

## In this Issue

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### Kondo's 'Quality motivation in Japan'

Professor Yoshio Kondo, eminent Japanese expert on quality control and quality motivation, long-time proponent of the powerful and successful ideas of Nishibori, Deming and Juran, has always emphasized the decisive and dominating role of the 'human factor' in modern strategic thinking. He is therefore in complete harmony with the precepts and strivings of *Human Systems Management*, for which he has now written the overview of his major thoughts, ideas and experiences.

It is encouraging to see the resonance and interest *human systems management* and *HSM* are eliciting among the Japanese scientists, businessmen and managers; from the American viewpoint, there is also a sense of *déjà vu*: we did see such a case of benign neglect, rooted in misunderstanding and incomprehension, once before.

Professor Kondo knows that already today a number of additional incentives to money must be brought forward. Money used to be a sufficient reward for 'labor workers', money is not going to be enough for the emerging 'knowledge worker'. The premises of Taylor, taylorism and neo-taylorism are no longer valid: the Taylor system is obsolete.

In American, we still retain the obsolete and detrimental premises of taylorism, often hidden by the increasingly embarrassing and doubtful sophistication and slickness of those who continue to 'motivate by money'. Such systems lead directly and unavoidably to the underutilization of intelligence and creative capacity of millions of human beings.

Unless we stop reducing the multidimensional, rich and complex set of motivating factors to the

common denominator of money, we are going to get back the simplicity and unidimensionality we deserve, rather than the richness and variety we need. We are going to be awfully late in entering the knowledge age.

Human needs are multiple, parallel and interactive, human motivators should be correspondingly multiple, parallel and interactive. Money however, is unidimensional.

People need more time. They would work a 40-hour week in four days. Why do they need more time? Not just for leisure (which is becoming more expensive and less satisfying) but for *self-service, do-it-yourself, self-reliance and independence*. People need more time to improve the quality of their lives, not just the quality of their working lives.

People need multidimensional motivation: sports, hobbies and do-it-yourself could be more strenuous than work, yet they could absorb us entirely. The 'work' is slowly shifting into that category. One day we shall say: people engage, at their discretion, in leisure, sports, work, hobbies and self-service – and 'love every minute of it'.

Knowledge worker says: 'It is me who is doing the job; I know its benefits and drawbacks best of all, by definition; I want to be the one to design it and to improve it. I am the engineer of my work. I also wish to be the engineer of my life'.

Why is this little guy, with even 'littler' business degree, interfering with such admirable vision, rather than helping to make it happen soon?

Every human being has a natural ambition and innate drive to do a good job of the highest possible quality. This 'quality consciousness', as Kondo calls it, can be diminished or even destroyed by 'managers' instituting wrong motivational, behavioral and organizational principles. They destroy the joy of teamwork (via ruthless and mindless specialization) and diminish 'worker's pride' (via unidimensional reward systems). Professor Kondo pleads with these 'managers' to come to their senses and start caring about productivity and quality again.

### Safayeni, MacGregor, Lee and Bavelas's 'Office automation'

Automation in the office, as in any other workplace, will lead to a more integrated and better socially interconnected environment, more self-respect, more positive view of other people and more task-dependent, rather than rules & procedures-dependent, performance.

The group of researchers from the University of Victoria and University of Waterloo has prepared a field study which shows that as task variety increases, the number of *mutual adjustment* connections between tasks increases – i.e., we have a better team as a result. As mutual adjustment increases, the more emphasis people tend to place on social as opposed to procedural influences on task performance. The greater the variety to be regulated, the more important mutual adjustment becomes as means of coordinating task performance.

There are many important implications of this work. First, 'mutual adjustments take place' means that self-organizing and self-managing forces have been released. 'Self-management becomes respected' means of regulating system variety; compare with the 'central controller' paradigm of feedback-cluttered mechanistic cybernetics of the past.

