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FIELD ANOMALY RELAXATION

The arts of usage

Russell Rhyne

This article describes a proven method for projecting scenarios descriptive of alternative, comparably plausible lines of evolution of the contextual pattern within a given social field such as a city or nation or the world. That method, field anomaly relaxation (FAR), took on its present form in 1971 and has been applied variously since then. The routine steps of the FAR method are summarily described, after which the arts needed in its use are laid out in greater detail, based on 20 years' experience at Patterns and Systems International (PSI).

This is the third of a series of articles. The first presented a theory of the act of choosing, asserted that choosing among long-term policy options will rest on the chooser's image of the future context within which his choice would 'live', because all choices depend thus on context. The second argued that it is now especially urgent that appropriate scenarios of contextual change be projected for the world and for selected regions, and it suggested that that end be accomplished using a proven method, field anomaly relaxation—FAR.

This third article summarizes the structure of the FAR method, going on to elaborate on the arts involved in its use as explored during the past 25 years by Patterns and Systems International (PSI).

A context-matching theory of the act of choosing, in the first of these articles,[1] features a central model of the act itself plus functionally adjacent models for context, images of context, and intuition. The central model likens choosing to 'A fleeting pattern-matching, intuitive in character and mostly subconscious, in which a person feels which of the options at hand seems to fit best within his image of the relevant contextual field'.

Context is viewed as a gestalt field condition, and intuition is considered to be a

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non-mystical looking within at images previously stored in the subconscious. As an immediate consequence, a sort of primary derivative, 'When assumptions, results of component studies, or statistical data are drawn from functionally dissimilar contexts, they may be as immiscible as parts of unrelated jigsaw puzzles'.

The second article[2] pointed out particular aspects of the closing years of the 20th century that make wise, mutually compatible policies especially important, just when we lack the shared images of future contexts that are needed in choosing such courses of action. That article went on to discuss the attributes (as summarized in *Figure 1*) to be built into futures projections if they are to induce commonly held images of whole, gestalt future patterns.

Three caveats are necessary before describing the FAR method and its methods of use.

(1) *Projecting contextual futures should be a non-prophetic venture.* There may be a few component aspects of the future that may be foretold confidently (assuming no global catastrophe), but there is zero chance of reliably predicting the most probable overall field condition, with its innumerable components. What can be done—a valuable aid to choosers—is to compose a set of *illustrations* of what that unknowable real future may be, so elaborated as to offer bases for contingent policy selections.

(2) *Method alone cannot deliver even those limited results offered in (1).* Composition is an art, permeated with acts of judgment, and the output from an exercise of the FAR method will always be limited by the appreciations and the creative abilities of the persons carrying it through. A sound method should, however, help stimulate and focus and integrate component insights while opening the processes of projection to critical inspection; it should amplify the powers of those using it.

(3) *An image of the future can of course be developed without using any formal method.* Policy makers *cannot* choose among alternatives without reference to some image of the future context, so one always is formed, and some of those images have been very good indeed. Without a guiding method, however, the quality may be patchy, and the implicit nature of the images precludes cross-comparisons among them.

- **Scenarios,** not snapshots
- **State scenarios,** rather than event scenarios
- **Lateral consistency,** at each time hack
- **Sequential consistency,** along each scenario line
- **Bracketing sets of scenarios** for each field
- **Alternatives readily compared**
- **Alternatives described even handedly**

Figure 1. Needed attributes of futures projections in aid of policy selection.

FAR—a skeletal description

The routine procedures of the FAR method are sketched here, as foundation for later discussions of lessons learned during its use.

FAR offers an ordered, relatively transparent way of projecting alternative, comparably plausible future scenarios, each an illustration of how evolving social field conditions—contexts—might unfold within some chosen region or institution.

It differs radically from standard technological forecasting, since it deals directly with whole patterns rather than component variables. It also is unlike other currently used ways of holistic projection in that it places pattern consistency ahead of time sequencing, arriving at a sharply limited roster of plausible future patterns *before* assigning dates to those patterns.

Each exercise of FAR should move at least twice through the four-step cycle shown in *Figure 2*, and step 4 of one cycle feeds step 1 of the next. We at PSI have found that two cycles are usually enough, satisfying both the analysts and the client; we have done a few one-cycle projections, under the lash, but that never felt comfortable.

Step (1). Form a view of future contexts in the field of concern. One starts, as is usual in successive approximations work, by assuming the answer, namely the character of the future within the target field. This can be quite sketchy during a first FAR cycle but even that initial visualization should include more than one alternative scenario.

Step (2). Construct a symbolic language to describe whole contextual patterns. An array is composed in which *sectors* are laid out along the top and *factors* are listed under them. The array from the Indonesian sea control study of 1977[3] is shown in *Figure 3*. When one factor is designated within each sector, a *configuration* is formed, serving as a symbolic description of an overall condition within the target field.

Sectors are portions of the overall field—pieces of the whole pie—and all of them are to be considered concurrently in any visualization of a whole field condition. There may not be more than seven of them, and there should be no fewer than six.

Factors are fundamentally different. Each of them designates an entire, discrete state or condition within its sector. The factors for a given sector should exhaust the perceived range of plausible conditions therein.

Step (3). Filter out non-coherent configurations. Filtering is necessary, because any

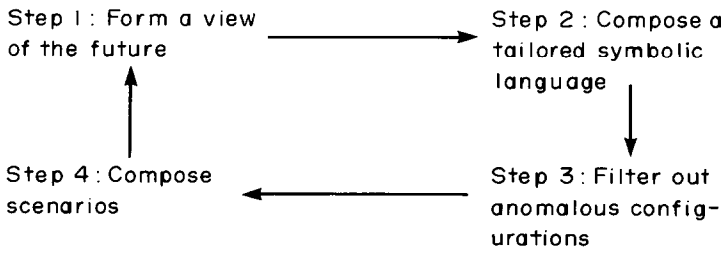


Figure 2. The FAR cycle.

