Management of Human Systems & Human Management of Systems

By Milan Zeleny*)

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Respecting such obvious limitations, I shall avoid any long-term "futuristic" predictions as well as any suggestions of what " should be". I simply describe what is and offer a personal interpretation of the directions it is taking.
What are the main characteristics and the "near-future" manifestations of the ongoing managerial revolution?

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they do have a beginning. And, as a historical category, management and management process will have an end. No cause for alarm though – we, managers, are nowhere near *that* end. But our understanding of the teleonomy or the "omega" of this process will be helpful in understanding and explaining the process itself.

The process of the division of labor, accompanied by the specialization and simplification of skills, as well as by the disaggregation of knowledge, requires large, costly and complex coordinative functions and services: management. Each new step towards a greater division of labor and knowledge requires increasingly costly, complex and voluminous support by the managerial "overlay": hierarchies of command, organizations, services, etc. The more we atomize the task (and our knowledge of the task), the more demanding and more costly will the requisite coordination become.

At a certain stage, further atomization of labor and knowledge become economically unattractive: the costs of coordination exceeds the benefits of specialization; the complexity of managerial task exceeds the abilities of managers; the difficulty of integrating atomized knowledge approaches the limits of contemporary human abilities. The ancient process of the division of labor finally slows down, stagnates, reaches a turning point – and reverses itself. A process of progressive re-integration (or synthesis) of labor and re-aggregation of knowledge sets on its course. In social systems, as in any other living systems, after each *corso* there is a *recorso,* after each outswing there is a rebound. (Needless to say that such recourse should not imply "return" to anything; we talk about a progressive process and its "reversal" factor refers to its particular, observer-selected attribute: division of labor.

The process of management is (I propose that from the late eighties on) increasingly dominated by the *recorso* stage (i.e., the integrative stage) of the process of the division of labor. Most advanced economic and business systems will have found themselves in the *corso-recorso* transition in this last quarter of the twentieth century. Although a variety of "trends and megatrends" can and will still be postulated – none can be understood (and thus satisfactorily explained) without pointing to their common, underlying and fundamental *ancien régime.*

What are the current, day-to-day manifestations of this "great reversal"? How does a manager recognize that something fundamental *is* taking place, and for the first time in history at that?

Let us list some unobscured tell-signs:

- workers are undertaking a larger number of tasks – *not* a smaller number: a "multifunctional" worker is emerging (multifunctional manager is next);

- workers are given more responsibility – *not* less: self-management and participation are replacing, wherever possible, the increasingly constricting and inflexible command structures of the "traditional" management;

- conventional managerial hierarchies are "flattening" out: they are becoming horizontal rather than vertical: organizations of independent, individual "partners" and intrapreneurs are emerging;

- self-service, do-it-yourself and self-help are rapidly growing and thus slowing down the need for the traditional, market-provided services;

- technology is becoming increasingly multi-purpose or general-purpose oriented, i.e., less specialized and less dedicated to the efficient performance of only the smallest of tasks;

- worker's relationship to technology is changing: instead of worker complementing the machine, the machine complements the worker. Workers become responsible for more independent and increasingly knowledge-oriented tasks;

- the re-integration of labor and re-aggregation of knowledge have advanced most in the agriculture; they are advancing rapidly in the industry, and have recently entered as a significant factor into the services;

- high technologies are not just more efficient (doing the same things, but "better") but they now allow (and often require) doing things differently and doing different things: they affect the division of labor profoundly.

The reader will be able to supply many additional tell-signs of the emerging "Great reversal".

The implications for managers and management are so vast and so significant, that not only a whole new generation of managers will have to enter, sharply contrasting with the old "Iaccocian" (allow me) stereotype, but new theories, new principles and new educational programs will have to be institutionalized soon. The principles useful for the *corso* are simply inappropriate and become outright harmful for the stage of *recorso*. Managing the division of labor and specialization of knowledge requires different skills, experinces and worldviews than managing the reintegration of labor and reaggregation of knowledge.
To summarize with a common metaphor: the old, conventional wisdom of management, "If it aint't broke, don't fix it", is now being replaced, and rather rapidly, by a fundamentally different dictum: "If it ain't broke, improve it."

New management theories and practices are emerging. In their totality they represent a fundamentally different proposition, not just a *per partes* improvement of the old. They do not extend the old and are not built upon the old. They represent a "clean break", starting "from the scratch": a sudden and final recognition that the *recorso* is fundamentally different from the *corso* and that it is here to stay. This is why the GM's "Saturn Project" must be totally disconnected from the existing GM organization and operations: one cannot build a new system by tinkering with the old one. Looking west, no matter how intensely, will not allow you to see the sun rise.
Let us take a short look at some specific and perhaps most visible "departures" from the conventional managerial wisdom:

1) *Do <u>not</u> optimize given systems, design optimal systems.* Critical resources can no longer be wasted on operating suboptimally or haphazardly created "given" systems. Doing one's best within the bad system is not good enough.

2) *Concentrate on improving quality of the <u>process;</u> quality of the product will follow.* There is no context-free tradeoff between quality and costs. In fact, in optimally designed systems, to achieve higher productivity and lower costs – one must improve process quality. In properly designed systems, quality and productivity merge into a dual pursuit of their simultaneous improvement.

