



## From Below: Roots & Grassroots of Societal Transformation The Social Construction of Change

**Piero Dominici**

Associate Fellow, WAAS; Scientific Director, International Research and Education Program CHAOS and Director of Scientific Listening, Global Listening Center

Those who aim for societal transformation, understood as systemic change, must first understand fully what the concept of systemic change indicates and implicates. Historically speaking, even before the scientific world had begun to explore the meaning of complexity, setting forth the unique characteristics of complex systems as opposed to merely complicated systems, the *idea of systems itself* had revolutionized the entire framework of the sciences, and later, the humanities as well as the sociological sciences, which unite both.

---

*“That systemic change must begin from grassroots communities and single individuals and groups, and by definition can never be a top-down imposition, implicates a necessary rethinking of our educational institutions, which are still based on logics of separation and on “false dichotomies”.*”

---

In order to pursue systemic change, therefore, it is first and foremost essential to understand the basic structure of a *system*—of any kind of system, be it biological, physical, social, or otherwise. All systems, as defined many years ago by Ashby, Wiener, Von Neumann, Kauffman, Von Bertalanffy, Bateson, Anderson, Simon, Von Foerster, Morin, and others, are made up of smaller, interactive subsystems, or subunits, arranged *hierarchically*, where the changes “from below”, in smaller sub-units, trigger changes in higher levels of units, changes which will affect the entire system and its interactions with other systems and with the environment [1-17, 18-58].

*Systemic change*, in fact, regards complex dynamic systems, open to the environment, whose changes and interactions, initiated among subunits, give rise to what is termed self-organization, or emergence, a universal phenomenon that is responsible for the appearance of life itself. What social leaders, political authorities, experts, intellectuals, and last but not least, economists fail to realize is the inescapable necessity that such change—systemic change—begins at the bottom level, among the smallest and most unassuming elements in the system. It is simply impossible to obtain systemic change from the top down, and herein lies the fatal error made over and over again by well-intentioned reformers from the upper echelons of society.

We continue to invoke “excellence”, calling for the best of the best, the top talents, the most highly celebrated geniuses from the halls of the most prestigious institutions, to spark off, implement and execute the metamorphoses we need in order to transform society in the most positive, efficient and enlightened manner. Yet despite the undeniable importance of a complex, systemic approach on the part of leaders chosen for their brilliance and integrity, true and profound change, that is, social and cultural change, can only come about from the bottom up, a transformation that will never be realized as long as the protagonists are taken solely from select groups of elites and/or intelligentsia, but must arise from a conscious, deliberate action intent on widening the foundations horizontally, as amply as possible, through processes of inclusive education and literacy, not only digital literacy. Because genuine societal transformation consists of local, national, and global citizens educated and trained in critical thinking and towards a systemic vision of reality, carried out on a long-term basis.

Thus, the first thing we must recognize is that systemic change shares the essential characteristics of complex adaptive systems and their emergent properties and processes. That systemic change must begin from grassroots communities and single individuals and groups, and by definition can never be a top-down imposition, implicates a necessary rethinking of our educational institutions, which are still based on logics of separation and on “false dichotomies” [1, 7, 15, 16], as well as on frontal didactic methods that exclude participation and empathy. The didactic methods that should be fostered from now on, adopted by teachers who have themselves been trained in systems thinking—thus requiring fundamental changes in the universities that carry out the function of “forming” future teachers and professors—are those encouraging collaboration and contribution, where the error is welcomed and analyzed, and where digressions from the main topic open other paths to knowledge. It is furthermore crucial to realize that schools and universities are not separate “entities”, but rather are a *single ecosystem* and must be treated as such.

Furthermore, within a framework that has become essential, of rethinking and re-defining/overcoming the dichotomy nature/culture, an interdisciplinary and multidisciplinary approach to complexity is becoming more and more urgent for the analysis and study of dynamics that are themselves more and more complex (non-linear and unpredictable), in which the patterns of discourse strongly condition one another, sharply challenging traditional linear theoretical-interpretive models. All of these need to materialize into educational proposals and functional strategies for the *social construction of change*, which as we have said, when imposed top-down is (and will always be) an exclusive change, for the few and for a brief period.