Hubungan (Connection: S.E.Asia & The World)	ASEAN (S.E. Asean Regionality)	Sekutu (Regional Alliance Patterns)	Idiologi (World Power Polarization)	Kacau (Regional Patterns of of Disorder)	Energi (World Raw Materials Supply)	Pangan (Subsistence Balance)
H1: Open, Vigorous Exchange	A1: Reduced Coherence	S1: Peaceful Coexistence	I1: Multi-Polar Calm	K1: Mild	E1: Abundance	P1: Improved Food Situation
H2: Channeled, Moderately Active	A2: Moderate Coherence S.Q. 1975	S2: Vietnam-- Competitive Coexistence	I2: Multi-Polar Tense: S.Q.'75	K2: Moderate: S.Q. 1975	E2:Some Resource Scarcity	P2: Status Quo 1975
H3: Over-Controlled, Bureaucratic	A3: Drawing Closer	S3: Thailand Dominated; S.Q. '75, Rest ASEAN	I3: Shifting Allignments, Hostile	K3: Random "Senseless" Violence	E3: Self-denial by Industrial Powers	P3: Low Food Prod. Worse Than '75
H4: Interaction Slowed by Slack World Economy	A4: Economic Block	S4: Thailand Dominated; Rest At Risk	I4: Polarization Around Raw Materials	K4: Scattered Insurgency	E4: Leninist Resource Denial Strategy, Comm.	P4: Uneven Allocation by Producers
H5: Interaction Slowed by Fear of Violence	A5: Military Pact., All of ASEAN	S5: "Domino", Coherent ASEAN Response	I5: Polarization Around Subsistence	K5: Much Heavy Insurgency	E5: Recession, Econ. Crises In the West	P5: User Disorders
		S6: Multi-Polar Disorder In ASEAN	I6: Polarization Around Communism	K6: Invasion of One/ More ASEAN Nations	E6: Deep, Wide Depression	P6: Famine Wide Spread
		S7: ASEAN Islands vs. Communist Maniland				

Sample Configuration: H2 A3 S4 I5 K4 E3 P2

Figure 3. The 'HASIKEP' sector/factor language for describing Indonesian policy contexts.

sector/factor array that is rich enough to serve will permit designation of too many configurations to work with—often several hundred thousands of them. Luckily, only about one 0.1% pass even the first filter, and the second one cuts that to about 0.05%.

- *Filter 1.* Inspect each pair of factors from the array to see if a pattern can be visualized in which those two factors would coexist. Rejecting a single pair will scratch all of the several thousand configurations containing it.

- *Filter 2.* Judge the coherence—the wholeness—of each configuration that survived the first filtering. Even though all of a configuration's component pairs of factors (21 of them, for any 7 sector array) may have seemed separately plausible, the configuration still may not feel coherent as a whole.

This advance elimination of most options is one of the great strengths of FAR.

Step (4). Compose scenarios. String the configurations that survive step 3 in sequence to form scenarios. This is the first point (another distinctive, worthy aspect of FAR) at which configurations are dated.

Doing it

The experiential base—PSI's past uses of FAR

The following are among the principal applications of the FAR method undertaken by PSI. All these studies, except the Indonesian one, were prepared as limited-distribution PSI papers, as bait for, or reports to, clients. I know too little about applications of FAR by others to draw useful lessons from them.

(1) *Contingent US patterns—CUSPs.* This was a major effort, absorbing about 10 man-years of effort, 1969–1972, during which the FAR method took on its present shape. It was done for the US Office of Education, with PSI providing the core team (2–3 members) sub-contracted to Stanford Research Institute for two years.

(2) *Alternative mission district patterns* were projected for the Latino Local Development Corporation, to provide contextual bases for decisions by 'mom and pop' businesses in San Francisco's Mission District. Limitations of cash and time forced us to a single-cycle use of FAR, with about one man-year spread over a six-month period in 1973, but it was generally successful.

(3) *Alternative educational patterns, USA, 1970–2000.* This work was done during 1971, based on US contextual futures generated during the first FAR cycle of CUSP projections (1 above). It represents our only attempt, until now, to project future evolutions within an institution. It was at best moderately successful, but the FAR method proved applicable to it.

(4) *Alternative future contexts for Indonesian policy making.* This was a full-dress application of FAR, done as part of an extended analytical evaluation of alternative sea sovereignty systems for Indonesia.[4] The social field was that of the whole world outside Indonesia, but with an attenuated view of regions outside South-east Asia. The futures projection task absorbed about three man-years.

(5) *Projected world patterns, 1985–2010,* an in-house, 1983 projection of world future contexts by PSI—a scratch effort, since there was no client support. Scenarios of worldwide change composed back in 1963 by PSI's parent corporation, Johnson Research Associates (JRA),[5] had served as backdrops for our CUSP projections but, by the mid-1970s, those JRA scenarios were becoming obsolete, and they were outdated entirely in the early 1980s by the Polish revolt against Soviet dominion. Our limited 1983 effort did include some scenarios featuring the liberation of Central Europe, but we completely missed the idea that the USSR would invite, rather than oppose, that sea-change in the worldwide pattern.

