Chapter 1
Anatomies and Dynamics of the Society-Mechanism:
Among Myths of Simplification, Facilitation, and Disintermediation

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ABSTRACT

It was post-modernity that first told us that facts were now to be considered interpretations, whereupon the value of theorization diminished to the point where theories became little more than opinions. As a reaction, the reductionisms and determinisms that had previously been dismantled by a novel, non-Newtonian perspective returned as a "tyranny of concreteness," foreshadowing tomorrow's post-normality. So, what then is "normality"? Human societies have always been wrapped in chaos, complexity, and contradictions: this is normal for all living beings and for all living systems. A volatile, uncertain, complex and ambiguous (VUCA) world, therefore, has always existed, and as such is perfectly normal and natural. Therefore, a science based on "post normality" should take into account that normality itself implicates unpredictability, uncertainty, and the impossibility of controlling or managing complexity, including the unexpected events called "black swans," which are simply intrinsic features of the complex adaptive systems we inhabit.

DOI: 10.4018/979-8-3693-2125-6.ch001

INTRODUCTION

The uncertainties and relativities which have been plaguing our civilization from the era of post-modernity onward, from the first announcement of the overcoming of the 'objectivity principle', both in philosophical terms and in the realm of the 'hard' sciences, the announcement that there were no longer any such things as facts, only interpretations, gave rise to a series of paradoxical 'side effects', in which the value of theorization was diminished to the point where all theories became equivalent, considered little more than opinions themselves. As a result, the same reductionisms and determinisms which had previously been dismantled by a novel perspective in physics, focusing on non-Newtonian, quantum phenomena and properties, have since returned (with a vengeance) under the guise of an 'evidence-based' search for a completely neutral and absolute…objectivity, in the realm of social sciences as well, resulting in a reinforced "tyranny of concreteness" (Dominici, 1996, 2017b; Hammersley, 2013). And might not this 'new' objectivity be yet another social construct, and as such subject to an unavoidable amount of subjectivity, considering that all human beings are, first of all, subjects?

In any case, before speaking of post-normality, we should perhaps ponder normality itself. Our human societies have always been wrapped in chaos, complexity and contradictions: this is normal for all living beings and for all living systems, which in general can be grouped together as 'complex adaptive systems' (CASs). A volatile, uncertain, complex and ambiguous (VUCA) world, therefore, *has always existed*, and as such *is perfectly normal*; as a matter of fact, it is both natural and desirable. Therefore, the idea of a science based on "post normality" should take into account that normality itself implicates unpredictability, uncertainty, and the impossibility of controlling or managing the complexity that comprises us, including the unexpected events often called "black swans", which are simply an intrinsic feature of the CASs we inhabit (Haken, 1977; Morin, 1977; Kiel, 1994; Kuhlmann, 2013).

In the thirty or so years that I have been studying, teaching, writing, and carrying out research on complexity, I have, time after time, come up against experts from various fields who misinterpret the concepts behind terms such as complexity and chaos. That is the reason that I always insist upon defining and distinguishing the difference between complex and complicated systems before introducing any epistemological or methodological considerations. As a result, I am often accused of repeating myself. But how is it possible to analyze issues, overcome inadequacies, or identify connections, much less find solutions for problems (which turn out inevitably to be *simple* solutions aimed at resolving *complex* problems), based on totally false premises? I find myself obliged to insist on these points, because the confusion between the two abovementioned systems, the tendency to think that a complex system can be described as complicated – and consequently, dealt with in

the same way --is the fatal error which is leading humanity into a trap of its own making, a trap which is revealing itself to be a progressive hardening of vital, living communities into a *"society-mechanism"* (Dominici, 2019a, 2022a, 2023a; see also: Luhmann, 1990; Laszlo, 1996; Rosa, 2010).

This has great impact on the quality of our lives as individuals, our academic progress as students and teachers, and our strategical capacities as businesses, governments, and organizations in general, all of which are dealt a fatal blow by the prevailing neo-positivist vision of society which we have adopted in the wake of a post-modernist "awakening". I am speaking in particular of the narratives that have come to the fore in the digital age, in particular an acritical enthusiasm common to all professional, political, economic and educational fields, calling for s*implification, disintermediation,* and *facilitation,* made ever more appealing by the prospect of delegating complete carte-blanche to technology for problem-solving, decision-making, planning for the future and above all for turning educational processes into mere instructions for skills and "know-how", a prospect that has been called "the Great Mistake" (Dominici,1996). The logical outcome of letting technical systems, algorithms and artificial intelligence assume the task of thinking for us is a dramatic reduction of our sphere of liberty and of its inseparable companion, that is, a sense of responsibility.

COMPLEX OR JUST COMPLICATED?

But before embarking on any further descriptions of the criticalities of our age, it is necessary to "synchronize" the meanings we give to terms. To begin with, we must apply a definition to the adjectives 'complicated' and 'complex', which will need to be extended to the terms 'chaos' ('chaotic') and 'order' as well. Linguistically speaking, of course, the word "complicated" can be considered a synonym for "complex". But in the real world, things are very different. Specifically, complicated systems are artificial, mechanical, and technical, so we can manage them easily by breaking them down into smaller parts. That way we will also be able to measure, predict and even control their progress and functions. When we put these parts together, the total result will be equal to the sum of the parts.

But in complex systems, on the contrary, -- and all living systems are complex, including our human social systems -- the parts, which we can also call sub-units, are so interconnected and interactive that they can never be broken down or controlled. The totality will always be *greater* than the sum of the parts, because these parts are adaptive, and are capable of feedback, of self-generation and of self-organization. In other words, they are *emergent*, and therefore completely *unpredictable*. A small

change in one of these sub-units might have an enormous effect on the entire system -- a phenomenon often called "the butterfly effect" (Lorenz, 1963).

Another interesting property of complex systems is that it is not possible to simply "*observe*" them because the observer is *part* of the system, and therefore the observer changes the system and is also changed *by* the system. If we think about the properties of complex systems, it will soon become obvious that it is not only impossible to predict their evolution, but it is impossible to measure, control, even to visualize or create an image of these systems, much less to eliminate error from them. In short, even *talking about* managing complexity is a contradiction in terms.

Thus, without wading too deeply into quantum physics, we can state that the fuzziness between the two concepts leads precisely to this fatal error, that of believing that we can (now or in the near future) predict or manage the complex system we live in. Despite the fact that today "complexity" has become a buzz-word, even when it is ingeniously included in an acronym like "VUCA", it remains an empty –and misleading -- slogan if it is not used accurately.