Above all, it is not merely a matter of adapting educational and training processes to technological progress. It is essential to uproot the bases, modifying the entire *architecture of the fields of knowledge and skills* [1-16]. Our students and our teachers alike must be capable of recognizing the radical interdependency of all phenomena, and of the impossibility of eliminating uncertainty and unpredictability in complex systems such as biological and social systems, thus realizing that setting objectives of control and *elimination of error* (intrinsic to life itself) are based on pure illusion.

We are already living in a hyper-technological civilization that is progressively augmenting its systems of automation and simulation, which are pushing aside human beings and their decisional territories and reducing the dimensions of responsibility; a cultural paradigm poised towards reaching perfection, towards rivaling the perfection of the machines. But it is precisely our errors that denote our being human and being free, which must include the *freedom to make mistakes* or even just to think about making them.

This means rethinking the relational and communicative spaces within the formative and educational institutions, re-launching education within a systemic perspective, which can only be socio-emotional.

Another essential requirement for educating towards societal transformation is the breaking up of what I have termed elsewhere the “tyranny of concreteness” [10, 11, 14-16]. Educators, students, and managers alike need to find the courage to go beyond that deceptive vision that pushes us to always look for something useful in what we do, even regarding our personal growth and intellectual maturation.

It is the passions and the interests of young people, instead, that should be awakened, encouraged and brought out through a complex educational pathway that must begin during the first years of school; avoiding the “great mistake” [1,3,5,7-9] of the hypertechnological civilization: that of believing that the kind of education and/or training that is necessary today is purely technical and/or technological, which instead is the exact opposite of what we so desperately need. While the universally declared objective of technological innovation is to improve human performance, paradoxically, this performance is measured in exclusively quantitative terms, while instead it is undoubtedly *qualitative*. Measuring quality is a contradiction in terms, but it is something that must be addressed. Certain benefits, for example, the effects of training, renewal, and update courses for human resources cannot be evaluated in quantitative terms, and especially not in brief periods.

Only through well-designed and implemented educational strategies can we produce the level of cultural change which can set off economic, political and social change: there is no room for improvisation or shortcuts—the strategic level for teaching begins in the earliest years of school: this is the crucial level where “well-made heads” are formed, and only here can a culture of legality, respect, and non-discrimination be forged, where the socio-cultural conditions of a New Humanism that will reduce the hegemony of the individualistic and egoistic value systems that have been weakening social bonds can be constructed.

The achievement of these dimensions will not be feasible, however, if students are not capable of critical analysis, systemic thinking, and using the *scientific method*, if they have not been taught how to use *logic* to develop or verify arguments, if they have not learned a method for synthesizing the enormous quantities of information they encounter, if they have not received an education that enables them to see the *connections* between knowledge and life-experiences and to evaluate the social-historical origins of cultural and legal norms.

Any global initiatives that may be set up to coordinate movements and ideas from local individuals, groups and communities, should have the following objectives, both on a macro and micro level:

- to overcome the age-old linear and cumulative models that are still profoundly affecting the structure and the very organization of fields of knowledge, by setting up **international projects focusing on rethinking education, training, and research within educational institutions. These projects should be designed to** reformulate and redefine the complex architecture(s) of fields of knowledge and skills within educational institutions and training agencies, with the objective of transforming the logics of separation and mono-disciplinary visions into inter/multi/trans-disciplinary approaches;
- **to define new international networks of research and work with universities and scientific academies, associations and institutions, overcoming** the traditional idea or view of learning as a process of accumulation of knowledge, in view of increasingly complex and articulate learning processes that are, above all, more and more oriented towards cooperation and collaboration, with the aim of actually reformulating an entire system of thought, increasing what Morin has called the *knowledge of knowledge* [43, 44, 45] with greater awareness, with didactic methods using error, doubt, and unpredictability to form critical minds;
- To recuperate the complex dimensions of educational complexity through **local and international projects** rewarding empathy, critical thinking, a systemic view of phenomena, and the teaching of communication, other than those dimensions we have deliberately chosen to remove, namely, creativity and the collective imagination;
- To trace the “best” (rather than “ideal”) itineraries by preparing people to *inhabit the current and future complexity*, favoring those who will be able to shape critical and elastic minds at every level: *hybrid figures* [1-11, 15, 16] open to the contamination among fields of knowledge and skills;
- To ensure that the international projects and working groups created are in agreement with and will act on the premise that **cultural transformation must not be underestimated by entrusting strategies and actions to technology alone.**