(6) *Alternative futures for South-east Louisiana.* These projections were made in

1985 for the New Orleans Chamber of Commerce. PSI provided the core team of one within a previously initiated programme by the University of New Orleans. Only a first FAR cycle proved possible.

General lessons

Study design. If possible, make the study a team effort, and have a few core members who work almost full-time. See that at least a few team members have an extensive appreciation of the social field (nation, company, whatever) for which projections are to be made, and seek out members with diverse pasts and ones from at least two generations; a spread of academic disciplines is helpful, but relatively unimportant. Expect the study to run for several months or more, and try hard to get the sponsor to commit to follow-on *use* of the study results. Special arrangements would have to be made before more than a few of these desiderata could be met within academe.

Intermittent engagement of potential users is vitally important, since the most important 'results' usually consist of appreciations lying implicit in the minds of the participants.

- A projection effort never works well, in our experience, unless the work is done in a room reserved for it, where en route results can be posted on the walls and where users and interested bystanders can drop by unannounced to scan and discuss the postings.
- For the Indonesian project, arrangements were made for the formation and engagement of a senior advisory council to which en route results were reported and which worked hard for several long evenings, scoring the array of pairs, in the first filtering of step 2, cycle 2. This worked so well that we urge it as a part of every project design.

Seriousness. FAR scenarios for a given social field should be viewed during the work of projection as contexts to be referred to by *all* the policy makers whose responsibilities range across the field. So, each participant in a FAR exercise should try to assume imaginatively the mantle of care worn by upper-echelon leaders. For instance, one policy team (executives and analysts) base their efforts to improve a country's logistic system on the FAR scenarios being produced, but another such team might (as targetters) use them to find cheap ways of degrading that system; others (working on counterterrorism) might try to anticipate where saboteurs might strike. And clients, too, should be serious; the commitment to a FAR exercise rarely should be for fewer than two man-years of effort.

Fields within fields . . . Social fields (and therefore contexts) are nested, and it is desirable that projections for one such field should be undertaken only after other scenarios are available for the broader field of which it is part. Ideally, we feel, a full-dress programme of futures projections should begin with world futures. Then, compose sets of scenarios for a given world region (eg Europe or Latin America) keyed to (and therefore contingent on) each of several particular world scenario lines. After that, look at social fields nested within those regions. Unfortunately, no such programme has ever been mounted, and the world futures that were composed soon became obsolete, as must happen in a few years to the best of projections in these changing times. So, this preferred form has yet to be really tested in practice.

Presentation is important, since the aim is to transmit similar images (a matter of art) rather than just to report facts. PSI has done poorly on this, although I doubt whether we could have persuaded any of our clients to invest more project funds in improved presentation. We did slip a few bright ideas into our reporting, such as those indicated below, but we should have done much more.

Spreading the 'tree' of scenarios in terms of attractiveness is easy, but it injects too much analyst preference, so one should search for lateral dimensions that are less subjective. We have used two lateral spreaders, to produce a 3-D tree. They are:

- *Openness*, as that word was used by Karl Popper.[6] This is an inward-looking dimension reflecting the extent to which the social field offers latitude for individual choices.
- *Faustianness*, ranges from 'can and will' on the plus side, to 'can't and won't' on the other. It reflects Faust's belief that he could and legitimately might manipulate the world around him; it looks outwards, measuring the capacity and the willingness of the field's agents to dominate external conditions.

Spreading the tree along these two dimensions only seems to work for relatively tight-knit fields. It fell in line nicely for our US projections, but not for those with worldwide scope.

Figure 4 shows the Faustian tree of CUSP scenarios; think of it as the XZ plane of a 3-D drawing. *Figure 5* offers a second lateral spreading of that same tree (a YZ view) in terms of openness; *Figure 6* shows a transverse cut through the top of the tree, for 2000 AD.

We tried something really artistic in 1971, constructing a 3-D tree out of Plexiglass with transverse sheets at designated time hacks and slender, light-conducting rods for scenario lines; we arranged it so that individual scenario

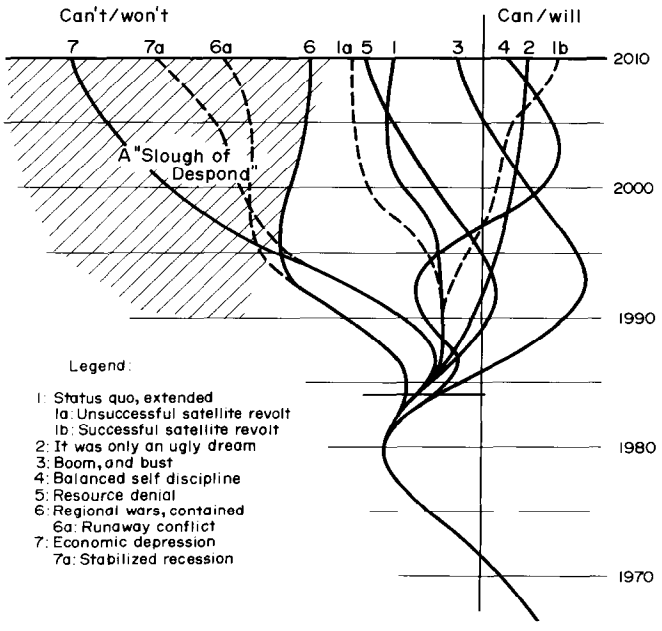


Figure 4. Projected world patterns, 1984–2010 a 'Faustian' tree.