Second, office automation in particular, but high technology in general, strengthen, not weaken, the social structure of the workplace. This has become almost a political issue with some unexpectedly emerging defenders of the old workplace. Suddenly, there are anti-technologists who defend the de-humanizing production lines, drudgery, boredom and degradation of human knowledge because: 'people socialize' at such places. The Detroit-type mass production line must surely be one of the worst places ever invented by Man for the purposes of socialization.

Finally, instead of political sloganeering of anti-computerists, anti-work-at-home, anti-self-service and anti-everything-new-and-human-oriented, we have the first study which concludes, unhesitatingly, that *none* of their results supported the 'pessimistic' view of technology.

This anti-technology streak is the strongest in the U.S.A. It does not exist in Japan, it is incomprehensible in U.S.S.R. or in China, and it is only a dream of work with dignity and without drudgery to all developing nations. In the U.S., we still have

workplaces where computers are avoided and 'computer literacy' considered a peak of technological sophistication!

Automation (and technology) in itself is *not* the causal factor of a better, more human and more team-like environment. It is its amplification of the integration of knowledge, the enrichment and larger variety of tasks, the recovery from the ravages of specialization and the increased emphasis on knowledge and knowledge work (not on 'information') which leads to the substantial and desirable reorganization of a task-dependent network, as authors refer to it. This is nothing less than *HSM's technology support net*.

Automation and high technology *do not* lead to more specialization, de-skilling and routinization. Just the opposite: they lead to enhanced integration of labor and knowledge, recovery of skills and craft-pride, and increased variety of tasks in a rotational, multifunctional environment.

There is no other evidence for the opposite effects of new technologies, except inertia, incompetence, narrow-mindedness and short-term views of the reigning managerial class.

It is now time to move towards research, field studies and methodological developments which would show how to enhance the emerging man-machine symbiosis to the benefit of working people. To advise how to break such symbiosis, to the benefit of nobody, is both myopic and naive in the year of 1987.

### Yu and Chien's 'Effective goal setting'

Multiple Criteria Decision Making (MCDM) often requires not only maximizing or minimizing objectives, but also achieving a priori set targets or goals. Japanese-type management and decision-making systems are characterized by the lack of explicit a priori goals, targets, standards and quotas in order to promote continuous and never-ending improvement which is implicit in optimization of objectives. The western strategies usually involve set goals and targets to be reached, achieved, accomplished – the ongoing improvement is not inherent in such approach.

P.L. Yu and I.-Shien Chien of the University of Kansas start with the notion of goal achievement and the conventional wisdom that higher goals tend to lead to higher achievements. They build an

effective goal-setting approach based on the notion that specifically targeted action is better than directionally motivated action (for example, 'achieve quality of maximum 2% rejects in the next 6 months' versus 'continue improving quality, always and under all conditions').

With the multiplicity of criteria the notion of effective goal-setting comes in. Obviously, not all goals can be posted at the same high levels as if they would be considered singly, in separation. 'Cutting costs' acquires entirely different meaning and potential when it's embedded in 'Improving quality, cutting costs, and increasing market share'. This is why effective goal setting can only make sense under conditions of multiple criteria (in the MCDM framework). Questions of relative weights, trade-offs, precise or less precise goal statements, goal fuzziness and ambiguity, etc., all enter into effective goal setting.

Yu and Chien find it useful to categorize decision problems into (1) simple routine; (2) mixed routine; (3) fuzzy; (4) challenging. This classification reflects the relative amounts of habituation and precedence involved. During problem solving these frames of reference have a tendency to transform themselves from one habituation level to another.

Effective goal setting is not just statement and listing of multiple goals and their achievement levels, but also the requisite support system (or 'support network of conditions') which would enhance responsibility, motivation and confidence of problem solvers so that their attention span and effort expenditure would be commensurate (effective) with the stated goals. Only such a complex configuration of interdependent variables could be considered effective goal setting. Yu and Chien do take some interesting first steps towards its formulation.

But important questions have to be analyzed. Can we take for granted that humans work to fulfill their life *goals*? Or do they pursue life objectives? The difference is crucial and fundamental: do people aim to be, say, a lawyer, or do they continually strive to become a better and better person (personally, professionally, socially)? To surpass, always, the previous performance, is certainly the right mode for many, individuals and nations. It is the difference between being and becoming: to aim to be and to strive to become, to enjoy the state of being and to explore the state of

becoming – these are important questions of human goal setting.