It is of the utmost importance, of course, to acknowledge that all of the above can only come about through **long-term policies and substantial investments** in education, training, and research as well as in **orientation**, which should never be delegated to mere marketing practices. Without funding, the self-organization and emergent properties that will spring up from grassroots participation will be unable to thrive and spread; thus, tangible actions must accompany the good intentions on the part of leaders, policymakers, and innovators.

It is time to become aware that the progress made so far in large areas of society is essentially technological in nature, whereas similar progress in social, cultural, and moral awareness has not yet been reached. Although we are surrounded by immensely sophisticated levels of connection and technology, new levels of inequality and asymmetry have emerged, even within (and sometimes owing to) this very technological progress.

In my opinion, social transformation implies “*inclusion*”, which in the age of globalization, is a problem of global inclusion and global citizenship; because rather than

simply “connected citizens”, we need citizens educated and trained in critical thinking and with a systemic vision of reality (long period). Indubitably, innovation is a complex process; “innovation is complexity”. The absolute value of culture must be reformulated in terms of its being a ‘common good’ and a fundamental device for social cohesion, in a historical phase that asks us urgently to rethink the structural conditions of the ‘social contract’, of our cohabitation [2, 11, 13].

A project for transnational communities that, we hope, will carry with it the ambition of finally putting the *People* (and the *life-worlds*), and not *technique*, the market or *consumerism*, at the “heart” of a developmental model, which up to now has clearly shown us all of its criticalities and incongruences.

## Conclusions

From a whole system perspective, societal transformation is the meta issue. All aspects of human society are sub-elements of it. Around the world, many experts have developed well thought out societal transformation theories and processes. The above essays reflect the rich diversity of ideas in this area.

The authors highlighted a number of key themes related to the arts, humanities, system sciences and economics. A main theme is that current societal narratives perpetuate system failure. There is a profound need for new narratives. Several authors suggested that they should be created through dialogic social processes (Reuter) as well as processes that facilitate reconstruction of societal ideas and systems (Werlen).

There also was a broad recognition of unsustainable values. Through the lenses of different fields, the authors discuss how the values and narratives of consumerism, growth and industrialization are unsustainable and driving system failure. The creation and cultivation of more sustainable values is an essential part of societal transformation. This goes hand in hand with a new worldview, one that recognizes the diverse aspects of society as interconnected parts of one dynamic whole system. Gills and Hosseini discuss this through their ‘globalisations’ and recognition of interconnected local and global systems. Several of the authors discuss the need for grassroots, local and communal processes and how these facilitate the development of new values and worldviews that support societal transformation.

The requirement for structural change is another theme emphasized by the authors. A consensus emerged around the need to recognize how fundamentally flawed systems perpetuate socio-economic inequality and ecological decline. To address this, several authors suggested different strategies for resolving systemic flaws in education, economics and the arts. There was widespread recognition that institutional and systemic change is essential for achieving societal transformation.

Combining the suggested new narratives, worldviews and system change strategies provides an overall framework for societal transformation. The framework recognizes the interconnectedness of local and global challenges, and shows that re-alignment with the laws of nature is essential. New narratives and societal transformation strategies must operate

within planetary boundaries and abide by the laws of nature. Humanity cannot survive and thrive without these adaptations.

Many challenges and opportunities remain in areas including the arts, culture, education, and systemic change (economic, political, institutional). The above essays illuminate the need for cross-disciplinary, whole system approaches. Combining local and global, top-down and bottom-up approaches also is essential for successful societal transformation. These essays provide a foundation for the ongoing work of the WAAS Societal Transformation Working Group. Going forward, a primary emphasis will be on highlighting, developing and implementing practical, specific societal transformation strategies. Given the rapidly growing environmental, social and economic challenges facing humanity, there is an urgent need to engage in creative thinking together to develop real transformative alternatives and redesign civilization.