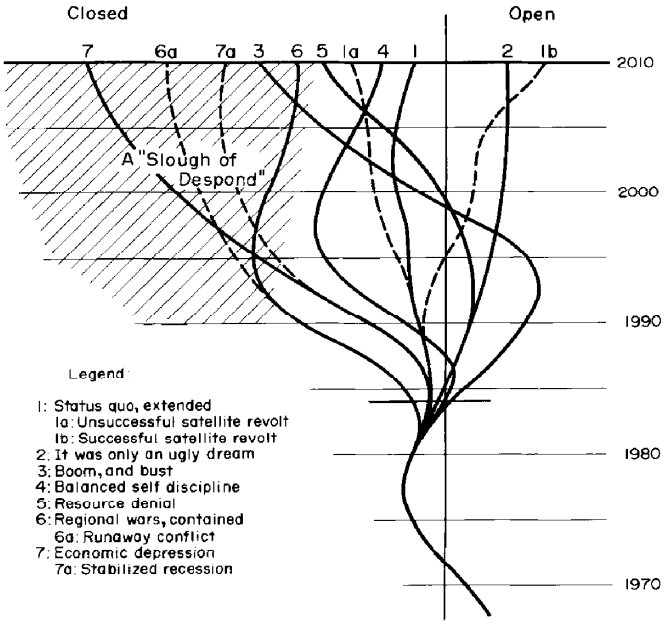


Figure 5. Projected world patterns, 1984–2010 an 'Openness' tree.

lines could be lighted at will in various colors. It was lovely, and it did stimulate insightful discussions by a few people at a time; but it cost too much (some $2000, as I recall), and it was cumbersome. Now, we can do much the same thing with computer graphics, easily and cheaply.

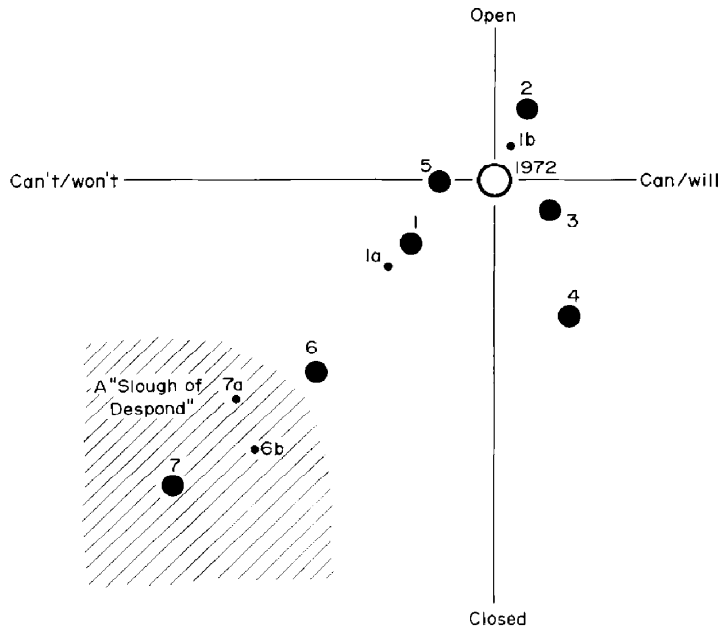


Figure 6. Projected world patterns, 1984–2010 a cross section (year 2000) through the 'Open/Faustian' tree.

Particular lessons, keyed to the four steps of the FAR cycle

Step (1). An initial view of the future. This step offers few difficulties. In the first cycle, a quite rudimentary view is good enough, and in later cycles the needed inputs flow directly from the results of the prior step (4). Even in the first cut, however, there should be detailed discussion of alternative views of the future and of the character and boundaries of the field of projection. We have not yet found it worthwhile to make a record of such discussions, but that would surely be desirable if the core team (the natural repository for such materials) were weak or non-existent.

Step (2). A tailored symbolic language. This step sounds straightforward when described but it reeks of complexity.

Selecting six or seven primary sectors

We think it imperative that *all sectors* (and all factors within them) be described in qualitative terms. Lateral associations among sectors are needed almost continually, so they should be described similarly. Quantitative treatment will not work for some evidently important sectors, so all *should be handled qualitatively.*

Figure 7, drawn from the CUSP report, shows the 12 sectors that we considered, with the seven primary ones (ACTIVES) shaded. Those shown on the inner ring pertain to the cultural core, while the others are somewhat less value-laden. The five that were not included in the primary set (UPMOD) were used later for fine tuning, as follows: after a seven-sector configuration had passed the filters of step (3) and been written into a scenario, the team considered which factor from each of the UPMOD set would fit best within that configuration's pattern.

Seeking out an acronym might seem trivial, but we have not found it so, for two reasons:

- Field theory tells us that precedence among sectors is apt to change as the condition of the field changes, but our culture tends to give first priority to economics or technology or politics. So, some way of arbitrarily shuffling the primary set is needed, and selection of an acronym accomplishes that.
- While it is possible to keep seven different aspects of a situation concurrently in mind, it is difficult enough so each of us tries to escape into consideration of only a couple or three of them; an acronym helps expose and thus discourage such laziness. The only time we tried working without an acronym, the discourse was drastically slowed.

We have never yet found a case in which the set of primary sectors deemed appropriate for one social field could be used in another, but the fields for which we have made projections have differed widely. Within an extended programme of FAR projections, it would often be appropriate to deal successively with fields of similar scope nested within one broader context, as (for instance) projections were made for selected European countries after completion of embracing Europe-wide scenarios. In that case, the rosters of primary sectors might be nearly alike, and comparisons would be easier if they were identical.

