



CHAOS

International Research and Education Programme on Complex Human Adaptive Organisations and Systems - University of Perugia -

About us/Who we are

The first International Research and Education Programme on "Human Complex Systems" was founded in 2011 by Piero Dominici, who is also Scientific Director of the Centre, at the University of Perugia. In 2017, the Centre became part of the Department of Philosophy, Social, Human and Educational Sciences (FISSUF), directed by Prof. Claudia Mazzeschi. Today, the programme has been renamed "CHAOS", which stands for *Complex Human Adaptive Organisations and Systems*, and forms part of a number of prestigious international networks of universities and research centres studying complexity and complex systems, with particular reference to issues related to education, training and scientific research. Collaborating with the aforementioned founder/Scientific Director Piero Dominici, whose fields are sociology (with a methodological background) and philosophy, is research fellow Luigi Somma, M.A. in Philosophy from the University of Perugia, who coordinates the website and related activities.

Scientific Committee

The Scientific Committee, whose founding principles are based on multi/inter/transdisciplinarity, is made up of scholars, scientists, experts and personalities of known international standing from all scientific-disciplinary sectors. Among these are: **Edgar Morin** (Professor Emeritus, sociologist and philosopher of complexity), **Dr. Carlos Alvarez Pereira** (Club of Rome), **Prof. Ullica Segerstrale**

(Illinois Institute of Technology), **Prof. Franco Ferrarotti** (Professor Emeritus, formerly Sapienza University of Rome), **Garry Jacobs** (WAAS President and CEO), **Prof. Derrick De Kerckhove** (University of Toronto), **Prof. Claudia Mazzeschi** (psychologist, Director of the FISSUF Department, University of Perugia), **Prof. Pierre Lévy** (INTLEKT Metadata), **Prof. Nicoletta Ghigi** (philosopher, University of Perugia), **Prof. Barry Gills** (University of Helsinki), **Dr. Janani Ramanathan** (The Mother's Service Society, India), **Prof. Petra Kuenkel** (Club of Rome, Collective Leadership Institute – **to be confirmed**), **Prof. Luca Gammaitoni** (physicist, University of Perugia), **Prof. Dilly Fung (Pro-Director Education at LSE - to be confirmed)**, **Prof. Jesús Flores Vivar** (Universidad Complutense), **Prof. Denis Renò** (Universidade Estadual Paulista - UNESP), **Prof. Osvaldo Gervasi** (software engineer, University of Perugia), **Prof.ssa Oriana Falcinelli** (pedagogist, Università di Perugia), **Prof.ssa Giuditta Alessandrini** (social pedagogist, University of Roma TRE), **Prof. Fabio D'Andrea** (University of Perugia), **Prof. Michele Sorice** (LUISS University), **Prof. Marcello Signorelli** (Economista, Unipg), **Prof. Mauro Magatti** (University of Milan), **Prof. Chiara Giaccardi** (Università Cattolica di Milano), **Prof. Enrico Caniglia** (University of Perugia), **Prof. Guido Gili** (sociologist, University of Molise), **Prof. Giovanni Scarafile** (philosopher, University of Pisa), **Dr. Luca De Biase** (Il Sole 24 Ore, Director of Nòva 24), **Prof. Marcin Kilanowsky** (Director of The University Centre for Entrepreneurship, Nicolaus Copernicus University), **Prof. Andrea Pitasi** (University of Chieti-Pescara, President WCSA), **Prof. Cleto Corposanto** (Sociologist, "Magna Graecia" University of Catanzaro), **Prof. Luigi Cimmino** (philosopher, University of Perugia), **Prof. Gino Roncaglia** (Univ. Della Tuscia), **Prof. Immacolata Vassallo de Lopes** (Universidad USP – to be confirmed), **Prof. Corrado Petrocelli** (Rector UniSM), **Prof. Andrea Prencipe** (Rector of LUISS University), **Prof.ssa Daniela Falcinelli** (jurist, Università degli Studi di Perugia), **Prof. Alberto Felice De Toni** (engineer, former Rector of the University of Udine, President of the Conference of Rectors - CRUI), **Prof. Maurizio Ferraris** (philosopher, Director of the LabOnt Study Centre, University of Turin), **Prof. Rama Mani** (Centre for International Studies, Oxford University), **Prof. André-Yves Portnoff** (economist, ESSEC Business School), **Prof. Assunta Morresi** (biologist, University of Perugia), **Prof. Alfonso Montuori** (California Institute of Integral Studies), **Prof. Ervin Laszlo** (philosopher of science, Club of Budapest), **Prof. Giuseppe Gembillo** (Philosopher, University of Messina, Centre for the Study of the Philosophy of Complexity Edgar Morin), **Dr. Alberto Zucconi** (IACP), **Prof. Mario Caligiuri** (pedagogist, University of Calabria), **Prof. Agnese Rosati** (pedagogist, University of Perugia), **Prof. Joshua Meyrowitz** (ECA-USP), **Prof. Fabio Ferrucci** (University of Molise), **Prof. Mauro Ceruti** (Director of the PhD School for Communication Studies - IULM University), **Prof. Alexander Schieffer** (transformative educator, TRANS4M Center for Integral