Similarly, 'chaos', 'chaotic' and 'order' are terms we use every day to describe our daughter's bedroom or the hodgepodge of norms and regulations in our municipalities. In popular language, chaos is taken to mean a state of anarchy, disorder and randomness, whereas, as chaos science has shown us, underlying pockets of order can be found in chaotic systems, where repeated patterns of sub-units of the system can be generated in different dimensions of time and space. Both chaotic and complex systems are subject to the "butterfly effect" described above, but *complex systems* – on which there is an extensive and multidisciplinary scientific literature (Poincaré, 1885, 1908; Weaver 1948; Popper, 1934; Wiener, 1950, 1958; Ashby, 1956; Heisenberg, 1958; Simon 1962; Bertalanffy von, 1962; Feynman 1963, 1985; Hayek von 1964; Neumann von 1958, 1966; Canguilhem, 1966; Emery 1969; Anderson 1972; Bateson 1972, 1979; Morin 1973, 2004 [1977]; Holland 1975; Capra 1975, 1996; Le Moigne 1977; Mandelbrot 1977; Prigogine and Stengers 1979, 1984, 1997; Maturana and Varela 1980, 1985; Foerster von 1981; Kauffman 1993; Luhmann 1984, 1990, 1996; Gell-Mann, 1994, 1995; Krugman 1996; Prigogine 1996; Laszlo 1996; Bar-Yam 1997; Diamond 1997, 2005; Mathews *et al*. 1999; Barabási 2002; Israel 2005; Dominici, 1996, 2017b, 2019c, 2022a, 2022b, 2023b; Nicolis & Nicolis 2007; Taleb, 2007, 2012; Montuori 2014; Tegmark, 2017; Turner and Baker 2019) - have such an enormous number of interdependent, interacting, interconnected sub-units that no determining patterns can be predicted: as P.W. Anderson once titled one of his articles: "More is different" (Anderson, 1972). Although some chaotic systems are also complex, (or vice-versa), complexity invariably implicates the capacity for self-organization and emergence as described above, a self-organization which is triggered, not from above, but from below, from the smallest and least important sub-units, which is why significant change in social

systems cannot be imposed from the highest, most sophisticated or advanced layers of society, but instead is kindled from grassroots communities and even individuals. I would like to emphasize this point: genuine societal change comes from below, not from top-down rules or initiatives.

Having underlined these crucial distinctions, it is now possible to explore the hypothesis that there is an ongoing endeavor in public and media discourses (through logics of control and the evaluation-culture), which also involves researchers from scientific communities as well as various and sundry "experts", to fabricate a paradigm/meta-knowledge whose main objective is to simplify, facilitate and diminish the abundance and diversity of the approaches and epistemologies, rendering seductive and efficient any hegemonically chosen discourse, theory, scientific or cultural initiative. At the same time, the value and the importance of embracing a genuinely pluralistic vision/perspective, "open" to the coexistence of seemingly irreconcilable and contradictory elements, must be endorsed and emphasized, because this is what (hyper)complexity is: coexistence.

In doing so, this chapter intends to undertake an in-depth analysis of the full meanings and implications of the quest for simplification, disintermediation, and facilitation, taking into account the hypertechnological illusions which have enabled and fueled this ultra-modern crusade, and will attempt to put forward some suggestions for a new approach to organization and education, taken from a point of view more similar to the gardener than to the mechanic.

OBSOLESCENCE, INNOVATION AND ILLUSION

To begin with, in order to undertake a new approach to educational and organizational themes, it is necessary to become aware that that the process of global and systemic transformation that we are currently living through is only in part technological but is above all an *anthropological transformation.* This is being brought about by an overturn of the complex interaction between two kinds of evolution, biological and cultural, where cultural evolution – which includes, but is not limited to -- the scientific and technological discoveries, inventions, and innovations of these last decades -- is now determining biological evolution rather than vice versa. Among the driving factors of this anthropological transformation, the two most relevant are *acceleration* – things keep getting faster and faster – and communication, which is getting more and more *viral*. Things are getting *so* fast, in fact, that we are living in what social scientist Dominici calls the Age of Obsolescence (2017, 2018, 2020b). Our lifestyles, jobs, and knowledge become so rapidly obsolete today that we have no idea how to prepare ourselves or our children for the future, mainly because we keep trying to confine and to construct walls and limits; we keep chasing after

"usefulness" and security instead of pulling down borders, and moving towards inspiration, open trajectories, and even vulnerability. Because *true* innovation is not only inclusive, it is also destabilizing, at least initially, and therefore must be ready to cohabit with the unexpected.

Speaking of innovation, it is important to keep in mind that technology is not something separate from culture--- this is one of the many false dichotomies I have been fighting against for so long. Technology is produced by culture: it is a subset of our human, social, complex dynamics. And although it's true that the technological dimensions are expanding in a hypertrophic manner, along with the dimensions of what is technologically controllable, we now find ourselves – paradoxically – in a period of maximum unpredictability, in which the social production of knowledge determines --and is accompanied by -- the social production of ***risk.***

Our perception of this risk is insufficient because we are too awed by the exponential increase of data and information. This increase in big data does not correspond to an increased rationality in our choices, as we naively suppose; in fact, the decisions we make, which are guided by the availability of these data, are more and more characterized by a condition of *limited rationality* (Simon, 1962, 1997). And we have not yet been able to devise a *thought system* capable of dealing with our hyperconnected and hypertechnological civilization. What we are currently doing is nothing short of fooling ourselves: we are laboring under a number of illusions – which Dominici (1996, 2017a, 2017b) has called the *grand illusions* of the hypertechnological society:

- the illusion of *rationality*
- the illusion of *control*
- the illusion of *measurability*
- the illusion of *predictability*
- and the most pernicious one of them all: the illusion of the *elimination of error.*

These are the illusions of an obsolete organizational paradigm. Evidently, we are still too little aware of the intrinsic ambivalence and ambiguity of life – something that can never be limited, predicted or regulated by things like algorithms (Finn, 2017; Domingos, 2015). The more we try to eliminate error and unpredictability from processes, systems, ecosystems and life, the more we find ourselves surrounded by *simulation:* simulation of order, simulation of reality, simulation of personal relationships, simulation of participation. What is not being constructed here, what is direly needed, is a Culture of Complexity – but with a full understanding of complexity as defined above.