Six primary sectors, or seven? Either choice will call for self-discipline, since a dozen or more candidates will normally seem worthy. If the projections are to be used widely and with scant guidance, readiness of communication calls for the use of only

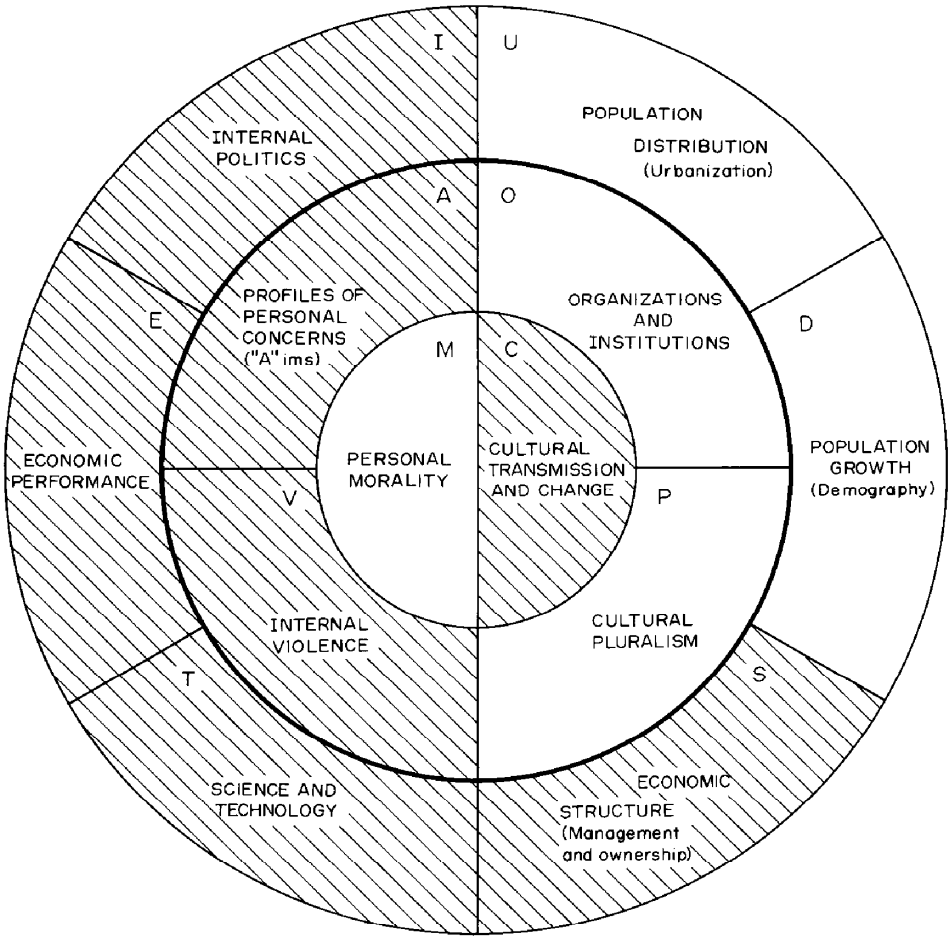


Figure 7. Seven primary sectors (ACTIVES) plus five secondary ones (UPMOD) used in the CUSP projections of 1972.

six sectors; otherwise tap the increased discriminatory power available with seven of them. Do not even try it with more than seven; tests by psychologists have shown that most of us can keep seven separate things in rapid-access memory, but almost no one can handle eight; and practice has shown that eight will not work.

Scope? Try to cover too much within a given sector, and it will be impossible to make a short list of factors that offers filing spaces for all plausible alternative states or conditions within that sector. Set the bounds too narrowly, so that only three or four such states emerge, and it would have been better to increase the scope or perhaps to select a different sector to include within the primary set.

Choosing factors for each sector

Judgment and artful dodges are especially needed here.

What's in a name? The name of each factor, as shown for instance in *Figure 3*, is (as

with all names) just a mnemonic clue to help one call up an image of some vastly complex entity or happening—a personality, a strategy, a field condition. Each such factor name is, in practice, backed up by a page-length description, but even that falls short of *defining* the field condition in question. Indeed, the image of that condition may shift as the pattern around it changes, so factor names are merely guides to factor character.

Ordering factors in terms of one, or more, dimensions. Even after a team agrees to work qualitatively, our culture's current bias towards numeracy will tempt us to lay out factors along some single dimension reflecting size. That is overly constraining, since conditions within a sector usually differ in kind as well as in degree. Kurt Lewin used two-dimensional maps to reflect adjacency among alternative field conditions. On such a map, changes from one factor to another can be shown by moving a pencil point across only one boundary. Two dimensions would seem to add only a little descriptive power, but in fact the gain is substantial. We have found it useful to map the factors in each sector in Lewinian style. Note that Lewin's early focus on the act of willing (choosing) led him to realize the key significance of context. He seems to have hoped early on that his mapping, plus the mathematics of topology, would permit *definitive* treatment of context;[7] later he came to see (correctly, I think) that his maps should be seen merely as powerful aids to intuitive appreciation and communication of holistic insights. *Figure 8* shows one such map (for the *cultural change* sector of the CUSP projections).

Using indicators. Think about—meditate on—a given sector, and try to see which variables might best be used to describe change within it. Then, lay out a table in which various alternatives for each such variable are indicated, and seek out combinations that seem both plausible and distinctive. Each such combination could be used to designate a factor for that sector.

For example, the *cultural change* sector mapped in *Figure 8* was built around two indicators, acculturation (one-at-a-time addition of new traits within a culture) and enculturation (the sintering together of traits to form an integrated pattern), with low, medium, and high options for each. To pick just one, a factor combining low enculturation and high acculturation would suggest uninhibited change.