Development), **Prof. Angelo Vescovi** (biologist, Scientific Director of *Casa Sollievo della Sofferenza* and Associate Professor at the University of Milan Bicocca), **Prof. Igor Perko** (economist, University of Maribor), **Prof. Enrique Manuel Luengo Gonzales** (Centro Interdisciplinario para la Formación y Vinculación Social, ITESO),

Core Values

The fundamental objective of the ***International Research and Education Programme CHAOS*** is to contribute to the building and spreading of a “**complexity culture**” - understood as a **culture of responsibility, prevention, sustainability, but also a culture of communication between knowledge and skills – from both within and “without” educational and training institutions (schools and universities) and complex organisations (public, private and social).**

The current pandemic has generated a social, cultural and economic emergency, an emergency of both information and communication, whose dynamics are best described metaphorically by “**the butterfly effect**”, **highlighting the radically interconnected and interdependent nature of reality.**

Consequently, only through the systemic, multi/inter/transdisciplinary approach typical to complexity sciences can reality actually be studied. Our universities and schools, therefore, along with the rest of the society, can no longer shirk from thoroughly rethinking the overall architecture of knowledge and competences (1995), so as to create the conditions for a substantial and profitable dialogue among disciplinary fields, which are still marked today by the logics of separation and confinement of knowledge and competences. Another strategic objective, in this sense, is to actively reconstruct a fruitful dialogue between the world of science and the world of art and creativity, between “the sciences” and “the arts”.

The Department of Philosophy & Social, Human and Educational Sciences (FiSSUF) of the University of Perugia

The Department of Philosophy, Social, Human and Educational Sciences of the University of Perugia has always been a pole of scientific aggregation, a powerfully binding element, profoundly multi and interdisciplinary, open to collaboration with public and private institutions and bodies, which has shown itself to be capable of promoting important regional, national and, above all, international exchanges.

Strategic objectives

It is undoubtedly through Complexity Theory and Complexity Science that the University of Perugia and the important international partners involved in the CHAOS programme will have the opportunity to become leaders in scientific research and in the processes of didactic renewal and reinvention that are linked to this paradigm and its epistemology.

A rigorous program of study, analysis and multi/inter/transdisciplinary research on complex systems will be the starting point for pursuing the following fundamental objectives of the *International Research and Education Programme "CHAOS"*:

- **Preparing public and private leaders and managers for facing global challenges by training figures equipped to cope with complex problems, through approaches diametrically opposed to reductionist and deterministic explanations.**
- **Training researchers from all disciplinary fields, in multi/inter/transdisciplinary methodologies, by enhancing their awareness of epistemological, logical and ontological premises.**
- **Design, implementation and development of national and international research projects and the consequent establishment of global and transnational research networks.**
- **Definition, design, implementation and development of didactic activities and methodologies towards teaching and training complexity, systems thinking, and scientific methodology.**
- **Education and training in the areas of Complexity Theory and Sciences, with particular attention to the issues and dynamics inherent to educational and training *processes*.**
- **Training young PhD students and university researchers in the *praxes* of scientific research and complexity sciences, regardless of their respective scientific-disciplinary fields;**
- **Complexity for school teachers: teaching, training and updates;**
- **Creation and support of an **international global network of universities and study and research****

centres focusing on complexity and complex systems within various disciplinary fields and originating from different approaches.