### Author Contact Information

Email: [dominicipiero@gmail.com](mailto:dominicipiero@gmail.com)

### References

1. Dominici P. (1996). *Per un'etica dei new-media. Elementi per una discussione critica*, Firenze: Firenze Libri Ed.1998.
2. Dominici P. (2010). *La società dell'irresponsabilità*, Milano: FrancoAngeli.
3. Dominici P. (2014). *Dentro la società interconnessa. Prospettive etiche per un nuovo ecosistema della comunicazione*, Milano: FrancoAngeli.
4. Dominici P. (2016b). *La filosofia come "dispositivo" di risposta alla società asimmetrica e ipercomplessa*, in Candioto L., Gambetti F. (Eds.), *Il diritto alla filosofia. Quale filosofia nel terzo millennio?*, Bologna: Diogene Multimedia.
5. Dominici P., *Il grande equivoco. Ripensare l'educazione (#digitale) per la Società Ipercomplessa [The Great Mistake. Rethinking Education for the Hypercomplex Society]*, in "Fuori dal Prisma", Il Sole 24 Ore, Milano 2016.
6. Dominici P., *L'ipercomplessità, l'educazione e la condizione dei saperi nella Società Interconnessa/iperconnessa*, in «Il Nodo. Per una pedagogia della Persona», Anno XXI, n°47, Falco Editore, Cosenza 2017, pp.81-104.
7. Dominici P., *For an Inclusive Innovation. Healing the fracture between the human and the technological*, in, European Journal of Future Research, Springer, 2017.
8. Dominici P., *Dentro la Società Interconnessa. La cultura della complessità per abitare i confini e le tensioni della civiltà ipertecnologica*, Milano: FrancoAngeli 2019d.
9. Dominici P., "Educating for the Future in the Age of Obsolescence", in CADMUS, Volume 4 - Issue 3, November 2020, pp.93-109.
10. Dominici P.(2005). *La comunicazione nella società ipercomplessa. Condividere la conoscenza per governare il mutamento*, Roma: FrancoAngeli 2011.
11. Dominici P. (2008). *Sfera pubblica e società della conoscenza* in De Cesaris, A. (Ed.), *Oltre l'individualismo. Comunicazione, nuovi diritti e capitale sociale*, Milano: Franco Angeli 2008.
12. Dominici P., *A.A.A. cercansi manager della complessità [Complexity Manager]*, in «Business People», 2019a
13. Dominici P., *The Struggle for a Society of Responsibility and Transparency: the core question of Education and Culture*, in, E.Carloni & D.Paoletti, *Preventing Corruption through Administrative Measures*, European Union Programme Hercule III (2014-2020), European Commission, ANAC, Morlacchi Ed., Perugia 2019b
14. Dominici P., *La complessità della complessità e l'errore degli errori*, in Enciclopedia Italiana "Treccani", Treccani, Anno 2019c. [http://www.treccani.it/magazine/lingua\\_italiana/speciali/digitale/5\\_Dominici.html](http://www.treccani.it/magazine/lingua_italiana/speciali/digitale/5_Dominici.html)
15. Dominici P., *Controversies on hypercomplexity and on education in the hypertechnological era*, in, A.Fabris & G.Scarafile, Eds, *Controversies in the Contemporary World*, Amsterdam-Philadelphia: John Benjamins Publishing Company, 2019e.
16. Dominici, P.(2021) *The weak link of democracy and the challenges of educating towards global citizenship*, in Torres C.A., Gaudelli W. and Bosio E. Eds., *Values, Knowledge and Curriculum in Global Citizenship Education*, Springer, UNESCO [forthcoming]