3) *Strive to remove all inventories, buffers and bottlenecks from your operations.* Management has to abandon the old "just-in-case" philosophy and learn the lean, no-nonsense "just-in-time" philosophy of management.

4) *Top management has to learn that setting objectives is a continuous process: simply attaining short-term goals is not enough.* There is no such thing as "acceptable" quality, costs, productivity, and so on. Management as a continuous process requires that managers emerge from within the company – they are not "parachuted in" from the outside.

5) *A system of people and machines is a human system.* Any human system will exhibit variations in performance due to both the machines and the humans. In order to improve human systems, one has to understand the causes of their performance variations. Appropriate concepts and techniques of statistics become managerial tools *par excellence.*

6) *Workers must be given more responsibility – not less.* Workers, supported by appropriate technology, are the most qualified agents to perform, inspect and assume responsibility for the performance of given tasks. Manager becomes a "coach" of the team and their mandate is clear: continuous improvement.

7) *The name of the game is education – not training.* In order to assume new, integrative responsibilities, workers do not need to be better trained or even re-trained for a specific job – they have to be *educated* for a broad family of multi-tasks.

8) *The product should never leave the "production" process; even in the hands of the consumer, it should still remain part of it.* The principle of continuous improvement cannot stop when the product is already in use: through knowledge-feedback, consumer becomes also a designer and a producer of a given product (a *prosumer*).

9) *Goals, standards, norms, targets or quotas are appealing "survivors" of the old paradigm of management: the objective now is continuous improvement, always "surpassing the already attained".* Workers should be rewarded for improvement, innovation, and invention.

10) *If you bid for the lowest price, you'll get the lowest quality: don't bid for your suppliers, make them part of your production process.* As are the consumers, also the suppliers are the integral part of the production process and its continuous improvement.

The only reason why we still have to "manage" is because we have atomized our knowledge and task into so many little pieces. If a consumer could produce his own, "custom-made" product (with the help of the requisitely high technology), we would not need any management. Imagine a fully automated factory, which is controlled through a computer program. If a consumer can select, adjust or even originate such a program, he becomes also a producer, prosumer. As consumers are becoming producers, managers as a class of coordinators, controllers, schedulers and motivators is going to wither. Managers as a class of coaches, catalysts, consultants and designers is going to prosper. This new (and much smaller class of managers) will require new skills, new personalities and new education: it is *not* going to be linear extrapolation of the old class.

High technology allows and requires us to do things differently and to do different things. The old, traditional technology was designed to do the *same thing* better and more efficiently. Shifting towards *high* technology is not so much a shift to new hardware or software, but to new organization, new way of doing things. Because of this, high technology has to be managed: its major effects are to be found in the managerial rather than in the engineering domain. High technology cannot be successfully resisted: it actually redefines the notion of "better"and "efficient", it changes the rules of the game. We are shifting from "economies of scale" to "economies of scope" – from doing the same thing better to doing a better thing.

Humans are becoming the focus, the purpose and the ultimate foundation of the emerging technology of *human systems management.* Instead of asking: "What kind of person is needed to perform best in the given task and to support best the given machine?", we ask: "What kind of technology is needed, so that any human could carry out the given task?"

As knowledge becomes more integrated (there are deeper than just speculative reasons for the current wave of corporate acquisitions of

artificial intelligence/expert systems companies), workers become more responsible and self-reliant. Self-management is a natural outcome of the re-integration of knowledge. Self-management ultimately means that everybody becomes a manager . . . and producer, and consumer – all at the same time. So, the emphasis on humans does not come through their hearts ("high touch" and "lots of love" of the guru management) but through their brains (re-integration of knowledge type of economics).

In a macrospace, the society is moving neither to information, nor to service, and certainly not to anything "post-" (– agricultural, "–" industrial, and so on). Information, in itself, is useless and leads only to further atomization of knowledge. It is the knowledge (and even wisdom) which ultimately matters, and knowledge can only be embedded in human systems. Service (traditional, market-provided) is simply a further (and often extreme) manifestation of the division of labor and specialization: it is bound to slow down, recoil, and ultimately decrease in importance. Most advanced systems (like the U.S. economy) are anything but post-agricultural: actually, it is the agriculture which is the most advanced and the most effective sector of that society. There is only 4% of total U.S. labor force directly involved in the agriculture: yet, agricultural production is not only fully adequate, the cheapest and the most efficient – its full (international) potential has not been even approached. The same holds for the unfortunate label "post-industrial". Our advanced societies, if anything, are "pre-", not "post-".

The "megatrends" point the way towards self-service, self-reliant, and self-sufficient society based on human knowledge and its technological embedding. The nature of work, the nature of leisure and the nature of the division of labor, knowledge and time are going to change along the lines so sketchily outlined above.

We can refer to such society as "an integrative society". Integrative society is increasingly and continually concerned with the integration of tasks, labor, knowledge, time, and human experience.