Third Mission and openness to ecosystems

Particular attention will be paid, as always, to what have been called “Third Mission”.

The general framework of reference will continue to be based on the strategic objective first defined by the **European Council, held in March 2000 in Lisbon, of transitioning to a *Knowledge-Based Economy***, capable of creating inclusion, strengthening social cohesion, and achieving sustainable and dynamic growth.

Universities and research centres may well play an even more strategic role from this perspective, as they are now called upon to amplify their traditional strategic objectives (higher education and scientific research) and to face the ultimate challenge: that of opening their halls to the increasingly interdependent and interconnected global ecosystems and to direct communication with society. The challenge they must meet is to abandon their traditional “ivory towers”; a challenge that has become even more evident and urgent during the ongoing global and systemic emergency.

Third Mission and other objectives

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In speaking of the Third Mission, we are also dealing with *knowledge transfer* and with methods for communicating scientific research and technological innovation, thus of:

- **managing network communication and promotion to increase awareness of the value of university research;**
- **organising individual and group sessions and encounters;**
- **identifying ad hoc technological solutions for companies;**
- **providing technical and project support for the start-up of innovative spin-offs, operating in sectors with a high technological impact, based on academically acquired know-how or technology transfer, involving the direct or indirect participation of the university;**
- **carrying out study and research activities, information, specialised organisational and management consultancy and technical assistance, in the context of actions concerning innovation, technology transfer and locally, nationally and internationally applied research;**

- organising basic and advanced comprehensive courses on issues closely related to technology transfer, research, intellectual property protection, economic exploitation of research findings and access to various sources of funding;

- creating and executing undergraduate and graduate courses designed to educate and train young students in complexity and systems thinking, offering genuinely multi/inter/transdisciplinary Bachelor's and Master's Degrees;

- creating and implementing a genuinely multi/inter/transdisciplinary International Master's Degree and International Doctorate, successfully designed to educate and train future scientific researchers and managers of complex organisations in complexity and systemic thinking;

These (complex) objectives are to be sub-divided and further consolidated through the following actions:

(a) Defining and implementing education and training initiatives and projects on complexity and responsibility/sustainability in educational and training institutions.

b) Defining and implementing training initiatives on complexity and systems thinking in other public and private complex organisations.

c) Defining and implementing activities for projects and scientific research for and/or with enterprises.

d) Establishing and implementing international research networks, formed by universities, study and research centres, scientific organisations and institutions, international organisations, including non-governmental organisations;

e) Strengthening and intensifying collaboration between universities and research institutions.

f) Sharing knowledge, skills and methodologies with school teachers, university professors and, more generally, with managers interested in adapting the educational and training activities of their organizations to systems thinking.

g) Designing and implementing initiatives and projects aimed at bringing school and university students closer to systems thinking and complexity sciences, providing them with knowledge, skills, methodologies, languages and approaches related to complex systems as a basis for

inhabiting complexity and achieving objectives for sustainable development.

Theoretical framework of the project lines and areas

The multi/inter/transdisciplinary systemic approach which characterizes the International Research and Education Programme CHAOS, made up of international scholars and researchers hailing from all disciplinary fields, takes advantage of their research, expertise and interest to pursue the objectives of investigating and researching educational and training processes while simultaneously investigating and exploring different types of “complex systems”, in order to highlight how crucial the former are for the survival and the (non-linear) evolution of the latter.

