typical response to the implementation of foresight analysis. Peter Senge (Senge 1994) speaks of "disconfirming" information which creates a social disequilibrium and may then be met with a series of combative responses. The most common resistance options are: 1) ignoring it outright; 2) dismissing the information as irrelevant; 3) shifting blame for either the information, the disequilibrium or the resistance to opposition groups or larger unmovable forces or 4) to deny the validity of the information (which is actually the most common response).

The most effective counter to resistance is an educational one, oriented around creation of a group "survival anxiety," which just means that if the group or organization in question does not respond to this new information, the goals or ideals that the group has committed to will not be achieved. This effort must include the overcoming "learning anxiety" which includes the unwillingness to admit previous mistakes or having doing something wrong before (which threatens effectiveness/self-esteem). A good American example is in the environmental area concerning pollution in the housing development known as Love Canal near Buffalo NY and the long-term official denial of the damage done to families and children through cancer and related illness.

Unless psychological safety is created, new information will be rejected, and without survival anxiety, there is much less motivation for persisting with change. One of the big chal-

lenges in change management is how to structure the information and its implications in ways it can be truly heard. The next issue is how to anticipate and relate to the "What Now?" issues, which arise when the foresight analyst is also responsible for process management.

The distinction between diagnosis and intervention is often an artificial one, and I believe that any futures consultant has a responsibility to structure recommendations with an eye toward implementation. If the proposed solutions do not fit well with the existing culture, they will have no lasting impact, and the related policy initiatives will have no lasting impact. This is one reason that foresight analysis should include the group which will be involved in implementation. Involvement in the environmental scanning, analysis and recommendations allows that group to pick from a range of options and consider new attitudes or standards. This avoids some of the all too common resentment of new policies from the headquarters "Head Shed," which does not understand how "things really worked" in practice out in the field. Ongoing dialogue between foresight analysts and experienced field managers is always the best policy.

Stakeholder Analysis

If a policymaker is going to understand the dynamic of change or act as a change agent, the fit between an organization and its changing environment must first be understood especially in terms of other players (both individuals and groups).

1. Humans promote the change they believe in and resist what they do not (thus the need for buy in).
2. Inclusion in the process of change analysis and planning enhances the buy-in process.
3. Stages of a change project include: a) honeymoon b) insecure vulnerability – struggle for position and leadership c) even-handed settlement (hopefully) and resulting improved teamwork.
4. Information gathering about goals and objectives of critical groups is essential.
5. Input/involvement by other stakeholders improves success, not just using visioning and public meetings but also surveys, focus groups and board representation.
6. Intra-jurisdictional collaborations can be useful.
7. Integration and constant updating are critical.

The basic principle here is that a systemic and broad-based approach to analysis and implementation of foresight issues has the best chance of success, as the dynamics and the players involved in any organizational setting are both complex and subtle, and must be taken into account.

Business

It has been my experience that business foresight includes all the basic challenges of an organizational setting, and then adds the need for of technology assessment and acceptance (although technology dynamics affect all organizations to some degree) overlaid on the workings of the marketplace. It is essential to understand the dynamics of that marketplace – especially in the area of technology adaptation and assessment to understand cross-impact dynamics (e.g. economy-culture-technology).

While large system change dynamics are important, they may be somewhat more academic that the "on the ground" analysis required in business analysis. Good foresight must focus on the practical operations of business as well as the system dynamics. It is essential to clearly understand both the goals of any foresight effort being reviewed and the values of the system you are examining.

One question that must be asked in looking at a business futures study is who was the real client? Is this a situation where business foresight was being done for the business in question or about business (academic or commercial work)? The question in evaluating a business-related futures study is what was the real goal – was the foresight being used as a serious policy or management tool or a public

relations gambit and did the analyst pursue the answers in a fearless manner, regardless the "political" implications?

Foresight done for and about governments and for and about business have some similar characteristics, especially around the question, "How do we measure success?" Sometimes it is not a bad thing to be wrong... for example concerning the forecasting of the possible impact of atomic wars... Thank God the doomsayers have been wrong about this one to date! Working with the impact of atomic war was very common in the United States in 1950s and 60s and a futurist named Herman Kahn made a career out of the subject – he coined the phrase "Nuclear Winter" for the Pentagon – and this might have actually have forestalled the worst case, as his work became known outside of the US intelligence community. A parallel example is the work of the Club of Rome and the book *Limits to Growth*, whose strong vision of population, ecological and economic disaster generated counter-forces that forestalled the worst case versions of their scenarios. This is a good example of what has been called by Prof. Wendell Bell at Yale University as a "Self-Altering Prophecy". (Bell 1996)

