Hari's Hubble:

The Applied Mathematical Psychology of Integration, Mindscapes and Synchronicity - 3

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Abstract

The last in a trilogy, focus here is on a case study that answers the most uncouth, yet most relevant, of all applied research questions—so what? The model developed in the second paper is applied to a real world psychology department, where it makes the necessary connections between personalities, organization charts and the evolution of an extremely bitter and divisive conflict. Compared to the sophisticated strategies of participants in Robert Axelrod's computer simulated tournament, tactics and strategies of Department X's personnel were a tragicomedy. Maruyama's mindscapes both predict and clarify elegantly the strategies and behaviour of the participants.

Conflict begins when rather than employ any of five integration options, new leadership chooses dominance over cooperation, with disastrous results; results accurately summed up with the expression dé·jà vu.

Dé·jà vu is the illusion of having experienced something before, when in reality, an event is occurring for the first time. The mathematical psychologists of general systems are having increasing difficulties distinguishing between dé·jà vu reality, and a repeating nightmare as Information Technology threatens cultural infrastructures with evolution. Despite economist's and philosopher's assumptions and claims of Homo sapiens rationality, intelligence, strategy, etc., integration projects most critical to the existence and well being of our species are inevitably frustrated by serious struggles for dominance, territory and for niche space.

Cooperation, sharing space and information are essential to four of the five forms of integration. Add to this the fact that contemporary evolutionary forces combine to exclude dominance as an option. And the reasons for resistance to change are not logical, but psychological as parties attempting to treat Information's multidimensional cyberspace and personality's six dimensional hyperspace as if they were a two dimensional surface—or worst, personal space.

Keywords: game theory, genetics, behavioural analysis, personality

Foundation's Edge

When Isaac Asimov (1982) added *Foundation's Edge* to what had previously been an award winning trilogy, the conflict at Department X was entering the phase where the consequences were clear. Ironically, the major participants still discussed integration in positive terms, as if it were an option, though the strategies of Department X's leaders was optimal for precluding integration. The integration problem was complex, a constructive solution more complex, and the ecology's resolution was to be merciless. Nevertheless, Asimov's science fiction masterpiece accurately formulated the General Systems problem, described the method of analysis, evaluated the alternatives and chose the ecology's resolution as the hero's optimal option. The novel is so astute, so complete and so well formulated that Asimov's "Psychohistory" is used here to delineate a theory of applied mathematical psychology.

Hari Seldon (Asimov's alter ego) is the name of the mathematical psychologist who applied his theory of Psychohistory (General System's alter "super ego") to predict that an empire that was unalterably on a course to implode. Unable to hinder the implosion, Seldon established two foundations. The 1st Foundation was dedicated solely to physical sciences and intentionally kept ignorant of psychology. The 2nd Foundation was dedicated solely to mathematical psychology and was to remain ignorant of physical sciences. Preoccupied with their specialties, both foundations were to prove relatively ignorant of the ecological sciences (living systems). The two foundations were to follow Seldon's plan that would permit the earliest possible development of a second empire much more advanced and more stable than the empire that had imploded. Established at "opposite" ends of a *psychological* spectrum, the two foundations' integrative strategies were mirror images of each other.

The 1st Foundation was constructed to use physical science, aggressive strategies and *physical power* to overcome political power. The 2nd Foundation was constructed to use behavioral science, subtle, persuasive, strategies and *psychological influence* to overcome political power and guide the 1st Foundation. Seldon arranged that the execution, updating and modification of his plan would be the sole responsibility of the 2nd Foundation. And to avoid predicted destructive conflicts, Seldon's plan required the 1st Foundation to be ignorant of the existence of the 2nd Foundation. After establishing the 1st Foundation in the first novel, Asimov devoted the next two novels of the trilogy to the conflict that developed when a mutant set off an unpredicted chain of events that revealed the existence of the 2nd Foundation and disrupted virtually all aspects of Seldon's plan. A 2nd Foundation victory over both the mutant and the 1st Foundation ended the trilogy.

Beginning where Asimov's (1951) *The Foundation Trilogy* ended, *Foundations Edge* portrays the problem as *forced integration* in the face of irreconcilable differences. Up to this point, concomitant ethical problems, struggles for dominance and personality problems are consistent with those associated with the rise and fall of the Roman Empire—after which Asimov modeled his trilogy. The role of ecology is introduced when Gaia makes its entrance as a third party in what was previously a two faction conflict. Here, Asimov the author (a physical chemist) had problems identical (as opposed to analogous) to the complex integration problem faced by 21st Century General Systems. Today, authoritarian political and administrative methods (dominant since the rise and fall of the Roman Empire) are being replaced by contemporary paradigms. The automotive industry, IBM and governments of industrial nations are psychological equivalents of the dying empire; the aeronautical industry; Microsoft and NASA (National Aeronautics and Space Administration) the replacing paradigms. It requires very little imagination to

envision Hari Seldon (Nicolas Rashevsky!) as a Professor in General Systems who devises a plan that would forcibly integrate the Ayn Rand ethics of predatory hierarchical organizations with the Bill Gates ethics and equally predatory networks of IT-organizations. It requires considerably more than imagination to envision the professor's plan; and even more imagination to understand how competing foundations, an ecologically advanced society and human intuition might (all!) be persuaded to adopt the plan. Note, there is no conflict about whether to follow Seldon's plan or not, only over how the plan should be executed.

In addition to how the integration problem is formulated, Asimov (1995) is quite explicit, as to how Seldon's plan was developed, updated and executed as well as from wince Seldon achieved his "moral authority." The word "prophet" encompasses all that is needed, implies most of what is lacking, and "mathematics" is supposed to fill in the gaps. Seldon as prophet predicted the future, advocated a plan, inspired whole regions in a galaxy and was viewed by many with a quasi-religious awe. As far as contemporary power structures are concerned, behavioral science, particularly psychological specialties, lack all of the above.

Fortunately, theoretical psychology has two problems that are analogous to those solved by theoretical physics. First, psychology inherited a 19th Century determinism that is difficult to integrate with the random processes (analogous to Heisenberg's uncertainty principle) encountered in contemporary laboratory experiments. Second, psychology inherited from philosophy an anthropic principle that gives the human mind/soul a uniqueness that demands exceedingly precise conditions. Physics developed quantum mechanics (the Copenhagen interpretation) and a generative theory (the Oxford interpretation) as solutions to the respective problems.

Ethics and Living Systems

At the end of the century, Combes & Goerner (1999) extended behavioural science's use of revisions of physical concepts into the age of information. They used Mechanistic Age thermodynamic notions of information as "neg-entropy" as their case example. Neg-entropy has the universe losing energy and degenerating toward simplistic disorder. In direct contrast, living systems move toward increasing complexity. Large gradients circulate energy faster and faster. In response to the continued pressure living systems seize upon small, naturally, occurring fluctuations to organize motion to higher and higher speeds. Driven to its limits, a new, more intricate system of motion evolves. Combs & Goerner use interdependent dynamics (commonly called chaos and complexity) to aid in explaining mechanism by which structure self-organizes under pressure.

In addition to spectacular advances in physics, the 20th Century was to produce enormous changes in polymer chemistry, mathematics, micro genetics and Information Technology. This places new demands on behavioral science specialists who, like the author Asimov, find that they have to work within an increasingly constricted area, with progressively fewer and fewer degrees of freedom. A Hari Seldon type would be able to take full advantage of General Systems' unique perspective at the interfaces of specialties and the strategy of embrace, extend and integrate—but how would one use the knowledge gained from *Foundation's Edge* and Combes & Goerner to formulate the integration problem in terms of chaos?

Asimov (1995) sounded doubtful, "As mathematicians began to be interested in the details of what is now called 'chaos,' it seemed to me that human history might prove to be essentially 'chaotic' so that there could be no psychohistory". He was further discouraged

by the fact that psychiatrist had taken Asimov's word. "psychohistory" and used it to study *individuals*, when the word was actually coined to describe a *mass psychology* derived from statistics that physical Chemist Asimov thought analogous to laws governing expanding gasses. Finally, a *Science* paper published by psychologist Roger N. Shepherd made Asimov concerned that psychohistory may be developed within the 21st Century rather than 20,000 years in the future as he had pessimistically predicted. General Systems has already begun the quest. Our Psychohistory begins with psychiatrist C. G. Jung's (1969) struggle with *synchronicity*.

Jung's Acausual Connecting Principle

Physics' reformulation of Natural laws in terms of statistical truth was interpreted by Jung to mean that the connection between cause and effect could, at best, be only statistically valid and therefore only relatively true. Jung concluded that another, "acausual" principle must connect events under circumstances where causality was not valid. He applied the concept *synchronicity* to the coincidence, in time, of two or more events that are not causally connected, yet connected in meaning. Jung's synchronicity consisted of two factors, 1) an unconscious image that comes into consciousness either directly (literally) or indirectly (symbolized or suggested in the form of a dream, idea, or premonition). 2) An objective situation coincides with this content. Jung pondered how both events arose and how they became associated.

To psychologists (who are obligated to study all manner of thought, be it brilliant, insane or pure nonsense) this is an interesting—even exciting—phenomenon. To philosophers, experimental psychologists, hard nose executives, and editors of publications in physics, biology and medicine, Jung (1969), (1970) was trying to present the incredible to the incredulous. This is pretty much the case today. Yet, synchronicity is the gift that defines a prophet. And regardless of how much public scorn and ridicule is heaped upon it, psychologist Seldon would know that synchronicity is, to most people, *almost* irresistible. It can be argued psychologically that it is cause and effect and absolute truth that are the illusion and synchronicity the fact.

Philosophically complex, theoretically difficult, yet pragmatically simple, Jung had come very close to the solution to his synchronicity problem: but was far from convincing Western philosophers and clinicians to accept what was essential a Chinese philosophy solution. The pragmatic image (borrowed from Leibniz's philosophy) of two clocks that keep perfect time was both available and an elegant demonstration of an "acausual" connective principle. Not connected by cause and effect, pragmatic use of the correlation between events on two, synchronized, clock faces has helped determine the course of history. Nevertheless, Jung (1969) was not completely satisfied with Leibnitz's explanation. Anthropologist/psychiatrist Jung found an even better example in Chinese *I Ching* philosophy, but he wrote that fear of attack (probably from both philosophy and clinical psychology) prevented him from openly applying the Chinese system—until Jung was too old for its use to cause him any professional difficulties.

Seldon's Shock

Asimov's younger, more impetuous, more politically adroit, Hari Seldon would have defined it, then move on to the more pragmatic questions. Is synchronicity attainable by psychological methods? Obtained, could synchronicity be controlled? Controlled, could it be exploited? Misused? Does synchronicity have its own laws, its own pattern of reasoning? Information technology helps 21st Century General Systems to boldly embrace

Jung, Asimov and Asimov's mathematical psychologist alter ego by changing the randomness that so troubled Jung into the chaos that really worried Asimov.

The impetuous young Hari Seldon was in for the shock of his life, a grave shock with cultural/ethical consequences from which he, like Jung and Asimov, would have great difficulty recovering. Homo sapiens have not been trusted with such complex difficult questions as synchronicity and integration. Gaia (life and environments that support life, acting in concert[1]) is in control and the genome has, for millennia, been doing a *brutally* efficient job with synchronicity, synchrony and integration. The end is "more or less" determined. Survival is the highest priority. Only the life form needs yet to be determined. Homo sapiens are only in contention, our minds only at a very rudimentary state of development.

Synchronicity integrated with Information makes Gaia's strategy explicit and reveals Homo sapiens' futile and costly resistance. Each human life begins with a union and integration of genetic information from an egg and a sperm that transforms the latter into the generator of an organism of extreme, but quite elegant, complexity. Barring mishap at a crucial stage, the process of morphogenesis by which the egg becomes a fetus transforms the living organism from one superbly integrated living system to another. In the transformation from a single celled organism to a complex of interrelated, integrated, cells that are simultaneously organized into organs, tissues and systems each cell is supplied with the information that initiated morphogenesis.

Part of this information is common to all life on this planet, part to the stages along the path to development of our species, part to our parents, part to our siblings, and, finally the part that defines each, unique, individual. All of the information from life's beginning comprises the information we call the human genome. 20th Century psychology and biology have focused on the nervous system, an organ system specialized *primarily* for integration. The word primarily is emphasized because even in specialized cells the genome has inserted its redundant message; a message that relates cells, leads to overlapping functions, integrates and synchronizes organic systems. In this schema the brain, as the organ of integration, is doubly integrated, integrated at the genomic information level (G-information) and integrated at the conscious level. This is the condition of every healthy human infant.

Left to 1st Foundation methods and the priorities of physics, it might take 20,000 years to progress from the randomness of atoms and masses of people to quasi determinism of psycho historic predictions. Psychologists use a much more direct, synchronistic, route— but not nearly as direct as it could be. Table 1 is the result of studying the relationships between the rates of change of functional units from relevant Western science disciplines then integrating the results by means of a Chinese acausal connecting principle—Taiji. Significant modifications to both systems were necessary before they could be integrated. See Dockens III (2004). The results reveal that the human brain's integration strategy enlists five unconscious integration processes that can be modified and optimized into five, conscious, epistemological strategies called mindscapes. Optimization would make it possible for the conscious mind to integrate in any one of the five possible modes, to hop dynamically between different modes, or to use a super mode to integrate four of the five primary modes into a very special strategy designed specifically for a situation than requires either a unique tactic or strategy.

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[1] See The Ages of Gaia by James Lovelock, 1988, Oxford University Press, Oxford.

An *I-Mindscape* is an optimized mode of integration for unstable situations where priorities are unpredictably forced to shift and events seem without pattern. On the other hand, stable, rigidly structured situations with strictly defined, rigid hierarchical organization should induce an *H-Mindscape* mode. Constantly shifting patterns that may or may not be random and may or may not be stable suggest a *G-Mindscape* optimization mode. Stable situations where balance and equilibrium prevail are best served by the *S-Mindscape* mode. When encountering new environments with unknown and/or untested contingencies, the Integrated Taiji/Synchron mode will prove most adaptive.

That the last mode was the cognitive learning mode would profoundly shock young Seldon. Suddenly, everybody was right, and every body was wrong; and right and wrong became irrelevant; because, the neuro code discovered by psychologists and the genetic code discovered by micro geneticists had the same pattern as the Chinese acausal connecting pattern. Logically, philosophically, according to anthropology and according to psychophysics an opponent-pairs theory of Mind precluded integration. Each had quite stringent rules against the union of opposites. These rules were opposed by the elements of Chinese reasoning, the process of morphogenesis, evolution, learning, the genome and Seldon's common sense. Mathematics could not be relied upon to break the deadlock because; the new Information Technology mathematics does not support conventional logic and, *pointedly*, yields to experiment.

Table: 1
Synchronic mapping, a basis for genomic "reasoning".

Conflict resolutions	Positive sum		Zero-sum and/or Negative sum	Zero-sum	Integrated Synchron	
Color Dynamic	Blue	Yellow	Green	Red	Black	White
Re-inforcement Schedule	Variable Interval	Fixed Interval	Variable Ratio	Fixed Ratio	Con-tinuous	Discon-tinuous
Mindscape	G-Mindscape	S-Mindscape	I-Mindscape	H-Mindscape	Yin	Yang
Elements	Wood	Metal	Water	Fire	Earth	
Control Centers	Bottom up				Top Down	

Experiment had spoken in clear, unambiguous, language that was backed by both intuition and common sense. To a mathematical psychologist, like Seldon, most of psychology, all of Information Technology, all of theoretical physics and much of micro genetics was applied mathematics. So mathematics' abdication meant the loss, at a critical juncture, of a sorely missed mediator. Worst, a conventional history (see Wile, 1996) regarding the use of the Chinese acausal connecting system in a critical EAST/WEST conflict situation

revealed a Chinese mirror image of our WEST/EAST culture conflict. Seldon's only recourse was to trust the synchronicity of the two living system's codes. The implications and consequences of integration of these two were far more threatening than any Jung had imagined.

Hari's Hubble

Fortunately for Psychohistory, Seldon's imagination was expansive. If Table 1 was a valid description of the genome's integration strategy, then the resolution of the cultural conflict in the table should be contained in the table itself. It would be like a barber looking into a mirror and noticing that he needed a shave. Western philosophy had to be modified when metamathematician Bertrand Russell posed the problem. Psychologically color coding the opponent pairs mindscapes suggests five, scientifically optimized, pragmatic resolutions, only one of which is acceptable to metamathematicians. The Chinese system easily accommodates all five because the Chinese system is misclassified in the West. Its synchronicity makes it a psychological rather than a philosophical system.

Applying the table to attempt to resolve the Chinese/Western psychological/cultural conflict immediately throws the system into the learning mode, and once again Seldon is shocked. H-Mindscape (zero-sum) strategies dominate the cultural and political organizations in psychology, so the system settles in the learning mode. See Maruyama (1980a, b). Eigen & Winkler (1993) discovered that a hypercycle method that prevents loss of critical components due to both employing zero-sum dominance strategies. This is a risky strategy even for learning mode because failure can lead to implosion of the conflict system—a mutual suicide pattern. Nothing about either the conflict or its most probable resolution comes as even a mild surprise. The shock is that the brain and genome have a dynamic, general, resolution for integration problems. But in the case of the brain, learning can, and too often does, cripple or suppress altogether the integrative conflict resolution dynamic. If mathematical psychology could just restore to optimal function Nature's….

The powerful functional variables available to the table make continuation altogether too simple. The most significant question thus becomes, how would one predict the consequences of attempting a restoration of the brain's inherited integrative dynamic against determined Homo sapiens resistance? The answer from Table 1 is clear. Nobody really has to predict the consequences because the genome is diligently in the process of obtaining an unequivocal answer to the question. Nature's genome mediated resolution strategy was easily obtained by comparing dog breed specifications, adaptation data and Veterinarian statistics similar to those compiled by Kirk (1985). Homo sapiens are free to alter any genetic structure according to any priorities. If the result conforms to Nature's ecological criteria, it survives.

Using physics' use of lenses, mirrors, microscopes and telescopes as an analogue (but the psychological priorities dictated by Table I!) Seldon's next move had to be to extend human abilities synchronicity. Applying physics concepts to a 21st Century, Information Technology variant of Brunswik's (1955) psychological lens model suggests that mirrors be used to enhance and record images. The meta system is the conceptual analogue to a physical mirror. So a synchronicity meta-system had to be constructed, according to Information Technology's latest metamathematical model. When using the conceptual lens to magnify and widen the "view" by zooming in and zooming out revealed more holes in conceptual frameworks than it did wholes, it was evident that Psychohistory needed an analogue to the Hubble telescope. By "seeing" far enough into the past and recording trends in development mathematical psychology's synchronicity (ability to look into the

future) might be enhanced. Snapshots from history might also be useful, both for clarity and communication.

Reintegration and the "Prime Radiant"

Though Seldon named his new conceptual tool the "Prime Radiant", we call it Hari's Hubble in honor of Asimov's Seldon and to emphasize the intimacy of the relationship. It is the basis of the Seldon plan, its modes operandi, and the basis of the intuitive training necessary for the establishment of the 2nd Foundation. Synchronicity defines the Prime Radiant and distinguishes its pattern of reasoning both from the authoritarian rulers whose Empire imploded and the physical science biases of the 1st Foundation.