Our futile effort to manage and control complexity, in fact, rather than teaching and learning how to *inhabit* complexity, is one of the causes of our obsession with predictability and with numbers, facts, statistics, dates, measures, and so on, which leads to the *tyranny of concreteness* I mentioned above. The tyranny of concreteness is what tells us that only quantitative data are important, only what is "*useful*" is worth pursuing, while so many valuable aspects of our human society are those that are qualitative, those that are invisible, unmeasurable, things you cannot put into a chart or a graph. Take technology itself: the universally declared objective of technological innovation is to improve *human performance*, yet paradoxically, this performance is measured in exclusively quantitative terms, while instead it is indubitably qualitative.

This mindset is also responsible for the idea that society can be organized, monitored and controlled in an orderly manner, with the exception of an occasional "*black swan*" (Taleb, 2007, 2012; Dominici, 2023a, 2023b, 2023c) – those unexpected events, those perfect storms, which cannot be avoided but which are merely freak accidents in an otherwise perfectly functioning social machinery. This kind of thinking is a feeble attempt at justifying our inadequate vision and approach, a kind of post-rationalization meant to reassure ourselves that almost everything can be put under control, with just a few unforeseeable and unavoidable flukes. Quite the contrary, I'm afraid: it is time we admitted to ourselves that what we call black swans, far from being exceptional occurrences, are actually *intrinsic* to complexity, and that *emergency* itself is a *connotative characteristic* of complex systems (Sorokin, 1941; Fry, 2019; Dominici, 2022b, 2023b; McCall & Burge, 2016).

Instead of striving to manage complexity, and to eliminate error, what we should be doing is to become aware of the *value* of error. Error is what makes us human, and it is error that is a fundamental requisite for any kind of knowledge. We should be constructing, from the earliest years of school on, an *epistemology of error,* teaching our students that error, doubt, and unpredictability are three crucial components of learning.

Above all, our words must become actions. Too often words like "complexity" or "inclusion" are used as slogans rather than as genuine strategies and policies. Other words, like "disintermediation", "innovation"; "simplification", and "communication", are used without an in-depth analysis of what these words actually implicate. Speaking of which, there is one term that I find particularly important to define correctly: the term "simplification". In the context of complicated systems, simplification is simply a matter of breaking down bigger problems or processes into smaller and more manageable pieces and parts. But social systems, we have clarified, are *complex systems*. Breaking things down into smaller parts is not possible in a complex adaptive system; the definition of such an endeavor leads us to the opposite of complexity, which it must be clear, is not simplification, but reductionism. In

fact, simplification will not result in the reduction or the management of complexity, two very popular, often-quoted ambitions which are, believe me, totally impossible to achieve; in fact, those who proclaim the prospects of succeeding in reducing or managing complexity in the future simply have not understood what complexity actually is.

The next question is, therefore, in our complex social systems, what exactly is simplification?

Simplification in itself is a particular process of focusing on the interacting sub-units within a system; we do it all the time without ever reducing the complexity we inhabit. This said, we need to understand whether simplification is a risk or an opportunity. The answer is as straightforward as it is significant: *simplification is a means and not an end,* and according to what area we are attempting to simplify, it can be an extremely positive means or, on the contrary, an extremely negative one.

SIMPLIFICATION OF PROCESSES AND PROCEDURES

The simplification of processes and procedures, in particular bureaucratic procedures, is of course, highly desirable, and one hopes that, in the near future, we will be able to find a genuinely effective way to reduce the time it takes us to execute our duties and tasks. All citizens, for example, should be put in the condition of begin able to make an annual tax declaration in a few simple steps, without going through complicated processes that are both frustrating and punitive. The same should hold true for legislation: our laws should be designed in as straightforward, simplified and general a manner as possible, without unnecessarily intricate conditions and sub-conditions, opting for transparency and equality in order to encourage compliance.

Of course, one has the impression that the better we get at smoothing out and simplifying our procedures, the more complicated our requirements become, so that workers and professionals alike—including educators, of course -- are obliged to spend too much time filling out forms and records and filing documents when they should simply be carrying out their real functions and actions, vital and productive functions and actions aimed at reaching objectives and, ideally, at going beyond them. This may be a kind of side-effect of a digitally organized work environment, something which definitely needs to be addressed in a creative way. This added red tape is producing a kind of digital fatigue, a veritable bureaucratic burnout that risks sending us back to the dreary and soulless work environments so well described by Dickens and Dostoevsky. Granted, this time they are virtual environments, but all the more so, many of us now find ourselves flooded with busywork, even in our own homes, waking up each day to face an endless series of endless workdays, unable to ever clock out or to cut out time for living and enjoying our lives, our families and

our friends. This is as true for the workers in an increasingly unequal society, who find themselves obliged to work longer and longer hours just to scrape by, as it is for the upper echelons of our professional classes, who have become so chained to their goalposts, targets and responsibilities that 24 hours are no longer sufficient for completing a day's work.

Thus, the progress we make in simplifying procedures must not be neutralized by constantly expanding bureaucratic demands on employers, employees, educators, students and people in general. This is an important point. It is generally agreed, for instance, that computers were designed to save time, which supposedly meant that we would have more free time, but just think how much of this free time is now spent in front of our computers or some other kind of screen. We are therefore called upon to undertake the kind of simplification of processes and procedures that will be truly beneficial to ourselves and others.

SIMPLIFICATION OF LANGUAGE

When we consider language and linguistics, simplification can have some positive effects. Using less complicated language, reducing professional or sectorial jargon, is undoubtedly a more inclusive way of speaking to others outside our fields, or to those who have not received a similar kind of education, be it by choice or by exclusion. In these cases, linguistic simplification is a positive and democratic action. Doctors, philosophers, financial consultants and nuclear physicists should learn to communicate with people outside of their fields without using terms which automatically exclude them. Avoiding this kind of language is a way to bring the world together. But we must be careful: simplifying language can also be very negative. To begin with, rendering language more universally comprehensible can also be subtly deceptive, in that it makes hierarchies much less visible, or apparently less penalizing, thus pre-empting occasions for protest or real opposition. Another disadvantage of simplification in language is that it blurs the finer-tuned distinctions that can be expressed through different tones or grades of language, providing a universal readout or analysis of reality which is by nature partial and limited.

Furthermore, on a global scale, there are both benefits and drawbacks of using one universal language system for all international communication, in this case the English language, of course. The advantages are self-evident: one really cannot deny that it is very useful to have one common instrument for communicating. But the disadvantage of this, of course, is that it cannot avoid limiting – or even eliminating – the richness of expression and diversity. As Federico Fellini once said, "every language is a philosophy", and having one dominant philosophy may at times be an opportunity for integration, but is quite often also a risk – the risk of

reducing the capacity for expression and diversity, which, as Orwell has shown us, leads inevitably to the impoverishment of ideas and even of the capacity to produce them – that is, to the impoverishment of thought itself.

SIMPLIFICATION OF COMMUNICATION

The subject of language brings us directly into communication. What does the simplification of communication do? First of all, we need to define "communication" (Mead, 1932; Watzlawick P. et al., 1967), which is not at all as obvious as it may seem. A clear and convincing definition of communication is this: *communication is the social process of sharing knowledge – and therefore power* (Dominici, 1996). In my opinion, the simplification of communication is largely negative. What usually happens when we simplify communication is that we reduce it to mere persuasion techniques or marketing. When this happens, it becomes nothing more that rhetoric, or strategy (Dominici, 2020a, 2023a).

There is also a great deal of confusion between the concepts of communication and connection (Dominici, 1996, 2019; Greenfield, 2017) – far too often they are considered equivalent, almost synonyms. It is as though modern society says, well, we are connected, so we are communicating. This is totally false. Connection may (or may not) facilitate communication, but they are not in the least the same phenomenon. In organizational fields, in particular, what prevails is often a mechanized and mechanistic vision, where communication is simply seen as an automatic appendage of connection. Communication is, of course, strictly linked to organization. As such, any large organization must include coordination and participation in its objectives to be efficient. The evolution/development of an organization depends on sub-systems which require new forms of (digital and non) communication.

A practical example for a business or a non-governmental organization would be to consider how online communication should be carried out. Should the organization have one department – or sub-system -- which deals with online communication or should each one of the coordinated sub-systems manage its own vehicle of online communication? And if we are speaking of educational institutions, the mistake of regarding communication as equivalent to connecting becomes absolutely enormous.

SIMPLIFICATION OF EDUCATION AND DEMOCRACY

In the fields of education and democracy (which are, by the way, highly and intensely interconnected), simplification is downright disastrous. Simplifying education means turning it into a laboratory for simply teaching skills and "know-how". Even

worse, it tends to neutralize *conflict* and *debate*, which are the very *foundations of pluralism and of critical thinking.* Today's educational institutions, in Europe and elsewhere, seem to function on the belief that technological skills are all we need, and that teaching solely technology is the key to solving any crisis. This has been called, as mentioned above, the *Great Mistake*, and it leads directly into the dangers of simplifying democracy.

"Simplifying" democracy eliminates the processes of negotiation, reducing democracy itself to a mere sequence of norms and procedures. Worst of all (or best, according to one's point of view), it completely does away with alternative thinking and protest, while producing an illusion of an equal and direct relationship to power, for instance through some kind of online platform. In the long run, when democracy has been simplified down to the core, all that will be left is simulation: simulation of participation, simulation of citizenship (Marshall, 1950; Bellamy, 2008), in short: simulation of democracy (Arendt, 1958; Gramsci, 1975; Todorov, 1998; Dahl, 2000; Dahrendorf, 2001; Crouch, 2003; Touraine, 2004; Dominici, 2022d, 2023a).

With these dire warnings in mind, I would like to go back to the more positive aspects of simplification, referring to approaches that could be commonly applied to educational institutions, organizations, and even governance. Positive simplification could be used to improve and revolutionize the negative characteristics of more traditional organizations. The hegemonic structure of most organizations, in fact, is to divide their sub-systems according to different *functions*, whereas our organizations in general should be increasingly structured around *processes*, consisting of a horizontal network rather than a hierarchical pyramid of governance. Because complex systems have the property of self-organization, it is paradoxical to try to control everything from a centralized paradigm. More autonomy will guarantee the possibility of pursuing common goals in different manners.

The application of the prerequisites of complexity theory/complexity science, strange as it may seem, will give organizations the capacity to simplify and render actions and procedures autonomous, without which they would otherwise require numerous, continual systemic control(s) on everything that has been effectuated. Objectives and cognitive and decisional processes should be negotiated and shared by the various parts of the organization. It is important that this shared responsibility and decision making be real rather than simply soft coercion or mere slogans.

LIVING ECOSYSTEMS VS. TECHNOCRACY

It is not too arduous to imagine a similar strategy for finding solutions in government and education as well. In particular, a more profound understanding of complexity and systems thinking would help educators to provide a genuinely interdisciplinary,

transdisciplinary, and multidisciplinary system of education, rather than the current model of narrow disciplinary fields kept completely separate from one another (except for the desultory lip-service to these themes that substitutes truly innovative initiatives in today's academic world), a sorry state of affairs that has been defined the "false dichotomies" (Dominici, 1996, 2017a, 2019a, 2022c). Another sector which could benefit from a more interconnected approach is medical practice, where the lack of communication between doctors and patients, between doctors and staff, and above all, between doctors and doctors from different areas of specialization, creates many serious problems throughout healthcare, especially in hospital care. The same could be effectively applied to governmental ministries and departments. Many of these dilemmas need to be tackled through networks which resemble a living organism rather than a machine (Bateson, 1972, 1979; Capra, 1975, 1996; Beck, 2000, 2008; Capra & Luisi, 2014; Bostrom, 2014). In order to function in a hypercomplex context, these systems will have to arrive at a form of *autopoiesis*, precisely because it is impossible to determine the consequences of any potential input; what will happen is never obvious. In this case, a form of simplification is the means to facilitate functions within a complex system: the solution is to allow more autonomy in order to increase self-organization *(emergence).* More order will eventually - -and paradoxically -- result, but complexity will not be (cannot be) reduced.

In order to understand these concepts more clearly, therefore, it is much more effective in the long term to think of academic structures, organizations, and governmental departments as a kind of plant within a living ecosystem, rather than visualizing – and thus creating – a machine; that is, a system based on cogs, wheels, binary flows, and algorithms, whose mechanistic functions are directed by hierarchic, top-down commands. These procedures often run on language and concepts borrowed from team sports or military structures, a totally inadequate approach for successfully inhabiting complexity.

