

Future Hybrids in an Unsewn World

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Abstract: The contribution aims to outline the next steps of STS studies in order to challenge contingencies and changes in an unstable World. The crisis of *One-World World's* approach and the appearance of multiplicity in different forms opened up the possibility to a more engaged STS. In this regard, a more *lateral* approach and a constant attention to unstabilized phenomena has to be promoted.

Keywords: multiplicity; pandemic; convergence; information infrastructures; infrastructuring.

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I. Next 10 minutes: The public and Science and Technology Studies

The results of Science and Technology Studies (STS) have been disseminated across many countries, academic institutions, and publics. Some theoretical frameworks, such as Actor–Network Theory, were produced by the first wave of STS, causing a paradigm shift in many fields of research. Consequently, a second generation of STS scholars is now browsing and referring to a repository of an already old wave of original theories, points of view, and paradigmatic shifts. Among the vast number of investigable topics, the crisis of finance capitalism, recent climate change controversies, and the Covid-19 (SARS-CoV-2) pandemic provide some terrific opportunities to implement current STS scholars' research.

During the 1980s, when STS surged, technoscience, as well as academic and epistemological concerns changed dramatically. The multiplication and compartmentalization of knowledge follow two parallel courses with-

out producing an equivalent theoretical effort. We are still applying theoretical frameworks elaborated many years ago to new phenomena. Technoscience is “overwhelmingly old” (Edgerton 1999) and its ecology has dramatically changed since 2008 and financial global crisis. Nevertheless, the presence of STS studies and approaches has been important in the public debate.

In Italy, it is still quite rare to find an analysis of technoscientific or sociotechnical phenomena from an STS perspective in public debates. Italian STS scholars are generally well informed about the theoretical debate at the international level. However, the severe lack of important texts in Italian has left young students and the educated public unaware of STS approaches and uninformed about, and often disconnected from, this international debate. Without reaching a wider public, the fate of our studies will be parochial.

2. Next 10 days: Pandemic and contingencies

The present time is marked by the Covid-19 pandemic. A global sense of tragic fate is replacing inclinations toward purposeful action that previously dominated the hegemonic Western mentality. Our future no longer seems to depend on our plans—obviously, it never did. Indeed, this global contingency has spoiled any plan. As Latour (2020) highlighted, the economy has been suspended, public bodies (states as well as local governing bodies, such as cities, regions, and federated local entities) have a renewed prominent role, ecology and environmental measures have become essential, and welfare and public debt have been adopted as business as usual by institutions that were previously strictly oriented toward budget control and expense monitoring. In this inverted world, technoscience is playing a crucial role both as an object of politics and as a political tool of government, not considering the huge dimension assumed by scientific controversies. The pandemic has also highlighted the length of collectives composed of hybrid elements we were used to consider and propose in academic debates.

The pandemic has also acted as a contingency changing the previous courses of action or becoming embedded in a renewed business as usual. A contingency is an unexpected accident, disaster, or breakdown that gives way to an interpretive activity, not necessarily controversial, directed at the features of phenomena previously interpreted in another way (Pellegrino 2014). In the present case, which phenomena are these? Apart from those shown in Latour’s (2020) various interventions, it appears that the role of STS in public debate must be vindicated. Distance and prudence must be abandoned, and a public stance must be adopted. Some of the most relevant examples are Paul Edwards’ (2010) book on meteorology and climate change, *A Vast Machine*, and John Law’s (2015) critical paper, “What’s wrong with a one-world world?”. Although many other contributions have

been made, these particular works opened up the possibility of an engaged STS. The authors of both works developed a critical stance toward societal and technoscientific regimes of stabilization without abandoning the traditional ANT distrust for indignation as a narrative register (Latour 1993). Indignation cannot exist without some trust in a balanced form of society, whereas a critical stance can be developed from an interest in equality or from ethical or ecological interests, or it can come from other sources and positions. Many arguments concerning the core interests of STS have emerged from this huge contingency and from the struggle among interests to manage them as a breakdown of old practices and of old hierarchies, or as an embedded business as usual. All of them are waiting to be reabsorbed in old courses of action or to serve as their stumbling stones.

3. Next 10 months: An unsewn world

Technologies and human activities are so intimately connected today that many people take this overlap for granted. Monitoring an entire population with tracking apps during a pandemic does not mean an overall *reductio ad unum* as in a dystopian nightmare. It is a complex phenomenon within which some layered activities produce distinct effects that cannot be reduced to a single causal aspect.

Three kinds of interwoven human, technoscientific, and material activities seem relevant today in order to produce a continuous effort for “sewing” and connecting different elements: (a) convergence among different elements around a device, which are projected, designed, or used; (b) infrastructured works and infrastructuring; and (c) contexts or ecologies comprising any element that can be in-between devices or technological systems, which interacts and changes them.

The idea of convergence is quite fruitful for describing processes involving a multitude of actors and entities with a common course of action but without necessary agreement or a common structure.

It may or may not contain ordering practices and involve elements or local sets without necessarily reducing them to a common structure.

Convergence is an often-ephemeral phenomenon combining socio-technical elements, such as social actors, design, money, materiality, knowledge, skill, case, situations, infrastructures, standards, forms of classification, data, duration, organizations, norms and conventions, etc. This texture of different elements recurs increasingly as socio-technical networks extend their reach to any aspect of life. Especially in Northern and Western countries, they are included in a project or are labelled as a project, but they tend not to have a denomination, especially in the world’s peripheries (Mongili 2015, 162-170). They increasingly saturate some environments, but they are more often distributed as one of the “wires” of socio-material life, among others. For example, an aircraft is deeply saturated with many technological systems, which are often correlated to make

the device work. The presence of humans is rare, and their tasks are secondary when compared to those of the device. By contrast, the classroom contains many humans, social, and material elements in-between the technological ones (heating, electricity, interactive whiteboards, Wi-Fi, etc.).