The crucial step had to be to formulate the two-foundations problem in terms of synchronic as opposed to causality based reasoning. But before he could do that, he needed a meta-system upon which to base a language and communication system. Table 1 and the mathematics upon which it is based supplies the conceptual matrix that resolves the problems. It deploys a dual catastrophe model, one for individuals the other for groups. See Dockens III, 2004. The meta-system can be expressed mathematically as a modification of Reichenbach (1965). Equations describing the neuro coding of color vision would be the primary basis of the modifications. This complete, the synchronicity in Table 1 contains opponent pairs that lead to conclusions almost incomprehensible to Mindscapes in the H-mode.

Modes in Conflict
How Table 1 reasoning becomes incomprehensible to Mindscapes in the H-mode is fundamental to the Seldon Plan. Observations in laboratories, in the field and in the clinic suggest that neither H-mode nor I-mode require sharing, and sharing is essential to integration. As Table 1 specifies, both resolve conflicts by means of zero-sum games. Consequently dominance defines distribution. Whereas Homo sapiens phenotypes (individuals) can survive quite well with grossly unequal distributions of information and niche space, genotypes (families) and genomes (species) suffer on three counts. First, creativity and learning become increasingly important as losers are eliminated; and creativity is an individual centered activity. Second, sharing becomes increasingly important because learning and creativity are information intensive activities. Together, these add up to *personal empowerment*. Consequently, whether the competition is based on physics, chemistry or psychology, unequal distribution has a high probability of inducing implosion. The tendency for people in I-mode to employ a negative sum resolution increases this threat. Competition for niche space then has a high probability of becoming suicidal.

People in S-mode and G-mode prefer to avoid conflict by positive sum game strategies and, consequently a reason in terms of harmony between opposites. These are much more information intensive modes because S-mode requires a balance and therefore tends to reason in terms of dyads while G-mode is an integration mode which is capable of systematizing constantly changing information. Switching back and forth between dyads and triads is the preferred G-mode pattern.

Homo sapiens seem to differ from other large brain species in an increasing ability to learn to override and/or reprogram natural relationships between modes and environments and to use experience to optimize the modes. Language and mathematics not only enhance this ability, but permit an optimization of modes into cognitive strategies and/or Mindscapes. Like Chimpanzees and unlike Bonobos (see Wrangham & Peterson, 1997),

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Homo sapiens—especially males—tend to optimize H-modes and I-modes at the expense of other modes. The genome has evolved death as a limit to exceedingly aggressive, yet successful phenotypes. I-Mindscapes' creativity, ability to accept variation, and susceptibility to gambling (variable ratio schedules) make it easy to induce people dominated by I-modes to accept more equitable distributions. But aggressive H-Mindscape controlled societies can create education systems that can optimize the H-mode to such a level that all other modes and people in other modes are dominated. This optimization makes behavior that may be lethal (but ecologically tolerable) in Chimpanzees increasingly suicidal—both for groups and for individuals—in Homo sapiens.

The genome is not indifferent to species suicides. The evolutionary patterns cull aberrant types and Homo sapiens' advances in strategies and technology accelerate Nature's culling procedure. Cloning aberrant aggressive types will also accelerate the process. Skillful H-Mindscape strategies can delay eventual implosion for what may appear to be long periods (from the perspective of a mortal phenotype, or even some genotypes) as was the case with Rome and Asimov's Galactic Empire. However the recovery period after the almost inevitable implosion (usually called Dark Ages) may be extended beyond imagination, or in extreme cases, may never occur.

Drawing these conclusions from his Prime Radiant, Seldon would have decided that if he created a 1st Foundation, controlled by aggressive H-Mindscapes, and left its balanced and integration in the hands of a creative I-Mindscapes, his G-Mindscape plan would combine with the genome to hypercycle the I-Mindscapes. Obviously, it would be a catastrophe if the H-Mindscapes 1st Foundation had even the slightest notion about the existence of the plan, which they would not be able to understand (see Maruyama 1980 b) and a 2nd Foundation with which they would have irreconcilable differences. But anything that Seldon could produce by design, the genome could produce by either mutation or by evolution. Aided by a well meaning robot, Asimov's genome's produced Seldon's greatest nightmare, an aggressive I-Mindscape dominated Mutant and a society of G-Mindscapes. Fortunately for Seldon, the intuitive power of the plan appealed to both the persona and the genome society. Consequently the conflict between his two foundations was resolved by the G-Mindscape society and an I-Mindscape. The conflict analysis matrix, according to Hari's Hubble, describes Gaia's problem and four solutions.

Table: 2:
Foundations Edge Conflict Analysis.

	Second Galactic Empire		**Greater Gaia**
Asimov Analogy	1st Foundation	Second Foundation	Greater Gaia
Mindscape	HHH-Mindscape	III-Mindscape	GGG-Mindscape
Conflict Strategy	Zero-sum (Dominance)	Zero-sum/negative-sum (Dominance)	Positive-sum (Integration)
Consequence	Conflict	Stagnation	Evolution
Organization	Politics	Information	Living System
Seldon Control	Hyper-cycle	Equations	Genome

The Gnome, Information and Cultures

Asimov's four solutions characterize his conscious mind as being in an HISG-mode. It would have to be. He has created the ultimate administrative problem for the ultimate behavioral scientist, where a mistake would lead to the ultimate consequences. Asimov's solution is optimal for saving us from the genome's resolution—implosion, possible recovery, continued evolution; perhaps as another species. Though his solution is intuitively both correct and practically irresistible, its psychological basis (represented by the two Tables) is directly **in conflict with prevailing logic of *all* of the world's leading industrial nations**. This Asimov's alter ego (Professor ***Hari*** Seldon) had foreseen. This General Systems can predict from Maruyama (1980a, b). From integration of behavioral science, General Systems can also predict that there is an infinitesimally small probability of establishing the Foundation that could implement a "Seldon Plan" at this point in history. Nevertheless, Seldon's use of the Prime Radiant suggests how Information Technology in combination with the genome's *personal empowerment* strategy can permit General Systems to make an attempt at averting disaster that is every bit as imaginative and as valiant as Hari Seldon's. The key word is **reintegration**.

Reintegration

Through the ages, information in its many forms (philosophy, myths, books, plays, music, films, TV, the Internet, mathematics, etc.) has inevitably caused problems for 1st Foundation, H-mode type domination. See Lessig (2004). Each new advance has lead to more determined and more sophisticated attempts to both limit and control information. Control of the genome is the only way that the H-mode can succeed, because the gnome defines information. And attempting to control the genome's information brings the H-mode into a three way confrontation between H-mode organizations, the individual phenotype, and the Homo sapiens genotype. Due to psychological and mathematical flaws in contemporary logic (Dockens III, 2004a) people

in H-mode are incapable of intuitively sensing the conflict or understanding its resolution. Consequently their only intuitive contact will come from personal defeat and organizational implosion. Information Technology simply accelerates the implosion process and amplifies the consequences. Given the situation, there are two, optimal, H-mode options; to delay change as long as possible, or to reintegrate the psyche. The first option is the easiest and the most dangerous *for others*. Reintegration, though far more difficult, leads to more constructive consequences.

Reintegration is learning to solve problems by using the Integrated/Synchron-mode in Table 1. The difficulty is that this entails a change in Mindscape, and changing Mindscapes is equal in difficulty to learning to speak a new language. Playing quasi positive sum games[2] is the optimal method. Usually considered frivolous pass times for amateurs, practice for the genome's Life/Death Game demand the concentration— though not necessarily the competence—of professionals. The Life/Death game (see Eigen & Winkler 1993) itself is a matter of survival. Since the Life/Death Game resembles the Japanese game GO, GO is included with Tai-chi Chuan (Chinese shadow boxing) and a variety of music. There are two purposes for the games; to demonstrate positive sum strategies, and to demonstrate (especially to those addicted to H-mode) the superiority of integration vs. the *extreme vulnerability of the H-mode*. In the world of the genome, ethics is dictated by vulnerability.

Learning to play "reintegration" games trains synchronicity the intuitive sense. Due to inconsistencies and psychological fallacies in language, logic and common sense, it is often impossible to precisely describe synchronic events in words. Mathematics (for H-Mindscapes) and music (for I, S, and G-Mindscapes) is much more descriptive. During learning it is advantageous to compare synchronicity solutions with either a favorite or familiar method. There is, however, some universal quality in nature that numbers and music communicate far better than language. It is often necessary, for clarity, to approximate the qualities with language. When those in conflict have all the necessary information but insist on defeat and/or implosion, it is usually better to let natural consequences prepare your audience or to remain silent altogether. Discretion is learned first by testing thought experiments then by producing and testing prototypes.

"Personality", Mindscapes and Culture

Synchronic mapping in Table 1 describes what most people call "personality" in terms of *mindscape modes*. Even before an infant is born, it begins adapting to the changing womb environment according to a set of pre programmed priorities embedded in the genome. The adaptive pattern is mathematically modeled (see Dockens III, 20004b) as a butterfly catastrophe. After birth, the first few months of its life are characterized by reflex patterns that are interactions between the infant's pre programmed priorities and the environment according to complex patterns that can be roughly *classified and controlled* by psychological procedures called *schedules of reinforcement*. As most infants mature, they begin to *play* with both other people and objects in their environment. Language, music, games and later mathematics are usually *modeled through play*. Rules that can be applied to language, music, games and mathematics and the fact that they *all have synchronistic properties* make these activities different

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[2] The games selected emphasize mathematical psychologist Rapoport's TIT FOR TAT strategy so they are not pure positive sum.

from other aspects of play. Games (as defined in Rapoport, 1970) are fundamental to defining, understanding and applying synchronic mapping.

Though driven by the laws of reinforcement, games are systems that have complex and useful characteristics that permit the development of optimized systems of behavior called strategies. Under some conditions game strategies may facilitate learning; under others the same strategies may preclude learning. Philosophy and science have organized strategies into optimized systems called epistemologies or paradigms. Cultural anthropologist Magoroh Maruyama (1980 a, b) has classified and systematized these paradigms into categories called mindscapes. Like games, mindscapes are also fundamental to defining, understanding and applying synchronic mapping.