Not only in organizations, therefore, but throughout our global civilization as well, we need to begin thinking of our structures, institutions, corporations and governmental bodies as part of a living ecosystem. From high and low today, the entire global system is in fact calling for a change in our *developmental model*. Apart from the evident environmental urgencies, this necessarily involves recovering the *human dimension,* which is being increasingly marginalized by the expansion of *technocracy* (Fischer, 1990; Easterly, 2013; Friedman, 2019). The hegemony of rationality and the self-regulating market economy have ended up imposing an economistic vision of society, and a dominion-based line of reasoning that has spread through every aspect of social life, where *uncertainty and vulnerability* have become, not only economic, but above all, *existential* conditions. Along with this, the exponential growth of financial power and the creation of a virtual space where

money and information flow at such high speeds, have had a number of negative consequences that need to be addressed, both by grassroots communities and by the decision makers themselves. These include:

- the weakening of the social bonds that transform individual choices into projects and collective action;
- the loss of trust and cooperation between political systems and their own "bodies", that is, their separation from the social actors of civil society;
- the de-potentiation of democratic mechanisms;
- the politics of fear and of perpetual emergency;
- the growth of the political economics of insecurity.

Those who hold a position within the halls of decision have a great responsibility toward their fellow citizens: and responsibility, as I always say, is an inseparable companion of liberty. As a society, our first responsibility is to stop giving carte blanche to technology, and to find the solutions (which are not simple solutions) to our complex problems, be they related to health, wealth, or simply the common good, within the human sphere. We must bring back the human factor into our society, our educational institutions and our organizations, reintegrating creativity, emotion and imagination along with rationality and technical capacities. The separation between these elements is and always has been a *false dichotomy*, like those of nature vs. culture, natural vs. artificial, technology vs. culture, which hinder the healing of the fracture between human and non-human, between mind (individual, collective) and environment, between thought and action, between systems and the new global ecosystem, between the *"inside"* and the *"outside"*.

At the moment, alas, we are teaching our younger generations to become *mere executors of functions and rules*. This, of course, is not education, but indoctrination, and where will that leave us? It is foolish to believe that there will be a select group of extraordinary thinkers who will be able to take up the reigns of tomorrow's civilizations. As physicists, biologists, philosophers, theologians, indigenous cultures and every kind of artist can tell us, *everything is connected to everything else* (Lorenz, 1963; Mandelbrot, 1977; Panikkar, 1989; Morin, 1973, 1990, 1993; Gell-Mann, 1994; Bostrom, 2014; Montuori, 2014; Dominici, 2022a, 2022b, 2022c; Prigogine & Stengers, 1997), and what we do to others will come home to roost in our own souls. It is foolish to believe that artificial intelligence (Dreyfus, 1972, 1992; Tegmark, 2017; Fry, 2018; Bostrom, 2014; Boden, 2018; Sadin, 2018; Crawford, 2021) will be able to take over where human intelligence – and human solidarity – have failed. The future will belong to those – human beings -- who have learned how to leap over the rigid disciplinary logics of separation, who have learned how

to inhabit the boundaries and hybrid zones of tension and conflict (democracy), who have become *hybrid figures*.

FROM SIMPLIFICATION TO FACILITATION

More and more frequently, social discourses on the principle of inclusivity are used to justify a veritable *ideology of facilitation.* Paradoxically, at the same time that ever more illusory and impressive-sounding categories of positions and careers are being instituted, carrying, for the most part, captivatingly incomprehensible titles – for the purpose of justifying, I suspect, an increase in economic retribution which is, in all likelihood, proportionally inverse in relation to its actual value – we are being encouraged to distill our language, our artistic endeavors and our educational processes to their lowest possible common denominator, once again in the name of inclusion. This ideology of facilitation inevitably leads to a slow but inexorable descent down a very slippery slope, towards lower and lower levels of educational content and method, towards a culture of repeated and systemic underestimation of the value of a rigorous, logical, methodological, and epistemological preparation. As compensation for the skills, capabilities and mindpower that is inevitably lost in such a process, we are being offered, in every field, in every organizational and social sphere, the declared and undeclared objective, the founding and foundational goal, of *making everything easier* (or at any rate, of making everything *appear* to be easier). For this novel but self-harming illusion, the code word is *easy*, the hype is that procedures, pathways and results are becoming increasingly easier, effortless, more convenient, in a word: facilitated.

The implications and the outcomes are inevitable: concepts, behaviors and processes requiring patience, discipline, effort, commitment, sacrifice, and reflection, or which simply necessitate long time periods for realization or maturation have been all but banned from our organizational and educational institutions and processes. All of this is being carried out under the auspices of a technological revolution, a technical/technological/digital advancement, which we are blithely (mis)using in exactly the worst manner conceivable. Instead of educating, training, stimulating and motivating critical thinking, creativity and a systemic approach to learning and to coping with the complexity of reality, *thus educating minds that will be capable of utilizing these sophisticated technological instruments effectively,* in particular the much-acclaimed systems of artificial intelligence, to achieve more complete, more streamlined and more functionally efficient results, we are doing things absolutely backwards: *we are trying to use these mechanisms and machines themselves to educate and train our students, professionals, educators, and future leaders*. What can this

give us but mechanical and mechanized minds, stunted by non-human simulations of human intelligence and resourcefulness, taught to "think" like machines?

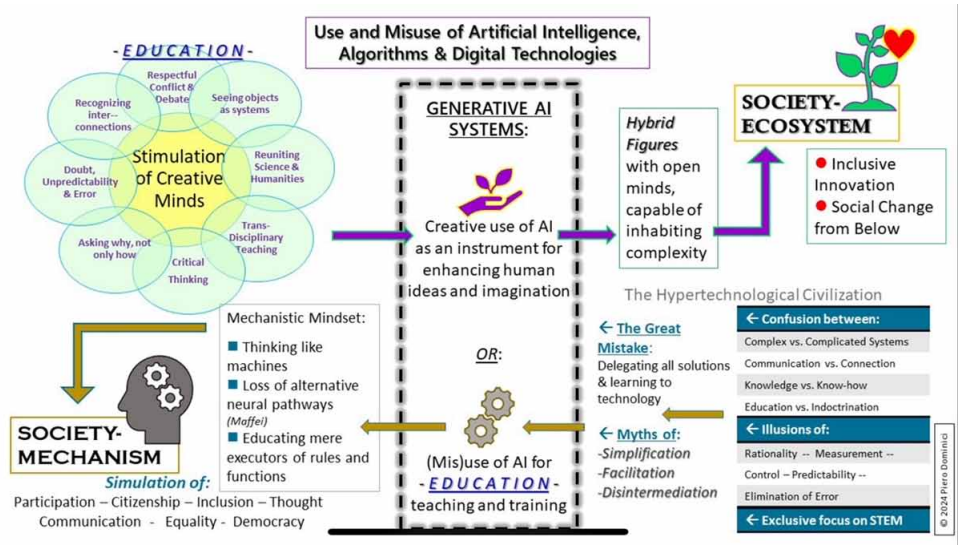
Yet thought itself is a complex, multi-dimensional, emergent phenomenon, despite the current tendency to make thinking coincide with rationality – an applicable sort of rationality that must aim towards a purpose, in which thinking is confused with mere "problem-solving". In today's incessant search for usefulness in every sector, it is more and more common to find ourselves seeking the utilitarian side of our personal relationships: even in the other people we choose to spend time with, we are trying to figure out in what way our acquaintances, friends, teachers (or even lovers?) can be "useful" to us. Furthermore, the form of rationality that has become hegemonic in society is economic rationality; consequently, every activity must be not only be useful, but also productive and profitable. We have hence arrived at a point in which human relationships have undergone a further, inevitable reduction to mere consumer commodities. Acting from this perspective, the introduction of AI can only augment this tendency (after all, it has been set up to program itself "rationally" by human members of this same utilitarian society), running the very tangible risk of reducing what was formerly a "person" to a one-dimensional man or woman, far flatter than the figure first painted by Marcuse (1964).

DOING THINGS BACKWARDS

The danger of doing things backwards in this manner, that is, of using tech to train minds rather than stimulating minds to use tech creatively, brings me to another consideration put forward recently by the neuroscientist Lamberto Maffei in his book "In Praise of Rebellion." (2016). One of the consequences of not using a certain neural pathway regularly can lead to the actual disappearance of that pathway. An example is the lack of independent movement for using the fourth finger of our hands separately from the adjacent fingers, something common to most of us, with the exception of certain categories of artisans and artists, such as pianists. Once this natural pathway has been undone, it is quite difficult to rebuild it. Not impossible, mind you, but very arduous. Maffei points out that the same is true for our thinking and our thoughts, which form actual plastic – physical – pathways in our brain. Once all our thoughts conform to a standard, following only one certain pattern, we lose the mental and neurological ability – we lose the pathways themselves – to think differently, to think creatively, to think rebelliously, to think outside the box. This is the inherent danger of giving in to laziness, facilitation, and convenience, and herein lies the fatal peril of entrusting machines with the education and training of our children.

This atrocious perspective, be it wicked or well-meaning, is the perfect illustration of the proverbial fools rushing in where angels fear to tread. Given the discouragingly hefty number of contemporary educators and experts in pedagogy who are actively encouraging the use of AI in educational processes, what is currently happening (and what will unfortunately happen more and more frequently in the years to come) is the progressive impoverishment of an independent spirit of discovery and a gradual incapacitation of critical thinking and creative potential. From textbooks and educational media for pre-school to middle-school children, where the tendency is to increasingly grind out accelerated sequences of vividly colored images and animation in substitution of slower forms of studying and learning, up through students in higher education, where the phantasmagorical utilization of technology and special effects continues to substitute real-life events and experiences, dominating social and intellectual relations both in and out of class, we are trying to form, inform and formulate minds through mere technology, in the conviction that developing minds and human thinking in general will reap great benefits from the concoction of data, whisps of ideas, and paraphrases of notions (stolen, by and large, from uncited human authors) that have been put together by various AI chats and bots through their processes of instant calculation, collection of vast amounts of information, hyper-accelerated simulation of thought and imagination, and immense capacity for pattern-recognition (see Figure 1).

Figure 1. Use and misuse of AI



Searching for what lies behind this unprecedented and apparently unstoppable acclaim for the use of artificial intelligence in learning processes, on the part of educators, prestigious university deans and ministers of education, who should be among the first to "know better", (just to give an example: recently, even a prestigious university like Oxford has promoted the use of ChatGPT for writing dissertations), what do we come across? At the best, well-meaning but deluded figures who appear to be genuinely convinced that teaching "know-how" and delegating the solution for every educational dilemma to technology is a win-win proposal (having evidently forgotten the value of teaching students to pursue the "why" of what they are studying rather than limited themselves to learning "how"). More numerous, and much more dangerous are the others, who are evidently acting upon what can only be ascribed to economic interests. The latter appear to be of enormous dimensions, judging by the power and size of the organizations that are disseminating and propagandizing the advantages of educating through so-called "generative" AI (which comprise the teaching of ethics through "digital empathy", just to cite one of the many oxymorons common to this area of perception management).

It has been said that necessity is the mother of invention. Likewise, it is my belief that our limits, our vulnerabilities, and our fragilities are our greatest strengths: they are what motivate us to become inventive and creative. The time we take to think about something in-depth is what fuels our passion to learn more. A good illustration of this can be seen in the development of our physical capabilities: it is impossible to become a good athlete, musician, dancer, or painter, or simply to become physically stronger and more agile, without repeated sessions and hours of training, which slowly build up muscular strength, power, coordination, dexterity and reflexes, as well as the cerebral prowess and lucidity for directing them, through years of practice. Similarly, our mental capacities, talents and memories are constructed slowly and gradually: quicker and shorter periods of time produce superficiality and the kind of mediocre capacities that are becoming more and more common today in every field and profession, including crucial sectors such as, for example, airline pilots or physicians, along with the "inclusive" lowering of qualities and qualifications required to access employment in certain key sectors. Not to mention the fact that too much "easy" living is rendering our bodies and spirits much weaker, less resistant and unhealthier, another consequence of the ideology of facilitation.

It is certainly not difficult to see that by making everything easier, by providing short-cuts for everything, we will end up disempowering ourselves, eliminating the stimulus to explore the world and the motivation to fight for what is important. Even more alarming is the fact that at the moment, it is our children who are undergoing the greatest and most dangerous degree of disempowerment. We should not be surprised if their (our) capacities for invention and desire for learning begin to diminish. Like animals kept in captivity, who lose the ability to hunt and cannot survive in the

wild, we are weakening human potential to its lowest level by encouraging humans to think like machines, under the fallacious impression that machines do not make mistakes! Let it be clear that it is not only technology which is rendering us so weak, it is our own stubborn quest for having everything within our reach, for achieving a perfect, utopian, hetero-directed, easy life, which we are pursuing without stopping to ask ourselves what effects this extreme facilitation will have on our minds, our bodies, our spirits, our lifestyles, our relationships, our past memories and our future hopes and fears.