Research and studies which consistently lead back to -- or belong to -- various fields of research, such as social, anthropological, chemical, biological, physical technological and artistic areas, with the further aim of recognizing and tracing potential working definitions, research hypotheses, theoretical principles, methodological and epistemological analogies and affinities, experimental data and theoretical-interpretative models common to all different approaches, disciplinary fields and studies, which we hope will be able to explain some complex, chaotic and often unpredictable phenomena.

On the other hand, the question of complexity – and of complex systems -- is truly a complex question in every way, and as the global and systemic emergencies of these recent years have shown us, we are still little aware of the intricate, ambivalent, unstable, interdependent, systemic and ever-shifting nature of what we define as “**complex systems**”. As are we still little aware of the strategic centrality of educational processes, in our endeavours **to “inhabit complexity” and to prepare ourselves for the unexpected, for those events which we insist on calling “black swans” (Dominici, 1995 and further works).**

Complexity, as is widely known, is an essential characteristic of living organisms, in other words, of biological, social, relational and human systems (although, according to some, this list could be extended to other typologies): these systems are well-structured and made up of parts which, through numerous and (obviously) systemic interactions, condition the behaviour and the (non-linear) evolution of the systems themselves. Complexity Science seeks to identify and study the forces, actions, interactions, links and principles that can explain the radical interdependence and interconnection of phenomena and processes, both on a micro and macro level.

Based on these rather “dense” premises, and on an integrated, systemic approach bridging diverse scientific areas, this project, which has been developed with a multidisciplinary structure, starting from an analysis and study of complex systems, overstepping the age-old logics of separation and certain “false dichotomies”, (let me recall, among others, those false dichotomies separating social/human sciences from natural/hard sciences, or, indeed the humanities from scientific studies, or those between knowledge and skills, not to mention between the “specialisation” and the multi/inter/transdisciplinarity of fields of knowledge), intends to:

1) investigate/explore/verify the possibilities/opportunities of defining the conditions and pre-requisites that unite the aforementioned disciplinary fields from a methodological and epistemological point of view; in other words, following the footsteps of the systemic approach to complexity, to Systems Theory and, more generally, to Complexity Science,

2) define, on the basis of a research activity developed on precise "case studies" related to the different disciplinary fields involved, the conditions of practicability and effectiveness for a renewed openness and permeability between disciplinary fields: a need that has become even more inescapable in the so-called hyper-connected and hyper-technological civilisation. A challenge - a series of challenges - to a (hyper)complexity, within complexity itself, which, having once been founded on logical, methodological, epistemological and even ethical assumptions, common and shared, aims to

3) provide an operational translation to issues as absolutely fundamental as multidisciplinary, interdisciplinarity and transdisciplinarity. This study and research project, based on the scientific method, will seek, with methodological rigour, to recognise, define and highlight, through “case studies” and systemic, rational analyses from the prolific scientific literature, conditions, theoretical assumptions and possible praxes and methodologies for analysis and detection. Tracing analogies and convergences.

The strategic centrality of choosing this kind of approach and research perspective is even more apparent in this particular historical contingency: a phase profoundly marked by a global and systemic emergency, or to put it more accurately, by an *ecosystem of emergencies*, which has once

again confirmed, regarding our educational and training institutions, not only their substantial inadequacy, but above all, the urgency of radically rethinking education, training and research themselves, dragging them out of the quicksand of determinism and reductionism.

In fact, for some time now, faced with an increasingly evident and recognisable hypercomplexity that characterises the change underway (for which, as said before, our educational and training institutions are dramatically unprepared); **faced with an exponential growth of the interdependencies / interconnections / interactions / conditions that innervate phenomena and processes, we have, been witnessing, almost paradoxically, the dominance/hegemony of reductionist and determinist analyses/explanations and the return of a neo-positivist vision/conception of reality and of the real.**

Dynamics and processes that take form, on the one hand, as a sometimes obsessive search for simplification at all costs - even when it is dangerous to simplify (education, training, communication, democracy) - and, on the other, as what we have called the "great illusions of the hyper-technological civilisation (rationality, control, predictability, measurability, elimination of error)". We inhabit an immense ecosystem of ecosystems, full of feedback, connections and flows of all kinds, marked by a hypercomplexity that is not only cognitive, subjective, social and ethical, but also linguistic and communicative. In this sense, models and representations of complexity introduce further elements that cannot be underestimated (hypercomplexity).

