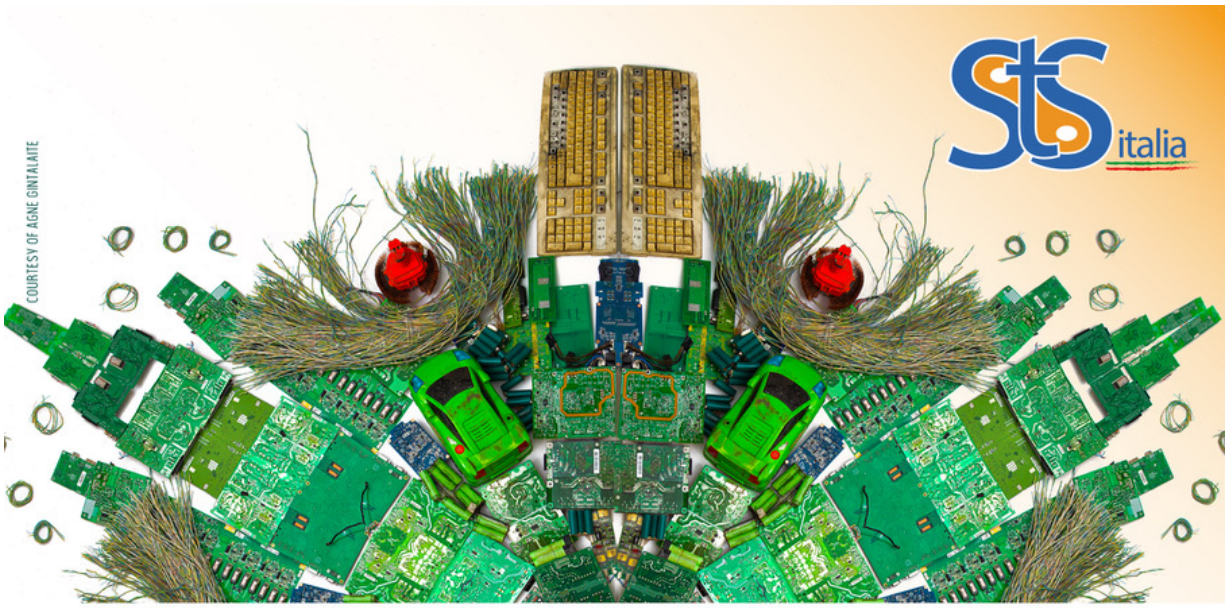
BOOK OF ABSTRACTS



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7th STS ITALIA CONFERENCE

JUNE 14/16, 2018 - UNIVERSITY OF PADOVA

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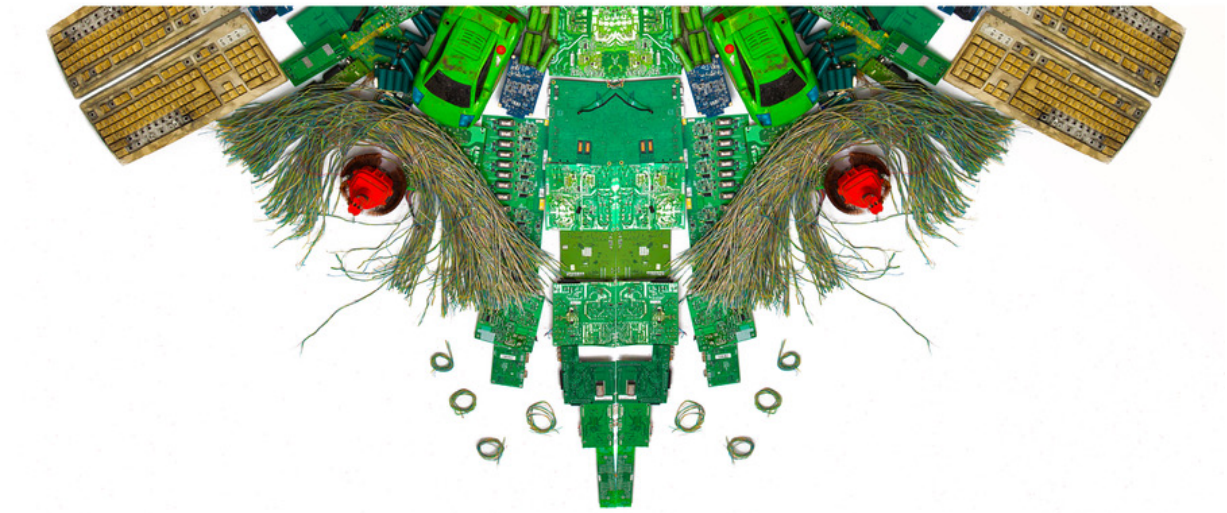

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Tracks of Thematic Stream 1

Partecipation, citizen engagement and democracy from below

TRACK 1
Responsibility from below. Participation in the governance of technoscience
Convenor: Simone Arnaldi (Università di Trieste, Italy)

From Public Engagement to Responsible and Responsive Research Co-Production: The case of the Engineering and Physical Science Research Council (EPSRC) in the UK

Mario Pansera (University of Bristol, UK), Richard Owen (University of Bristol, UK)

This paper focuses on the evolution of the EPSRC's engagement with Responsible Innovation (RI). Based on 20 interviews and document analysis, we describe how the EPSRC moved from an approach to research funding based on Public Engagement initiatives to the purposeful embedding of RI within some its directed programmes. As a result, a number of RI initiatives have commenced across UK universities which can be viewed as RI experiments in practice. Despite the formal commitment to RI, however, significant institutional and cultural barriers remain. Disciplinary norms, approaches to epistemology, institutional expectations, incentives and research evaluation criteria are hindering uptake and practice of RI. Without changes to these, proper resourcing and committed leadership, RI as an inter and transdisciplinary endeavour faces major challenges. Our findings suggest that the rising impact agenda in the UK presents an ongoing vehicle for continued engagement with RI. However, overall it was felt that while the UK academic and research council communities have played a major contributing role in the development of RI in concept and practice, it was acknowledged that it is a fragile discourse encountering significant institutional barriers and uncertain political times. The changing political environment for research and higher education in the UK, including Brexit and the forthcoming transition of the UK Research Councils transition into a new body (UK Research and Innovation) are seen as significant factors that could influence the future of RI in the UK. This is set in the context of an overwhelming political imperative for economic growth at a government policy level, for example within its Industrial Strategy.

Messing about with time and responsibility: RRI as pre-emptive politics

Luigi Pellizzoni (Università di Pisa, Italy)

Responsible research and innovation (RRI) is enjoying growing success at academic and policy level. Its genealogy is complex – part technology assessment, part deliberative democracy, part attempt to reply to persistent public unease with innovation. Compared with earlier forms of technological governance RRI is allegedly broader in scope (including 'purpose' and distributive questions), wider in foresight (up to devising and steering actual novelty), and, in spite of its technocratic rationale, stronger in democracy (thanks to the mutual responsiveness of relevant stakeholders).
By analysing academic and policy literature I will argue, however, that at least in its present state RRI is less novel an approach than it seems. RRI messes about with time, establishing a 'messianic' relationship between past, present and future, whereby a technological eschatology is posited and indefinitely postponed. And it messes about with responsibility, framing mutual responsiveness in a context of major differentials in agency. In this sense, RRI belongs to the growing field of pre-emption, a type of anticipatory politics which from security is spreading to science and environmental governance. RRI's actual goals seem to be the opposite of those claimed – replying to the wicked problem of an innovation-dependent economy faced with socially and environmentally disruptive impacts, by expanding 'organized irresponsibility' and obstructing actual change. RRI should at least be profoundly rethought, as part of a democratization of technological and economic governance, by acknowledging that 'purpose' and distributive questions come first and are political in nature, having to be handled in appropriate venues and by appropriate processes.

The use of "by design" in European law: an effective tool for technology regulation purpose
Giorgia Guerra (Università di Padova, Italy)

Different options are explored in terms of the optimal approach to the regulation of robotics and the normative tools that are best suited to this task. The position adopted in the EU Resolution is mixed: it rests heavily on hard law, as it aims at enacting a directive; and the need to intervene timely, before the technology spreads, generates needs and users' behaviors, thus triggers a market demand, requires regulators to employ other instruments than old-style law.
In this vein, the European Resolution resorts quite heavily to soft law, in the form of codes of conduct for researchers, designers, users (e.g. Charter on Robotics).
A recent instrument in the assorted "regulatory tool box", the so called scheme *by design* or *by code,* envisioned by the EU Parliament Resolution, entails incorporating legal norms, and compliance to them, into the technology itself. Technology can be used to steer robots and users' behavior, thanks to rules embedded in the technical set-up. The "by design" can be used for several purposes: safety by design; privacy by design etc.
The presentation aims at discussing the "by design" as an opportunity to reflect on the use of self-regulation and soft law as effective means to meet the requirements of the European responsible research innovation strategy.

German Citizens' Dialogues as a Process of Stakeholder "Responsibilisation"
Julia Hahn (Institute for Technology Assessment and Systems Analysis, Germany), Miltos Ladikas (Institute for Technology Assessment and Systems Analysis, Germany)

The term RRI is not well known in the German context but debates on responsibility in STI have been active for a number of decades. Wide participation in STI decision making is desirable and a number of CSOs are active in the field, but there have been few examples of bottom-up initiatives that have impacted policy making. This is partly due to the lack of procedural clarity in governmental attempts to involve the public in STI discussions.
A game-changer in this respect was the Citizens' Dialogues on Future Technologies (CDFT) initiated by the German Ministry of Education and Research (BMBF) that took place in 2011-2013. Three rounds of CDFT were run to cover topics like energy technologies for the future, high-tech medicine and demographic change and resulted in policy recommendations for the BMBF. The number of participants (600-800 per topic), the close connection of the exercise to the Ministry and the dialogue process, offer unique insights regarding the possibilities and constraints of participation. Although initially a top down exercise, the CDFT created its own approach whereby the resulting thematic focus differed substantially from the topics initially assigned by the Ministry. An actual reframing of the themes took place and topics were adjusted according to the citizens' foci, showing strong elements of bottom-up responsible engagement and mutual learning between the policy community and the public.
This case offers insights into how processes of participation can be shaped in order to allow responsible input from non-expert stakeholders, yet still stay connected to representatives of the democratic system in order to ensure that outcomes are actually heard. In order to govern STI robustly these processes must be further adapted to provide learning opportunities for all stakeholders and the possibility for concrete impacts in setting agendas and policy priorities.

Gut feelings from below: emotions in Responsible Research and Innovation
Barbara Grimpe (Alpen-Adria Universität, Austria)

This paper analyses an important aspect of participation processes, and RRI more generally: emotions. They merit more systematic attention in an RRI debate that appears often too rationalist and cognitivist. The 'essential emotionality of science' (Pickersgill 2012: 598) does not only surface in public debates such as, Twitter discourses on Fracking (Hopke/Simis 2015), or public engagement processes (e.g. Harvey 2009). In fact, a great deal of researchers' and technology developers' everyday work consists of emotional labour (e.g.

Hochschild 1985). Thus, more inward-looking principles of RRI such as, reflexivity, need to be reconsidered too. The paper provides insights into current existing lines of reasoning on emotions in RRI literature, and suggests a more proactive and nuanced conceptualisation of emotions. Actors' existing and emerging affects, feelings, or attachments more generally (e.g. Landri 2007), are often part and parcel of their tacit and embodied knowledge (e.g. Salter et al. 2017). Given this epistemic importance of emotions, we need to understand them better from an RRI perspective, and when promoting the responsibilisation of actors.

Articulating and practicing responsibility through participation: an experience of the social problem-solving R&D program in South Korea

Hee-Je Bak (Kyung Hee University, South Korea)

Since 2013, the South Korean government has launched a new R&D program which aims at solving social problems through technological innovation. The social problem-solving R&D program has been viewed as adopting fundamental elements of Responsible Research and Innovation(RRI), such as engagement and responsiveness, to direct science and innovation toward 'socially' desirable ends. In particular, emphasizing the involvement of a wider array of social actors in the innovation process, it has required all research projects funded by the program to include public participation as a form of living lab. Through a series of in-depth interviews with participants of the program, this study attempts to reveal how responsibility was perceived and practiced by diverse social actors including researchers, citizens, bureaucrats, and social innovative organizations. Overall, participants, especially bureaucrats and scientists, tended to view public participation as a way to increase practical 'impact' of research. Unlike many western scholars' concern, however, the impact was not necessarily linked to academic capitalism. Rather, it tended to be perceived as the actual benefits of science and innovation which people can directly experience. Also, viewing participants in public participation as users rather than political citizens, participation under the program did not politicize technoscience. For the reason, while researchers and other actors involved in the program had an opportunity to deliberate social responsibility of scientific research, the responsibility tended to be understood as an ethical contribution rather than as apolitical right and obligation. I discuss the findings and implications of the present study in terms of the long tradition of science policy in Korea where technoscience has been mobilized as a tool for achieving national goals and the ways in which the social problem-solving R&D program has designed practices of responsibility

Responsibility from above? Barriers to participation from below in the governance of technological innovation

Paolo Crivellari (Université Toulouse III – Paul Sabatier, France)

Responsibility and inclusive processes in policies, innovation, and research about science and technology participate in a progressive transition from science and technology government to a broader form of science and technology governance. Such processes have been encouraged in the last few years by the European Commission through the promotion of Responsible Research and Innovation but are not new. Different scholars from various disciplines and countries have studied these processes during the last decades and have outlined asymmetries, conflicting frameworks, and the difficulty of matching top-down approaches with bottom-up participation, stressing the importance of drivers and barriers for actors' engagement.
Our contribution to the conference will address such questions and is based on a sociological empirical research conducted with qualitative techniques (44 semi-structured interviews and systematic review of local press articles and documents) on the petrochemical site of Porto Marghera (Venice, Italy), namely on the design and building of the SIMAGE (Integrated system for environmental monitoring and emergency management). This system, which is both a technological innovation and a service innovation for the population, has been financed by the public sector (the Region of Veneto), and built jointly by the ARPAV (Regional agency for environmental protection of Veneto) and the chemical plants of the industrial site, excluding (for the most part) citizens' participation from the design and development processes.
Conclusions will focus on: a) barriers to citizens' participation (including selective inclusion from above and self-exclusion from below); b) (ir)responsibility from above in technoscience governance and the

democratization of industrial risks; c) the technocratic nature of technological innovations for industrial risk prevention and crisis management.