One more word about memory: this is another human capacity which is diminishing progressively as we rely more and more on our screens and technical instruments and their huge capacity for facilitating our everyday lives. It is not simply a matter of being unable to remember the phone numbers we used to know by the dozens. It is not only that in modern times, photos and gifs have become necessary to remind us of where we have been and what we have seen: indeed, like the compulsion to take photographs and videos of every monument, painting, birthday celebration or special occasion, which at times leaves us unable to "enjoy the moment", in these digital times, it is now also necessary to post every single visual artifact of these events online in order to certify, not only to others but even to ourselves, that they actually took place. It is not even the fact that we tend to look up every detail that does not immediately come to mind (and that we blindly trust the information provided online by the various websites that have replaced our brains, our hearts, our books, our teachers and our grandfathers and grandmothers). It is also our collective and historical memory which can be deleted at the swipe of a corporate or governmental thumb when the information is no longer "approved". As the obsession with technology advances, our memories are losing more and more of their original structure and significance. Hopefully, the future will not resemble the kind of science fiction tale where we need an external "smart" memory box (Lethem, 1994) to remind us of where we were born, what we like doing, and who our brothers and sisters are, or where we will be so enthralled with our virtual lives that we will not even need memories anymore.

DISINTERMEDIATION… OR RE-INTERMEDIATION?

From the first gleams on the horizon of the dawn of the World Wide Web, word was being passed around that the age of disintermediation had begun. Finally, there would be no middleman standing between the individual and his/her source of knowledge, the truth would become transparent to all, independent journalism would flow unfettered, reaching every corner of the world, and democratic process would be available at our fingertips. We were told that all forms of intermediation

were doomed by the advent of the digital era. And yet, quite the contrary to the prophetic promises made by the majority of social scientists on this topic, here we are today in the throes of a massive comeback of intermediators, bigger and better than ever before, with social media giants, you-tubers, influencers, fact-checkers and digital censors galore.

But perhaps we should first take a step back and briefly review the previous state of the arts, before Tim Berners-Lee unleashed the idea for a free internet. Or begin even further back, long before the era of modern media, when the existing 'opinion leaders' were mainly clergymen, doctors, and teachers. These were the intelligentsia who shaped the minds and cultural beliefs of the masses, along with the intellectuals who frequented the famous London coffee houses and those who wrote for the first newspapers. At the organizational level, the first political parties and large corporations began to formulate and exercise certain methods for influencing tastes and consumption on the part of the masses. Then, in the USA, Hollywood's star system, whose celebrities wielded great influence on social attitudes and habits, began throwing its weight, while the press and news media started showing off their power as the "fourth estate".

Fast-forward to the 1960s, when social scientists in Europe and the USA undertook a number of serious studies on the evolution of intermediation. Sociological studies on mass society and on consumerism documented the vanishing of the individual, analyzing the effects of communication media and/or political propaganda on cultural attitudes and consumer habits, comparing changes in preferences, attitudes and purchasing power and evaluating the homogenizing effects of these influences on individuals and communities. In general, the Europeans took a more critical point of view compared to their North American colleagues, who tended to have a less contentious and more psychological perspective. Studies on mass psychology aimed at comprehending these social mechanisms were not only being carried out by social scientists, but also by financial analysts and marketing experts, with the objective of understanding how to better manipulate them. The type of phenomena observed in the 60s and 70s in the United States, in any case, was more likely to occur later in other parts of the world (as late as the 90s in Italy, for example). Great significance was given to the omnipotence (and omniscience) of the media. The apparent rivalry between competing publishers and broadcasters was revealed to be essentially homogeneous, sparking off the same (or similar) kinds of selective perception and selective memory of events on the part of audiences and readers. Staying in line with the majority opinion, as is known in both psychology and sociology, fulfills a universal need for a sense of belonging and recognition, hence those holding opinions perceived as being too distant from the norm find themselves excluded from the group, and feel strongly pressured to abandon them (Lippman, 1922; Habermas, 1962; Noelle Neumann, 1984; Coleman, 1990; Dewey 1992;

Crouch, 2003; Rainie & Wellman, 2012; Dominici, 2022d, 2023a). The outcome is visible today even more clearly through the phenomenon of social media. In any case, a very critical picture of the effects of the media on public opinion was drawn by various sociologists in that period, many of whom had been at least partially influenced (also) by the Frankfurt school of thought.

Subsequently, an opposing hypothesis came to the fore, spearheaded by groups of mostly American sociologists, who provided an entirely different read-out of the phenomena. Armed with what was claimed to be accurate statistical evidence, they postulated that the so-called masses were not nearly so influenceable as had previously been asserted, that they were more than capable of assessing the information provided and making their own choices, regarding cultural habits, purchases, and opinions. Suddenly, the media were not so omnipotent – the individual was perfectly capable of making independent choices and decisions from a wide range of options and alternatives.

As it turned out, a good number of these latter studies were the products of significant conflicts of interest, having been financed by important multinational corporations and enormous corporate groups who were interested in soothing over any ruffled feathers on the subject of media manipulation. Having declared the public capable of distinguishing which line of thinking, behaving and purchasing they wished to follow, free to select options from opinion makers and other sources of information, news, advertising and entertainment independently, any potential proposals to regulate or limit media influence (or ownership) fell to the wayside. The fact that quite a few of these analysts were shown to have been funded by financial institutions did create a certain degree of scandal and public outcry, which was, however, soon forgotten.

In the following years, newer studies noted that the media were also capable of intermediation by way of the mechanism of agenda-setting, which consisted of choosing one or more exclusive focal points towards which public attention would be directed. In a nutshell, it was not necessary to influence public opinion on a given matter because a stronger form of power could be exercised simply by establishing on which subject the public could form an opinion. This was also dubbed "the spiral of silence" (Noelle Neumann, 1984), as it effectively eliminated (silenced) those questions which the economic and/or governing powers and mainstream media wished to avoid and proved an extremely effective form of perception management even before the advent of internet and social media. At the same time, it allowed (allows) the public to divide their support between two or more positions, as in any case what has been chosen for them is the issue, while the positions themselves are irrelevant to those conducting the game.

As we all know, the (quite literal) opening of the World Wide Web, which became public (royalty-free) in 1993, sent a series of transformative shocks through the

spheres of media, business, and governance, shocks which provided a time-window of relative freedom and anarchy before the economic and socio-political powers were able to reorganize and re-establish a certain degree of control. As mentioned before, during this initial period, the web was hailed as the end of intermediation. Many of the mechanisms and operators in this field were slated to become completely obsolete: the age of disintermediation and decentralization had begun. It was also thought that people would have more opportunities to avoid being manipulated; the internet was perceived as being anti-system. Without underestimating the incredible impact that the sudden availability of enormous amounts of data and information has had on all of us, it is now evident that, contrary to the predictions of the vast majority of social scientists, it did not take long for the age of internet disintermediation to grind to a digital halt, and we are now being constantly assailed by the bows and arrows of outrageous…re-intermediation.