Seven Dimensions, Dual Catastrophes
Because Table 1 is the psychological basis for the anthropological phenomena observed by Maruyama, there are small but extremely significant differences, between Maruyama's anthropological description of mindscapes and the synchronic mapping description in Table 1. Information in the mathematical models overlaps, but is quite different. The six dimensional catastrophe model describing Maruyama's anthropologically observed mindscapes has two behavioral surfaces, one to describe the individual's public behavior, another to describe the private behavior. In contrast, the psychological model has only one behavioral surface divided into three parts, one part to describe the individual's private behavior, a second to describe the public, and a third to describe the persona. Though everybody can observe everybody else's private and public behavior, nobody can observe what goes on in the persona. Because the persona can not be observed, *it can only be experienced; experienced by the individual to whom the persona belongs.* Most people use synchronicity to intuit other people's personas and persona strategies. Professional anthropologists and psychologists usually apply a combination of synchronic intuition and inference based on paradigms. Even for professionals who have access to their own public, private, and persona surfaces, information is almost always incomplete, because unless one lives in a world full of mirrors, a professional can not observe his own behavior. And pointedly, mirror images are always two dimensional representations of a reality is described, mathematically, as a dual catastrophe in seven dimensional. Only the public and private behavioral surfaces are visible. The genomic function of the dual catastrophes is to synchronize the behavior of the person with the ever changing environment.

Neither the dual catastrophes nor the ability to override genomic programmed brain mediated integration is unique to Homo sapiens. What is unique is the degree to which language, games and mathematics permit Homo sapiens to modify human's physical environments. Since modifications in the environment are linked (by the dual catastrophes) to human priorities, synchronizing human environments and the genomic programming becomes considerably more complex, not only for humans, but for the whole ecological network that is influenced by the changes. Human priorities define the mindscapes. So when humans create environments that optimize specific mindscapes while leaving others relatively undeveloped the specialization can lead to conflict, not only between modes but between genomic priorities and mindscape priorities. The genome, working both through phenotype systems and mass numbers of *phenotypes (in concert!)*, will exert phenomenal pressures to restore its program. Genome failure to correct means that maladapted behaviors and phenotypes are *not* culled, aberrant environments are maintained, or increase and implosion is highly probable. Primary mindscape modes follow the typical genomic pattern, the pattern typified by the human color vision system.

Four Primary Mode Psychologies

A person in H-mode either dominates (Alpha-H), or is dominated (Beta, Gamma, Delta and Epsilon). This mode favors hierarchical groups. Alpha-H mode dominates, and segregates rather than integrates. A person in H-mode is comfortable only with other people similar to him/herself and ranks others lower than him/her self. Anyone wishing to become aggressive, resourceful, and well organized will favor H-mode; and be classified as an H-Mindscape. The least creative of the modes, H-mode has difficulty with changes, and with things that lack of uniformity. Conflict is resolved by zero-sum strategies leaving a winner and a loser. People favoring H-mode are usually quite good at archiving information but are, predictably, poor at integrating it. Since a great deal of dynamic information often portends radical hierarchical changes, H-mode people tend to attempt to reduce the flow of information, either by monopolizing it or destroying it.

A person in I-mode will not tolerate being dominated but may dominate. This mode favors either working alone or in *non*-hierarchical groups and/or networks. A person in I-mode can be quite comfortable with other people radically different from him/herself and though they tend not to rank; they often have very strong, very personal opinions, usually based on intuition and aesthetics. A person favoring I-mode (an I Mindscape) can be very aggressive and resourceful, but thriving on chance and chaos I-modes are not so well organized. The most creative of all modes, I-mode thrives on variety and changes but dislike uniformity. Conflict is resolved either by zero-sum strategies leaving a winner and a loser or by total destruction of the situation and/or the relationship. People favoring I-mode can be quite good at using information creatively—especially in graphics and as hackers. Since a great deal of dynamic information often portends radical hierarchical changes, I-mode people tend to attempt to increase the flow of information. When provoked, instead of monopolizing information they bury adversaries under a mountain of it or attack with viruses.

A person in S-mode will not tolerate being dominated and avoids situations where they may be placed in a dominant position. This mode favors either working alone or in *non*-hierarchical groups and/or networks. A person in S-mode can be quite comfortable with other people radically different from him/herself. Like I-mode people, S-modes tend not to rank but they differ from I-modes in that S-mode aesthetics, ethics and values are usually based on symmetry. A person favoring S-mode (an S-Mindscape) prefers not to be aggressive, but is often resourceful and well organized. Innovative rather than creative, S-mode people thrive on variety but are not too enthusiastic about changes that disturb or deviate from balance. They dislike uniformity. S-mode achieves integration by balanced negative feedback systems. Rather than conflict S-mode people prefer to resolve problems by positive-sum strategies leaving only winners no losers. People favoring S-mode can be quite good at archiving and using information but are often not enthusiastic about updates that disrupt balance. Since a great deal of dynamic information often portends radical hierarchical changes, S-mode people tend to attempt to control the flow of information so that the system is not damaged by information overload. When provoked, instead of monopolizing information they tend to try to persuade adversaries with balanced arguments.

Whereas the H-mode is the most common mode for conquest, the I-mode the mode for creativity, and the S-mode the mode for feedback systems integration and balance, the G-mode is the mode for dynamic systems integration. A person in G-mode will not tolerate being dominated but is equally at home in a dominant or non dominant position. This mode can work alone, in hierarchical or in *non*-hierarchical groups and in networks. Like S-mode, G-mode people can be quite comfortable with other people radically

different from him/herself. S-mode people, G-modes also tend not to rank: but resemble I-modes in that G-mode aesthetics, ethics and values, may or may not, favor symmetry. Like S-mode a G-Mindscape) prefers not to be aggressive, but is often resourceful and well organized. Both innovative rather and creative, G-mode people thrive on variety; and are very enthusiastic about changes. Unlike S-modes, G-modes are not at all disturbed if changes create random systems or chaotic systems that deviate from balance. They may tolerate uniformity but usually create systems with a great deal of variation. Like S-mode people, G-modes prefer to resolve problems by positive-sum strategies leaving only winners; no losers. People favoring G-mode can be quite good at creating and updating systems that archive and use information creatively. When a great deal of dynamic information portends radical hierarchical changes, G-mode people tend to attempt to increase the flow of information and, by means of positive feedback, create a new system that can take advantage of it. When provoked, instead of monopolizing information they tend to create systems that embrace and extend the strengths of adversaries to create a new, better adapted system.

Genome / Mindscape Tactics and Strategies of Integration

Elegant, quasi symmetrical system of opponent pairs and processes generate, on demand, a spectrum of options for the human genome. Whether it is the genetic code (as is the case in evolution), or the neuro code (as is the case in color vision), the genome's primary adaptive strategy is constantly editing an existing code. Bio physicists and micro geneticists are extremely impressed with the genome's ability to actually govern the random processes; processes that drove physics, chemistry, philosophy, psychology, and mathematics paradigms into states of crisis that lasted most of the 20th Century. Trends of the genomic strategy in respect to conflict and integration appear quite different from the perspectives of different mindscape modes.

H-Mindscapes interpret evolution as favoring the aggressive over the passive, the strong over the weak, selected, optimized elites over the mediocre masses. Distribution of niche space and resources are, "obviously" determined by a hierarchy established by zero-sum games of conflict, according to the aggressive H-Mindscape extreme. Equally hierarchical, and aggressive, but more benign, some H-Mindscapes accept a responsibility for the vanquished. I-Mindscapes accept the zero-sum competition principle but believe that chance is the real arbiter that produced the genome and the consequences of interactions between the genome and the environment. S-Mindscapes are more apt to interpret the genome's strategy as that of an ecosystem that periodically corrects a somewhat fragile balance. Sharing as a consequence of positive sum cooperation is the S-Mindscape's genome modus operandi. The G-Mindscape agrees with the S-Mindscape, but views the Homo sapiens genome strategy as that of a dynamic system in a frantic race to synchronize itself with a quasi indifferent, dynamic, environment. The Integrated/Synchron genomic strategy in Table 1 tends to share the G-Mindscape's perspective, but derives it from generating a spectrum from opponent pairs of the four primary mindscapes.

Evidence from field, clinical and laboratory studies suggest that at Homo sapiens' present state of development, the four primary Mindscapes describe the contemporary phenotypes whose behaviors are recorded and analyzed by behavioral scientists. The Integrated/Synchron describes the general genomic strategy. Psychohistory's synchronicity *asserts* that the general genomic strategy will prevail, even if humans succumb to it. General Systems is now at Hari Seldon's juncture, with analogous

problems, solutions and predictions. Contemporary societies are so psychologically primitive, and so living systems ignorant: to try to convince contemporary phenotypes of the unnecessary waste; to warn of the pain, and the danger of extinction that will occur, if the genome hypercycles (see Eigen & Winkler, 1983) H-mode aggressiveness, is futile—much like discussing career options with a five year old child.

Seldon's solution, an option not open to General Systems, was to hyper cycle Homo sapiens by means of two foundations, a solution that is sound synchronicity but virtually incomprehensible to Mindscapes locked in zero-sum modes due to chronic conflict. Synchronicity intuits that integration is a very strong option for minds in S- and G-modes; and integration often occurs spontaneously among I-mindscapes engaged in a high priority task: but integration is effectively excluded for minds locked in the H-mode and I-mode while they are involved conflict. So Seldon devised a G-Mindscape plan. The plan depended on his heightened synchronicity (gained from the Prime Radiant) to convince, to motivate and to hyper cycle both the H-mode driven physical scientists of the 1st Foundation and the I-mode 2nd Foundation psychologists. Seldon had no other option than to leave responsibility of executing and updating the plan in the hands of the 2nd Foundation, because the deductive logic that was the bases of the 1st Foundation's superiority in physical sciences practically excluded the heightened synchronicity necessary to execute the plan. And though mathematics can heighten synchronicity; and mathematics was essential for creating the Prime Radiant; *contemporary* mathematics can neither substitute for synchronicity, nor match synchronicity's efficiency.