The management as we have known it will disappear: people will manage themselves – in production, in comsumption, in self-service and in home-based economic activities. Traditional supervisors, foremen, and inspectors will go the way of horsewhip-makers. Coaches, taskforces, A-teams (crisis-teams), and *ad hoc* rotation of responsibilities

and decision-making powers will make their way into the management lore.

Even in the corporate governance, the trends toward self-reliance, enhanced responsibility, and professional obsession with quality will become outwardly visible and apparent.

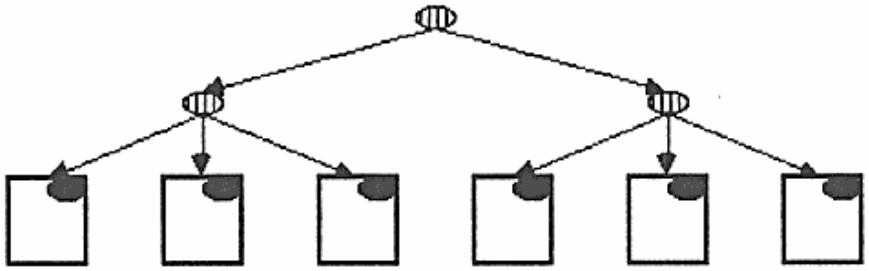
The emergence of the *nation-state* system itself has been spawned by the rampant processes of division of labor. With the advance of the *recorso* processes of integraton of labor and knowledge, the role and significance of the State will decline. The State will stop meddling,wasting money, over-regulating, expanding bureaucracies and service hierarchies, over-taxing, over-caring, and over-reaching.

Self-management, self-governance, self-responsibility and neighborhood autonomy will take over.

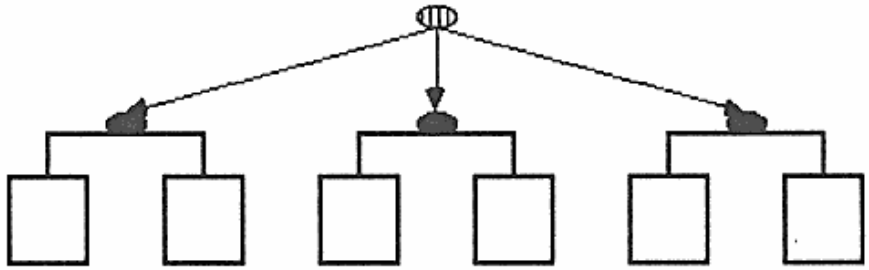
Once again, the (democratic) State has very little choice or influence in all this: it is going to be increasingly ignored and made increasingly irrelevant by the self-governing geographical and "shared-interests" networks. State's role in the nation-*defense* responsibilities however, is going to be consensually expanded, approved and brought to unprecedented levels of quality and reliability. The withering of the State is taking place across the spectrum of political systems: the process itself is apolitical, triggered only by the decline of the division of labor.

Because the process of the division of labor underlies broad socio-economic systems formation, sciences, arts and culture in general, not only management and business administration, are going to be affected. The sciences will become more integrated, transdisciplinary education and research will emerge: the generalist, a renaissance man will make a comeback; the specialists and their specialized knowledge will become automated and assumed by artificial "intelligence". Universities will be also affected: classical departmental structures will integrate into more coherent and interactive "problem-wholes". Research will concentrate less on relentless acquisition of increasingly meaningless and disconnected "data", more on synthesis, re-interpretation and re-discovery of new meanings, new links, and new explanations.

However, we are not entering a "systems era", but a "human systems era". Main emphasis is less on the coordination/dialogue role of systems and more on the integrative role of systems. In Figure 1 we sketch the distinction:



1a. Systems: coordinative paradigm



1b. Systems: integrative paradigm

task to be carried out or department to be managed
worker or performer
manager or coordinator

Figure 1: Coordination-integration distinction

The first, coordinative paradigm (conventional "systems approach") essentialy accepts the existing levels of specialization and division of labor/knowledge. But it recognizes the shortcomings and difficulties of the outcome and aspires to build a coordinative hierarchical superstructure of cross disciplinary communications and control. The complexity, costs, and ineffectiveness of such superstructure continue to grow, in step with the further process of knowledge atomization.

The second, integrative paradigm, is now *actually* emerging and asserting itself with some vigor. It re-integrates the previously specialized tasks, knowledge and labor into larger, more natural and more coherent units. With the help of high technology, humans can return an increasingly competent performance of such integrated tasks. As a result, the complexity, costs and ineffectiveness of coordination decline.

We are now ready to return to the title of this essay:

Management of human systems implies the management of the entire, integrated (not simply coordinated) human system (a symbiosis of machines and humans). *Human management of systems* implies the de-emphasizing of rigid coordinative hierarchies and recognizing the inevitability of self-organization and self-management: human knowledge (not labor and not information) becomes a primary form of capital.

Both aspects form the two inseparable (and mutually self-amplifying) characteristics of *human systems management.*

It is customary to end an essay with an appropriate quote, (here from management or business literature), which would motivate, complement or enhance the presented material. To avoid the frustration of such selection, let us close with a statement from Lazarus Long (a fictional character, created by Robert A. Heinlein):

– A human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects.