Let's focus onto the increasing complexity of present organizations and the
difficulty we have to manage it. As a A. T. Kearney's study (1) shows it, increased
complexity originates from growth. Even if it would be possible to reduce it by
outsourcing some activities, it remains necessary to maintain the "variety" required
by users. This study does not reveal any metrics but a valuation in terms of number
of products/services, markets, channels, customization combinations and so on. Of
course, you might translate these figures into graphs such as Petri nets, reckon the
probabilities of transition from one state to another and infer any complexity
entropy-based indicator uttered in bits (following to the Shannon formula): it is a very pleasant result indeed especially
if you have to compare different solutions of reengineering related to architecture,
processes, workflows, M & A, investment/disvestment and so on; but is a hard job
to be compared with Herculean labours, without any guarantee of accuracy.
Nevertheless, some intersting studies allow to solve problems in some peculiar
cases (2). We may quote D. C. Mikulecky of Medical College of Virginia
Commonwealth University (3): "The system's important attributes are beyond
algorithmic definition or realization by algorithms and therefore not computable".
Complexity is not a goal in itself and is a source of costs and heaviness and that
you have to remove it when it is not necessary; but you must engage with it when it
is useful to make you more influent, more resilient, more competitive and more
able to attract customers; dealing with complexity means dealing with all kinds of
difficulties occurring because of complex relationships.
First of all, we have to do an historical survey for complexity is cumulative and the
trend is the superposition of structures and products that are more or less profitearning
and source of improductive costs. In fact, it is tantamount to adapt oneself
to the necessity and the environment. Managing complexity is to arbitrate between
what is the most profitable for the firm and adding value for its customers -not only
in the short term- and what is less , making allowance of the increase of complexity
and its possible cost. This method is similar to value analysis but takes into account
the complexity cost which you can only evaluate by having a holistic point of view.
Indeed, the main feature of complexity is that it results from interdependence of
almost every component hence the metaphoric analogy of complex organizations
with living systems either at an individual level or at the level of social one; it involves recursive definitions, iterative processes,
non-linear relations, delayed impacts, numerous feedbacks, positive or negative, being some times multi-nested without speaking of more
unpredictable phenomena such as so-called "attractors" and emergence.
complex systems behave as a whole and when you modify something in one point,
it may have repercussions upon others we might wish to remain unchanged; the
recursive mechanisms which take place in complex systems propagate the consequences of any disturbance, either it is caused by the management or by the
environment; for instance, if you delete a product, it may diminish the production
of a component used in another product and so increase the price of this product;
you will have to sell this product at a higher price; the sales will be lower and the
unitary cost will increase; this is an endless spiral; you have in this very simple
example, not only a recursive relationship but a negative feedback loop which in turn
will have other consequences. That is why models (4) are so useful to better seize the
dynamics of systems and understand what takes place when changing the value of a

key variable. You will find some interesting thoughts about it into a paper from
Mani and Li (5).

Numerous methods were designed to understand and act upon complex systems but, pratically, their limits are fastly reached for want of being able to quantitatively express the necessary parameters.

For instance, the concept of elasticity used by economists has meaning only if you get at hand statistical data over a sufficiently long period.; on one hand, those data are seldom representative of a usable sample to perform regression computing because they don't cover a large enough scope; on the other hand, in the case of a long period of time, elasticity itself may change under the influence of various factors and this leads to a kind of mata-elasticity no manager will try to tackle.

Consequently, we must not discard those methods but use them if it is not possible otherwise in a qualitative way, which is nevertheless a good approach to appreciate the direction toward which we have to orientate our decision making.

It will be interesting to benefit by the Forrester model which calls into play flows and stocks linked to information, material, orders, money, labour and assets (6) while taking into consideration their interactions through non-linear relationships and ideed recursive ones, feedback loops and the lag of their influencing such and such parameters.

The role of managers is namely to understand and act upon the structures, the functions, and the behaviour of organizations as Gharajedaghi underlines it; he adds that only an iterative approach may improve a system as a whole by successively changing these characteristics.

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