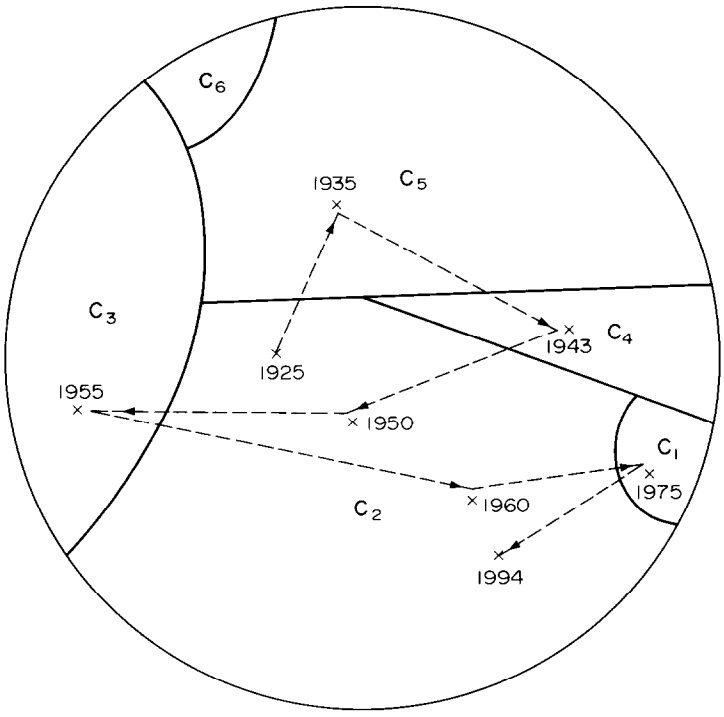
Step (3). Filtering

The matrix of pairs

This filter calls for consideration of all possible pairs of factors, one at a time, so it is well to start with construction of a matrix of pairs such that each of its cells indicates a particular pair. Do this by laying out all the factors, from one sector after another, along the top, and then showing the same sequence of factors down one side—as shown in *Figure 9*, the scored matrix from the Indonesian projections.

Consider each of the indicated pairs of factors, with the members of each pair coming from different sectors, asking the same question for each: 'Can we think of a pattern within which these two factors might coexist?'. Some nuances of this are as follows.

For the second cycle of our CUSP projections, we tried scoring degrees of fittingness for each pair, with: No 3 = 'Hell, yes', No 2 = 'Yes', No 1 = 'Maybe', and No 0 = 'No'. We programmed the computer to give geometric means of the 21



Legend:

Factor	Enculturation	Acculturation
C-1: Unhibited change	Low	High
C-2: Moderated change	Moderate	High
C-3: Neutral/dull	Moderate	Moderate
C-4: Assimilated change	High	High
C-5: Conventional	High	Moderate
C-6: Tradition controlled	High	Low

----→ US History

Figure 8. A Lewinian map of the cultural transmission and change sector from the CUSP projections of 1972.

such scores for each configuration, thinking that number would help us judge its overall plausibility, but we never got much good out of the numbers. We now believe that just a simple scoring of 'yes' or 'no' is good enough, as indicated in *Figure 9*.

The *process* of scoring is notable for several reasons:

- First, it seems always to induce a transdisciplinary mode of discourse; after just a few hours of such work, an outsider usually cannot tell which team member is the engineer and which the economist or philosopher.
- Second, it helps each participant integrate all his accumulated bits of knowledge, since the arguments about each pair tend to be sweeping and diverse. A hint to educators?
- Third, it tends to make radicals more conservative (as simple solutions give way to

Sectors	H	A	S	I	K	E	P
Factors	12345	12345	1234567	123456	123456	123456	123456
Hubangan							
H1: Vigorous	xxxxx	x-x----	xx----	xxx---	xx----	xxx---	
H2: Moderate	xxx-x	xxxxx--	xxx---	xxxx--	xxx-x-	xxxx--	
H3: Over-Cont.	xx---	---x-x-	-xxx-x	xxxxxx	-xxxxx	-xxxxx	
H4: Slow, Econ	xx---	--xx--x	--xxxx	-xxxxx	--xxxx	---xxx	
H5: Slow, Fear	x---x	---xxxx	--x-xx	--xxxx	-x-xxx	xxxxx	
ASEAN							
A1: Less Coherence ------		x--x-x-	xxxxxx	xxxxxx	xxxxxx	xxxxxx	
A2: SQ, 1975 ----------		xxxx---	xxxxx-	xxxxx-	xxx---	xxxx-x	
A3: Drawing Closer ------		xxx-x-x	-x--x-	xxxx--	xxxxxx	xxxxx-	
A4: Economic Block ------		xxx-x--	-x----	xxx---	-xxxx-	---x--	
A5: Military Pact -------		----xxx	--x--x	---xxx	---xx-	xx-xx-	
Sekutu							
S1: Peaceful Coexistence -------		x-----	xxx---	xxx---	xx----		
S2: Competitive Coexistence ----		xxxxx-	xxxx--	xxx---	xxxx--		
S3: Thai Down; VN Satisfied -----		-xxx--	-x----	xxx-xx	xxxx-x		
S4: Domino Ser.; One Down -------		--xxxx	---xx-	xx-xxx	-x-xxx		
S5: Coher. ASEAN Response -------		--x--x	---xxx	-xxx--	xxxxx-		
S6: ASEAN Discord ---------------		-x-xxx	--xx-x	---xxx	xxxxxx		
S7: Islands vs. Communism -------		--x--x	----xx	---xxx	xxxxx-		
Idiolgi							
I1: Multi-polar Calm ----------				xxx---	xx----	xx----	
I2: MultiiPolar, Tense --------				xx-x--	xxxxx-	xxx---	
I3: Hostile, Shifting ---------				-xxxxx	-xxxxx	--xxx-	
I4: Polarized; Raw Mat. -------				---xxx	--xxxx	--xxxx	
I5: Polarized; Subsistence ----				--x-xx	-xxxxx	--xxxx	
I6: Polarized around Communism -				----xx	-xxxxx	-xxxxx	
Kacau							
K1: Little Violence ----------					--xx--	--xx--	
K2: Mod.; SQ, 1975 ------------					-xxx--	--xxx-	
K3: Random Violence -----------					-xx---	-xx---	
K4: Increased Insurgency ------					xxxxxx	-xxxxx	
K5: Wide, Heavy Insurgency ----					--xxx-	--xxx-	
K6: Overt Invasion ------------					--xxxx	---xxx	
Energi							
E1: Resources Abundant -------						xxx---	
E2: Some Resource Scarcity ---						-xx---	
E3: Successful Self-Denial ---						xxxx--	
E4: Leninist Encirclement ----						--xxx-	
E5: Scattered Econ. Crises ---						--xxxx	
E6: Wide, Deep Depression ----						--x-xx	