Another example of "self-altering" foresight is the information technology (IT) firestorm that centered around the impact of computer misprogramming at the turn of the millennium or the "Year 2000" (Y2K) – In the United States, the 1999 WFS Conference on that issue in Washington DC drew a significant portion of the technology policy analysts on Capitol Hill and city and state government officials from half way across the US. This "fire alarm" approach produced a complete rethinking of the central IT assumptions for both government and business that arguably mitigated many of the foreseen consequences (although it also produced a public relations disaster when the more catastrophic events in many scenarios failed to appear).

Finally, the question must be addressed whether what might look like failure might in fct offer benefits to the analyst. My point is that being incorrect in foresight work is not always a disaster, but can be as instructive as being correct. One useful example from my own work is a set of foresight conferences held five years apart concerning trends impacting small businesses in America done for the US Small Business Administration.

At the follow-up conference on small business trends, I reviewed my projections from five years earlier and reported to the assembled audience "I am grateful for the opportunity to be wrong. Too often, I do a forecast and move on, never looking back. I went back to the White Paper I did for the White House Conference on Small Business and found almost a even split between where I was right and wrong – which is a very good hitting average in baseball."

1. WRONG – On the growth rates for small businesses in the US. Five years previously, I believed that new business development would snowball out of this catalytic state, as individuals all over America discovered the joys of small business ownership. Just the opposite happened, as the numbers seem to have been directly driven by corporate downsizing. As the economy got healthier, the number of new small businesses slowed instead of increased. And then with the Dot-Com boom and bust, the cycle repeated itself.
2. RIGHT – My concerns about the negative psychological and social aspects of the virtual office continue to grow, as does concern about the ergonomic aspects of the home office.
3. WRONG – The lack of venture capital for new and innovative business services did not turn out to be the continuing problem I foresaw for the new century. If anything, there was too much available funding for awhile. At the MIT Enterprise Forum, we saw far too many small-business start ups with surplus funding but insufficiently developed market and operational planning.
4. RIGHT – If anything, I underestimated the power of knowledge for small business, because I did not foresee the quantum leap that knowledge

resources have taken in the last five years. While I did say that technology was leveling the playing field between large and small companies, I did not foresee the extent to which downloadable or Internet accessible resources would almost erase the distinctions.

5. WRONG – Generational patterns. I saw the aging of the baby boom as a potential burden on society and small business owners, the growth of the Useless elderly. I was caught flatfooted by a trend from another direction. The issue of growing staffing needs for small business meeting decreasing staff resources. After years of being undervalued, older workers are now the targets of delayed or "phased retirement efforts. Luckily enough, 80% of baby boomers agree...and expressed interest to a Roper poll in staying in the workforce past 65 years of age.
6. RIGHT – Growth of the importance of global markets for small business. While globalism has been a clear trend for years, I did not anticipate its force. The US - China trade agreement brings almost incalculable opportunities but also unpredictable consequesces (and I worked as a policy trainer for senior PRC officials for three years).
7. WRONG – I foresaw government continuing its role as an obstacle versus a resource for small business development. Extensive regulation and little concern for economic impact were once the watchwords of the day.
   There has been a growing regulatory influence of states on business, and the single federal standard versus 50 state sets of regulations. While technologists insist that their software can handle 50 or 5,000 legal variations, the data network that would be required is still in infancy. This problem could be multiplied ad infinitum if each country in the world also took up the gauntlet of establishing additional business structures, for example, a local Internet regulatory standard. According to Forrester Research, in Cambridge MA, the difference between foreign government obstruction and foreign government assistance could move the overseas Internet market over the next three years from a minimum of $400 billion to as much as $1.8 trillion.
8. RIGHT – The promise of technology for small business continues to grow and evolve. Science and technology advances continue to reduce non-legal barriers to trade and market entry, such as transportation costs, information costs, cultural distance etc. However modeling or virtual reality software is very complex and that subject raises more issues that I can address in this article... but it is enough to say that transparency of modeling assumptions is a very important issue.

Straight line projection, no matter how complex, [even work that is differential equation driven] does not involve an understanding of the underlying process, but only observation of past behavior. This is just historical analysis and serves as a method for comparing past and present, but offers little in the of understanding why something happened and if it will happen again in the same way.