Responsabilità a senso unico. L'opposizione pubblica ai contatori elettrici 'intelligenti' in Francia

Laura Draetta (Université Paris - Saclay, France), Bastien Tavner (Université Paris - Saclay, France)

Promossi in Italia per lottare contro le frodi, i contatori elettrici 'intelligenti' sono stati introdotti in Francia con motivazioni innanzitutto ecologiche. Sulla base dell'ipotesi della capacità di favorire la partecipazione degli utenti al controllo energetico (Draetta et al., 2014), tali contatori sono stati inseriti nella normativa nazionale sulla Transizione Energetica che ne ha decretato l'installazione generalizzata come parte di un progetto di modernizzazione – socialmente desiderabile – della rete elettrica nazionale e europea.
Eppure, sin dall'inizio della loro installazione (dicembre 2015) questi contatori sono oggetto di un'opposizione pubblica crescente, sulla base di una serie di preoccupazioni (salute, privacy, sicurezza, …) oggi ancora più incisive in quanto addossate a una critica delle modalità di imposizione di un progetto tecnico-politico di grande portata su cui i cittadini non avrebbero voce in capitolo.
L'articolo propone di analizzare la traiettoria dell'opposizione pubblica ai contatori elettrici 'intelligenti' in Francia, attraverso il prisma delle diverse concezioni di responsabilità che tale opposizione rivela nei confronti dell'innovazione. L'entrata metodologica articola l'analisi della rappresentazione dell'opposizione pubblica nella stampa nazionale e locale con l'analisi delle discussioni online dei collettivi d'opposizione, delle delibere municipali e dei dibattiti degli organi istituzionali e di expertise tecno-scientifica chiamati in causa nella definizione del problema.
Questa analisi incrociata permette agli autori d'interrogare in « negativo » la portata dei principi dell'*innovazione responsabile* attraverso la descrizione delle condizioni di evasione da parte dei promotori politici e industriali e delle conseguenze su un progetto che doveva essere di politica ambientale.
Più che focalizzarsi sulla traiettoria dell'opposizione in quanto controesempio volto a sottolineare la perpetuazione di un'innovazione "irresponsabile", gli autori cercheranno di mostrare come, a partire dal caso del progetto francese di generalizzazione dei contatori intelligenti, la responsabilità possa talvolta venire "dal basso", attraverso la promozione e la discussione – da parte della critica – di compromessi socio-tecnici finora inesplorati, o attraverso la riqualificazione di mobilitazioni volte a sbarazzarsi della postura del "rifiuto tecnologico" per sostenere il ruolo di partigiani di un "diritto al rifiuto".

Responsible governance of emerging industrial technologies through certification 'from below'

Angela Simone (Fondazione Giannino Bassetti, Italy), Anna Pellizzone (Fondazione Giannino Bassetti, Italy)

Despite its diffused experimentation at research level, Responsible Research and Innovation (RRI) approach has been scarcely applied and tested in the industrial realm. Scattered examples are already in place so that there are no tools that have been widely recognized as effective means to embed RRI within innovation sectors. According to companies' daily experiences, certification is a common and highly used instrument to regulate and govern innovative products before their entrance into the market and thus in the public sphere. In some specific industrial sector, technical certification is a mandatory means to ensure high standard of quality as well guaranteeing safety for end-users. This is the case for biomedical devices in which certification (in EU: CE marking; in US: FDA marking) is a compulsory requirement.
In search of effective tools to ground RRI in the industrial realm, very few examples of responsible innovation certifications (i.e. HUGO certification) have been developed, relying on standards already enacted in CSR pathways. Their efficacy is still under discussion, even if certification could be undoubtedly considered an understandable tool by industrial players. Some emerging technologies are suffering narrow exploitation because of lack of specific regulation. Thus, soliciting "from below" the introduction of novel rules, to be tailored for the needs of the actual players and stakeholders, can represent a great opportunity to implement RRI into the industrial context. Relying on the ongoing cases of 3D printing process certification for medical devices, emerged from the EU H2020 SMART-map project 3Dmed pilot, and certification for ethical implementation of intelligent technologies stemming from the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, we will discuss how technical certification, if conceived and developed through an RRI multi-stakeholder process and with the objective to be RRI-compliant, can represent an effective tool of responsible governance of emerging industrial technologies.

The reasons why the progress of genome editing will increasingly hinge on the involvement of wider array of social actors in the R&D decision-making processes

Franc Mali (University of Ljubljana, Slovenia), Anja Kolak (University of Ljubljana, Slovenia), Jennie Olofsson (University of Ljubljana, Slovenia)

Because of the introduction of the new methods known as genome editing which have huge potential for radical changes of the genome, the progress of biotechnology is again at the crossroad. Especially new genetic engineering tool known as CRISPR-Cas9 has been assessed as “a game changer” in biotechnology. It is assumed that the use of CRISPR-Cas9 will cause »revolution« on various areas of human and social life. Taking in regard one of the main assumptions of EU Responsible Research and Innovation (EU RRI) strategy, i.e. proliferation of participatory approaches and mutual public responsibility of various stakeholder's groups in risk-based models of governance of science and innovation, the paper will try to find answer on the question why the possible benefits or pitfalls of CRISPR-Cas9 will be more than any other technological »breakthroughs« hinge on the involvement of wider array of social actors in the decision-making process on science and innovation. The main goal of the paper will be to draw some parallels and comparability between the situation in Europe at the middle of 90s and today. A look back at situation in Europe in the middle of 90s reveals that at least part of European civic society (through the activities of various non-governmental organizations) has been strongly mobilized in actions against genetic engineering in biotecnology. GMO food safety scandals and resistence of some non-governamental organizations against genetic engineering which has been drawn on various motives radically altered the governance to biotechnology by main EU R&D policy actors (i.e. they began to evaluate the potential negative consequences of all new emerging technologies on the strong principles or precautionarism). And how does it look the situation today, in the time when EU RRI philosophy declairs the need to avoid of two unacceptable strategies, that is a total ban of the new risky technologies on one hand, or a laissez-faire approach to them on the other hand? In the paper, there will be provided critical reflexivity, if the newest requirements of various groups of non-governmental organizations that new genetic engineering tool known as CRISPR-Cas9 must come under the GMOs regulation is in accordance with the basic principle of EU RRI strategy. Namely, EU RRI strategy tries to find third way between precautionary and proactionary principles.

TRACK 2
Citizen science from below and above
Convenors: Michiel van Oudheusden (KU Leuven, Belgium), Ine Van Hoyweghen (KU Leuven, Belgium), Gert Verschraegen (University of Antwerp, Belgium)

Innovation in Pharmacology: animalist and scientist on the forefront
Flavia Zucco (Consiglio Nazionale delle Ricerche, Italy)

In the 1980s, moving from different scientific fields, some scientists started to ask whether it was possible to adopt different experimental models than animals, especially in toxicology and pharmacology. In those areas animals were the key research model, according to international regulations to place on the market drugs and other products related to human health and hygiene. Among the new experimental models, particular attention was devoted to cell cultures technologies, which were already widespread in other bio-medical disciplines. A review was published in 1981 on this topic and a conference was organized in The Netherlands. Then, a series of more structured activities started in Europe and later in the US. Those activities attracted the attention of animal movements, but their expectations were to wide and initially some conflict arose between scientists and animalists. However, eventually, a ground for a common effort was found and a productive dialogue started. The scientists had to face the conservative attitude of the establishment in the biomedical disciplines and, on the other side, the animalist had to face the protest of the most radical representatives of their movement. The institutions reacted positively to the topic: in some countries (especially Northern Europe and the US) institutes on “alternative to animal experiment” have been founded. The EU Commission allocated specific grants on alternatives and a devoted Institute was set up at Ispra. The problem of animal use in scientific experimentation has not been solved yet for important scientific reasons. However this experience represents an interesting case of study on the advancement of science and the contribution of dialogue with the society at large.

The beautiful world of the “mothers against XXX” groups in Italy: re-shaping health policies from below. The case of some groups in the Veneto region
Lorenza Perini (Università di Padova, Italy)

The research starts from two interlaced questions: A) why most of the groups of citizens protesting and rising issues related to health, environment, pollution and the quality of life at urban level are mostly made of women who address themselves “mothers against XXX”? Isn’t this a sign that society is not neutral and it is time for the policies that have something to do with the body and the daily life of people in a given territory to be framed using a real gender perspective- which means taking in account the diversities? B) The relationship of Science with Society – as shown by the EU keyword and pillars for funding and sustaining the EU research- is strictly interlaced with the dimension of Responsibility. So when we talk about RRI – Responsible Research Innovation- are we – just talking about finding a better way of interaction between experts and non-experts, or are we talking about the necessity for Science to get in touch with other disciplines, to build interdisciplinary groups in order to exchange information and building a “community of mutual learning? In order to frame these questions the idea is to take into consideration some cases of “mothers no” groups (no vaccines, no water pollution, no plants around the towns and so on, in which also a lot of men involved) in the Veneto region in the last six months and analyze the way in which – as well as the means they use – to interrogate Science using technologies, classic media and new social media as means of communication, with the ultimate goal of understanding if and when this pressing from below can produce a reflection, a reshaping or even a complete change at local and national level in the production of policies.

How Do the Citizens Play Their Roles? A Case Study on the Safety Assessment of Agricultural GM Organisms in China

Zhicong Shang (University of Chinese Academy of Sciences, China)

Since 2010, more and more citizens and media participated in the debate about the policy on the safety assessment of agricultural GM organisms in China, besides the government agencies and scientific experts, and gradually grew into two groups – the supporting group and the opposing one. By a field research on the debate about the safety assessment of the GM rice, and interview with the key participants, we found following facts. 1. With different members, the two groups took different channels and ways in their opinion expression, debating on the following three questions: 1) who owns the final authority in agricultural GM organism safety assessment? 2) Which principle should be taken in the safety assessment, the principle of substantial equivalence, or the precautionary principle? 3) Toxicology test should be based on animal or human experiments? 2. The supporting group cited the rational style in the debate, while the opposing group showed a strong style of populism and nationalism. 3. Due to the lack of institutionalized public debate platform and rules, the debate could not reach a consensus, and delayed the relevant policy making. Such a case study reveals that: 1) Practical public decisions about science and technology need the citizens' participation and the supporting from the public culture of democracy and democratic system of the nation; 2) By the participation of citizens' participation, expertise such as scientific and technological knowledge is transformed to public knowledge in the public decisions.

Hackerspace Sciences

Jeremy Hunsinger (Wilfrid Laurier University, Canada)

This paper describes hackerspace and makerspaces as spaces where some scientific practices occur within a limited framework of scientific discourses of sharing and innovation. It argues that hackerspaces are not oriented toward science or even scientific effort, but that they do produce scientific outcomes in an applied way. Based on a large research project involving the websites of over 300 hackerspaces and makerspaces from 2009-2014, this paper presents the discourses of sciences found on those websites, and describes the use of science as represented on those websites. Using critical discourse analysis of the multimedia websites, this paper uses discursive evidence to show that citizen science in hackerspaces/makerspaces is limited. Pushing beyond the non-scientist-scientist dualism to recognize that many members have scientific training and have scientific practices in the hackerspace, I describe a tension found in the discourse between innovation and reproduction. The tension is found in science in practice, in which the reproduction of science is more frequently performed, but the innovation of new knowledge is more celebrated. As an ideological and cultural construct, this tension informs citizen science in hackerspaces and becomes a point of construction of possibility for science in these spaces. It is revealed from the study that there are significantly fewer scientifically oriented hackerspaces and makerspaces than one would expect, and this operationalization of this tension in the discourse around science in hackerspaces and makerspaces is one of factors limiting citizen science in these spaces.

Community Modelling: Reclaiming scientific tools for use by local communities

Catharina Landström (University of Oxford, UK)

Environmental scientists in academia develop and use computer simulation models to investigate environmental processes that pose risks to society. Aiming to create new knowledge they use models as tools to think with. However, the capacity of computer models to simulate possible alternative evolutions of complex systems is also attractive to environmental decision makers who wants to control the future. Hence, computer models routinely feature in the exercise of science-based expert-led government decision making on the management of environmental risks. Often these models are used to justify management decisions opposed by local communities. Thus, environmental computer models have become the tools favoured by the powers that be, used in ways that militate against democratic public involvement in local environmental risk

management. Environmental scientists have been complicit, contributing 'decision making support', to demonstrate the policy 'impact' of their research.
Community Modelling is way of working that counteracts the anti-democratic use of environmental computer models. Underpinned by STS critique of the distribution of power and knowledge in environmental risk governance Community Modelling reclaims computer models as tools to think with. The aim is to make models accessible to local communities to address environmental matters of concern to the people at risk, to levels the playing field for 'lay publics' engage with environmental decision making. Successful Community Modelling case studies show that models can be understood by lay people and that scientists are not necessarily committed to the powers that be, but can become loyal allies to local environmental groups.
This paper introduces the Community Modelling approach to environmental participation and explains how it changes the relationships between scientists, local communities and government with examples from work on water quality and flooding in two different localities in England.