Note:

x = Yes
\- = No

Figure 9. The 'HASIKEP' matrix of pairs.

more complex ones) and conservatives more radical (as standing pat proves unattractive).

- This is a point at which participation by potential policy makers and senior members of the client organization should be built into the process. The final

results will surely be improved by stirring in judgments from such people, and their functional engagement will raise the chances that the results really will be used. Kipling wrote, 'Who rides may read', and those who have contributed even briefly to a projection effort will be vastly more able to appreciate later reports flowing from it.

When a matrix of pairs has been fully scored, there remains the task of pulling out those few configurations having no pair(s) scored 'no', and that is a tedious, error-prone task when done by hand. A computer does it well.

Considering the wholeness of entire configurations

In this second filter, the coherence of each whole pattern is considered, relying even more on holistic appreciations than in the first. Members of a given team may have different ways of gaining a feel for the pattern of life reflected by a given configuration, and some prove unusually good at that very personal task. These tricks help.

- Wall posting of the configurations to be appreciated seems almost necessary, as an aid to individual appreciation and to facilitate and focus arguments among team members. It also gives an entrée for casual engagement of non-members, which is both substantively valuable and sound public relations.
- We have found psychometric scaling of the relative attractiveness (and, later, of the Faustianness and openness) of the configurations to be a powerful aid to appreciation. It is also useful in assigning lateral positions to configurations, but mostly as an aid to judgment rather than as an answer. We favour the use of magnitude estimation scaling (MES),[8] and have programmed such scaling for direct inputs of scores from the computer console. The scoring itself (with repeated consideration of questions such as, 'How much more Faustian is this configuration than that one?') quickens one's feeling for each of the patterns involved. Defending the resulting weightings to other team members, who may have judged them differently, further refines such appreciations.

Step (4). Scenario composition

This step is best done by the members of the core team working separately and almost non-stop, since it demands intense concentration on the character of each configuration to be threaded with others as a scene along each scenario line. After such lonely, introspective labours have produced some tentative scenario lines, the core team can come together again in useful, reciprocal critique. After that, with some relatively solid results in hand, open the process to broader presentation and discussion. Indicate scenario lines by pinning coloured threads to configuration sequences, using the wall-postings from Step (3). This will usually leave some of the cards on the wall unused, for one reason or another.

Here are some of the procedural aids we have tried.

Factor adjacency. A Lewinian map of a given sector permits construction of an adjacency array, showing which factors are separated by one, two or more boundaries, and it seems plausible that a given configuration might more readily evolve into another if relatively few boundary crossings were needed. So, we programmed it so that the computer could print out configuration proximities as

measured by numbers of factory boundaries to be crossed, but those numbers seemed only to get in the way of judgmental assignments of configuration sequences. I see three possible explanations:

- This whole task is so intensely intuitive in nature, that injection of numerical 'guides' may just be bad composition—and sound composition is the key element in good art, and bad analytical art works badly.
- When spacing configurations along a scenario line, we have usually tried to locate one every five years or so, and that leaves room for a number of undesignated changes between such time points.
- More substantively, configuration proximity may not be meaningful. There seems to be a kind of whip-cracking involved; minor changes in a few key sectors may call for more radical adjustments in other sectors if pattern integrity is to be achieved.

Early designation of scenario themes. This can ease scenario composition dramatically, and we think it does no harm to the process. The end objective is to expose a few contextual scenarios that meet the criteria laid out in *Figure 1*, and by the end of the first FAR cycle the core team should have formed a view of the future within the field of concern sound enough to permit selection of the *kind* of scenario lines that would fill that bill. With such guidance in mind, the team can then search the roster of filtered configurations to see if the initially postulated scenario lines can be laid out.

Reintroduction of some rejected configurations. Remember that a score of 'no' on the matrix of pairs really meant, 'not yet', since the question was whether anyone on the team could visualize a future condition containing that pair. The process of scenario composition often calls such earlier judgments into question, showing where a pattern not previously visualized might fit between two others; this changes one or more pairs scorings from 'no' to 'yes', and *that* recovers still other configurations from the bin of rejects.