17. Ashby W.R., *An Introduction to Cybernetics*, London: Chapman & Hall 1956.
18. Bertalanffy von L. (1968), *General System Theory: Foundations, Development, Applications*, It.trans., *Teoria generale dei sistemi*, Milano: Isedi 1975.
19. Kauffman S. A. (1971), *Gene Regulation Networks. A Theory for Their Global Structure and Behaviours*, in "Current Topics in Developmental Biology", 6, pp.145-182.
20. Kauffman S. A., *Origins of Order: Self-Organization and the Nature of History*, Oxford Univ. Press, NY 1993
21. Bateson G. (1972), *Steps to an ecology of mind*, It.trans., *Verso un'ecologia della mente*, Milano: Adelphi 1976.
22. Bateson G. (1979), *Mind and Nature. A necessary Unity*, New York: Dutton, it.trans. *Mente e natura. Un'unità necessaria*, Milano: Adelphi 1984.
23. Anderson, P., More is Different, *Science*, 04 Aug 1972, Vol 177, Issue 4047, pp. 393-396.
24. Wiener N. (1948), *Cybernetics: or Control and Communication in the Animal and the Machine*, It.trans., *La cibernetica*, Milano: Il Saggiatore, 1968.
25. Wiener N. (1950), *The Human Use of Human Beings*, It.trans., *Introduzione alla cibernetica. L'uso umano degli esseri umani*, Torino: Bollati Boringhieri 1966.
26. Neumann von J. (1958), *The Computer and the Brain*, New Haven: Yale University Press.
27. Neumann von J. (1966), *The Theory of Self-reproducing Automata*, Urbana: University of Illinois Press.
28. Hayek von F.A. (1964), *The Theory of Complex Phenomena*, in Bunge M., *The Critical Approach to Science and Philosophy. Essay in Honor of K. R. Popper*, New York: Free Press.
29. Piaget, J. (1970), *Psicologia e pedagogia*, Torino: Loescher.
30. Canguilhem G. (1966), *Il normale e il patologico*, Torino: Einaudi 1998.
31. Holland J.H. (1975), *Adaptation in Natural and Artificial Systems*, University of Michigan Press, Michican: Ann Arbor.
32. Mead G.H. (1934). *Mind, Self and Society*, It.trans., *Mente, Sè e Società*, Firenze: Barbera 1966.
33. Le Moigne J.-L. (1977), *La théorie du système général. Théorie de la modelisation*, Paris: Presses Universitaires.
34. Haken H. (1977), *Synergetics: An Introduction. Nonequilibrium Phase-transitions and Self-organization in Physics, Chemistry, and Biology*, Heidelberg: Springer (new ed. 1983).
35. Lovelock J. (1979), *Gaia. A New Look at Life on Earth*, It.trans., *Gaia. Nuove idee sull'ecologia*, Torino: Bollati Boringhieri 1981.
36. Foerster von H. (1981), *Observing Systems*, It.trans., *Sistemi che osservano*, Roma: Astrolabio 1987.
37. Maturana H.R., Varela F.J. (1980). *Autopoiesis and Cognition. The Realization of the Living*, It.trans., *Autopoiesi e cognizione. La realizzazione del vivente*, Venezia: Marsilio 1985.
38. Maturana H.R., Varela F.J. (1985), *The Tree of Knowledge*, It.trans., *L'albero della conoscenza*, Milano: Garzanti 1987.
39. Luhmann N. (1984). *Soziale Systeme*, Suhrkamp, Frankfurt 1984, It.trans. *Sistemi sociali. Fondamenti di una teoria generale*, Bologna: Il Mulino 1990.
40. Luhmann N. (1990). *The Autopoiesis of Social Systems*, in N.Luhmann, *Essays on Self-Reference*, New York: Colombia University Press.
41. Gleick, J. *Chaos: Making a New Science*, NY, Viking Press, 1987
42. Gell-Mann M. (1995), *Complexity*, New York: Wiley.
43. Morin E. (1973), *Le paradigme perdu: la nature humaine*, It.trans., *Il paradigma perduto. Che cos'è la natura umana?*, Milano: Feltrinelli 1974.
44. Morin E. (1977-2004), *La Méthode*, trad. it. vol I-VI. *Il Metodo*, Raffaello Cortina Editore, Milano 2001, 2002, 2004, 2005, 2007, 2008.
45. Morin E. (1990), *Introduction à la pensée complexe*, It.trans., *Introduzione al pensiero complesso*, Milano: Sperling & Kupfer 1993.
46. Morin E. (1999a), *Les sept savoirs nécessaires à l'éducation du futur*, It.trans., *I sette saperi necessari all'educazione del futuro*, Milano: Raffaello Cortina 2001.
47. Morin E. (1999b). *La tête bien faite*, It.trans., *La testa ben fatta. Riforma dell'insegnamento e riforma del pensiero*, Milano: Raffaello Cortina 2000.
48. Morin E. (2015), *Penser global. L'homme et son univers*, It.trans., *7 lezioni sul Pensiero globale*, Milano: Raffaello Cortina Editore 2016.
49. Morin, E., Ciurana, È.-R., Motta, D.R. (2003), *Educare per l'era planetaria*, Armando, Roma 2004.