Technology Assessment

This is one of the cutting edge disciplines in futures, as it addresses the interface of several areas, i.e. how economic, technological, social and cultural issues interact and affect one another, yielding a true cross-disciplinary analysis.

Technology trend analysis looks at market adoption patterns as well as trend obstacles and drivers – Obstacles are the more difficult to visualize as foresight "predictions" can center on a list of wonderful things that all could happen, but will not all actually happen. A blind spot among some futurists is full confidence in their forecasts, despite of past disappointments. The behavior of mass markets has proven more complex than anticipated...perhaps not butter-

fly wings in Mexico, but most market phenomena are affected by a range wider than the human imagination can presently encompass.

One revelation of technology foresight is the realization that technology usually has unintended consequences. e.g. the automobile and the rush to the cities.

OR

- Richer diet – Longer life, health problems of plenty
- Longer life – Services for elderly, growth of end-career volunteers force
- Communications technology – SPAM/cell phone noise pollution
- Financial management software – Fraud, ID theft

Much of technology change is now driven by improvements in information technology, and it is the cultural matrix that is often slow in keeping up. Electronic grocery shopping, for example, as basic as the technology is, has been slow to catch on, and dozens of innovative firms which sprouted to capitalize on this "next new thing" have come and gone. Although the technology existed, the logistics often did not, e.g. the lack of a sufficiently robust infrastructure system for the 1960s videophone or the completely electric car. Consumer level technology often needs two generation beyond streaming video for the interactivity demanded by casual use.

Straight line projection of existing technology assumes that development will follow its present patterns. For example, 1890 predictions of Chicago to Buenos Aires Train Services, but no automobiles or projections of speed/cargo growth for aviation based on propeller or lighter than air but not jet engines.

Many believe that acceptance of new technologies can be influenced. For example, Ford Motor Co. has focused on this gas/electric hybrid automobile for a market they feel is high income, educated and liberal. So they are advertising in "counter culture" media like Mother Jones or Organic Gardening and is taking out sponsorships of National Public Radio programs. This has been so successful that sales have already outrun production for the coming year.

Industrial Ecology

What industrial ecology provides is new perspectives for benchmarking change in business processes. Its approach is more analytical that predictive, and provides another perspective in assessing change. While it is somewhat normative, it also offers a new measure of change dynamics through such approaches as Rethinking Negative Forces and Maximizing Resource Utility.

For example, the concepts of Negawatts and immaterials are types of "economic savings through process efficiency" and good examples of "soft" or intellectual capital. Negawatts and Immaterials represent gains without the introduction of new labor or capital by reducing the demand for finite resources and slowing their exhaustion.

One of the central tools of industrial ecology is the Eco Audit, which focus on new uses of Industrial Process Waste (revaluate discarded materials/processes/opportunities) and Industrial Energy and Materials Flow (processing improvements & efficiencies).

"Ecologies of scale" can be achieved through strategic alliances – for example reselling waste products like carbon (soot) to materials specialists who can make use of it. The basic principals of industrial ecology is that 1) biophysical law are non-negotiable but economic laws are negotiable and volatile and 2) moving from competition to cooperative systems improves the system on all counts because competition is energy and resource absorbing.

Once again, this analytical techniques strongly represents the normative side of the field, which can be stated as: Instead of focusing on what the future will be, focus on what the future should be – based on the values of the analyst – and conduct all assessments around whether this goal is being achieved and how to make that happen. This difference in approaches represents one of the basic conflicts within Future Studies which will not be resolved anytime soon.

Finally, foresight can be wrong and still be useful to business... it's a working metaphor,

and the value for business is as a way of thinking strategically. A sports metaphor is useful here, i.e. staying on the "balls of your feet" and ready for whatever comes.

Conclusion

Change is both driven and shaped by underlying and sometimes unstated individual and organizational values. Differences in approach and philosophy may lead to different conclusions from viewing the same data. These differences can also lead to different responses to the same set of options/situations.

The challenge is how to structure the glut of information that comes from scanning in ways that make it useful to the organization – The only magic in foresight is long experience and some imagination. But the real test is not how much imagination is in the mix, but how much honesty in reviewing and adjusting for the assumptions of the analytical team.

Some schools of foresight see common sense as the enemy of good futuring, and feel that innovative visioning comes from embracing the chaotic forces in all systems. The basic assumption here is that modern change is so dynamic and rapid that tools designed for more stable times are inappropriate, and esoteric and imaginative approaches fit the situation better. Foresight is not a substitute for sound common sense approaches and time-tested institutional processes, but should serve as an addition to the existing management toolkit.

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