Mapping the invisible: deconstructing constraints on meaningful public participation in the UK Water Framework Directive

Emma Hibbett (University of Oxford, UK)

This paper focuses on answering a pertinent question within environmental governance: does public participation and citizen science ever facilitate meaningful change to policy? Although the increasing utility of participatory processes and citizen science in environmental governance is suggested to promulgate a transferal of power from state to citizen, reality is often to the contrary. Perceiving participation through a lens of power lays bare the core principles of empowerment and agency; suggesting that through the move from state centric government to decentralised governance, publics are empowered and given agency to enact change to the policy process. Evaluating this empowerment is complex, requiring a step away from normative understandings of participation and towards approaches that shift the locus of assessment to the public. Drawing upon theories of governmentality and the construction of identity, this paper formulates a theoretical framework in which the relationship between publics, scientists, institutes, and policy agents are explored. These interactions are effectively evaluated to understand how publics' agency to enact change is constrained by flows of power within their relationships. Applying these theories to the implementation of the Water Framework Directive (WFD) in the UK, it is argued that publics are not being empowered to enact meaningful change to water policy despite the fundamental fixture of public engagement within the WFD. Exposing these impeding structures makes visible the constraints to agency, which act to reproduce official discourses on institutions and undermine new forms of power in the policy process. This paper concludes with recommendations that offer a pathway to truly empower the publics, co-creating space for these forms for new power to challenge the status quo of water policy creation in the UK.

Living apart together: a case study of the interaction between citizen science and institutions in the field of radiation monitoring in Japan

Joke Kenens (KU Leuven, Belgium), Ine Van Hoyweghen (KU Leuven, Belgium), Michiel Van Oudheusden (KU Leuven, Belgium)

In the field of radiation monitoring, the 1986 Chernobyl and 2011 Fukushima nuclear disasters triggered an upsurge of bottom-up citizen-led responses. As the advent of new technology and media helped the bottom-up movement to overcome spatial boundaries and gradually lowered the threshold for citizens to participate, they have boomed over the past decades. Interest from institutions in the potential of citizen participation has likewise risen from attempts to explore the potential of citizen monitoring after the Three Mile Islands accident to an increasing valorization of citizen participation in research and innovation by the European Commission. However at the time of the Fukushima nuclear disaster, Japanese grassroots organizations were set up in a very different environment, overshadowed by the "nuclear village" (*genshiryoku mura*), a powerful interest group of advocates of nuclear energy. Notwithstanding this independent citizen laboratories have successfully created platforms, such as Minna no Data Site, to interconnect and exist alongside official policies and pressures. Yet others, such as Safecast, are actively seeking recognition from the Japanese government and are reaching out to official institutions. Drawing on research literature and empirical data collected from

fieldwork in Japan, this presentation explores the interaction of these citizen scientist laboratories with institutional actors, showcasing the diversity of grassroots organizations and demonstrating how different grassroots organizations and institutions are generating diverse responses at the challenges at hand in a post-nuclear accident environment.

Not just monitoring: rethinking Citizen Sensing for risk-related problem solving

Anna Berti Suman (Tilburg University, The Netherlands), Marina van Geenhuizen (Delft University of Technology, The Netherlands).

This contribution analyses the scarcely researched problem solving potential of citizen sensing in cases of complex and often controversial public health risks. Two cases are compared: the Amsterdam Schiphol Airport and the London Heathrow Airport's systems for noise monitoring. The questions this contribution addresses are: how did lay people use citizen sensing to find solutions to the increase in noise? Which conditions influence and facilitate the success of citizen sensing for problem solving? The analysis of the theoretical notions framing the cases is combined with empirical researches to assess whether citizen sensing can contribute to risk problem solving. The main contribution we identified were the production of an increased awareness on the risk and the generation of a trusted dialogue between lay people and institutional players, The key conditions that facilitated this contribution turned out to be the urgency of the risk; the agreement on the nature of this risk; the malfunctions of the institutional response; the data validity and reliability of the bottom-up monitoring; and, lastly, the willingness of both parties to trust each other. The present study demonstrated that citizen sensing can contribute to the achievement of better solutions to a given problem. This argument has serious implications to the extent that it challenges opposite positions supporting a more closed governance of the risk. It can be indeed affirmed that the collection of 'alternative' and competing data could undermine the authority of the institutions democratically appointed as responsible for the risk problem. This reliance on conflicting data could cause more chaos than clarity and substantially delay the problem solving process. What has been argued in this paper is that citizens' input should be included *before* the rise of the conflict. If practices of inclusive problem definition and discussion would be in place in ordinary governance strategies, arguably the need for evidence checking *ex-post* would disappear. It is also likely that, this way, the relation between people and institutions would substantially improve, without triggering the necessity to overturn hierarchies of power. Yet this implies a commitment from policy-makers, on their side, to take people's input into account in their decision-making and to find creative manners to harmonize this bottom-up contribution in the institutional system.

TRACK 3
Technoscience 'in the wild' and the public co-shaping of science and technology
Convenors: Stefano Crabu (Università di Padova, Italy), Paolo Magaudda (Università di Padova, Italy)

Techno-populism: When techno-science and energy cooperatives meet
Shivant Jhagroe (Eindhoven University of Technology, The Netherlands)

Against the background of the Dutch sustainable energy transition discourse, pro-active citizens have taken up initiatives to pursue renewable energy (Frantzeskaki, Avelino, & Loorbach, 2013). In particular, energy cooperatives seek do decarbonise 'their community'2 while cooperating with local authorities, grid operators, and energy technology companies. But, how do these actors integrate techno-scientific and local community norms? What political logic underlies such energy-led techno-scientific practices 'in the wild'?
This paper presents an empirical case of the Dutch energy cooperative called *LochemEnergie* (in the rural city Lochem). *LochemEnergie* aims to "produce [Lochem's] own energy by the year of 2030, both by citizens and companies"3. This ambition of 'energy autonomy' moves away from external dependencies (e.g. fossil fuel), while highlighting local solidarity (e.g. electric car sharing), employment and social return of investment. The paper reflects on the political rationality underlying *LochemEnergie* as an intersection between: (1) *techno-scientific* practices associated with governing 'decarbonisation'; and (2) *political-cultural* practices that serve 'the local community'. Employing Foucaultian insights on governmentality and communitarianism (Dean, 2010; Van Houdt & Schinkel, 2014), the governing strategy can be characterised as *techno-populism*. Empirical materials are derived from policy documents, observations and semi-structured interviews with stakeholders (e.g. *LochemEnergie* members, tech-companies and grid operators).
Contrary to the vast research on cultural/nationalist populism, techno-populism centre-stages communitarianism vis-à-vis techno-scientific practices. As such, it opens up analytical space to understand how techno-scientific governance decentres and operates in concert with activist citizenship and populist rhetoric. Finally, the paper reflects on my dual role as a scholar; techno-populism requires critical scrutiny given its techno-centrism, localism and neoliberal overtones, but, it also requires further examination given its potential for energo-politics from below.

The evolution of public-scientists: how Indian science museums are creating grassroots innovators.
Anwesha Chakraborty (Chalmers University of Technology, Sweden)

In this paper, my aim is to define and critically engage with the conceptual category of 'grassroots innovation' bearing in mind the technopolitical culture of India, a rapidly developing technical power but burdened with consistent social problems for which the solutions need to be scalable, bottom-up and co-produced by experts and non-experts. I do so by reporting the findings of a short ethnographic study carried out at the 'Innovation Hub', a recently inaugurated (in 2013) facility (similar to the tinkering labs found in multiple European and American museums) at the first public science museum in India, the Birla Industrial and Technological Museum (BITM), Kolkata. The space, as explained by its curator, is designed to encourage young members of the society (students from schools and universities) to participate in the national vision of promotion of scientific temper and to visualize themselves as innovators providing scientific and technical solutions to address societal challenges. The site was selected for the study because it was created as a part of the larger national plan drawn by the National Innovation Council, a think-tank formed to develop strategies on inclusive innovation and development. (NInC Report, 2013). The findings of the ethnographic research have been used in the analysis in conjunction with definitions and examples of grassroots innovation and innovators provided in policy documents and annual activity reports of the prominent Indian think tanks working on this issue: National Innovation Council and National Innovation Foundation. These additional sources will help us understand if there is a continuity between the rhetoric of grassroots innovation and the realisation of the idea in non-formal settings which encourage public engagement with science and technology.

The ontological politics of design practice in a participatory mobile phone learning intervention for Kenyan community health workers

Jade Vu Henry (University College London, UK), Niall Winters (University College London, UK), Martin Oliver (University College London, UK)

Observing that critical studies of global development practice have been primarily concerned with "policy, institutions, and macroeconomic forces," Burrell has asked: "What does it mean to act or to intervene in other ways, not through policy making, but through the material design of technological artefacts and systems?" (2016) We argue that while the working relations of design and use in this research action were co-constituted by an array of heterogeneous lay actors including government agencies, health workers, and civil society groups, it was the role of formally-trained design experts to attend to the careful, routine practices of distribution, coordination, and infrastructuring to "draw things together" (Latour, 2008), and thereby tame the controversies in the ontological politics of "participatory design in the wild". This empirical work describes the sociomaterial relations of design and use in a participatory action research project to train Kenyan health workers with mobile phones. Integrating post-structural material-semiotic tools with classic ANT concepts such as translation and the token, this account describes how an array of humans and non-humans participated in a transnational, multi-sectoral participatory action research intervention. It recounts how this mobile learning project for community health workers expanded into an assemblage that included disabled children, their mothers, special needs agencies, schools, prosthetics, diapers, and solar chargers, while implicating new practices such as income-generating activities and the manual fabrication of mud bricks by community volunteers. Over the 18-month project funding period, at least six different patterns of sociomaterial relations operated through a given set of people and things, enacting the material-discursive apparatuses (Barad, 1998) of educational research, healthcare, the market, the state, and the local community. This multiplicity generated trials of strength that corresponded to the ontological politics of design practice.

***Re-thinking the FabLab*. Un'etnografia del "FabLab Genova"**

Luca Perissinotti (Università di Padova, Italy)

Nel processo che Catarina Mota, attivista del movimento *open source,* definisce la *rise of personal fabrication* i FabLab hanno un ruolo centrale nella diffusione di tecnologie, pratiche e valori (come la condivisione e l'orizzontalità) provenienti dalle diverse esperienze del DIY. Benché rappresentino solo una parte di un fenomeno più ampio, hanno goduto di una forte rappresentazione mediatica, sia per le particolari tecnologie utilizzate (fra tutte, la stampa 3D), sia per l'impatto rivoluzionario che secondo alcuni queste tecnologie avrebbero sul resto della società.
Senza voler trascure il potenziale trasformativo dei nuovi sviluppi tecnoscientifici, queste narrazioni – assunte trasversalmente dalla politica istituzionale ai media generalisti – riproducono una prospettiva determinista del modello lineare di innovazione e sviluppo, e diffondono un'idea univoca dei processi di Innovazione (quella promossa dalla FabFoundation), limitando così l'affermarsi di possibili elaborazioni alternative.
A partire dalla critica alla linearità e all'unicità di questi modelli, si intende presentare un lavoro di ricerca etnografica riguardante il "FabLab Genova": quarto laboratorio italiano, nato nel 2012 in pieno *hype* da FabLab, e situato all'interno di una storica occupazione genovese. Basandomi sulla ridefinizione della pratica del *repair* di Steven Jackson e sulle sue categorie di *residual mobilities* e *reapir worlds*, questo contributo metterà in luce come il FabLab in oggetto si fondi su un modello organizzativo che eccede la narrazione comunemente adottata nell'analizzare le caratteristiche di questo tipo di spazi: non solo la condizione di illegalità dell'occupazione e le caratteristiche fisiche dello spazio, ma anche il background culturale, tecnico e politico, di fondatori e partecipanti, così come le pratiche del recupero e dell'autogestione, concorrono tutte a realizzare quella che gli stessi intervistatati definiscono "l'anomalia del FabLab Genova". Nel complesso, quindi, si evidenzierà come i FabLab rappresentino delle isituzioni pluarli e ambivalenti, entro cui hanno luogo processi di innovazione intrecciati con valori politici e specifiche modalità organizzative.

Fungal infestation in social media: reshaping biodiversity data citizenship

Minna Santaoja (University of Turku, Finland)

Finland is one of the leading countries in knowing biodiversity, largely thanks to an established citizen science tradition. European and Finnish biodiversity policies rely on strong biodiversity science and efficient knowledge management that is carried out in top-down data projects such as the Global Biodiversity Information Facility (GBIF) and its Finnish node, the Finnish Biodiversity Information Facility (FinBIF). The centralized data projects appeal to some of the volunteer citizen scientists, while they fail to address the values and rationales of others. Traditionally there has been a master-apprentice -system for knowledge transfer and knowledge on nature has been generated through committed, affective and bodily practices in nature.
New technologies bring new affordances for citizen participation in the data project and for nature education. Take the case of amateur mycologists: Mushrooms are a numerous and still largely unknown part of biodiversity. Now nature enthusiasts gather in the wild of social media, learning from their peers and creating new naturalist identities. In comparison to the membership of the traditional naturalist societies, the number of subscribers to e.g. naturalist Facebook groups is manifold. The promoters of the biodiversity data projects have seen this as a new possibility for naturalist recruitment and to tap into previously unharnessed sources of data. In this paper I analyse the amateur naturalist practices in the wild – their compatibility with the data project, and everything that overflows. I am interested in the potentials for new naturecultures emerging in the new socialities.
The analysis draws on a variety of qualitative materials: observations from the FinBIF project and amateur naturalist societies, social media content of the Facebook group of the Finnish mycological society and another group Bugs of Finland, writings from amateur naturalists on their use of technologies, and interviews with both data managers and amateur naturalists.

Engagement from below at the European Commission? Exploring 'ecologies of participation' at the EC's Joint Research Centre

Thomas Völker (Joint Research Centre), Angela Pereira (Joint Research Centre)

In recent years the European Commission (EC) displays a growing interest in various forms of citizen engagement and public participation. This becomes visible not only in the so-called 'Better Regulation' agenda or President Juncker's objective of being a "president of social dialogue", but also in a range of small scale projects conducted at the Joint Research Centre (JRC). Most recently, collective imaginations of citizen participation materialised in the report "Reaching out to EU citizens: a new opportunity".
Against this background, this talk explores recent efforts to establish citizen engagement activities at the JRC. These efforts provide a fascinating site to explore how models of engagement and participation are being re-negotiated and thus also to ask for the 'role of the 'in the wild' notion in rethinking processes of public engagement of citizens and laypeople in technoscience', which can be a useful way to to reflect on the question to what extent 'participation, citizen engagement and democracy from below' is possible at such an institution. To do so we apply a co-productionist (Jasanoff, 2004) understanding of participation and engagement and focus on what Chilvers and Kearnes call 'ecologies of participation' (Chilvers & Kearnes, 2015). This means acknowledging engagement exercises as part of techno-political orderings that are enacted together with particular material institutional configurations, scientific knowledge claims, objects, issues at stake (Latour, 2004; Marres, 2007), subject positions and (collective) identities. This is especially interesting for exploring engagement practices within the JRC with its institutional culture characterized by its position as an interface between science and policy-making. Understanding what engagement means within the JRC thus means to explore how engagement practices are embedded within (or co-produced) with collective forms of public reasoning (Jasanoff, 2005).
The contribution builds document analysis and interviews with actors involved in citizen engagement activities at the JRC.