Designed to Implode

Seldon's problems and their General System's analogues and how both are related to Table 1 will be more clearly illustrated by the implosion of Psychology Department X. For a psychology department to be in a situation where it might succumb to such an implosion is like a government owned industrial architectural design firm whose new CEO moved the firm from a structurally sound but adequate warehouse into an exceedingly ugly, dilapidated building. Government inspectors finally evicted the chief, but only after a considerable number of serious, permanent, injuries (none of them accidents) to personnel and student architects. There, the analogy ends, because there is no analogous 1st Foundation or 2nd Foundation remedy for what has to be a Gaia correction. That does not mean that one has not been tried or that similar attempts will not be made in the future. The probabilities for success are less than chance, because those who have responsibility for solving what was and is an integration problem have no theory of integration, no experience with integration, no intuition as to integrative processes and, most important, no intention of integrating. Chance might save them but domination will definitely fail because of a major difference between structural problems in living systems and structural problems non living systems.

Two Foundations
The primary difference between solutions to classical structural problems encountered in physics and engineering and classical structural problems encountered in biological systems is that bio systems are organized in terms of two foundations, complementary pairs and interlocking networks. Non living systems tend to be organized in terms of one foundation, adversarial pairs and hierarchies. Contemporary physics and engineering has learned a great deal by integrating biological patterns and even systems (in the case of cyborgs) into their structures and organizations. Like most of behavioral science, Psychology Department X was designed along classical patterns. But in direct contrast

to physics and engineering; contemporary psychology had, and has, *no generally accepted theory of synthesis*; no unifying theory integrating psychology. A "theory of everything" is seldom, if ever, discussed. Consequently, most (but not all) of contemporary psychological theory is contrary to contemporary logic, contrary to patterns discovered in physical sciences, not consistent with biological patterns and not consistent with known functional patterns of the human brain. But with the developments in Information Technology contemporary psychology can continue to exist (and even thrive!) as a network. Department X could do neither.

Department X's problem was integration. Its basis was structural. The problem's synchronic resolution (predictable from Table 1) was informative for General Systems because it avoided four exceedingly difficult, but highly relevant, questions while answering an all important fifth question. The questions; 1) Can something that is not integrated integrate or reintegrate? 2) Can an organization that is not integrated but dominated integrate? 3) Can a system that is not integrated synchronize an integrated system? 4) Can a system that is dominated but not integrated win a conflict against an integrated system? And 5) can a brain that is dominated but not integrated win a conflict against its own, marvelously integrated, genome?

Only the fifth question can and need be answered; and the answer is an unqualified No! The H- and I-modes are the only two modes that use dominance. The genome responds to any brain attempts at domination by either hyper cycling (which generates the private and public Mindscape modes) or by deferring to internal and/or external environmental contingences. Internal environmental contingencies can vary widely from hormonal adjustments to conflicts between mindscape modes. In either case, consequences can range between mild discomfort to madness and/or suicide. External environmental contingencies can be divided into three categories, those posed by interaction with living systems, those posed by interactions with non living systems and combinations. Like internal contingencies, the external consequences of brain vs. genome conflict can range from mild discomfort to death. Whether internal or external, the probabilities of successful domination of the human brain over the human genome are probably too small to imagine let alone calculate.

Code Integration Strategy
Color coding in Table 1 can be used to illustrate the differences. Say that the environment has, for centuries, been red. Red favors fixed ratio training schedules, H-Mindscapes and zero-sum game competition. Suddenly the environment turns green, favoring variable ratio schedules, I-Mindscapes and zero-sum and/or negative sum game competition. All of the other *specialized* Mindscapes would be able to see in the new, green, environment, but they would be color blind (like seeing through a filter) and therefore at a considerable disadvantage against the I-Mindscape who is a green specialist. On the other hand, an Integrated/Synchron-Mindscape (T-Mindscape) would, after a brief adaptive period, be *almost*, but not quite, as competent as that of the new, green, leaders. Given that everything is optimized and functioning optimally, T-mode would not be equal to an optimized specialized mode when operating in the specialized environment. T-mode's advantage is demonstrated in natural and/or changing environments where a person with uncolored glasses can discriminate between more than 16,7 million colors, a feat that would be difficult to equal for people wearing either red or green colored glasses. If on the other hand, one or the other was not optimized….

It is important to emphasize, however, that the genome's ingenious integration strategy permits living organisms to have it all—and most of them do! Chemically, unconsciously

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and instinctively, as in color vision, the brain follows the strategy of the genome. Each element of each opponent pair is a product of millennia of development and updating of genetic code. A general code is shared by all cells. Specialization is built onto this general code. Laws—general and specific—are embedded in the code. Different from the rules of logic (defined here as 1st Foundation) and the statistical laws of mass action (2nd Foundation) the genome's synchronicity dictates the harmony of opposites rather than conflict. Synchronizing rates is essential to a strategy that shares space-time. Integration is an indispensable part of the genome's strategy; dominance is prohibited, either by hypercycle or by cognitive and behavioral strategies similar to those optimized by the mindscape modes in Table 1.

Discoveries in micro genetics have revealed the genome as a process rather than a goal. A living system that is also part of a living supra system, the human genome is not only being constantly modified and updated, the genome constantly modifies and updates. Phenotypes function as the genome's prototypes. Extraordinarily economical and efficient, the code systematically culls the most flagrant errors before birth. Gross errors in code that manage to survive birth are not permitted to reproduce. Only capable of manipulating micro physical and chemical aspects of living systems, the genome's ability to influence macro environments is greatly enhanced by its successful multi-cell complex phenotypes. Increased personal empowerment and group evolution are inextricably linked in the genomic strategies and tactics.

All life serves the genome and its evolutionary strategy is definitely to enhance the abilities to serve. Specialization and generalization are opponent pairs used in the evolutionary process. Plants are specialized for energy modification. Homo sapiens are the most successful by far of all the large brain phenotypes specialized for manipulating environments. Viruses lead in editing code. According to micro geneticists Eigen & Winkler (1993), the closest we have come to depicting the genome's Life/Death strategy and local tactics is by slightly modifying the Japanese strategic game GO. Here their analogy is extended to the relationship between the evolution of mindscapes and human cognition. Though integration can emerge in five basic ways from interactions between mindscapes; synchronization with changing environments introduces shifting combinations and permutations that determine (more or less!) outcomes at any point in time. Synchronicity makes conscious the trends as well as specific events. Synchronicity's role in evolution is now, as always, under genomic "scrutiny and testing". Like the lenses and mirrors sharpen and amplify existing senses of vision and hearing, contemporary behavioral science can only sharpen and amplify synchronicity. As the name implies, synchronicity uses time to integrate information. Department X's implosion is a demonstration of a basic application.

Synchronicity and Hari's Hubble
Synchronicity is a product of or unconscious mind made conscious. Like Seldon's Prime Radiant, Table 1 functions as a mode of communication, a form for a General Systems data base and a tool for amplification. Constructed like a telescope but used like a game, Hari's Hubble amplifies the information from our subconscious. Too much information for a conventional mind and far too much for even the most advanced contemporary computers to handle, the unconscious mind can use game analogies to come up with accurate predictions. Such a mixture of qualitative and quantitative information will send computers back and forth between "information overload" and "insufficient information". Yet, some (admittedly quite rare!) individuals need no training at all in games, psychology or anything else to achieve remarkable synchronicity—though they do seem to have some troubles with control and consistency. University and government

department struggles, like Department X, make excellent elementary training exercises because most of the energy of the "players" is spent on trying to rationalize (with linear logic) what to synchronic amplification seems like simple games involving turf struggles and hormonal outbursts. Like games encountered in clinical cases, players use a great deal of imagination and ingenuity to disguise what they deem to be unacceptable motives. The games also hide more productive and therefore more defensible resolutions. Many games involving families, politics, economics and love triangles are much more challenging than the "Hearts" game that emerged from the conflicts on Department X, but few are as appropriate for demonstration. Simple or complex the synchronicity principles are the same.

Mindscapes and Leadership
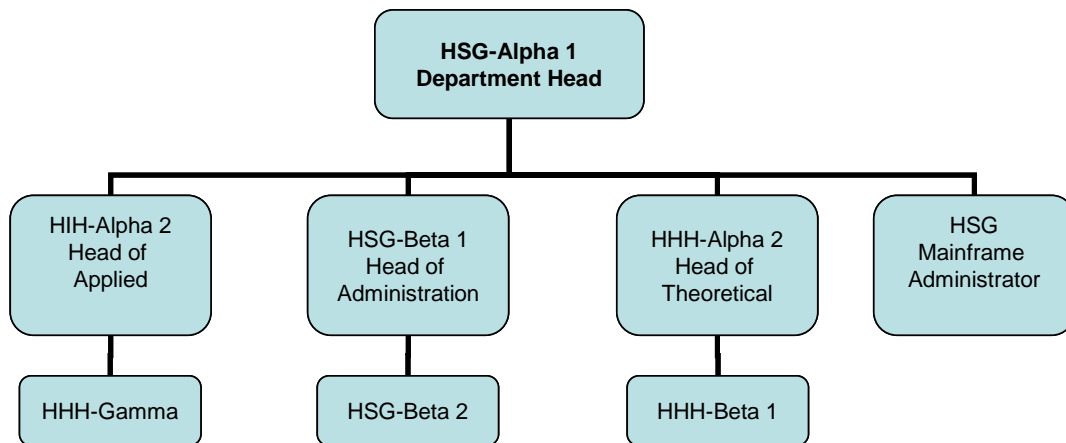
Figure 1:
Department X, Before Implosion

Figure 1 is a organization chart modified to show Mindscapes. Mindscapes are expressed as three capital letters. They represent **public, private** and **persona** behavioral patterns from the dual catastrophe model of human cognition. For example, HSG means that in official duties and public environments the *public* aspect of the personality follows H-Mindscape patterns. Privately and at home, an S-Mindscape strategy prevails. On a deep personal and subconscious level, the individual, *persona*, follows G-Mindscape strategies. Consequently, an HHH-Mindscape predicts that the individual applies *H-Mindscape patterns in all manifestations of the personality*, in public, at home and probably even in dreams.