50. Krugman P. (1996), *The Self-organizing Economy*, Oxford: Blackwell, it.trans., *Economia e auto-organizzazione*, Milano: Giuffrè 2000.
51. Prigogine I., Stengers I., *The End of Certainty: Time, Chaos, and the New Laws of Nature*, New York: New York Free Press, 1997.
52. Prigogine I. – Stengers I. (1979), *La Nouvelle Alliance. Métamorphose de la science*, It.trans., *La nuova alleanza. Metamorfosi della scienza*, Torino: Einaudi 1981.
53. Prigogine I. – Stengers I. (1984), *Order out of Chaos*, New York: Bentham Books,
54. Israel, G., *The Science of Complexity. Epistemological Problems and Perspectives*, in “Science in Context”, 18, Anno 2005, pp.1-31.
55. Nicolis G.- Nicolis C. (2007), *Foundations of Complex Systems*, Singapore: World Scientific.
56. Dominici P., *Oltre la libertà ...di “essere sudditi”*, in F.Varanini (a cura di), *Corpi, menti, macchine per pensare*, Casa della Cultura, Anno 2, numero 4, Milano 2017.
57. Dominici P. *The Hypercomplex Society and the Development of a New Global Public Sphere: Elements for a Critical Analysis*, in, RAZÓN Y PALABRA, Vol. 21, No.2\_97, Abril-junio 2017 - ISSN: 1605-4806, pp.380-405
58. Dominici P. (2015). *Communication and Social Production of Knowledge. A new contract for the Society of Individuals*, in “Comunicazioni Sociali”, n°1/2015, Milano: Vita & Pensiero.

## Notes

1. Bozesan M. (2020). *Integral Investing: From Profit to Prosperity*. Springer: Cham, Switzerland.
2. K. Wilber, *A theory of everything: An integral vision for business, politics, science, and spirituality*. (Boston, Shambhala, 2000)
3. McCoy, J., Rahman, T., Somer, M. (2018), *Polarization and the Global Crisis of Democracy: Common Patterns, Dynamics, and Pernicious Consequences for Democratic Polities*. In *American Behavioral Scientist* 2018, Vol. 62(1) 16–42 © 2018 SAGE Publications
4. P. Diamandis, & S. Kotler, *The Future is Faster than you Think* (New York, Simon & Schuster, 2020)
5. *Crowdfunding in Emerging Markets: Lessons from East African Startups*. 2015. Washington DC: The World Bank Group. License: Creative Commons Attributions
6. Arbib, J. & Seba, T. (June 2020). *Rethinking Humanity: Five Foundational Sector Disruptions, the lifecycle of Civilizations, and the Coming of Age of Freedom*. Viewed 5 February 2021 at <https://www.rethinkx.com/humanity>
7. J. Randers et al. (2018) *Transformation is feasible. How to achieve Sustainable Development Goals within Planetary Boundaries*. A report to the Club of Rome (Stockholm Resilience Center, 17 October 2018) <https://tinyurl.com/y9epzlmk>
8. W. Steffen, et al. “Planetary Boundaries: Guiding human development on a changing planet.” In *Science*. Vol. 347 no. 6223, (13 Feb 2015)
9. The World Bank SMES Finance, 2020, <https://www.worldbank.org/en/topic/sme/finance>
10. Bozesan, M. (2020). *Integral Investing: From Profit to Prosperity*. Cham, Switzerland: Springer Nature.
11. Snowden E (2019). *Permanent record*. Macmillan, London, UK