Ultimately, in human endeavor, there are no goals, no targets, no standards other than what was achieved, performed or experienced last year, last week, or last night. The goal is to internalize continuous and dynamic improvement so that no 'goals' need to be set after all. But we are only now starting to experience the exhilaration of that – through the self-surpassing philosophy of life and business which has emerged in Japan and is making itself available in China. There is still a long way to go for the U.S., too many targets to achieve, quotas to fulfill.

### Yuan and Kochen's 'Matching support systems'

*Matching problem* involves matching of members of one group with the members of another group: like in traditional matchmaking. Matchmaking and computer dating agencies actually use computerized support models in order to achieve a more stable set of resulting 'matches'. The nationwide systems of matching basketball players with NBA teams or medical graduates with hospitals (National Residency Matching Problem) are well known, widely used and computer-supported.

The standard *assignment problem* of Operations research is concerned with matching sources with destinations or workers with jobs. Single- and multiple-criteria versions, static and dynamic models, one-stage and multi-stage models of the assignment problem have been 'endlessly' studied in the past.

Professors Kochen and Yuan now propose a 'New Model of Matching Process'. They concentrate on:

- the information-processing *process* (rather than the act) of matching;
- dropping the assumption of 'complete preference ordering' of potential partners (incomplete or fuzzy information);
- replacing the optimization with satisficing ('practically attainable subgoals').

The matching (or assignment) process has roughly four phases: goal setting – search – evaluation – assignment. This falls nicely into the

Operations research paradigm of ‘measurement + search’. In traditional OR however the phase of ‘goal setting’ is usually assumed to be ‘given’ or pre-fixed. It is at this point that this paper can be connected with the paper by Yu and Chien on ‘Effective goal setting’ also in this issue of *HSM*. Yu’s concept of habitual domain and multicriterion process of interactive goal-setting is therefore complementing the Yuan-Kochen concerns about the algorithmic ‘architecture’ of assignment.

Professors Yuan and Kochen use the NRMP (National Residency Matching Problem) throughout the paper to demonstrate how the preferences of over 20,000 students can be matched with approximately as many hospitals according to ‘stable marriage algorithm’. They conclude that the key to increasing match satisfaction is to improve accuracy in evaluation as well as search coverage. This establishes a strong need for information systems to support searching and evaluation. In other words: don’t rush it, take your time, get all the information (and double-check it), and see as many candidates as possible – before marriage. Should people do so? They certainly have not done so in the past.

The authors state: ‘Matching is a multistage multicriterion decision-making process.’

This definition represents a tangible contribution to the OR concept of the assignment problem. They further evolve General Principles for Matching Support System Design which should be helpful in designing new matching systems or re-designing the old ones: (1) the objective of effectiveness and efficiency, (2) cost–benefit justification, (3) fairness. Matching systems should be effective, efficient, justified and fair.

Matching support systems epitomize the newer kinds of information systems that serve *multiple organizations*. What is the right thing to do rather than how to do things right – is becoming a preoccupation of executives in the high-technology era. It is high technology which leads to qualitative restructuring of its own support net: doing things differently and doing different things, not just doing the same thing better. HSM emphasis on high technology is consequently an emphasis on the qualitative changes in the technology support net. The authors conclude: ‘Matching people and positions is one of the most important tasks in human systems management’.

Extending the range of people’s ‘matchability’

(broader rather than narrower expertise or knowledge), redefining the ‘positions’, and recharting the ‘network of positions; (how they relate to each other) are also good approaches to deal with the problem of matching.

Because: the more specialized, atomized and narrow-trained are the matching participants, the more complex and difficult their matching will be – the possibility of ‘mismatch’ grows ever larger with the progressive specialization of the objects involved.