In contrast to the other mindscapes (who may be indifferent to hierarchies), H-Mindscapes require two additional classifications constructed especially to accommodate hierarchies. The Greek letters, Alpha, Beta, Gamma, Delta and Epsilon represent leadership strategies. Epsilons are usually either infants or clinical cases, totally incompetent and with no leadership strategies. Deltas are either apprentices or sub standard performers who will either develop and move up the hierarchy—or be forced to leave. Unlike Deltas and Epsilons, who are neither fully competent nor essential for day to day operations, Gammas are workers with little or no hierarchical

ambitions? Though Gamma job performance can fall anywhere on a spectrum, from super competent to mediocre, they exhibit minimal or no leadership strategies.

Preoccupation with leadership is characteristic of Alphas and Betas. Alphas have ambitions for the top spot, Betas also have ambitions, but for less dominant positions. With extremely powerful Alphas the fight for Beta positions can be every bit as fierce as the fight between Alphas and may even include Alphas who are contemplating a career climb. Numbers specify the achieved position. When (as in the case of Alpha 1 Head of the department) the number achieved matches the rank designation, conflict strategies tend to be defensive rather than offensive. Otherwise both defensive and offensive strategies apply and the vigor, though not always the sophistication of strategies, increase the higher the rank.

Department X was quite good, but functioned far from optimal. Started by a creative HSG-Mindscape, the complete spectrum of mindscapes were both represented and encouraged to flourish. The department was creative, successful and dynamic; its outlook global and diverse. Within reasonable economic limits, state of the art Information Technology was applied almost as soon as it became available. An HSG-Mindscape administrator insured a proper balance between research, teaching and administration as well as between the "right brain" clinical studies and the "left brain" experimental wings of psychology. A free flow of information insured excellent communication throughout the organization. This coupled with the fact that The HSG-Department head was considered a "giant" in the field meant that according to conventional organization wisdom, the department was close to ideal, and its successful future insured. In less than a decade the department had changed to Figure 2.

Figure 2:
Department X, After Implosion
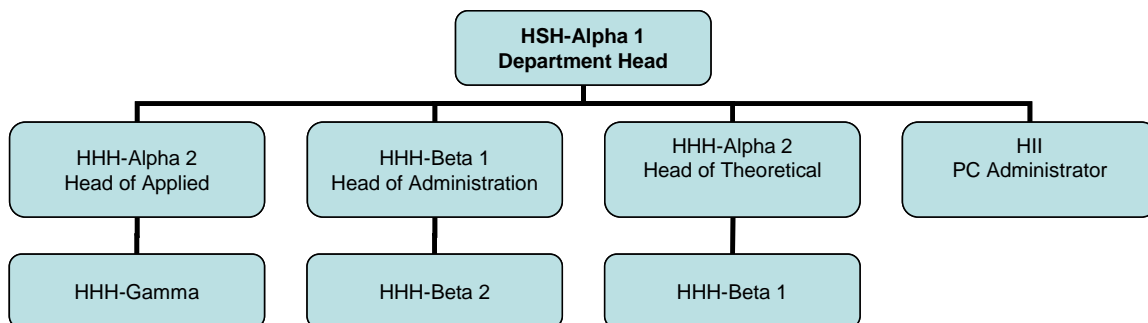
It took less than a decade to change from "quite good, but not optimal" to an embarrassment that would take over an additional *decade to **begin** to rehabilitate*. Department X divided itself into two quasi hostile, quasi cooperative departments that had to be forcibly reunited into one. The futile attempt to reconstitute the imploded department is depicted by Figure 2. Though the dynamics for the change, along with the characteristics of the new department can be readily predicted from the discussion above, a faster and more accurate picture can be gained by using a modification of Harold A. Linstone's (1984) (1989) (1999) organization perspectives and Robert

Axelrod's (1984) evolutionary strategies as a "lenses" for Hari's Hubble. After the additions, synchronicity makes short work of Department X's transformations. Hierarchical organization (a structural fault for a creative organization) was responsible, the rest naturally followed.

The HSG-Mindscape department head and his HSG-Mindscape administrator functioned as hypercycles. Hypercycles are the only effective method for integrating people locked by competitive contingencies in the H-mode. Difficult to maintain and dangerous to control, H-mode has serious problems, G-mode may, with difficulty, maintain the hypercycle solution. So given the strictly enforced hierarchical structure, replacement of the HSG-department head by an HHH-Mindscape was all that was necessary to practically assure loss of creativity, but not implosion.

Implosion was assured by the "weak Alpha" and "weak Gamma" strategies that the new HHH-department head was forced to employ (again!) by competitive contingencies. Given Table 1, Figure 1, both the possibility and the consequences of Figure 2 will become practically a reflex action for someone with enhanced synchronicity. The near certainty of implosion if a "weak Alpha" and "weak Gamma" are superimposed on the structure is also obvious, once the terms are defined.

Strong and Weak Leadership Strategies

Mode Definitions

In addition to the Mindscape-modes, a leader's choice of staff and strategies usually reflect whether he/she applies "strong", "weak", mixed or chaotic strategies. Though the terms "strong" and "weak" are always relative to the competition, in the very specific competition for niche space (Eigen & Winkler's Life/Death Game) *the definition must be global.* Nevertheless, the words have different meanings in different mindscape modes. In H-mode "strong" is interpreted to mean a ranking in "world championship", zero-sum competition; and "weak" is not having a world ranking. Local competitions count only as practice. In I-mode "strong" and "weak" describe intuitive, emotional/aesthetic reactions to themselves, other people, accomplishments or the environment. I-mode criteria and priorities for rankings can seem inconsistent, chaotic, or even random when viewed (by the same person!), in another Mindscape-mode. Though both H- and I-modes apply zero-sum modes in conflict, people in H-mode *can be dominated*; people in I-mode can not.

People in S- or G- modes can not be dominated. In contrast to H-mode and I-modes the S- and G-modes prefer positive sum cooperation over zero-sum competition. Both will resort to hyper cycling when confronted by zero-sum oriented competition. In respect to "strong" and "weak", S-mode criteria tends to stable like the H-mode and G-mode criteria changes like I-mode. S-mode leadership strives after a symmetric, or asymmetric negative feedback balance between modes to achieve integration. G-mode achieves integration harmony using positive feedback.

A strong Alpha chooses staff as if he/she were going to compete in a relay race. Weak performance is simply not tolerated and zero-sum competition *alone* determines every position. There are no exceptions. When challenged for leadership he/she either prevails or gives up the Alpha position. Dominance is the modus operandi both inside the organization and outside of the organization. Chronic struggles for niche space within the organization does not pose a structural danger if: 1) Despite the competition

positions remain relatively constant, 2) There are rules against strategies and tactics that weaken or destroy opponents, and 3) Opponent organizations have the same structure. A change in the Alpha position temporarily negates the first and second condition; and changes in technology and organization can negate the third. Replacing a strong Alpha strategy by a weak one, as was the case in Department X, negates all three structural conditions and creates new vulnerabilities. Weak Gamma strategies are among the riskiest strategies employed by weak Alphas.

The Gamma Strategies

In contrast to Alphas and Betas, who are often obsessed with their ranks in organization hierarchies, Gammas have little or no interest in ranks. I-mode aficionados are usually more motivated by what they are doing than by ranks that can be achieved by doing it. Mindscapes habitually in S- and G-modes quickly discover that more can be achieved by influence outside of the zero-sum conflicts than by dominance within them. Since I-mode creativity, S-mode innovative balance and negative feedback based integration, and G-mindscape creativity, innovativeness and positive feedback integration may all be great assets, they can be very useful as adjuncts to a strong Alpha strategy. Putting highly competent Gammas in influential positions has the added advantage of reducing strife and intrigue in an organization. Placing highly competent Gammas in influential positions is called a *strong Gamma strategy*.

Placing mediocre or weak Gammas in highly influential positions is called a *weak Gamma* strategy. Outlawing the competition (when possible!) is the only strategy more popular among weak Alphas than the weak Gamma strategy. Never employed during the strong leadership of HSG-Alpha-1, weak Gamma was employed almost routinely by both HHH-Alpha 1s after the department split. In fact, the first move to implode Department X began with the classical combination of unequal distribution of resources and a weak Gamma strategy.

The first conflict occurred between the HSG-Department head and the HIH-Head of Applied over who would be Assistant Head of Applied. A clinical department would attract greater funding both because it would be more popular with students and the government would pay more for the same courses if they were associated with the medical faculty. It was therefore agreed that the rapidly expanding Department X would be divided into two separate, but complementary departments. Typical of their respective mindscapes, HSG envisioned a diverse applied department consisting of disciplines that ranged from the strictly technical (often called "left brain") to touchy feely introspection ("right brain"). HIH preferred a department specialized in clinical psychology. Consequently, HSG backed an Alpha with an experimental laboratory background as candidate for second in command of the applied department. HIH demanded that an HHH Gamma with a psycho analytical clinical orientation be given the position. Thus HSG was advocating the continuation of a typical strong, diversified, Alpha strategy, HIH was for instituting a typical weak, specialized, Gamma strategy.

The conflict began in earnest when HIH-Head of Clinical enlisted the aid of HSG Head of Administration to achieve the appointment of HHH Gamma as Assistant Head of Applied (which changed its name to "clinical"). When HSG Department Head retired shortly after, the successful duo manoeuvred the appointment of an HHH "friend" of HSG-Administration to the vacant Alpha 1 position. Thus began a long chain of manoeuvres and betrayals.