Stakeholder analysis for a broader concept of interoperability in citizen science

Claudia Göbel (Museum für Naturkunde Berlin, Germany)

I'd like to present a case study on stakeholder identification through qualitative social science research for ICT standardisation in citizen science (CS).
In the field of CS various initiatives have recently emerged with the aim of developing standards and infrastructures for project data and metadata. Examples include an ontology for CS data and metadata, the development of linkages between existing projects and data repositories, and a reference model for sharing CS IT tools. Actors from around the globe are involved, including working groups in the US-based and European Citizen Science Associations, platforms like SciStarter and the Atlas of Living Australia, the Joint Research Center of the European Commission, and the Open Geospatial Consortium.
In this context, we conducted an exploratory stakeholder analysis with the aim of identifying individuals, groups, and organisations involved in and affected by CS activities, their knowledge sharing practices and perspectives on interoperability in the US, Australia and Europe. This was particularly relevant for two reasons: (1) CS is a very diverse field of practice and standardisations based on the model of data-gathering projects risks narrowing definitions; (2) standard development was carried out without participation of important stakeholders, such as project managers and citizen scientists.
My case study contributes to the session by: (1) Giving an overview of knowledge generation and sharing practices in different types of CS practice, arguably a form of "research from below"; (2) Outlining a standardisation process driven by researchers, SMEs and data repositories from the field – welcoming discussions if it fits better with "standardisation from below" or top-down approaches; (3) Presenting stakeholder analysis as exploratory tool for identifying actors and knowledge practices to be taken into account for ICT standardisation in the field of CS.

Co-creation or creolisation? the politics of digital participation in a South African Living Lab

Lorenzo Dalvit (Rhodes University, South Africa)

This paper reflects on the experience of a decade-long initiative seeking to explore the potential of ICT infrastructure, training and services for the socio-economic development of a marginalised rural area in South Africa. Such initiative is shaped by the Living Lab approach and foregrounds the role of the local community in identifying local problems and (co) creating ICT solutions. The need for a bottom-up approach has often been emphasised within ICT-for-development projects. Ensuring grassroot participation by prospective users of ICT solutions is expected to foster a sense of ownership and empowerment. This is particularly important among members of marginalised communities in developmental contexts, where the legacy of colonialism pervades all aspects of daily life. In our experience, however, participation in software co-creation activities as part of multi-disciplinary research or international collaborations highlights power dynamics in terms of different social and cultural capital, reflecting a persistent condition of coloniality. Literature on technology appropriation provides a socio-constructivist lense to interpret the role of technology in the context under consideration. In particular, the concept of creolisation captures the creative adaptation and use of ICT to support existing networks, preserve material/ non-material resources and address local challenges. A nuanced analysis reveals how digital participation reshapes hegemonic relationships within the community and with the outside World.

TRACK 5
Environmental data from below: Enactment and participation challenging environmental governance
Convenor: Paolo Giardullo (Università di Padova, Italy)

Creating energy citizenship in France: shale gas narratives

Roberto Cantoni (Universität Augsburg, Germany)

France has become world-famous in the shale gas business environment for the decision, made by the government in 2011, to ban shale gas exploration. However, prior to that decision, shale gas estimates relative to France generated huge expectations in French political and technoscientific environments. As a consequence of potential environmental threats generated by shale gas development, resistance to exploration activities and to the technological means used to extract shale gas, namely *fracking*, developed in the regions of France where companies had planned to conduct most drillings. My goal is to dispute the view of citizens as passive users-consumers of sociotechnical systems, or as just active energy market participants through new technical and managerial devices (as implied in the concept of 'prosumers'). Instead, I propose to reframe citizens as important contributors to the shaping of those systems. I believe that citizens' ability to use complex understandings of energy as a sociotechnical system, grounded in local, collective experience, allows for the emphasisation of the concept of lay expertise. My account is based on the data gathered through qualitative study: a set of 20 interviews with anti-fracking activists, conducted in the spring of 2016. By resorting to the theoretical framework known as the sociology of knowledge approach to discourse (Keller, 2011), as well as by referring to the Marten Hajer's politics of environmental discourse, I argue two points. First, the mobilisation and the relations established during the protest time were particularly significant for local communities in the formulation of claims for active agency, with regards to energy policies. Second, the importance of earning from past controversies (GMOs, nuclear energy) in terms of a set of pre-formulated arguments from which to draw, and the ability of actors to include local problems into a broader framework, were key to the speedy coming together of a critical mass.

Building the sustainability ecosystem in the hyperconnected era

Dario Cottafava (Università di Torino, Italy), Alessandro Sciullo (Università di Torino, Italy), Laura Corazza (Università di Torino, Italy)

This work aims to set the basis to explore the Posthuman condition as the future human condition, going beyond the anthropocentric sight of the life on Earth where humans, animals, nature, objects, buildings up to the Internet itself are considered as a whole system, an interconnected mind interacting on several layers simultaneously, where human beings are only a part of the whole system. For this purpose, this analysis wants to present the first steps of a general methodology, to co-design the sustainability ecosystem at local scale. The adopted approach is based on two main stages and it aims to identify an ontological map starting from a crowdsource mapping of the relevant topics related to sustainability, on one side, and to design a local environmental ecosystem, on the other side.
The first step has been achieved, with the contributions of more than 160 citizens, asking them to identify crucial interdependent concepts associated to food, energy, waste, mobility, green public procurement and environment and, consequently, to highlight keywords interconnections, obtaining a conceptual map of more than 400 keywords and 550 links. The second stage has been performed thanks to a 4-hour codesign workshop. Starting from few general topics (e.g. energy, food, waste, ..), 40 agents (public institutions, NGOs and businesses members as well as private citizens) within the local community, i.e. the City of Turin, have been interviewed. Thanks to this collaborative workshop a piece of the whole local ecosystem has been identified with more than 205 relevant actors and 300 relations.

This research proof how sustainability cannot be treated separately from the actors involved. It needs to be theoretically explained using an holistic and multidisciplinary approach that encompasses stakeholder theory or agent theory including social and psychological implications, as well as, hyperconnectivity as core element of a posthuman system.

Knowledge co-production methods and challenges

Serena Tarabini (Sapienza Università di Roma, Italy)

My research is about knowledge co-production and network creation in an environmental conflict. I describe a process where a mining project is contested through the co-production of scientific and local knowledge. I argue that lay citizens, communities and local grassroots organizations immersed in a socio-environmental conflict are engaging with professionals scientists to better understand the impact of 26 years previous steelwork on their environment and their health and the negative consequences that another industrial activity on the same area could have. Together with scientists they co-produce new and alternative knowledge that gives the local organizations visibility and legimacy, and allows them to engage in practical activism, challenging the manufactured uncertainity and other information produced by the local adiministration or the company running the project. In this process voluntary lay citizens becames activists bulding new relations, knowledge generation and communication dinamics. My task is to analyse and characterise this particular process, looking at its main characteristics and the reasons why citizens-activists engage in this particular way. Which kind of knowledge is producted? Which kind of data and why? Which actors? Which methods?How is this new knowledge spreaded?
The analysis is based on the the “Ex area Falck“ case in the north of Italy, where local population that already suffer for pollution, is struggling against a mining project, triying to obtain the site reclaim and a substainable plan for the future.

“From the “know-how” to the “make know”. The role of "instruments" in the associative claims in the field nuclear”

Saliha Hadna (Conservatoire National des Arts et Métiers, France)

In this communication, we present the results of our comparative sociological study concerning the environmental monitoring of two former French uranium mines: “La Commanderie” (Vendée / Deux-Sèvres) and “Pen Ar Ran” (Piriac-sur-Mer, Loire-Atlantique). If the first site has a consultative forum–"Commission de Suivi de Site" (CSS) -, we can observe that this instance does not really correspond to the model of the “hybrid forum” (Callon, Lascoumes and Barthe, 2001). Associations do not have the possibility to express their claims. On the one hand, CSS generally presents many difficulties ("Groupe d'Expertise Pluraliste", 2013). On the other hand, the second monograph illustrates a case where a citizen's expertise has emerged against AREVA data, but it also contributed filling up the lack of technical knowledge relating to the inventory of mine waste. In this way, measuring instruments and lay knowledge resolve the issue of a lack of public participation. Therefore, our work highlights the role of the Gamma Ray Detector (DG5) in citizen's claims for the decontamination of radioactive zones in the village of Piriac-sur-Mer (Loire-Atlantique, France). The democratisation of the access to this measuring device, and the transmission of a methodology of measure of radioactivity by CRIIRAD1 have allowed to a group of citizens to contribute to the decontamination of radioactive zones. Citizen expertise re-question our conception of “expertise”. Since about twenty years, expertise is in crisis (Lévy-Leblond, 1977; Horlick-Jones and From Marchi, on 1995; Granjou, 2003; Collins, 2014), particularly in health and environment fields (Lascoumes, 2002). Our research discusses citizen expertise as a process, and gives other perspectives to define “technical democracy” (Callon, Lascoumes & Barthe, 2001). First, we analyse how the activists acquired technical competences to produce knowledge (*know-how*). The second point focuses on the process of legitimization of this lay knowledge, in which the media coverage and metrology played a key role (*make-know*).

"Piste riCiclabili" project: where geo-tools meet paduan citizens' participation

Daniele Codato (Università di Padova, Italy), Diego Malacarne (Università di Padova, Italy), Elena Ghezzo (Università di Padova, Italy), Salvatore E. Pappalardo (Università di Padova, Italy), Alberto Diantini (Università di Padova, Italy), Federico Gianoli (Università di Padova, Italy), Massimo De Marchi (Università di Padova, Italy)

A bottom-up approach in the collection, creation and sharing of spatial information by citizens with the use of geo-information technologies, increased worldwide since the first years of this millennium. This process is facilitated by the spreading of digital opensource technologies and opendata and to the increasing opportunities for everyone to internet access. In fact, new approaches called Public Participatory GIS (PPGIS), Volunteered Geographic Information (VGI) and Citizen Science, comprise projects and researches that are involving the citizens' participation in urban planning and management and in the production of environmental information by no-experts.
PISTE riCICLABILI, an innovative project funded by the University of Padova, started in 2016 following these conceptual framework. The aims of the project are: a) carry out a participatory mapping work of critical issues of the paduan urban cycle path network; b) the implementation of an open source geoportal for sharing georeferenced reports.
Data collection and mapping comprise two integrated methodologies: on one hand, using printed city maps during public events, where involved citizens marked the cicle paths issues with pins; on the other hand, through a mobile geo-app, the Open Data Kit (ODK) platform. ODK is a combination of open source tools allowing everyone to create a form to be filled on field with a smartphone and to send georeferenced reports to a server. Mobile data collected were periodically reprocessed and released through the open source webGIS platform Lizmap.
Over 700 critical points were collected during the first year of the project, with an increasing participation by citizens. Another result of this work is the participatory mapping process and data sharing via WebGIS carried out in the website pistericilabili.wordpress.com, and to show the first GIS analysis that could give to decision makers a first suggestion of hotspot critical areas where to prioritize interventions.

A Participative GIS approach to map and to model soil sealing in Padua

Salvatore Pappalardo (Università di Padova, Italy), Francesca Peroni (Università di Padova, Italy), Stefano Brugnaro (Università di Padova, Italy), Edoardo Crescini (Università di Padova, Italy), Daniele Codato (Università di Padova, Italy), Massimo De Marchi (Università di Padova, Italy)

Soil sealing is, at present, one of the most important environmental issue in urban context. By the increasing of concrete surfaces and by the implementation of new buildings and urban infrastructures, soil sealing is directly and indirectly affecting soil system and related ecosystem services: carbon sequestration, micro-climate regulation, hydrogeological risk mitigation, water and air purification. Even if the awareness of citizens about this theme is constantly increasing through both implementations of SDG and institutional tools, and g-local initiatives and networks such as the World Soil Day and People4Soil, there is still a lack of social processes for spatial data collection and generation. The general aim of this research is to involve university students to map the territory of Padua and to generate detailed spatial data about soil sealing in the city. The approach used is known as Participatory GIS (PGIS) and it brings GIS technologies to support public participation for a variety of applications by the inclusion and the empowerment of no expert population. In this way citizens, who generate spatial information, have the control, the comprehension and use of sensitive spatial data. In the present survey 25 volunteered university students, with different background and ages, were involved in the project and they were supervised by researchers which shared criteria and methodologies to extract geographical features from high resolution aerial images.
The results obtained by the students were: 1) the detailed generation of spatial data about land cover in Forcellini, a residential neighbourhood of Padua of about 300 ha located in the east of the city centre, and the application of an ecological urban index named Biotope Area Factor (BAF) about the permeability of surfaces. Moreover, students performed a participative land use mapping, deepening spatial knowledge of the city in which they are living in, and increasing skills by open source GIS technologies in a collective learning environment.

