Setting the Scene for the Workshop

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What we are proposing with this workshop is rather ambitious and also not very easy to explain.

Our research activities show indeed that mainstream research and policy approaches in the areas we are targeting probably need not just one, but two changes of gear.

On the one hand, these approaches either do not yet fully acknowledge that the problems at stake with climate change and energy transitions sustainability have to be addressed under a complex systems perspective or do not fully acknowledge what a complex systems perspective entails. Technological innovation and change in individuals' behaviours to be achieved in a context where the global market has to constantly grow are still their almost exclusive targets. This causes that mainstream approaches are often blind to complex systems dynamics whereby the implementation of a large number of individual actions supposed to enable the achievement of a given end become the main obstacle to the achievement of that end (i.e. they are often blind to dynamics whereby e.g. the multiplication of individual actions aiming to increase information feedbacks, or to reduce energy consumption or to increase renewable energy production can generate at the system level results which are diametrically opposite to what expected). Similarly, these approaches seem to mostly rely on quantitative data and appear often either blind to the intrinsic impossibility of putting complex systems under control (because disruptive complex systems dynamics can continuously emerge and be rarely predicted through models or risks and probabilities calculations), or to the possibilities that disasters can be generated by apparently insignificant modifications that are produced locally due to how all parts of these systems are closely coupled.

Our ambition for this workshop is however also to discuss how the necessity for policy makers and researches to embrace a complex systems perspective represents just one side of the story. Complex systems are indeed not just natural and autonomous entities that exist out there in the world and wait

to be discovered, investigated and dealt with by scientists and policy makers. Complex systems and increased complexification are also the outcome of relatively new social phenomena which are diffusing and intensifying everywhere around us. We maintain that complexification is also the result of specific historical changes occurred in how human activities are organised and in how the world around us is imagined by scientists and lay persons. These changes have led to an incredible intensification of energy, material, information and monetary exchanges all over the world and have enabled fundamental advancements in a large variety of activities of everyday life. At the same time however, they have also generated new types of scarcity and uncertainties. We should never forget, for example, that present needs for increased labour market flexibility (which is a euphemistic way to refer to the increased sense of precariousness and vulnerability that nowadays seems to affect everything and everybody) as well as unexpected economic crisis and extreme events involving our climate and service infrastructures are probably some of the unpleasant side effects of complexification.

Unfortunately, when taken alone, complex systems theories and approaches that can be adopted to study complexity are very unlikely to be able to say something significant about how these social phenomena develop because they are rooted just in disciplines like cybernetics, physics, biology, ecology, etc. and, contrary to what assumed by some, we think that these changes escape any conceptualization that these disciplines can currently provide. Social dynamics require a completely different understanding of how more or less disruptive changes can happen. Changes that can occur within material and physical systems are just part of wider dynamics where, for example, human desires, imaginaries and violence play a key role about which complexity science has not so much to tell. This however does not mean that complex systems theories and the approaches they can inform should be disregarded to the advantage of a wider conceptual framework that can integrate them while allowing understanding a larger variety of phenomena. Complex systems and the universal concepts they rely on (e.g. concepts of information, energy, time, economic value, etc.) constitute nowadays the material and conceptual infrastructures whereby our present societies are organised. Complex systems dynamics are encrypted in present technologies and dominant imaginaries and practices developed

around management and control. As such, they can nowadays hardly be integrated and dissolved into a wider theoretical system. When however it comes to understand how present sociotechnical systems evolve or keep going on, it is necessary to understand how the material entities and concepts informing complexity science can be or are used in practice, it becomes necessary to understand how people engage themselves with these concepts and entities during their daily life or when acting to re-organise human activities to the benefits of other human beings. This dimension of practical application leads inevitably into a political and hence social dimension because it takes inevitably place through acts of collective interpretation where humans, their technologies and the environment are all involved. The socio-technical dynamics complex systems theories sometime pretend to capture escape therefore almost by definition their grasp because these dynamics are the result of contingent and often conflictual engagements that escape the universal concepts and laws they rely on.

In so far as it also aims to take dynamics related to practical application into account, social science might hence seem able to englobe complexity science. Also this conclusion would however be misleading.

While complex systems science seems to be ultimately made to deal with universal concepts which mobilize and are mobilized by people, social science addresses also the lively force and contingent engagements which animate societies. These two dimensions of research and human activity (that relate respectively to problems of production of universals laws and to problems of practical application) should never be confused. Rather than merging or englobing one dimension into the other, the task we are proposing for this workshop consists therefore in understanding how these two dimensions articulate with each other and how the study of this articulation can improve current approaches developed by researchers and policy makers to deal with extreme events and energy transitions.

You may perhaps now have a better grasp of the challenges we have been confronted with when we have decided to embark in this research initiative. How to contribute to create a common and proper understanding of the reasons why we need to adopt a complex systems perspective and, at the same

time, we need to address complexity under a social perspective? How might this be done in a time when complex system thinking is probably still quite far from informing most of current research and policy activity? How might hence we frame meaningful discussions on how this combination could be achieved, on how it can help advance in our understanding of the phenomena at stake and on its research and policy implications?

We have decided to address these questions together with some acknowledged scholars who have shown interest in our approach and can contribute to further develop it. Together with them we have devised a series of lectures, practical exercises and moments of reflections and we have invited you to participate in these activities.

We are trying to address these questions by keeping in mind that the level of impact on human life and the comprehensiveness of the phenomena we are dealing with necessarily require a sense of humility concerning what can be understood and what can be done in relation to them. I am telling this because we know that this sense of humility can often be forgotten, especially when researchers and policy makers gather together to discuss about global challenges and our hope is that this exploratory event (and the necessarily theoretical and speculative nature of some of the activities that constitute it) will not confirm this quite general trend. Among others, it is also for this reason that we have invited to this workshop experts with practical and on-field experience in relation to how to deal with extreme events, being aware of the fact that practical knowledge can provide fundamental insights on how to advance in the research and policy area we are targeting, while avoiding generalisations and over simplifications which might end up sounding even offensive to people who have been affected or been involved in some of the extreme events we are discussing this week. In a way, we are asking to participant experts and practitioners to help us to remain with our feet on the ground and to not forget that we are not looking for global solutions, as we are ultimately exploring how improved research and policy approaches can be developed to better take into account the specificities of the phenomena at stake in the places and in the time when they happen.

We sincerely hope to be able to show the added value of what we are proposing and to make some advancement with your support during this week. Our hope is also that this workshop can represent an opportunity to continue developing the proposed integration strategies in collaboration with you in the future.

Thank you very much.