Shortly after, HSG-Head of Administration and his "friend" HHH-Alpha-Head of Department conspired to have HIH-Head of Clinical removed on the grounds of alcoholism—not unusual among weak Alpha strategists. But HIH- died, relatively young, before the process was completed. With HSG as formal Head of Administration for both departments, and HHH- formal head of one and acting head of the other, it appeared as if the duo controlled two, newly created, psychology departments. In reality, due to the strict hierarchical structure, this left HHH with virtual dictatorial powers over both the theoretical and the clinical departments. Then began the next, and most deadly round of betrayals.

HHH-Head of both departments went into action when the HIH-Head of Clinical's position was made available. With a series of blitz manoeuvres he appointed another HHH- (a long time enemy of HSG Administration!) to be the new head of clinical. Together the new HHH duo replaced HSG-Head of Administration. Predictably, in the administrative "musical chairs" game that followed, both of the new HHH chairmen applied weak Alpha strategies. Independently they appointed two HHH Gammas as heads of administration of the clinical and theoretical departments respectively. They also appointed HHH-Gammas as assistant department heads.

Expansion of power and a lack of rules against nepotism facilitated extensions of weak Alpha strategies. The new HHH head of theoretical imported like mindscape (HHH) friends to fill significant posts and citing *an old rule and new principle*, he used his influence to fire assistants and create a vacant position for his wife. The new HHH head of clinical also appointed his own HHH friends to fill significant posts and used his power and influence to acquire a position for his wife. Thus the mindscape organization chart for Psychology Department X divided itself into two departments, each with uniform HHH-Mindscapes in all significant administrative positions except one—the computer section.

The weak Gamma strategy spread its way down the hierarchy. With the exception of the wives, the affects of Gamma were considerably more insidious for women than it was for men. In the three cases involving men, the Gamma appointee remained in position until he himself decided to leave the position. In the five cases involving women, all of the women were forced out as soon as it became convenient. This was true even in the one case where the HHH-Head of Administration who possessed the preferred HHH-Mindscapes. Not at all a factor under HSG-leadership, gender bias caused problems for the HHH-leadership. Of special interest here is the woman with an HSG-Mindscape who was victim to the Gamma tactic two times—the second included factors related to her Information Technology activities.

Leadership Strategies and Information

Of the four basic modes, the H-mode is most threatened by contemporary Information Technology. Part of the reason is because computers were modelled after the H-mode. Memory management, information storage and transmission, lighting fast computations and efficient robot like performance of complex but routine tasks are H-mode specialties. Simulation and dominance and submission to dominance are two more tasks that make H-mode an optimal choice. Astounding performances in strategic games (like beating the World master in Chess) exceed normal human competence. On the other hand, all of the characteristics that have made H-mode the model for computers and the dominant and dominating mode of Homo sapiens is now available to the most mediocre minds—at

the mere push of a button. Homo sapiens have created an artificial Alpha H-mode that is threatening the most competent Alphas with Gamma status. Only a very steep learning curve, a lack of dependability, and all of the obstacles that habitual H-modes can throw at it stand in the way of computer replacement of H-mode.

Ironically, jobs requiring optimized H-modes are most efficiently staffed by I-Mindscapes who, like cyborgs, turn over H-mode tasks to computers and save the creative tasks for themselves. Computer simulation of the Homo sapiens I-mode is far more difficult than H-mode because the secret to the I-mode's phenomenal creativity lies in the fact that its combinatorial patterns and mutations are not random[3] but chaotic in a mathematical sense. Steep learning curves are far less troublesome to the flexible, creative I-modes than they are to the stable, and sometimes rigid, I-modes. Also, computer assisted, task oriented, non hierarchical, network pattern of integration has facilitated the replacement of the human H-mode. Thus Information Technology fulfils all three of the criteria under which strong H-Mindscape leadership is threatened. H-mode dominance is a serious problem, but difficulties with integration of the artificial H-mode with the living systems I-mode is probably the only critical obstacle to I-mode cyborg dominance. Solutions are logically impossible, because the underlying Meta system creates the incompatible differences described by Maruyama (1980 a, b). And computer generated hypercycles present risky and formidable technical problems

S- and G-modes are the modes of choice for integrating people, but solutions for living systems do not always apply to computers and cyborgs. S-mode negative feedback systems offer promising solutions to integration problems, but positive feedback phenomena do not respond well to contemporary negative feedback solutions. G-systems similar to those applied by the human genome are promising but will probably have to wait until light based computers before G-mode becomes operational. While immediate use in solving integration problems and a promising future in next technology (light and quantum) favour S- and G-Mindscapes, H-mode is threatened by computer replacements.

Lens Enhancements
Adding Harold A. Linstone's (1984) (1989) multiple perspectives and Axelrod's (1984) mathematical game strategy descriptions to Table 1's synchronicity is analogous to adding lenses to mirrors to complete construction of a telescope or microscope. Both depth and breadth can be increased or decreased as needed, provided the "lenses" are suitable and properly fitted so that they are integrated into the synchronic structure.

Linstone's technical (T), Organizational (O) and Personal (P) perspectives permit an efficient analysis that is easily communicated. For example, a technical (T) perspective might automatically exclude the Gamma tactic, because it could weaken the product. On the other hand, fear of competition or family ties might induce a personal (P) perspective. Axelrod's cooperation strategies facilitate prediction of ethical consequences. For example, ethical consequences defined in terms of games can predict that the Gamma tactic, that was usually quite successful under the weak HHH-, failed miserably whenever it was attempted in the strong HSG-Mindscape department. Below, Axelrod, Linstone and Table 1 are combined in the evaluation of Department X.

HSG-Head of Department's evaluation strategy resembled Craig Fethers's REVISED STATE TRANSITION. It models the other player as a one-step Markov process, and

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[3] Random patterns are easily modeled on a computer but virtually impossible for a human mind to imitate.

then makes its own choice to maximize its own long-term payoff on the assumption that the model is correct. Gamma strategy resembled TRANQUILIZER, a strategy that starts of cooperatively, and then sees how much it can get away with before mounting a serious attack. In Axelrod's study, eventually REVISED STATE TRANSITION decided that TRANQUILIZER was exploitive, thus cooperation was impossible.

HSG-Head of Department's frustration with HIH-Head of Clinical's TRANQUILIZER strategy, clinical psychology's focus on personal (P) rather than a combination of technical (T) and organizational (O) perspectives, combined with nearest to his retirement to make dividing Department X feasible. In informal psychological terms, (P) is often referred to as "right brain" and (T) as left brain. It was a point of bitter contention between the two as to which method is most applicable to (O) perspectives. Alpha power dictated left brain should control, despite the greater popularity of (P) among students. This resolution of the problem worked briefly because HSG Administration applied a negative feedback type equilibrium to maintain (O) balance. The final resolution of the struggles for power over Department X was decided, however, from the (P) perspective.

Gross analysis at the (P) level is analogous to that of the (O) level. Mixed mindscapes, like the complex HSG-Mindscape, must solve internal compatibility problems in order to present a coherent base for social interaction. Thus a tolerance for diversity is built into the personality pattern. This tolerance, indeed preference, for diversity represents a point of contention when confronted, at the (O) level by an HHH-Mindscape dedicated to cloning itself in all three perspectives.

The HIH-Mindscape, Head of Clinical had a difficult time resolving the conflicts that occurred when the H-public and H-persona aspects of his personality ganged up on his I-private creative aspect. Failing to reach a consensus with HSG-Head of the Department, the split into two departments meant achievement of Alpha status for HIH. Continued close cooperation implied by a common administrator was a compromise that recognized HIH's new Alpha status while maintaining a structure pretty much the same as the old. Adequate for the old department, this configuration would have a small probability of surviving a lethal combination of a "personal" tragedy, alcoholism, and the new organization configuration.

Ironically, if anyone were to seek help for drug or alcohol abuse at Department X, they would have been immediately referred to Professor HIH. Though psychological theories procedures and facilities to deal with the complexity of the alcohol problem were available, HHH-Head of Clinical and HSG-Administrative Head opted for an (O) perspective approach. This would have meant a relatively long and difficult task of removing their colleague. But shortly after the process began, HIH died of a complication often accompanying alcohol abuse.

It would be extremely difficult to glean which were (O) factors and which were (P) factors from the written and verbal reports from this period. In the case of HIH's alcohol abuse, which is which becomes both academic and irrelevant, because (O) perspectives supported (P) perspectives and visa versa? There are clear differences, however, if the persona is taken as a reference point. Note, despite the relative importance of the persona, strategy, rather than ignorance of the persona, decided which (P) perspectives and which (O) perspectives took precedence in this case. This theme is repeated again at the middle management level, where Information Technology amplifies consequences.

Evolution at "*Foundation's Edge*"

There are a number of strategic options for hierarchical systems that are threatened by revolution, among them is counter revolution. But HHH-Mindscapes threatened by evolution have only two options—evolve or delay. Worst, there are not too many variations of delay; and the myth that evolution is a long process is totally ignored by viruses and most other information intense processes. Forced to respond quickly to most of the evolutionary pressures forcing the dawning age of information, like the dinosaurs, Department X relied on all techniques available to it that would delay change as long as possible. Of course, the results were easily predictable.

Dividing into two HHH-Mindscape dominated departments was analogous to cloning. The resulting departments had the same structural weaknesses as the original. Consequently, they both depended heavily on weak Alpha strategies, strategies characterized by extensive use of the weak Gamma strategy. For weak Alphas who wish to remain in power, the inability to threaten *has to be* given highest priority. Powerful support from higher university officials combined with the greater popularity of its courses to make the clinical clone's weak Alpha strategy considerably more successful than its theoretical twin. Consequences of attempting to dominate rather than integrate were dramatic. In both quantitative (publications, visiting lectures, research seminars etc) and qualitative (interpersonal communication) terms, information flow from and within the clone Theoretical Department X reduced to a point where the HHH-Mindscape department head and his few, remaining, allies were socially isolated, even from the rest of the department. At this point, HHH replaced one of the departed allies (HHH-Asst. Head of Theoretical) with an HSH-Mindscape. What happens next requires integration of game theory and multiple perspectives for a clear explanation of how Department X's devolution can be readily predicted from basic psychological principles. The fate of Information Technology dramatizes the events and relates it to Asimov's *Foundation's Edge* formulation of the integration problem.