Convergence does not correspond to a stabilized device or techno-system, rather than neither to their purpose or failure. It is a process and a common course of action that brings different elements closer together. Convergence often lacks clear boundaries and a clear fate: it can drive a stabilized novel assemblage through strong classification work and standardization, or it can include new elements in a new device. It can be an ephemeral phenomenon producing networking. This is why it is important to distinguish convergence from interoperability and stability. Certainly, convergence can drive the interoperability of different devices in a more complex system, a certain stabilization of a device in its shape and use, and a stable network intertwined with the device. However, this outcome is far from being assured. From a sociological point of view, it is a valuable concept because it focuses on the texture of socio-material processes. Extensive research on social, material, and technical convergence is constantly emerging, and it always has a heterogeneous character in terms of the ascription and belonging of its elements. Similar to interaction, convergence produces many things, including social and abstract objects (Blumer 1969), without considering their influence in diverse personal performances and positions. Also similar to mobility, in contrast to sedentarism (Urry 2007), convergence is a condition that is much more diffused than stabilized phenomena. Further, convergence and other socio-technical processes produce different ontologies of the same devices in their set of existence, following different interpretations, uses, and handling (Star 1999; Star et al. 2004).

The surge of information artifacts and systems, which converge with human activities in producing common work, has taken on a large-scale dimension following digitalization. Numerous activities, such as communication, writing, gaming, scientific research, digital applications for chatting, social networking, and the Internet and the main digital platforms, are no longer thinkable as only-human or only-social activities. They exist because they converge with information artifacts in some intertwined hybrid sets, defined as *information infrastructures*. In other words, some information artifact works with other entities to make the activities flow. These are all embedded in other social, material, and technical frames, and this modularity of humans, infrastructures, and devices is the very basis of a socio-technical texture that can extend across different places, times, spaces, and chrono-topic narratives. Their diffusion does not require the different users to share a common interpretation of the infrastructure or a common use in different chrono-topes. Information infrastructures have the main purpose of enabling work to be done. They demand maintenance, repair, adaptation, and torquing by technicians or users, defined as *infrastructuring*, especially if they do not work and do not allow the various activities to

flow; otherwise, they are transparent and taken for granted by users or naturalized (Edwards et al. 2007, Mongili and Pellegrino 2014; Monteiro et al. 2013; Star 1999; Star and Ruhleder 1996).

These constant activities of infrastructuring, compared to simple convergence, create a thicker texture in contemporary societies, composed of specific technical subcultures that connect people dispersed through space and time but that also enable many devices and technological systems to be naturalized in many situated sets. This socio-technical texture has been visible during the Covid-19 pandemic. In fact, people must learn to use information infrastructures to ensure that work and social life flow, but at the same time, devices and information artifacts must be taken for granted in ordinary activities. A range of solutions can resolve this double tension, and we can observe humans' complete adaptation and complete adjustment of devices at both ends of the spectrum. Yet these poles represent the rarest cases. Usually, in the lives of humans and devices, we observe many arrangements and a transformation of human performance as well as a continuous challenge to the stability of technologies, in their shape and uses, not to mention the unitary interpretation of their essence, which is very rare because consensus is not needed (Star and Ruhleder 1996).

We must not forget that technology represents a context for a huge number of human activities but also that any device or system occupies a place or time in human activities or in other technological or material environments. Considering the spaces between socio-technical networks or delimited collectives, everything in-between remains relevant not only as a silent context but as a set of elements that interact with the socio-technical networks. They modify some of their behaviors, knowledge, and roles, but they also they modify some of the socio-technical elements in their use, handling, care, or torqueing. An ecological understanding of technology can sharpen the focus on processes and consequences, uses and articulation, with respect to other conceptualizations that privilege conditions or factors indicated as causes, such as design, purposeful action, projects, and so on (Star 1995).

A more ecological understanding of the human–technology whole, to conceptualize both the singularity and universality of modern technological conditions, can help STS promote its crucial role. All this effort directed to connect and “sew” different elements do not solve the multiplicity and the diversity, but it is, in some sort, a witness of the constant need to solve problems and to face the adversities of an “unsewn” World.

4. Next 10 years: New hybrids

Multiplicity is not a simple plurality of forms but is intertwined with hierarchies and power relations. STS scholars working in the Global South cannot afford a symmetry of ignorance with the Global North without running the risk of appearing out of fashion. European and North American

topics are our topics; they have been endowed with a universalistic character before to our subaltern eyes. Our phenomena are reduced to mere field-work aimed at implementing these theories; they are theoretically arid and only local (Chakrabarty 1992). If we *lateralize* our research toward socio-technical processes and local participants' practices and forms of conceptualization, letting them speak (Morita 2014, 311), we can challenge the Western-centered STS canons but also amplify multiplicity.

Multiplicity and connection represent the new dichotomy that seems to prevail in the contemporary world(s). The fluidity of technical as well as human performance, belonging, and identity and the local occurrences of different ontologies (de Laet and Mol 2000) is inseparable from their connection. Being connected in long collectives does not mean uniformity, nor does it mean that their interpretation must be drawn from the design side or using its master's narrative. This point of view does not problematize diversity and inequality, discard plurality, and it is seen itself as the center. On the eve of the end of Western centrality, we must start from the participants' practices and conceptions to conceptualize the world in both local and universal terms and to develop a more balanced interpretation (Morita and Mohácsi 2013; Star 1999).

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