Deliberative participation as a challenge: the case of the design of a urban park from below

Federico Montanari (Università di Modena-Reggio Emilia, Italy)

The purpose of this paper is to describe the practices and strategies behind a case of a participative and deliberative bottom-up process, related to the design of an urban park that started in a district of Bologna. This bottom-up process was born as a response and a challenge to the policies of the city administration. It has been articulated through different phases, from the establishment of a committee, to the convocation of scientific experts to the organization of workshops and seminars, up to the actual design meetings. This is an interesting case study, which has seen the proponent of this paper as a participant advisor to the process itself, but also, clearly as an observer of a social practice of civic engagement that concerns not only the environmental governance but also the challenge to the official policies of the city administration, considered wrong by a few thousand citizens gathered in committee and challenged through the collection of signatures and the organization of this decision process from below. What implications are at stake regarding the relationship between bottom-up social practices, not only of protest but also of design, and the use of scientific data and information by the participating citizens? Which social and semiotic logics and practices are activated? The proposal is to bring a first description and analysis (using participatory observational practices and a first ethno-socio-semiotic analysis grid, that is, through an ethnographic glance, observing social processes *in vivo* through the direct involvement of the researcher and a first use of semiotic analysis grids, such as the study of narrative and discursive dimensions, description of the building up of the actors and the distribution of the value universes).

Tracks of Thematic Stream 2

The shaping of biomedicine, medical expertise and healthcare from below

TRACK 6
Engagment or Endorsment? How Roles, Knowledge and Practices of Expert Patients Change in Technology Innovation Processes

Convenors: Marina Maestrutti (Université Panthéon Sorbonne, France), Arianna Radin (Università di Bergamo, Italy)

The production of care effects in online patient platforms

Dimitra Petrakaki (University of Sussex, UK)

In recent years a range of online patient platforms (e.g. Care Opinion, Iwantgreatcare, PatientsLikeMe, NHS Choices etc.) have emerged that offer patients the chance to review healthcare providers and share their experience online with others (Adams, 2011; Lupton, 2014; Ziewitz, 2017). Existing studies have shown the impact these platforms have on healthcare delivery, patient reflexivity and identity and the risks of exploitation of patients' digital labour (Kallinikos & Tempini, 2014; Tempini, 2015; Ziewitz, 2017). Little is known about the work these platforms do to render patients' stories publically available. The paper shows that a part of this work is invisible 'caring' work. The study draws upon in-depth interviews conducted between March and July 2017 in Care Opinion (CO) in the UK and document analysis. Findings are analysed thematically by synthesizing ideas from sociology of health and STS.

CO is a social enterprise that publishes patient stories of their experiences of healthcare with the intention to lead to change. The publication of patients' stories is mediated through practices of moderation that prescribe what is allowed (and not) before publishing a story. Findings from the study suggest that CO exercises discretion over the publication of a patient's story. Once published, CO contacts the healthcare provider to provide a response. Through their mediation patient feedback becomes performed and enacted, leading to changes in healthcare. We conceptualize this as a form of care. Other care effects are also produced through CO such as stories that trigger an immediate need for intervention. Under these circumstances CO takes action by directing patients to the right support or by contacting healthcare services directly, performing thus an unexpected duty of care. The study discusses how, despite its challenges, moderation constitutes a form of invisible caring work.

Tactical re-appraisals and personal insights about medication: how patients' online accounts may become clinical evidence

Claudia Egher (Maastricht University, The Netherlands)

Despite a growing re-appreciation of the knowledge of people diagnosed and their increased engagement in clinical practice and research, their insights about medications have not been sufficiently acknowledged by medical professionals outside of clinical trials, particularly in mental health. This presentation argues that through the use of Internet the pathways towards the production of clinical evidence about the effects of treatment have multiplied. It investigates how people diagnosed with bipolar disorder enact expertise about the treatment of this condition online, by considering them 'subjects-who-know' rather than 'objects-that-are-known by medicine' (Pols, 2005). It shows that people diagnosed do not only have expertise in their own experiences of illness, but draw upon diverse resources available in their social world to contribute to the production of collective knowledge.

Using de Certeau's theory of everyday practices, three tactics are identified–complexity, uncertainty, and individualization–through which people diagnosed with bipolar disorder creatively adapt medical knowledge,

to render their personal experiences and views on treatment more authoritative. Through their affordances, which allow for the accumulation and refinement of the insights contributors share, blogs and online fora may thus become sites for the production of new types of clinical evidence. While clinical trials focus on medications as substances and assume a certain universality of experience regarding their effects, the findings show that online people with bipolar disorder seek to generate evidence that would be differentially relevant for particular subgroups or individuals, and would be applicable in specific contexts of their lives. They thus transform the meaning of clinical evidence by challenging its status as the prerogative of medical professionals, both in terms of its production and evaluation. Data were gathered from two American blogs and two French fora, which were selected using the Google index as relevance indicator, and thematic analysis was subsequently performed.

Harnessing the patient: experimenting electronically-assisted postural self-regulation, 1975-1985.
Lucie Gerber (Université de Strasbourg, France)

In the mid-1970s, at Rockefeller University, behavioral psychologists Neal E. Miller and Barry D. Dworkin developed a portable treatment device to be used in daily-life settings. Tested on young girls with sociolosis, the electronic device incorporated learning principles and techniques to train patients to stand tall through informational feedback about the shape of their spine and reinforcement. Drawing on the Neal Miller papers, this talk will track the development of the “posture training device”, from the design and construction of the first pilot model in the mid-1970s to the maturation of a commercial manufactured product in the late 1980s. I will focus my analysis on the difficulties and ambiguities of the art of technologically assisted self-regulation it was meant to enable. The device was based on the assumption that the adolescents would take an active and direct role in the treatment process. As the psychologists discovered in early trials, patients indeed learned to work with, and around, the apparatus, finding unexpected and unscripted ways to avoid compliance. The way they handled and perceived the device highlighted the difficulty of designing a perspicuous feedback system, leading to efforts to turn a corrective device into a persuasive one. Along with a series of changes in its material properties and parameter settings, securing patients’ continued use of technology was then associated with a redefinition of the role of the psychologist. While training was technically outsourced to the machine, the psychologist came to be understood as a necessary mediating agent, standing between the immediacy of unpleasant, potentially disrupting audio signals and the distant, uncertain prospect of improvement. Through this historical case study, I will consider how a behavioral device was reshaped by the very agency it was intended to modify.

(Ri)costruire le infrastrutture della cura: tra tecnologie di self-tracking, assistenza clinica e interventi organizzativi
Francesco Miele (Fondazione Bruno Kessler, Italy)

Negli ultimi anni la diffusione di tecnologie di *self-tracking*, finalizzate a supportare il cittadino nella gestione e nell’analisi di dati relativi al suo stato di salute, ha portato all’emergere di un numero crescente di studi interessati a valutare gli effetti e le prospettive portate dalla loro diffusione. Il lavoro presentato si propone di rompere la dicotomia, tipica dei contributi riconducibili a questo dibattito e più in generale degli studi riguardanti l’uso delle nuove tecnologie nel campo della salute (Pols, 2012), tra *sogni* – caratterizzati da un aumento dell’autonomia e del benessere del cittadino – e *incubi* – in cui le nuove tecnologie vengono adoperate per controllare, sorvegliare e disciplinare il singolo. Lo scopo del lavoro, al contrario, sarà di rappresentare i modi in cui pressioni provenienti dai fornitori di queste tecnologie, pratiche tecnologiche emergenti e pratiche cliniche pre-esistenti si intrecciano, dando vita a cangianti *care infrastructures* (Langstrup, 2013).
A questo scopo si presenteranno i risultati provenienti da una ricerca, ancora in corso, volta a valutare gli esiti di un progetto di *Workplace Health Promotion* finalizzato a ridurre il rischio cardiovascolare e di diabete di Tipo 2 dei dipendenti di un’azienda medio-grande del nord Italia (Piras, Miele, Fornasini, 2017). Nel progetto considerato l’azienda forniva ai dipendenti: un questionario on-line e una visita per valutare il proprio rischio clinico; una app *mobile*, in forma di diario elettronico, per incentivare gli *users* alla adesione della dieta mediterranea e all’aumento dell’attività fisica; l’assistenza di un medico e di una counselor; seminari sull’alimentazione e corsi di attività motoria.

Utilizzando il materiale raccolto attraverso 5 focus group e 15 interviste in profondità (2016-2017) ci si soffermerà sull'*infrastructuring work* svolto dai lavoratori coinvolti nel progetto e sui modi in cui essi –al variare del rapporto con la propria salute, con la tecnologia e con la propria organizzazione lavorativa –stringano la relazione con alcuni attori e la allentino con altri. A percorsi di prevenzione, quindi, in cui i professionisti svolgono un ruolo primario, se ne affiancano altri in cui le pratiche di *self-tracking* minacciano l'egemonia culturale al sapere clinico e, infine, altri ancora in cui il cambiamento di stile di vita è motivato soprattutto dall'adesione ad un progetto promosso dall'organizzazione. Se quindi la contemporaneità è caratterizzata da tecnologie e programmi sanitari sempre più pervasivi –che portano alla medicalizzazione di nuove sfere della vita quotidiana –il lavoro presentato pone l'attenzione sulle pratiche emergenti attraverso cui il cittadino può parteciparvi, innovandoli in maniera imprevista.

Technological innovation and patient expertise for assistive technology: is there a place to meet?

Agnès Roby-Brami (Sorbonne Université, France), Ross Parry (Sorbonne Université, France), Nathanaël Jarrassé (Sorbonne Université, France)

Technology holds much promise for people with disabilities since it can both improve body function during rehabilitation and facilitate social participation. However, there is still a gap between research objectives and the devices needed by users in their daily life. Despite the frequent statements that user needs are taken into account, and willingness of the researchers, projects are most often developed by "technology push" rather than "demand pull". Many factors contribute to this standoff, including the piloting of academic research and practical constraints linked to laboratory management. The contribution of patients to research is diverse. Some expert-patients may be directly involved in projects. They have invaluable contributions to long term development and may even willingly participate to invasive procedures, but they generally have no statutory recognition. Large scale projects involve user groups or patient associations to assist with ergonomic evaluations to explore the acceptability of devices, for which the design is often already planned. On the other hand, people with disabilities encounter many obstacles and difficulties in their daily life that could be solved by technology. Rehabilitation professionals (e.g. physicians, occupational therapists, orthoprosthetists…) are often effective at adapting existing technology to individual user needs but have limited competence or experience in the design and elaboration of innovative solutions based upon up-to-date research in engineering. Progress should be twofold. First there is a need of resource centers where concerned people from diverse origins could meet for sharing knowledge, expertise and skills to respond to individual needs and inspire research projects. Second, a multidisciplinary research field devoted to the behavioral and ergonomic analysis of daily life activity should be encouraged to track potential targets for research on technological assistance.

Stealth mutations induced by digital health empowerment devices

Pierre Pagacz (Université de Namur, Belgium)

I am involved as a social scientist in two different R&D projects working on digital health devices. During a set of qualitative interviews with the users of the prototypes, the normative concept at the core of these digital devices – the patient empowerment – appeared critical to understand the profound mutations characterizing the health sector. As a foucaldian frame seemed relevant for the topic, I used the concept of *dispositif* (Agamben) to depict the genesis of this particular dimension of biopower at its different levels (medical and political discourses, digital health architectures, sets of laws and regulations, moral propositions). On the basis of this empirically structured assemblage, I want to coin a new concept that grasps the actual shifts in rationalities, management and technologies of government regarding health: la "*santabilité"* (a french neologism we might somehow translate as "healthability"). Hence, I will discuss, as first hypothesis, two possible consequences driven in the wake of the normalization of health empowerment devices: 1) a shift in the substance itself of the health public policies and 2) an individualization of previously collectively assumed social risks. More broadly, it raises some crucial questions, as such: if techniques and moralities are indissolubly linked in the technological artifacts (Latour), how do technological objects contribute to the naturalization of social orders? This normativity being hidden in the materiality of the objects, how can we actually practice "disclosive ethics" (Introna)?

Beyond Science: the Brazilian "cancer pill" controversy

Aline Bastos (Universidade Federal de Minas Gerais, Brazil)

This paper seeks to analyze the possibilities of public engagement in Science and Technology, focusing on the potential of influence from the public in controversial situations. Based on the interactions of social human and non-human actors in the public space, we intend to evaluate the controversy surrounding the uses and efficacy of synthetic phosphoethanolamine, synthesized at the Institute of Chemistry of São Carlos, University of São Paulo (USP), popularly known as "Cancer pill". The intense ethical-moral debate in favor of life and health –enhanced by the media, judges and the politics –influenced the research with breaking scientific protocols.

Phosphoethanolamine is an organic substance present in all tissues and organs of the human body. It began to be studied in Brazil by a group of researchers from the Institute of Chemistry of São Carlos, University of São Paulo (USP) and other partner institutions in the 1990s, with promising preliminary results for cancer cure and treatment. Capsules containing synthetic phosphoethanolamine were distributed free to cancer patients for almost two decades by Professor Gilberto Orivaldo Chierice until his retirement in 2014. This distribution was suspended by USP, because there were not sanitary license and efficacy scientific proved.

Giving popular commotion, Brazil's President sanctioned the Law 13,269, on April 13, 2016, which authorizes synthetic phosphoethanolamine uses by patients with cancer. The scientific community soon repudiated the measure in manifestos and statements in the media, which overturned scientific and sanitary protocols. About a month later, the Federal Supreme Court (STF) suspended the Law, accepting an action filed by the Brazilian Medical Association (AMB). However, this controversy goes on until now, involving several sectors of Brazilian society, such as National Congress, Justice, Media, Scientific Community, Regulatory Agencies, NGOs and Civil Society.