RE-INTERMEDIATION AND HYPERCOMPLEXITY: COMMUNICATION IS ACTION

In order to fully comprehend the breadth and depth of this re-intermediation, we must return to the causes and effects of what can be termed hypercomplexity. The driving forces behind what has been defined above as an anthropological transformation are the same as those which have been turning the natural complexity inherent to all living systems into hypercomplexity. Apart from an incalculable increase in parameters and variables, the two most important forces involve, as said before, communication and acceleration.

Regarding communication, which in the digital age has undeniably become viral in every form and trajectory it adopts, its most significant feature goes far beyond its virality, as regards its role in re-intermediation. If, formerly, certain questions occupied the upper rungs of our educational, socio-economic and political hierarchies, of whom they were the exclusive territories, today these questions and their representations have been brought into the public sphere, in which communication has become a superstructural element of the phenomena it once represented. In other words, communication has passed from being a distinguishable dimension, element, part or division of an institution or organization to being one and the same with the institution/organization itself and organic to its power, its processes and its actions. Whatever theme is communicated becomes inextricably linked to the behavior of the system or phenomena; thus, we can now say, without fear of exaggerating, that communication is action. Everyone of us, therefore, is being mediated by communication, not as something which can be analyzed or understood, but as the system itself that we inhabit.

Adding to this the kind of hyper-velocity produced by digital technologies, all processes have become so exponentially accelerated as to defy any attempt at control or reflection. We are therefore carried along in perpetual motion without ever having the chance to comprehend where we are or where we are headed. The network of interdependencies and interconnections are constantly being modified, intensified, extended and developed, as every node branches out temporally and spatially into myriads of other interacting nodes, intersections and connections, a network which is becoming so thickly crisscrossed and intertwined that the amount of intermediation has been augmented and multiplied beyond human capacity for calculation, almost like a scarring of connective fibers. From within this continual expansion, what we can see is no longer reality, but an intermediated reality that has been filtered digitally by the intensification of these webs and networks, which also have a qualitative effect on minds and bodies, at times similar to a sort of doping. It is as though our original human synapses had been modified dynamically by spiking them with synthetic substances, capable of affecting sensations, perceptions, mental processes and emotions, accelerating all processes and rendering inefficient any system of control or defense. In such confusion, the easiest (facilitated!) solution would appear to be to follow the hegemonic narratives and avoid the discomfort of thinking with our own heads.

Although it is undeniable that we are all caught up in this tangle of intermediated reality, including those who have worked the hardest to create and amplify it, as individuals living within this hypercomplex and hypertechnological civilization, we can nonetheless strive to make ourselves at least partially aware of the amount of re-intermediation that is being woven into the information network of our society. Far from enjoying the benefits of the age of disintermediation, today we are witnessing the occupation of the internet by legions of digital intermediators, first and foremost the social media giants, who have taken the reins firmly in hand and exercise an immense, global influence on public opinion, not only regarding individual actors and communities, but also on politics and governance. As if these did not suffice to flatten public opinion ever more towards a single mindset, the new re-intermediation, as mentioned before, is attacking on all sides, via hordes of accelerationists, trans-humanists, you-tubers, influencers, and self-appointed experts paid as fact-checkers, who, basking in the glory of their privileged positions, are perhaps unaware of how much they themselves are being conditioned, not only through algorithms, AI, deep fakes and other recent inventions, but also through the age-old, tried-and-true strategy of "divide and conquer", where identify politics and processes of simplification, giving the illusory sensation of choice, lead to more and more polarization, thus annulling all differing opinions that could potentially offer a solution to the conflicts and traps that humans have set for themselves.

EPILOGUE

Navigating through the anatomies and dynamics that characterize the Society-Mechanism, we have begun to realize once again how strategically important educational and cultural questions have become. It is precisely the educational and cultural processes that constitute the only "Infrastructures of resistance" against those dynamics, totally founded on technocracy, on techno-science and, in general, on the hegemony of technical fields of knowledge and hyper-specialization (the STEM "doctrine" comes to mind, for one), aimed at constructing a society completely made up of hyper-accelerated processes of automation and simulation. In other words, it is up to education and training (which must not be confused with indoctrination), in the framework of a radical rethinking and reinvention of these very educational processes, as well as of scientific research itself, to show us the way. It is a difficult but vital way, which leads to the realization of a Society-Organism, whose living spaces can provide new paths of action to people, as citizens or simply as human beings, new paths of action that can transform our relationships to the living ecosystems that surround us. Because we ourselves are organisms, not mechanisms.

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KEY TERMS AND DEFINITIONS

Complex Systems vs. Complicated Systems: These are terms whose significance is often equated, leading to a fatal error that gives rise to many others (such as the "Great Mistake" of delegating carte blanche to technology in educational processes), whereas complicated systems, which are artificial, are completely different from complex systems, which are living, unpredictable, uncontrollable, interdependent, interactive, emergent, and self-organizing systems.

Facilitation: The process by which society intends to make all processes and activities "easier", at least apparently, leading inevitably to a progressive deterioration of our motivations, resistance, health, physical and mental capacities, and spirit.

Post-Normality: The normality of what is currently termed post-normality can be demonstrated by showing that our world has always been volatile, unpredictable, complex and ambiguous (VUCA), and that such features, along with the unexpected events known as "black swans", have always been intrinsic to the complex world we inhabit.

Simplification: A particular process, which is a means and not an end, of focusing on the interacting sub-units within a system, which however can never "reduce" the complexity of the system.

The Grand Illusions of the Hypertechnological Civilization: The illusions of control, rationality, measurement, predictability and the elimination of error, along with the myths of simplification, facilitation, and disintermediation.

Transdisciplinarity: An approach, along with interdisciplinarity and multidisciplinarity, which calls for a radical rethinking of educational praxes, avoiding the mistake of maintaining disciplinary fields isolated from one another in separate, narrow tracks. This can be achieved by uniting, or healing the fracture, between "False Dichotomies", such as technology vs culture, rationality vs. imagination, science vs the humanities, etc.

Tyranny of Concreteness: The obsession with predictability and with numbers, facts, statistics, dates, measures, and so on, which tells us that only quantitative data are important, and that only what is "*useful*" is worth pursuing.