### Schneider’s ‘Information overload’

Professor Susan C. Schneider of INSEAD has completed her study of the *information overload*. We all know that humans are limited in their information processing capabilities, but what are the causes and consequences of these limitations? What are the implications for organizational behavior and strategic behavior?

Information overload is undoubtedly plaguing modern organizations. Our view of information is very primitive and unidimensional: everything, from the detail bit of data to essential knowledge or wisdom, is called ‘information’. This unidimensional symbolic ‘clatter and chatter’ even lost the sight of ‘information as action’ – do you still remember *in-forma-tion*? Deep, organizational and conceptual information is being confused with surface, structural and specific information: while there is a ‘revolution’, overload and expansion of the latter, there is increasingly appalling dearth, poverty and fatal shortage of the former. People know more and more about less and less, getting ever so close to knowing everything about nothing – no wonder their world does not make sense, no wonder their information systems break down: information society, information explosion, information revolution? No: *the shortage, lack and poverty of information is starting to cause problems*.

Professor Susan C. Schneider understands that information is needed for making sense of the environment. But she probably means *in-forma-tion* (in the sense of imprint or indentation by action), not its symbolic representation ‘information’ as a number. One thing is clear: there is too much of ‘symbolic chatter’ and too little sense-making *in-forma-tion*. Organizations now cannot even process the informational ‘white noise’ be-

cause *it cannot be processed*, by definition.

Information overload is more acute and more deeply felt if the information ‘processor’ has no concept of the world, no *Weltanschauung*, no hypothesis, no matrix, no paradigm. Under such conditions everything becomes noise. So, we have entered the era of information overload when there is so little information to have.

As incredible as it may sound, some students have defined information complexity as ‘the number of units per time’, ‘the rate of information’, and so on.

Schneider attempts to talk about *uncertainty, ambiguity, novelty, complexity* and *intensity* of information, i.e., taking the approach of modern general systems research. Finally and mercifully, the times of ‘bits per second’ seem to be coming to a rapid end.

But the real issue is with human system organization: the disasters of specialization (knowing all about nothing), division of labor, atomization of knowledge, ‘crisp’ job definition, sharp departmental boundaries, and so on – all these are the most potent contributors to the proliferation of useless and non-sensical information. Information overload is proportional to and a function of the degree of division of labor.

Reintegration of labor, reaggregation of knowledge, overlaps and intersections of boundaries, requisite ambiguity of task – these are the tools for fighting ‘overloads’ of any kind. ‘Breakdown in communication’ is really a breakdown in understanding systems and their purposes and missions, breakdown in distinguishing between organization and structure, breakdown between data and wisdom. *Communication is consensual coordination of action*; language is consensual coordination of consensual coordinations of action. Communication without language is impossible. Yet, nobody studies language, but some ‘information’: what is it? Does anybody care?

Integration of information, getting rid of NPV, ROI or cost/benefit analysis, getting rid of centralized ‘chatter boxes’ of MIS, searching for optimal levels of differentiation and information, getting rid of efficient and expensive generators of totally useless data – these are the tasks, these are the challenges. Professor Susan C. Schneider is raising them in the most appropriate time: it is never too late for organizations and their theorists to start learning...

### Schmid, Dodd and Tropman’s ‘Board decision making’

Social work researchers are now confirming well-known and long-term problems and difficulties with board-of-directors decision making in human service organizations: *lack of decision, poor timing, swayed focus and unclear utilization of human energy*. So-called organizational ‘governance’ can therefore hardly take place at the top of the organizational hierarchy. The question here is not so much, ‘Where *does* then the governance take place?’ as it is: ‘What *does* take place in the boardroom?’

‘What kind of a job are boards *really* doing?’, ask the authors of this article.

Is there any need for ‘boards of directors’ in the modern, knowledge, creativity and technology intensive management era? Should not ‘boarders’ be simply allowed to wither quietly into the pleasing irrelevance of their ‘room at the top’ – if they are no longer able to ‘direct’ or ‘govern’?

The authors insist that their most important function is *decision making*. Then they show that most of them lack knowledge and experience about service organizations. Given that, they naturally (and mercifully) abdicate the decision function altogether. Corporate boards, both private and public, have ‘steered’ U.S. businesses and services into a historical limbo.