Positions in Transition
funding and economics, political and professional pressures from outside the two institutes made ambivalent Information Technology demands on the clones. Considerable funding was allocated to computer hardware, but precious little to keep programs updated and even less for training computer skills. Computer administrators were most distressed. The switch from mainframe to PC aggravated the Mindscape differences between the HHH-Theoretical Department Head and the retained HSG-Mainframe Administrator. Their acrimonious relationship was terminated by the relatively premature and untimely death of the computer administrator. The HII replacement fared even worst and died even younger. All of this left faculty and students handicapped, and more or less on their own.

One faculty position serves as the prototype for middle level resistance to Information Technology . Originally created for the relatively large HSG- lead department, it was designed to assist HSG-Head of Administration with course planning and class administration. The small size of the departments made the position became unnecessary after the cloning. Nevertheless, when the departments were cloned, two HHH-Betas replaced the HSG original. Replacement was immediate and stable on the clinical department, but a game of "one musical chair" developed on theoretical. The game developed because under HHH-Head of Theoretical, administration had a considerably lower status than research; and teaching classes was considered, at least, two steps below that. Against that background, the weak Gamma strategies of the final

HHH-Beta 2 occupant led to the *definitive middle level Information Technology* confrontation.

Figure 3:
"Busy" Ordering a Book
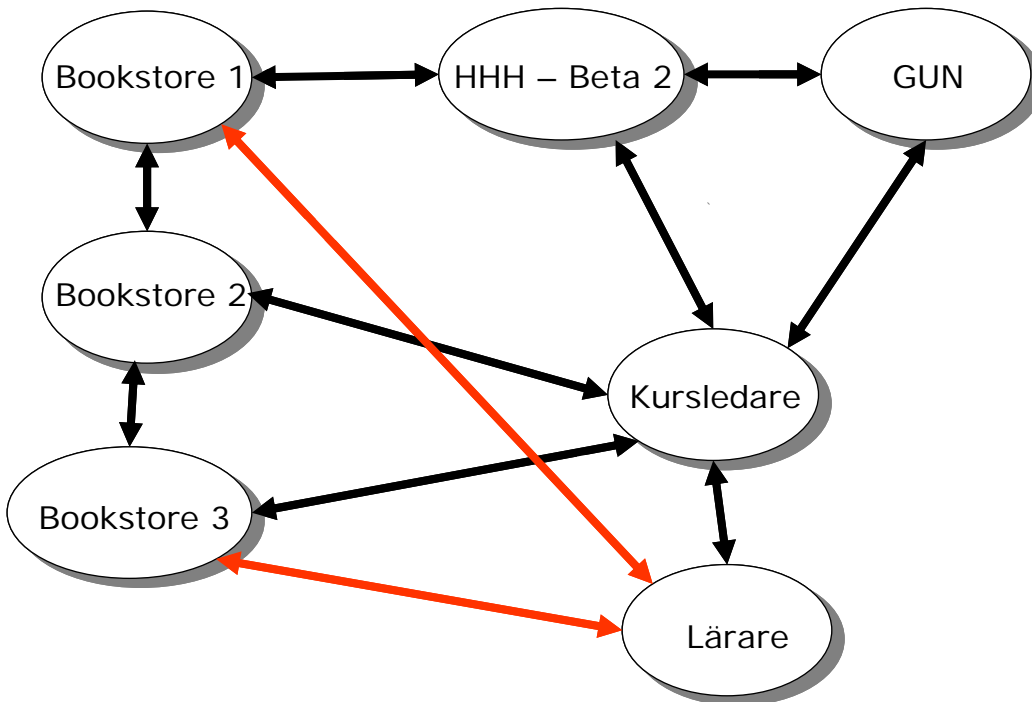
HHH-Beta 2's weak Gamma Strategies
HHH-Beta 2 had modified rules and changed organization to rationalize his administrative ranking. The complex network diagram in Figure 3 hides a hierarchy with HHH-Beta 2 at its apex. Nominally, the power rests in the committee (GUN). Actually, the committee has only advisory powers which are conferred on it by a governing board that has only advisory powers to the HHH-Head of Department. The black arrows in the diagram show the communication channels *required* to order or arrange change a textbook. The red lines show how a book was ordered during the leadership of HSG-Department head. Meetings, large meetings, small meetings, individual meetings, group meetings, all meetings (matching the arrows!) were HHH-Beta 2's preferred method of communication.

Wary of the effects that Information Technology might have on both his organization strategy and his position, he became chairmen of a committee that had sole responsibility for procurement, administration and application of Information Technology for Department X. HHH-Beta 2 encountered no serious problems until, he left his position, temporarily, and made his first use of a weak Gamma strategy to secure his job against a threat posed by a particularly aggressive HHH-Alpha 4½. The rules and protocols were flexed considerably to rationalize giving an HSG-Gamma woman the position over the much more highly qualified HHH-Alpha 4½ male. Part of HSG's-Gamma status came from her sex, part from her not having the necessary academic credentials for the job. HSG-Gamma performed admirably. Under normal circumstances she would have been able to keep the job, but HHH-Beta 2 challenged her, so HSG-Gamma lost the position on the grounds of qualifications and experience.

A few years passed before HHH-Beta 2 decided to improve his rank by filling a research position. This time the treat came from a teacher, HHH-Alpha 5. HSG-Gamma's qualifications were the same as before. Her rival's were much better, but again she was awarded the job. Two changes in her strategy were to force HHH-Beta 2 to attack, and failing, return a year earlier than planned. First she initiated a study to implement Information Technology in both the organization and the classroom. Also, to prevent a repeat, HSG-Gamma completed her doctoral thesis. But HHH-Beta 2 arranged to get himself assigned to the examination committee. With the help of an HHH-Mindscape colleague he challenged HSG-Gamma's thesis on irrelevant mathematical grounds. When this plot was foiled by the intervention of one of HSG-Gamma's colleagues, HHH-Beta 2 rationalized having HSG-Gamma removed despite her qualifications. Returned to power, HHH-Beta 2 dismantled the fledgling Information Technology project, disbanded the personnel and, at a meeting packed with supporters, organized a resistance to an Education Department scheme to introduce *university wide* Information Technology supported education.

HHH-Beta 2's emotional speech contained few facts, and those it contained could never be associated with either the emotions or the Information Technology that was supposed to be the meeting's subject. The bitter conflicts within the department, their roots, their resolutions, none were mentioned. They did not have to be mentioned. Competition from outside the Department implied the most powerful threats of all, the threat experienced daily, the threat that in the form of Information Technology amplified one of the most powerful of all emotions, the emotion associated with loss or reduction of each individual's niche space. Never mind steep learning curves, reorganization of priorities, and investments in hardware and software: these would have been taken care of by the government. More important is the fact that half of the administrative staff and about a half dozen secretaries (renamed to administrative assistants) would either be replaced or assigned different duties. All but three of the teachers would have to make radical changes in teaching methods[4]. Too, the resulting network would completely flatten the hierarchy.

Change was indeed a factor, and inevitable. Information Technology was a factor and also inevitable. Delay was the only possible consequence of the strategy that was being proposed; and to all but a very small minority of those present; delay seemed to be the optimal option—the only choice. The choice to delay meant that the new HSH-Head of the reconstituted department would have to operate under an HHH- structural handicap and against the forces of evolution. He was not present at the meeting.

Niche-Space-Time

Five Foundations and Gaia
Like the Galactic Empires in Asimov's *Foundation Trilogy*, mathematics applied to competition for niche space served as a basis for prediction of human behaviour and eventual integration of cultures and epistemologies despite *logically* irreconcilable differences. Gas law equations influenced Asimov. Chaos equations are the basis for Table 1. The implosion of the first Galactic Empire and the transformation of Department X could be formulated in the same terms, evaluated according to the same criteria and

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[4] Ironically the changes were developed by psychologists and based on psychological theories.

the conclusions were analogous, if not identical; 1) As the evolutionary processes progressed, behavioural science would have fewer and fewer degrees of freedom. 2) Mathematics was necessary in order to resolve a three way logical impasse. 3) As in the game *Prisoner's Dilemma*, the ethics of competition for niche space override both logic and common sense. 4) Consequently, prediction rather than mathematics or logic would be more convincing to those locked in conflict. 5) Once conditions reached a certain point, implosion was inevitable. 6) Despite exceedingly negative consequences, active intervention would be necessary to prevent the same structural faults that generated the implosion of the first organization from imploding any replacement. 7) The solution to the problem has to rest on creating harmony between opposites. 8) The exceedingly complex mathematical psychology solution must coincide with Nature.

Department X dramatized and clarified the congruence with General Systems' problem with: **Dé·jà vu the illusion of having experienced something before**, when in reality, an event is occurring for the first time. Relationships between genotypes and phenotypes suggest that personal empowerment through integration is an essential part of genome strategy. Opponent processes described by complex chaos mathematics practically insure that surviving organisms will have behaved according to genome strategy. Stated simply, the genome is integrated and integrating. All favourably disposed survive, others die. The brain though an essential part of genome strategy is *not* the generator of the process. Interactions between the genome and the womb environment generated the brain along with all of the systems it supports and all of the systems supported by it. Relationships between ecological environments and the genome test the validity of the genome's program. Survival of the genome is inextricably linked to the survival of its phenotypes. These links are flexible enough to tolerate a great deal of variation, change and innovation, yet rigid enough to cull serious deviance from the genome's prescribed strategy. Consequently, synchronicity modelled after the five integration forms from the genome's strategy seems much more promising than those contrary to it.

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