TRACK 7
Mapping the emerging biomedical landscape: Co-producing, patching, and tinkering in evidence-based medicine and beyond

Convenors: Roberto Lusardi (Università di Bergamo, Italy), Manuela Perrotta (Queen Mary University of London, UK)

Where is the evidence? Commercialization, clinical trials and the IVF add-on debate

Alina Geampana (Queen Mary University of London, UK), Manuela Perrotta (Queen Mary University of London, UK)

This paper examines how the UK discussion surrounding IVF add-on treatments has become defined by increasingly normative evidence paradigms. Through careful analysis of various media sources, we argue that the current emphasis on the need for randomized clinical trials marks a temporal shift in how the public views add-ons both as unproven treatments and commercial artefacts. The term “add-ons” usually refers to additional treatments offered – often at an additional cost – to IVF patients on top of their main treatment. However, as fertility professionals have pointed out, even the term “add-on” itself can be misleading as it can sometimes include routine treatments. While unpacking the use of this term itself and the consequences of its now frequent use, we argue that public debates significantly changed in the wake of a BBC Panorama special that heavily critiqued fertility clinics selling add-ons to patients. Despite the initial hype surrounding new “add-on” technologies such as time-lapse and PGS, recent discussions have become focused on evidence-based medicine standards and proof of effectiveness. Add-on treatments are now represented mostly and indiscriminately as a scientifically unjustifiable cost for patients, with a focus on the lack of proof for their efficiency, safety and cost-effectiveness. In light of dominant techno-scientific paradigms, such processes assume a tacit and uncritical understanding of what “sufficient” and “robust” evidence is. This, in turn, can affect future policy directions, treatment options, as well as the public's understanding of IVF treatments.

Patient voices. A project for the integration of systematic assessment of e-PROMs in an Italian Comprehensive Cancer Center

Linda Lombi (Università Cattolica di Milano, Italy), Cinzia Brunelli (Fondazione IRCCS Istituto Nazionale dei Tumori, Italy), Claudia Borreani (Fondazione IRCCS Istituto Nazionale dei Tumori, Italy), Bellazzi Marco (Fondazione IRCCS Istituto Nazionale dei Tumori, Italy), Roberto Mazza (Fondazione IRCCS Istituto Nazionale dei Tumori, Italy)

The recognition of the patients’ perspective as crucial in medical decision making, represents a major shift in medicine during the last decades. Patient Reported Outcomes Measures (PROMs), and in particular electronically assessed PROMS (ePROMs), have been identified as potentially effective tools to systematically gather “patient voices” (Jensen et al. 2014; Basch 2016). Nonetheless systematic e-PROM collection is not widely implemented in routine care delivery, due to barriers at various levels (Kotronoulas et al. 2014; G Basch 2017). Here we present an ongoing feasibility project aimed at establishing a systematic assessment of e-PROMs within an E-Health programm in an Italian Comprehensive Cancer Center (the Fondazione IRCCS Istituto Nazionale dei Tumori - Milan - INT). In particular, the main aims of the project are: (1) appraising which PROMs and e-tools are routinely used in oncological IRCCSs in Italy; (2) exploring technical feasibility of ePROMs integration into EMR; (3) assessing feasibility of ePROM assessments regarding physical symptoms, psychological distress and patient satisfaction; (4) Identifying barriers to the implementation of routine ePROMs assessment in oncology clinical practice.
The project includes: quantitative cross-sectional and longitudinal feasibility studies enrolling in- and out-patients of INT who will pilot test the first version of an ePROM system for assessment of physical symptoms,

psychological distress and patient satisfaction; qualitative feasibility studies, i.e. semi-structured interviews with patients and focus groups with clinicians who have pilot tested the system.
This set of feasibility studies is only the first phase of a wider project which is aimed at achieving a stepwise integration of systematic e-PROMS assessment into routine clinical workflow (step II) as well as measuring its impact on patient wellbeing, health care provider satisfaction and use of health care resources (step III).

Red Biotech from Below: The scientific and Technological agendas in Brazil about stem cells
Maria Conceiçao da Costa (Universidade Estadual de Campinas, Brazil)

As these technologies are developed in the twenty-first century, and because they are possibly becoming new growth drivers and research development drivers of medical biotechnologies, this paper is an important study can benefit from a greater understanding about the effects of regenerative medicine and stem cell medicine research in the healthscape in Brazil and in the lives of patients, as well as open up new collaboration and contact opportunities with other countries from the South.
Such developments present not only bioethical and political deep implications as well as implications for biological investigations and can: a) impact the global availability of sophisticated biotechnological inventions and interventions; b) hinder the creation of ethical and governance norms for new biotechnological forms, through the fast globalization of investigation systems and medical delivery systems; c) create new relation paradigms between State and (low income) Brazilian citizens (indigenous populations or sectors with minimal use of medication), who are considered a resource in the surplus value production. In this regard, we want to investigate how a comparative study of Brazil and India can enable a deeper understanding of the scientific and technological agendas of these countries.
From “green” to “red”, this paper aims to analyze the interactions between State, citizens and consumers, and between the emerging Brazilian stem cell technology markets. The main objective is to understand critically the agency and structural processes of new developments in stem cell investigations and therapies in Brazil. These processes are regarded through four interconnected themes: I) identification of research agendas; II) promissory health: state, citizens and cellular biotechnologies; III) bioeconomy and biotechnology: public or private health?; and IV) governance ethics, ethics governance. These themes were selected because they are at the crossing of local and global spheres, the proliferation of new (bio)markets, the circulation of consumer citizens and the ongoing ethical and political debates. These nodes are important entrance points into the world of science, medicine, economy, politics and policy making. These spaces will jointly add to an ethnographic mapping of the composition of distinctive local and transnational actors, where the red revolution is being built.
The novelty of this project lies in the nature of its in-depth ethnographic analysis, focusing on the specific Brazilian context. Here, we aim to understand the substantial “red” sector in biotechnology.

Good Diagnostics: Productive Uncertainty and Caring for Health in the Case of Hepatitis C-Testing
Lisa Lehner (Cornell University, USA)

New pharmaceuticals have induced a therapeutic revolution for Hepatitis C virus (HCV) infections, promising to cure this intractable liver disease in over 90% of cases. With the purported solution to HCV looming large, “finding the missing millions” (WHA 2018) of unknowingly infected individuals has become a leading premise for global public health. To this end, HCV-testing is taking center-stage as biotech companies vie for top spot of recommended diagnostic test. Against this backdrop, I leverage ethnographic engagements in Austria and STS-insights into the enactment of bodies, health, and diagnoses (Mol 2002; Mol, Moser & Pols 2010; Yates-Doerr 2017) to explore the mundane practices of HCV diagnostic testing. Juxtaposing routine diagnostics in clinical settings with more decentralized testing drives, I
attend to the instructive slippage between high-sensitivity laboratory testing and broad-impact screening efforts and ask how each of these enacts varying forms of “good diagnostics.” While maximizing diagnostic certainty is the clear target in the clinic, the use of rapid tests in
screening drives involves constant tinkering and myriad instances of uncertainty. However, as I will argue, this comparison does not easily translate into deficiencies of the latter. The uncertainty inherent in broad-impact screening routinely overflows, producing shifting assemblages of actors and technologies, as well as novel spaces for exchange-as-care and rendering bodies sensitive to the risks of HCV. While diagnostic testing is

generally considered an automated step in the treatment process, the HCV-case highlights testing practices as powerful mediators in the enactment of disease and the larger health-care network. I also show how purportedly competing forms of "good diagnostics" depend on one another while their downstream results on individuals (intended or not) vary. I finish by reflecting on the challenge to resist simple either-or choices in favor of fashioning and collaborating to make varying enactments matter practically and more selectively.

The politics of entanglements between biomedicine and bioeconomy: the use of genomic infrastructures for domestic cattle selection and reproduction

François Thoreau (Université de Liège, Belgium)

Since the Human Genome Project reached completion, the tools of genomic such as Next-Generation Sequencing (NGS) have pervaded the hospital and the shaping of biomedical knowledge. Their applications in the field of human medicine remain rather limited to some diagnosis capabilities. Most current applications of genomics are to be found in animal genomics and more specifically in animal breeding genomics, such as the selection of domestic cattle for reproduction (OECD, 2009). This is particularly salient in the case of bovine cattle. In this contribution, I depart from the unexpected entanglement that occurs in a human genetics laboratory in a public hospital in Liège, Belgium. I explore how it involves the farming industries of meat production, public agencies and non-profit associations, scientists, technicians; but also computers, databases, chips and software. While these tools used for animal breeding and genetic diagnosis are the same, their uses are very different depending on whether they are used for human health or animal production. I question the epistemic regime involved by this material and technical infrastructure so as to question further the allegedly strict delineation that prevails between biomedical knowledge, on the one hand, and the development of a bioeconomy, on the other. More specifically, I engage with the different implications for social science inquiry and argue for a « politics of entanglement » (Nading 2013) in situations in which taking for granted the great divide between health and economy is problematic.

Towards distributed drug development

Ellen Moors (Utrecht University, The Netherlands), Marlous Arentshorst (Utrecht University, The Netherlands), Wouter Boon (Utrecht University, The Netherlands), Jarno Hoekman (Utrecht University, The Netherlands)

Society faces complex challenges that require to move away from the linear model of innovation towards alternative innovation models, in which the nature of problems and solutions co-evolve. One way of dealing with these challenges is pursuing a distributed way of innovation. Various sectors have seen a rise of collective action in distributed communities creating innovation platforms, such as 3D printing hubs and DIY gene therapy.

We focus on distributed innovation and production in the biopharmaceutical sector, which increasingly struggles to deliver innovative medicines at affordable costs for unmet medical needs. Traditional drug development is too complicated, expensive and inflexible to support drugs tailored to individual patients. Whilst there is still a strong focus on fixing the problems in the existing system, in practice, more disruptive reforms of medicine production and use is necessary to make drug development sustainable. Distributed, in-hospital, cost-effective production and innovation of biopharmaceutical therapies is one proposed solution, offering an alternative innovation model to circumvent some of the technological, regulatory and financial challenges preventing provision of the right drug at the right time to the right patient.

To understand distributed biomedicine innovation processes, we follow various conceptual lines: From user innovation studies we start with the bounds of viability based on communication and design costs that mark specific areas of viability for single-user innovators, producer innovators and open collaborative innovators. We complement this with STS notions of scaling and translation. Distributed solutions have a straightforward part in transitions since niches are about 'local' experimentations and solutions. We adapt these insights to distributed biomedical solutions that do not have the ambition to scale. We also use institutional sociology as complex innovations cannot be understood without the intertwined institutional practices. The main question then becomes: what factors contribute to the proliferation and scaling up of distributed biomedicine innovations?

La genetica della "pillola". Chiusure e aperture delle controversie mediche attorno alla contraccezione ormonale

Mauro Turrini (Université de Nantes, France)

Nel 1994, la scoperta della variante genetica di un fattore di regolazione della coagulazione –il Fattore V Leiden (FVL) –come causa di ipercoagulabilita è da subito applicata, a livello sperimentale, nello studio della pillola ormonale anticoncezionale. All'epoca la malattia tromboembolica venosa (MTEV) era già annoverata tra i più nefasti effetti collaterali della pillola. I risultati delle ricerche sono ambivalenti: da un lato il FVL aumenta notevolmente il rischio relativo di trombosi nelle donne che seguono un trattamento ormonale contraccettivo, dall'altro il rischio assoluto rimane comunque basso. La controversia tra chi sostiene e chi è contrario all'uso del test genetico per il FVL prima della prescrizione della pillola si risolve in pochi anni. La comunità medica si orienta nel giro di pochi anni verso un approccio largamente condiviso di orientare allo screening genetico solo quelle donne con una familiarità verso questa malattia. Tale controversia è stata recentemente riaperta "dal basso", in seguito alla lotta che le vittime degli effetti collaterali della pillola o le loro famiglie hanno condotto denunciando all'autorità giudiziaria e/o all'opinione pubblica le rare ma potenzialmente gravi conseguenze del metodo contraccettivo più comune. Il caso francese è da questo punto particolarmente significativo, non solo per la grande fortuna della pillola in questo Paese, ma anche per la battaglia di un'associazione francese delle vittime di embolia polmonare causata dalla pillola (AVEP), che reclama l'obbligo del test per il FVL prima della prescrizione della pillola e, infine, dalla difesa della libertà di prendere la pillola da parte delle agenzie sanitarie pubbliche e delle sociaté mediche di riferimento difendono questa scelta per motivi economici, sanitari e culturali.

Democracy in medicine: a comparative analysis on democratic discourses and implementations in precision medicine

Ilaria Galasso (Istituto Europeo di Oncologia - Università di Milano, Italy), Giuseppe Testa (Istituto Europeo di Oncologia - Università di Milano, Italy)

Precision medicine builds on large scale national cohort programs, aiming to better understand the connection between specific conditions and health outcomes through the collection and the comparative analysis of multiple 'big data'. Massive and continuous public participation is thus the essential core of the precision medicine research, and within this framework participation is proposed at many levels, in a model considering "participants as partners": in different degrees and modalities, participants are proposed to be involved in consultations about the research agenda, the priorities, and the strategies to address them.
Our paper focuses on two leading cohort programs, 100K Genomes Project (UK), and All of Us (US), to analyze the democratic model related to precision medicine. The democratic rhetoric and the related imaginaries are investigated by analyzing initiatives' official releases and stakeholders' assertions within fieldwork interviews; the asymmetries between the discourse and the implementation are explored by closely following the mechanisms of public consultation. As especially relevant factors, we consider: which categories of people are allowed/facilitated to participate in the research decision-making, which categories do actually participate, which kind of comments/proposals do they provide, which kind of interests they do represent, how and with which degree of transparency these public comments/proposals are taken into consideration and possibly translated into practice.
We observe that, at this stage, the democratic models analyzed are only partially aligned to the rhetoric that propels them: participation tends to be limited to experts and to be applied only to specific parts of the research design, and the actual impact of these participatory practices in only partially transparent and/or accountable. With these results, we lay the ground for a broader analysis on the feasibility, the limits and the advantages of the democratic model in medicine, and on its impact for the equitable pursuit of the public interest.