Closing thoughts

Never forget, a contextual projection may serve as propaganda, but its legitimate purpose is to provide foundations for policy choices, and if such choices do not follow, the work (using FAR or any other method) was futile. Until now, that has been the track record of this important branch of futures. Of course, most policy walls are built incrementally and unnoticed, a brick at a time, during daily fire fighting; the phrase, policy choice, runs a long way beyond the few occasions when long-term courses of action are deliberately selected. So, projections should be *used* often by staffers as well as leaders, so as to be subconsciously ingested by all potential policy makers.

What kinds of actions do we pine for?

A shift among managers to a contingency stance

Yes, contextual projections are needed as bases for policy choices, but full use of a set of *alternative* contextual scenarios will call for a conceptual shift, to what might best be called *a contingency stance*. Several alternative contextual scenarios always

seem to be comparably plausible, so betting the farm on any one of them would be imprudent. We urge that planning and policy making proceed as though any one of them might come true.

With a bracketing set of such scenarios in hand, a preliminary policy/plan should be outlined drawing all its assumptions from just one of them—and then another, and another. Then, as one of the highest executive functions, the most plausible of the scenarios should be designated, and policies and plans keyed to it should be elaborated and *provisionally* accepted, with suitable hedging. This would make each such plan contingent, good not for one year or ten, but for the duration—for as long as the true future were to unfold along the chosen scenario line, thereby validating its underlying assumptions.

Such a contingency stance would call for continuing contextual monitoring to give early warning of a shift from one projected scenario to another, and the sector/factor array offers a structure for designing the indications boards needed for such monitoring. As a side-benefit, such an ongoing activity would exercise at least a few staff members in regular consideration of the projected scenarios; and if one can get the 'sergeants' involved, that spells victory.

Iterative looping of FAR projections and contingent quantitative studies

The FAR method is avowedly qualitative, for reasons given above, but its products offer a means of caging the assumptions needed in quantitative studies of many kinds, and this in turn invites a potentially useful cycling from holistic synthesis into analyses of parts and back again into a holistic mode of inquiry.

- Technological forecasts can thus be extended a decade or more into the future (instead of the two or three years for which context-free forecasts can be respected), each keyed to and therefore contingent on a particular scenario line.[9]
- Correspondingly contextual projections offer multiattribute modelling, decision analysis trees, and systems dynamics analyses firm bases for the assumptions that so often dominate their results. And each such result could feed back into the holistic scenario from which its assumptions were born, strengthening (or perhaps even invalidating) that scenario.

Cluster results drawn from similar contexts

Statistical data and studies that derived their assumptions from similar, designated contexts should be clustered. The context-matching theory of choosing asserts that merging of such components is legitimate only when such contextual discipline[10] is maintained. Limited experience suggests that this should to at least some extent heal one of the most notable weaknesses of the 'soft' sciences, namely their proven inability to build on prior work.

A programme of contextual projections

Whatever method may be used in composing the needed futures projections, it will be much better if the effort is established as a long-term programme. Only such a programme could:

- Provide a repository for the implicit appreciations accumulated by a study team out of sequenced, related projections.

- Explore the refinements of method opened up by making projections for nested fields, and the enrichment made possible when results for component fields are fed back as inputs when projections for the embracing context are recycled.
- Extend and refine the method itself, not only through external critique (which must rely for insights on prose, a poor impedance match), but through fully appreciative in-house examinations. Again, 'Who rides may read'.
- Provide the services of a contexts clinic, to which persons dealing with context-sensitive matters may come for help. A reservoir of results and experiences from projections for many contextual fields would provide a base for assistance to a wide variety of policy makers.

What size and shape? Each futures centre should be built around a permanent, small core team (maybe two members, to start) institutionally established within some government, research centre, or graduate school. For the last, consider a centre supported through services to outside clients, where members of seminars in policy research could learn while participating in futures projection. In any case, the centre's chief should report high in the authority pyramid, where actual policy makers are more apt to be found.

Before the emergence of a context-matching theory that tells *why* contextual futures projection are needed, there was no basis for attracting support for a programme of the sort considered here. Now, that objection has been met.

Experiment with presentation

Remember, the goal is to induce image formation; transmission of facts is just a means towards that end. There are all kinds of possibilities here. To suggest a few:

- Hang some short stories on the tree, like fruit. Consider how the personalities and capacities of a given cast of characters might evolve differently along each of several scenario lines.
- Try to make use of virtual reality techniques, and structure FAR for use on Internet.
- To lend a sense of realism, apply FAR to the past, searching out alternative lines of development if key events were to have happened otherwise—a victory by the South in the American Civil War, for instance, or defeat and destruction of the Norman invaders in 1066.

Explain why

I think this may be the most important lesson I have learned during a quarter-century of working with FAR. Always explain why contextual projections are useful in general, and who should use a set composed for any particular social field. Never expect the results to stand alone, no matter how artistic their presentation. After all, without belief in some such theory, why should anyone be willing to support a futures projection programme or be interested in results flowing from one?

When I published my first formal paper on this subject[11] in the early 1970s, my main purpose was to make our CUSP scenarios for the USA available to all, thinking that policy makers and analysts of many kinds would hurry to use them as backdrops for their judgments. I mistakenly thought their usefulness would be obvious. I believe now that nobody but me thought those scenarios were offered for *use*.

With regard to programme continuity, each PSI client really consisted of one enthusiast buried within a client organization, a person who felt intuitively that

future contexts should matter; but until the pattern-matching theory of choosing had been thrashed out, we could not explain to him (and his many disbelieving associates) why his hunch had been valid. Our lonely, unsupported supporter usually moved on to some other post while the projection effort was in progress, so each programme stopped prematurely.

Now, with a theory in hand that will do for the time being, I feel that vigorous promulgation of that theory (or some alternative to it) should accompany every presentation of results.

Notes and References

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