What were the boarders doing?

- (1) Decision opportunities were fundamentally ambiguous, but decisions invariably unanimous via ‘pseudomajority rule’.
- (2) Timing of the decision process was not considered.
- (3) Human energy (extremely scarce and limited resource here) was mostly wasted.
- (4) Major decision-making tools were OVERSIGHT and FLIGHT, rarely even resolution.

(The method of *oversight* refers to decision making with a minimum possible expenditure of time and energy. Even more popular decision technology is *flight* where decisions are delegated to the executive committee for further discussion at some later and preferably unspecified point in time. Although both techniques are rarely taught at business schools, they are somehow acquired and mastered over time.)

The authors admit that they have 'found what everybody already knew!' This is of course true. Yet simply knowing something is not the same as talking about it, admitting it and not at all doing something about it.

We all know that management by objectives is wrong, but we still do it; we all know that Japanese-style and Deming/Juran kinds of management are correct, yet we do nothing to implement them; we all know that product quality cannot be improved by longer warranty period (only its price and costs raised), yet we nod our heads. These authors have taken the plunge and repeated what everybody knew and added that that certainly makes the things worse.

What are the answers? Continued education, testable competence, demonstrated knowledge of today's technology and future environments, full individual responsibility, ability to recognize the essential and leadership: criteria of status or past experience only should lead to automatic disqualification.

If boards cannot be like that, if they cannot provide guidance and support to human service organizations, then their boards should be committed to the purely ritual and ceremonial spheres of broad and varied corporate culture.

### Kochen and Resnick's 'Mathemachine'

In this short communication the authors explore some possibilities of enhancing processes of discovery by computer: generating conjectures of plausible inference, learning from experience and improving the knowledge base.

The authors talk about well-structured and well-defined object of 'mathematical discovery' via specialization, generalization, analogy and formation of plausible or 'interesting' conjectures. These criteria are defined by the user.

Searching through vast knowledge bases, looking for regularities and analogies, forming conjectures, all this often amounts to mathematical drudgery: computers will be quite capable of bringing plausible patterns and conjectures to mathematicians' attention.

Essentially the issue here is *metaknowledge*: a knowledge about knowledge bases – how is it

generated, incorporated, stored and updated? Any sufficient sophisticated and large knowledge base can 'probe itself' and generate knowledge about itself, commonly referred to as 'metaknowledge' in the DSS/ES/AI literature. Together with 'deep' and 'surface' knowledge classification, it prepares the ground for a new generation of management support systems (MSS). Any metaknowledge must 'operate' on a multi-level knowledge base (at least deep and surface, but preferably more); in a unidimensional flatness of a if-then knowledge base not much metaknowledge exists, even less can be 'extracted'.

The authors conclude with a number of research questions which still remain to be answered. Ultimately, of course, machine cannot make any discovery of anything: the user must conceive of what is promising, plausible or interesting to pursue. But the machine can provide the user with a richness and variety of 'pre-digested' patterns which might significantly stimulate (not stimulate) and enhance his own processes of discovery.

In any case, the *self-producing, autopoietic* conception of knowledge base is necessary if any true support to human creative expertise is to be claimed.

Many tasks have for centuries been regarded as the sole province of humans: digging of ditches, adding numbers, proving theorems. Technology is showing that by automating such tasks we are continually shifting the boundaries of what is and what is not exclusively for humans to perform *in a given historical circumstance*. The true nature of human capabilities could not only be limitless, but actually expanding and thus forever escaping our efforts to grasp it and define it.

Current attributes of 'creative thought, discovery, inductive reasoning and vision' of some business leaders can conceivably be quite easily mimicked by the machines. That does not mean that new business leaders will not emerge, posing new, endless and real challenges to future computer designers. So the question is not only whether creativity and vision can be modelled, but the very notion of creativity and vision is rapidly changing. There are many executives who consider themselves creative visionaries while being described as routine-following, inflexible 'machines' by others. What is there to model?