TRACK 8
The value of participation. Studying biomedical research participation through multiple heterogeneous valuation processes

Convenor: Niccolò Tempini (University of Exeter, UK), Lorenzo Beltrame (Università di Trento, Italy)

Working with big data: Changing forms of participation, value, and meaning in the era of data rich medicine

Amelia Fiske (Christian-Albrechts-Universität, Germany), Alena Buyx (Christian-Albrechts-Universität, Germany), Barbara Prainsack (University of Vienna, Austria)

Big data comes with many promises, from changing the face of biomedical research to heralding better health for patients. From lifestyle information, the digitization of health records, data from direct-to-consumer testing, drug trials, biobanking, and genetic testing, increasing domains of people's lives are 'datafied', meaning that more and more information about them and their lives are becoming usable also for healthcare purposes. In the process, plural forms of value are co-produced by and for researchers, health care practitioners, and patients. At the same time, deriving actionable insights for clinical practice and individual life choices remains a difficult challenge. As critical scholars have argued, 'big data won't cure us' (Neff 2013); turning data into meaningful information for clinical practice requires tremendous time, resources, and skill on the part of patients, families, and health care providers. In this paper, we argue that these various forms of 'data work' – the technological, analytical, and emotional labor necessary to make data clinically and personally significant –constitute another emerging form of 'participation' within the political economy of biomedicine. Working from, and building upon, the perspective of scholars within social and ethical studies of biomedicine, we explore a range of participatory forms of 'data work' that are necessary in order for big data to be actionable in daily life in relation to broader questions of value and knowledge production.

Value Making Practices in Abortion Pill Research

Morag Ramsey (Uppsala University, Sweden)

In Sweden, abortion pill research was positioned between a demand for better reproductive technologies and a demand for better drug standards and testing following birth defects resulting from the drug Thalidomide. This demand for better reproductive technologies was also positioned simultaneously as an individual rights issue and a means for controlling populations. This paper examines the process of clinically testing abortion pills in Sweden during the 1960s and the 1970s and more specifically how researchers justified this process. Following researchers through their clinical trial applications, academic papers, and newspaper interviews, this study focuses on how the researchers drew boundaries around what was considered valuable and what was not and how this shaped reproductive technologies.This paper argues that the convergence of individual bodily autonomy and national demographic goals created different valuations that, in the practice of developing technology, did not necessarily conflict. This study also shows that the tensions surrounding pregnant women as test subjects resulted in a legal amendment that positioned clinical testing on pregnant women as a necessary measurement in the face of global overpopulation. Although archival material from the test subjects' perspectives is limited, the participation of women in these trials indicated a multi-production of value concerning reproductive technologies. In some instances, women were brought in contact with abortion trials through Swedish institutions, in other instances through personal need and motivation. The participation and willingness of women in the trials was brought to a public point in 1983 when two women offered accounts of their experiences in the study.

By mapping these valuations we come to a better understanding of how a controversial subject such as abortion, and an abortion pill, carved out an acceptable space in several sectors of Swedish society. This study also emphasizes that tensions between different values are not always detrimental to collaboration.

Social media data as currency: beyond the metaphor

Niccolò Tempini (University of Exeter, UK)

Social media data, it has been argued, are the currency of the big data economy. But in what way are they so? Literature has not investigated the metaphor further. To look at how the debris of one's everyday can become today's new currency is the aim of this paper. To start with, the paper reviews how social media data have been seen to be currency: because they have value, because they circulate, and because they are accumulated. Here, I build on literature interested in the valuation, circulation and accumulation of data.
However, social media data are linguistic in nature, and are personal for their users. The data are valued in heterogeneous ways by multiple actors and in ways that are not at all "like currency". We know that the way a social media user values the data they generate and deposit in the system is very different from the way in which a secondary user values them. To explain how social media data can be currencies, we need to explain how the data achieve this translation and are able to move back and forth between regimes of valuation. This largely conceptual paper does this by mobilising the work of Wittgenstein and Graeber to read into and analyse the case of PatientsLikeMe, as already documented in the literature. It aims to provide a theory of "social media data as currency" focused on the process of translation.

The biovalue of donors' participation and human leucocyte antigens in the politics of UCB banking

Lorenzo Beltrame (Università di Trento, Italy)

Umbilical cord blood (UCB) is a rich source of haematopoietic stem cells used as a transplant for treating haematopoietic disorders and malignancies (e.g. leukaemia). Since its first use in clinics (1988), hundreds of public UCB biobanks have been established worldwide. The system managing whole process of UCB banking (i.e. collecting, processing, cryopreserving and distributing UCB) is often defined as a redistributive economy based on voluntary solidaristic donation. In this bioeconomy, UCB has a use value that is given by its clinical utility which relies on several qualities of the UCB: its total nucleated cell count (TNC), the quantity of CD34+ cells and its human leucocyte antigen (HLA) phenotype. UCB biobanking is highly costly and relies on the willingness of mothers to donate UCB. While Public Health Institutions promote and try to maximize donations they have also to face with minimizing the costs of UCB biobanking, by optimizing the collection of UCB units with high TNC, CD34+ and covering the HLA variability. Maximizing the ethical values of donation can result in an overflow of UCBs of insufficient TNC and CD34+ or of overrepresented HLA types, that increases the cost of the public banking system. Optimizing the banking of clinically useful UCBs, can in turn result in collecting practices which constrain donors' participation.
Through an analysis of the public UCB banking system in the UK and Italy, this paper explores how the value of UCB is actively constructed in a complex institutional choreography managing the tensions between the ethical values of donors' participation and the clinical use value of the inherent biological qualities of UCB units. The paper concludes by showing that biovalue is not simply realised by mobilizing the biological in market exchanges, but is the outcome of valuation practices aligning the politics of ethical values of participation with the biology of antigens within a polity-population.

What is the value of human milk? Human milk banking, informal sharing and commercialisation of human milk probiotic strains

Carmen Romero-Bachiller (Universidad Complutense de Madrid, Spain), Pablo Santoro (Universidad Complutense de Madrid, Spain)

Human milk is a peculiar biomaterial: hybrid, intercorporeal (Waldby, 2002) and liminal: is it a food? A tissue? A drug, given its immunological properties? Or all of these things at once? Human milk has been "the first body product to be institutionally organized in disembodied form" incorporated in proto biobanks such milk stations (Swanson, 2014: 14). Human milk also is gaining interest as lactancy advocacy, online and offline mothers groups, scientific evidence on lactation benefits for the mother---child dyad and the fired debates around all those issues are fuelling new forms of human milk circulation, sometimes connected with traditional forms of nursing and milk---kinship, sometimes as new sources of economic biovalour.
In this paper we analyse three different forms of human milk circulation that entail certain forms of bio---banking based on a current research carried out in Madrid: 1) human milk donation to the public regional human milk bank in a reference neonatology unit; 2) informal milk sharing between mothers; 3) and bioindustrial practices that use donated milk as a source of probiotics. We identify the entanglements and dis---entanglements (Callon, 1998), hybrid configurations (Hauskeller and Beltrame, 2016) and bio--- objectification process (Vermeulen et al, 2012) around those practices.
Avoiding classifying them as either altruistic or for profit; as generators of private economic value or social collective one; of empowered collective relations or bioeconomic passive individual consumers, we will suggest they articulate forms of "activation of care" that blur those divisions in entangled relations fueled, by affect, interest and obligation (Santoro y Romero---Bachiller, 2017). We believe this case to be a particularly interesting site to reframe considerations of value production in the bioeconomies, asthey question and problematise what is to be considered "valuable" besides, but not away from bioeconomics, thus transforming the issue of value all together.

The moral significance of 'knowledge problem' for the governance of digital phenotypes

Michele Loi (University of Zurich, Switzerland)

Coproduction initiatives need to appeal to moral and social values in order to generate social support and social aggregation by ordinary citizens and patients, towards their goals. Yet moral values imply moral constraints, most importantly constraints concerning the *governance form* of the resource create through co-production.
Specific organizational forms, like the data cooperative (Hafen, Kossmann, and Brand 2014; Riso et al. 2017; Vayena and Blasimme 2017) have been argued to be particularly fitting to the founding values of bottom-up coproduction initiatives involving individual and collective digital phenotypes. Digital phenotypes can be defined as aggregations of information in digital form from heterogeneous data sources, including both data from identifiable individual (personal data) and anonymous and anonymized data. Organizational forms such as the data cooperative (as a case study of bottom-up organization) are grounded in the idea that the control of resources and the distribution of benefits generated by coproduction should revolve around the interests and values (including non-selfish values) of the data 'owners' (understood as data subjects in the sense of the personal data legal framework, or as anonymized contributors of data to the project).
In this contribution, I explore one limit of an organizational form grounded in the vale of 'control by the data contributors' and explain its implication for the ethical governance of data cooperatives (and similar, bottom-up forms of organization).
First, I will argue that the main ethical problem is an eternal problem affecting all forms of generalized knowledge, that is only misleadingly characterized as a problem of privacy or data protection, namely the fact that all generalizable knowledge (e.g. smoking contributes to causing cancer) has an impact on groups other than the data subjects and data contributors.
Second, I will argue that because of this, a conflict of interest between data subjects/contributors and other moral subjects can arise.
Third, I will point out that this conflict also arises when generalized knowledge is not formalized as declarative knowledge, but contained as 'generalized technological know-how' in the form of predictive algorithms whose ways of knowing are partially opaque to their designers. So, the problem is particularly relevant for projects involving data mining.

Fourth, I will argue that data cooperatives and similar entities should have ethics committees whose specific mission should be to identify conflict of interests between the data subject/contributors, on the one hand, and society and future generations as a whole; and, on the other, to invoke the interests of society as a whole and future generations, where necessary, as an additional moral constraint.

TRACK 10
The Dark Side of Digital Health
Convenors: Antonio Maturo (Università di Bologna, Italy), Luca Mori (Università di Verona, Italy), Flavia Atzori (Università di Bologna, Italy)

L'utilizzo di app per la gestione della malattia cronica: una salute tecnologizzata e molecolare?
Alberto Ardissone (Università di Bologna, Italy)

BACKGROUND. Il crescente fenomeno delle app ha portato alcuni studiosi (Cipolla, Ardissone 2017; Lupton 2013 e 2014; Topol 2015) a interrogarsi circa la potenzialità di questi software di incentivare una medicina laica, soggettivizzata e fondamentalmente basata sui numeri, promuovendo una nuova concettualizzazione del corpo umano e della salute in una modalità da self-entrepreneur (Maturo, Setiffi 2016). Una salute, cioè, rispetto alla quale l'unico vero protagonista e responsabile sarebbe l'individuo.
OBIETTIVO E METODO. Data la rilevanza del tema si è inteso sondare l'opinione di soggetti con malattie croniche sulle Information & Communication Technologies, in particolare web, social network sites e app. Questa ricerca è stata condotta in Italia nell'estate del 2017, reclutando gli intervistati sui gruppi Facebook single issue per patologia, raccogliendo 3.193 risposte. L'obiettivo è stato determinare la differenza delle opinioni esistenti tra coloro che utilizzano le app e coloro che invece non ne fanno uso, verificando altresì gli eventuali diversi giudizi sugli esiti che le tecnologie hanno sulla relazione con il medico e in merito ad aspetti quali la propria competenza, auto-gestione e accettazione sulla e della malattia.
DISCUSSIONE/CONCLUSIONI. La ricerca mostra anzitutto l'esistenza di una divisione piuttosto netta tra chi elogia le app per i vari contributi che esse apportano in ambito di salute e malattia, come il miglioramento dell'adesione alla terapia e della gestione della malattia, nonché la sua conoscenza, e chi, invece, ritiene ancora troppo elevati i limiti. Inoltre, rispetto agli esiti delle tecnologie sulla relazione con il medico e riguardo ad elementi quali la personale competenza, auto-gestione e accettazione, emerge la suddivisione in quattro possibili gruppi; quello aduso alle app è stato nominato della tecnologizzazione molecolare, in quanto nel sottolineare come per questi soggetti ogni aspetto della propria malattia sia importante, va altresì notato che esso viene vissuto e gestito individualmente con l'ausilio della tecnologia legata alla m-Health, risultando assai poco interessati alla relazione con il medico.

Ego in Numbers. Quantified self, data doubles and the neoliberal subjectivation process
Luca Mori (Università di Verona, Italy)

By reviewing the most recent health sociological literature on quantified self and self tracking, the presentation will focus on the concept of data double. Firstly coined by K. D. Haggerty and R.V. Ericson1 in a paper on surveillance policies and then developed by M. Ruckenstein2 in an article on heart rate measurement, this expression refers to the technological constitution of a self image through the reassembling of different data flows concerning individual physical and psychological states and behavioural activities. Though many have pointed out the importance of describing and analysing the different ways subjects construct and interact with their data doubles, what is missing is an overall reflection on the meaning of this reality and the reason why an increase amount of trust seems to be allocated to data doubles.
The presentation will argue that to better understand this phenomenon one has to place it within the neoliberal cultural milieu. As it is well known, neoliberal culture finds its core value in competition. In its frame, competition is a governmental regime that has to be elicited and expanded in every area of social experience. From work to friendship, from sentimental life to civil and political engagement, every human relation has to be conceived as a competition or as an investment with a view to a future opportunity. One could think of quantified self as a practice to increase individual awareness of personal potential and limitations in order to be better competitors in the neoliberal society. But this is just one part of the story. What is argued is that quantified self

implies a radically different kind of subjectivation process, one that basically dispenses with the social relations. The interactions with data doubles represent, in fact, a substitute of those social interactions traditionally considered essential to the process of subjectivation. Given that competition is the general relational regime, and since competition is naturally characterized by a strategic orientation toward the others, how could one successfully rely (or base) his subjectivation process on social relations? Data doubles constitute, so to speak, an alternative relational pole, which is necessary to proceed in being a subject in neoliberal societies. In conclusion, the presentation will show how the cyborgization of individuals, next to a performative aspect, entails a less apparent change in subjectivation that should be researched and discussed more thoroughly.

Digitalized Health, Collaborative Motherhood and Food Allergies

Ebru Kayaalp (Istanbul Sehir University, Turkey)

This paper discusses how online mother support groups make daily health decisions about their kids' allergies. The uncertainties about food allergies and the challenge of making decisions on a day-to-day basis necessitate medical advice requiring immediate action, which cannot be provided by doctors 24 hours a day. To manage the uncertainties concerning allergies, the mothers have created online collaborations and started to make daily dietary decisions in these virtual communities after having discussed the children's bodily reactions to each specific food. These allergy platforms cannot be simply considered sites in which people are sharing health information with each other; but rather venues where individual health decisions are being concluded in a collaborative manner in real time.