A complexity that presents itself in multiple forms and that forces us to rethink everything, even our conceptual categories with their related "working" definitions; all the more so in the hyper-technological (and hyper-connected) civilisation in which, in addition to having blurred the boundaries between "natural" and "artificial", between science and technology, is – apparently - capable of endowing "matter" with life and intelligence (?). This umpteenth "emergency" with global characteristics, undoubtedly more important, systemic and invasive than others, has highlighted, once again, a series of structural criticalities also, and above all, in terms of approach and methodology, choices and strategies to be adopted.

Systemic thinking. Thinking in the 'long term'.

The International Research and Education Programme CHAOS intends to try to open an

epistemological and methodological passage capable of making a significant contribution to rethinking the overall architecture of knowledge and skills (Dominici, 1995). This is the “raw nerve” that we have been afraid to touch; this is what stops us, as human beings and as organisations, from even attempting to govern the rapidity and unpredictability of the change that is in progress.

In other words, the kind of complex, ramified, yet much needed pathway that the CHAOS study and research programme intends to lay out, can only be undertaken through scientific research, supported by the sharing of methods and praxes and, it goes without saying, by taking a systemic approach to complexity, one that can orient its progression, shedding light on the analogies and on the elements of continuity, be they methodological and epistemological or otherwise as well. We can no longer afford to perpetuate the error of separating what is profoundly interactive, interdependent and interconnected.

Moreover, the solutions to complex, systemic problems must themselves be correspondingly complex and systemic, from the framework of an approach that can only be multi/inter/transdisciplinary. Themes and issues, obviously, which also closely concern democracy and our future of “living together”.

Scientific Managers of the Programme

The Scientific Managers of the Research and Action Programme are as follows: the Director of the FISSUF Department (University of Perugia), the Scientific Director of CHAOS and the members of the International Scientific Committee, with special reference to the respective projects and actions developed. All research and training activities carried out in the implementation of the project are coordinated by the Scientific Managers.

Stakeholders and Partners

- **Students, teachers, scholars and researchers interested in Complexity, Complex Systems, and methodological and epistemological issues related to research and teaching; teachers, scholars and researchers involved in education and higher education and, above all, the rethinking/reinvention of the same.**

- **Italian and international universities** (cooperation and internationalisation);

- National and international PhDs;
- Governmental and non-governmental institutions;

- World Academy of Art and Science (WAAS), International Association for Higher Education and Teaching Learning (HETL), Santa Fe Institute, Global Listening Centre, World Complexity Science Academy (WCSA), Home for Humanity, European Association for Digital Humanities (EADH), Communication and Media Research Centre - IPSA, International Political Science Association; ISA
- International Sociological Association; WOSC - World Organization Systems and Cybernetics, Russian Academy of Science, Media Ecology Association, Internet Media Lab – Universidad Complutense de Madrid, CoSy Thinking EU Project, Associazione Italiana della Comunicazione Pubblica e Istituzionale; AIS - Associazione Italiana di Sociologia; SOCINT - Società Italiana di Intelligence, SFI - Società Filosofia Italiana, Italian Institute for the Future (IIF), Doctorate in “Ethics of Communication, Scientific Research and Technological Innovation”, University of Perugia - Doctorado (internazionale) en Periodismo - Universidad Complutense de Madrid, Theatre of Transformation Academy, Instituto de Estudos Filosóficos* - Universidade de Coimbra, Interdisciplinary Research Network in Technology and Communication, LabOnt Study Centre, University of Turin, Center for International Studies, University of Oxford, IFICC - Instituto de Filosofía y Ciencias de la Complejidad **(temporary list)**.
- Transnational companies and organisations;
- Schools and Technical-Professional Institutes.

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