

The New Systemics on 1 page on recto-verso

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The New Systemics is art of acting effectively on a system.

For that purpose, this practice proposes a procedure in **two stages**:

- 1) **Identify the type of system** on which one works,
- 2) **Apply a suitable systemic method** to the system.

1) Identify the type of system

This stage is carried out while examining, and it often by beginning with a simple drawing, the system with its elements, the interactions which exist among themselves and those between the system and the outside...

At first approximation, if interactions between the elements are very few and not buckled (buckled means that the produced effect on an element returns towards the initiating element: a boomerang effect to some extent), it is a simple system (a bag of rice grains, a 4 x 100 m swim relay team...). If interactions are numerous and buckled between the elements, it is a complex system (a football team, an ecosystem...).

To obtain a precise characterisation of the type of system, modelling tools exist. They make it possible "to represent better" the system with its elements and its interactions.... Tools like the system dynamics or chaotic dynamics.... were thus developed.

2) Apply a suitable systemic method

A method will be said "systemic" if it is dedicated to a system. This second stage concerns the application of this type of method. The objective is to use, within the framework of an action on a system, the most effective method compared to quality, periods and costs standards. This involves therefore, in particular, avoiding "using a power hammer to crush a fly".

As examples of actions on a system, let us quote the creation, the modification, the control...

For the simple systems, approaches of the Cartesian type can be used to act on the system. They are generally sufficient. These approaches cut out the system partly and work on each one of them independently the ones of the others.

Distributing the present rice grains in a bag in various packages is a Cartesian approach which is valid with this type of system because this involves a simple system. Similarly, bringing out the good grain from bad one is possible with this kind of methods. That does not transform the grains: one can isolate the element without modifying the remaining system, and the withdrawn element itself.

On the other hand, it is cases where by isolating the element, i.e. by withdrawing it from a buckled system, that involves its destruction, its significant change or that of the system. And therefore in this case, separating and recomposing then the elements, to try to rebuild a system which functions, proves impossible.

Removing the petals of flower is irremediable: one cannot it restick them then. Similarly, withdrawing a fish of water modifies its colours quickly and removes to it the lifetime. In a mouth, removing a tooth involves an evolution of the position of the remaining teeth as a function of the newly left place. In a football team, if a back is excluded from the sports ground, the ten other players will reorganize to occupy hybrid functions (middle - back) by contrast with a rice grain which almost does not change if another grain of the bag is removed.

In fact, for the complex systems, it is important to unroll systemic methods which take this interdependence into account between the elements.

To carry out an organ transplant, it is, for example, necessary to seek, as a preliminary, to reduce the capacities of interactions of the immune system with respect to the future part graft. To constitute a new football team, it is necessary to envisage an adaptation time for the players in such a way that they learn to work together and therefore that interactions are carried out correctly.

Some examples of suitable methods for the complex systems:

- the systemic family therapies which propose looking after all the family and not the only person "who cracked".
- the paradoxical strategies which aim to prescribe the symptom that one wants to avoid.... The strategies with the vaccines take part in this principle. The strategy of a salesman's strong price also functions in the same way: lead a customer to reject a product "expensive" better to lead it to accept the product that one wants really it to sell....

As a summary:

The New Systemics is art of acting effectively on a system.

For that purpose, it is necessary well to **identify the type of system** on which one works and to apply it **a suitable systemic method**.

The identification stage will make it possible to distinguish the simple systems of the complex systems (characterised by one large interdependence between their elements).

The stage of application of a method will be made with a method of the Cartesian type if this involves a simple system and with methods taking the interdependences into account between the elements in the case of complex systems.

The major danger to avoid: use a Cartesian method on a complex system. Thus, misusing the antibiotics in the control of a disease, in particular while practising of the self-medication, enters into this kind of problems. Indeed, in this type of complex system (a human plus bacteria), there is no simple proportional relation between the quantity of bacteria destroyed at a given moment and the "cure rate". Stopping a treatment prematurely can "revive the illness". Moreover, misusing the antibiotics can encourage the emergence of resistances and therefore require thereafter to resort to a stronger treatment.... for everyone.