Through an ethnographic analysis, this paper seeks to examine how this new communication established among mothers through Facebook has transformed the decision-making process concerning health issues, and tries to answer these questions: How does digital media contribute to changes in mothers' experiences with dealing with their kids' allergies? Do mothers' self-tracking practices create new forms medical knowledge and regime? Are the mothers getting empowered or disempowered since the responsibility concerning their kids' health care shifts from doctors to them? Do these online support groups in any way transform the mothers' traditional relationship with their doctors and their perceptions about the dominant medical discourse? What do these digital practices tell us about new motherhood and new digitalized medicine?

I hold myself (ac)countable: the relationship between digital meditation and neoliberism for the millennials

Antonio Maturo (Università di Bologna, Italy), Veronica Moretti (Università di Bologna, Italy)

It is all too evident how much our age is the age of anxiety. Our society is untraditional and therefore unpredictable; we're 'on' 24/7; and thanks to technology, communication (and concerns) are constant. As an antidote, we look for some way to slow down, or in any case, some way to take back control of ourselves. One such way is meditation. There are, of course, also dozens of apps for meditation.

In this presentation we discuss sociological research involving 145 students at an Ivy League university. The students meditated with the app HeadSpace and then responded to some questions.

The students were asked to download and follow the instructions of Headspace (one of the most popular meditation app). The promo version of Headspace offers users 10 meditation sessions, each 10 minutes long, guided by a virtual coach. Thirty days after they downloaded the app, students were asked to fill out an online questionnaire.

Generally, students' comments about their experience of digital meditation were positive, reporting that meditation reduced their burden of stress. However, some responses were more ambivalent. For several students, Headspace acted as a 'digital therapy' helping them to cope with 'a demanding and stressful world' and other students reported that digital meditation was itself 'stressful'. Some students were disappointed that they could not compete with friends in doing digital meditation because of the lack of scores.

Therefore, it can be said that some millennials frame an activity like meditation – once considered as an alternative lifestyle –with a neoliberal view (medicalization, quantification and competition).

Design strategies and tactics as the meeting of two infrastructures: a case on e-prescription in Italy

Andrea Resca (Università LUISS "Guido Carli", Italy), Miria Grisot (Westerdals Oslo, Norway)

The expectations for better cost control fueled the interest for e-prescription systems in European countries during the past decade, and many countries are currently in the process of implementing eprescription solutions. E-prescription solutions support the electronic flow of information related to prescribed medications. Digitalization of prescription handling has proved to be challenging (e.g. Lichtner, Venters, Hibberd, Cornford, & Barber, 2013; Vassilakopoulou, Tsagkas, & Marmaras, 2012). As prescription practices are distributed across a network of actors, e-prescription solutions work across organizations and levels of care. In addition, they are at the intersection of multiple logics: expenditures control, transactions traceability, doctors' accountability, healthcare supervision, citizens' empowerment.

Here, we approach the process of putting in place e-prescription solution from the perspective of information infrastructures theory (Hanseth & Lyytinen, 2010). An information infrastructure is identified as "a shared, open (and unbounded), heterogeneous and evolving socio-technical system (which we called installed base) consisting of a set of IT capabilities and their user, operations and design communities" (Hanseth & Lyytinen, 2010, p. 14). Investigating two different e-prescription infrastructures – national and regional –the aim is to conceive the design of an information infrastructure as the result of the negotiation process between regions and the central state. The dynamics of this negotiation will be investigated turning to Dewey's work on collective political action and the notion of public will be central for this proposal (Dewey 1954 - first edition Dewey, 1927; DiSalvo 2009). With the notion of public we intend an entity that takes shape due to the necessity to deal with a specific issue and its future consequences. In our instance, regions and the central state can be considered the publics involved in the eprescription project as an issue to be faced through a specific design activity.

De Certeau's (1998) distinction between strategy and tactic is helpful for investigating the development of the e-prescription project according to the Emilia Romagna region, the region taken into consideration in this case. Strategies are intended as structures of power able to prescribe behaviors and course of action. In contrast, tactics are intended as means developed to circumvent or negotiate strategies and then to achieve own objectives. To say it differently, a region tactic responded to the strategy followed by the central level to implement the project in question. Tactics tend to substantiate in adjustments to, appropriations, or manipulations of design products and processes (DiSalvo 2009).

The design of the e-prescription solution determined who participated, how, and in what context allowing the figuring out of a public here intended as a series of elements forming a coalition to achieve a specific goal. In turn, the region followed its own strategy to achieve the implementation of the e-prescription project in the 11 Local Health Units (ASL), GPs and PEDs associations, pharmacy association, accredited hospitals etc. that followed their own tactics in order to accommodate the region strategy. The analysis can continue at a lower level as the strategies followed by LHUs, GPs and PEDs associations, pharmacy association, and accredited hospitals to implement the regional decree will enable related tactics by GPs and PEDs, etc. including GP and PED prescription system providers, booking and delivery system units in hospitals and health centers, and booking/delivery system providers in pharmacies.

Information infrastructures dealing with an issue like the implementation of an eprescription project and the related designerly means enacted provide an opportunity for analyzing the negotiations that such a project implicates. Design strategies and design tactics confront each other giving the opportunity for considering players involved, the different logic followed and the values at the basis of their actions.

Tracks of Thematic Stream 3

Innovation, design and standardization from below

TRACK 14
Engaging with Technoscience: Articulation, Invisibility in Use, Ambiguity
Convenors: Alessandro Mongili (Università di Padova, Italy), Giuseppina Pellegrino (Università della Calabria, Italy)

Engaging with digital platforms: AirBnB and the invisible work of users

Attila Bruni (Università di Trento, Italy), Fabio Maria Esposito (Università di Trento, Italy)

As from the seminal work by Star (1999) and Star&Strauss (1999), technologies and infrastructures always engage their users in some kind of more or less visible 'work'.
Since 2010, AirBnB – a company with a homepage for people to list, find and rent lodging – has expanded rapidly in many European and western cities. Establishing an apparently flat hierarchy and dispersed organization (in which hosts have a certain degree of freedom in listing their space and organizing it, and guests are able to search the listings and directly interact with the host), the company maintains its central role by managing payments, providing tools that enable interaction between users, and gathering information about them. Most of the site content is thus produced by users either as a result of their interaction (via users' feedbacks) or as a prerequisite to start the interaction itself (via profiles and listings). In fact, the crucial element for the well-functioning of this network, which becomes possible and visible through the Airbnb platform, is leaving a broad space of engagement to the users while maintaining a certain degree of control through a set of obligatory passage points. These are to find in the calendars, statistics, chat and ratings provided by the company on its platform, thanks also to the broad diffusion of smartphones and infrastructures for mobile technologies (which allow to always be reachable and connected).
The AirBnB phenomenon is thus a perfect case to look at the ways in which digital platforms engage their users in forms of work and consumption previously unknown, so that the users and their relationship can be thought as 'the product' itself (Hyysalo, Jensen and Oudshoorn, 2016). Referring to an in-depth research on AirBnB hosts recently conducted in a touristic north-east Italian province, the paper will critically explore the everyday practices of house-management enacted by the hosts, showing various forms of visible and invisible work performed by them in order to keep the platform active and fulfill the company-user relationship.

From trash to life: When objects' potencies drive energy inventiveness, sustainable solutions, resistant practices

Alice Dal Gobbo (Cardiff University, UK)

Sustainable transitions are often seen as driven by (institutionalised) techno-scientific innovations to be "adopted" by citizens. Such a simplistic top-down view has been contested by showing that people's engagement with technologies is always contextual, creative, emergent and constitutes integral part of the deployment, care and maintenance of technological infrastructures. With my paper, drawing on an ethnographic study of everyday energy transitions in the North East of Italy, I would like to reflect on bottom-up innovations for sustainability that emerge from everyday practices of care and restoration/recycling. These often take the form of "primitive technologies", as a participant called them. Old appliances are put back in working shape, disposed of objects are recovered and their materials given new life in novel contexts, creative energy systems get assembled. Similar activities contribute to disrupt a number of binaries through which we normally think innovation by inserting banal (or indeed "trash") objects in formal energy infrastructures. As such, they are evidence that sustainable innovation can come from the bottom-up inventive, singular, *re*discovery of things as against from top-down implementation of scientific discoveries only. They also confuse the distinction between (productive) work and (consuming) use. Simultaneously, by performing an anti-entropic work, they challenge the idea that use is necessarily dissipative and entropic. Finally, we are called to confuse the boundaries of agency as we see that objects (not only human beings) have the potency to generate creative technological assemblages. The material qualities of things, in fact, not only embody certain affordances: they

also have the power to affect human beings, to move them to an action that confuses one last binary – that between trash and objects of use: apparently disposable matter comes (back) to life.

Text classification from below: a social epistemology of the uses of machine learning technologies
Eglantine Schmitt (Sorbonne Université, France)

There is a general trend of beliefs in the media, but also within tech companies and their customers, that machine learning technologies can automatically classify and organize elements with little to no human intervention, nor knowledge from the world. Those technologies are deemed to be able to find and reveal the natural joints and articulations of a given data set, while the naked eye could not see them. Through an ethnography of text classification in a software company, we want to show that there is no naturally occurring divisions in text corpora, hence clarifying the role of machine learning technologies applied to data of textual nature.
First, we show how much of the final classification relies on the many choices of computational linguists, which are human experts in ontology creation and semantic analysis. Automation does not replace humans in making decisions, but carries out human decisions through computation. Those choices affect how the world is divided into categories, relating to the well-known problem of building classifications (Bowker & Star, 1999; Desrosières, 2010; Amossé, 2013), and how to link textual elements to those semantic categories. Then, we show how those choices are in turn shaped by internal and external influences, including the epistemic regimes in which computational linguists think, the software constraints, the internal standards of work of the company, and the expectations of the company's customers.
In this context, machine learning technologies play the very specific role of a recommendation system, helping computational linguists by identifying and suggesting relevant patterns and prominent phrases, which can be added to the classification system. Classifications are built from below through the combination of computational and human work.

Becoming an infrastructure: co-designing for common values in a European project
Mariacristina Sciannamblo (Madeira Interactive Technologies Institute, Portugal)

The STS-informed debate around the concept and process of 'infrastructuring' has shown how sociotechnical development is anything but a linear and pre-given process, revealing the multiple tensions and frictions that involve humans, artifacts, practices, and expertise. Since the seminal elaboration by Star and Ruhleder (1996), authors who have mainly focused on studying information infrastructures have emphasized the process of "becoming" surrounding infrastructures, developing an ecological viewpoint which take them as a boundary phenomenon that intersects multiple arenas (Mongili and Pellegrino, 2014). The process of "becoming an infrastructure", which is usually visible when breakdowns occur, is instead open-ended and visible when it comes to co-design and participatory approaches to technological development.
In this presentation I would like to discuss the boundary character of infrastructuring as it unfolds within a European co-design research project called *Commonfare*, which aims to confront societal challenges (such as precariousness, low income and unemployment) by levering the potential of digital technologies and developing a digital platform in order to allow people and social groups to inform and be informed about local welfare policies, and to support grassroots initiatives based on social cooperation and mutual-aid practices. The project involves three countries (Croatia, Italy, and The Netherlands), partners (NGOs, universities, research centers, technical partners, the European Commission), expertise (from design to social sciences, from arts to computer science), and local participants (precarious workers, unemployed youth, non-Western migrants). By adopting an understanding of infrastructuring as 'boundary phenomenon' I will problematize the multiple tensions and frictions – and the consequent care work – that occur among these diverse actors, such as, for example, when research participants reject the institutional labeling of funding agencies or when design work finds itself grappling with various and often conflicting demands.

Rearticulating Return of experience: Towards a participatory and flexible REX Information Infrastructure for safety and security management

Colin Glesner (Université de Liège, Belgium)

Our technological cultures are increasingly confronted with natural catastrophes, industrial disasters, intentional unlawful acts, or a combination of these elements. Information Infrastructures dedicated to manage post-crisis are key elements to cope with these new risks and the challenges and threats they pose. A system, called REX (for return of experience), aims, in principles, on the one hand at engaging users (crisis actors) through "collective learning processes" and on the other hand, at drawing teachings from previous crises and getting prepared for future ones. Such information infrastructures have been institutionalized and systematized in various high-risk industries (e.g. aviation industry, hospitals, nuclear research) as well as at the national scale for safety and security-related crises in order to increase reflective practices and stimulate a learning process. In Belgium, as elsewhere, several crisis management actors regularly call for the establishment of such an information infrastructure. But how can this system be implemented and "made to work"? Leaning on literature and existing REX examination, we highlight REX potential pitfalls caused by linear, top-down and technocratic approaches. Thereafter, through interviews and emergency exercises participatory observations we analyze the Belgian potential users' (police, fire and medical services and political/administrative authorities) representations and practices. Based on this, we suggest and discuss an alternative REX model dealing with such pitfalls. The proposed REX builds on a bottom-up, flexible and non-linear approach that rearticulates the relationship between its designers (REX producers) and users (crisis actors) by engaging crisis actors in its production. Thereby, the project aims to produce robust and reflective conclusions and recommendations in order to improve our technological systems' resilience.

Pulling it all together: **doing articulation in a technology cluster working group**

Oana Mitrea (Alpen-Adria Universität, Austria)

In connection with the sociological theories of articulation and invisible work developed by Star and Strauss (1999) as well as Bowker and Star (1999) the current paper focuses on the analysis of the activities and IT Infrastructures necessary to build and maintain a working group on *smart system integration* within an Austrian Microelectronics Cluster. This working group gathers technology researchers and developers from diverse fields: materials for microelectronics, sensors, semiconductors & printed boards, modelling and simulation, and embedded computing. Its mission is to foster scientific and technological innovation in this field and so contribute to the establishment of South Austria as a technology focal point on the international scene.
The thematic working groups in technology cluster organizations represent a rich field for STS sociological analysis. The heterogeneity of backgrounds, perspectives and time resources of the group members coming from academia, technology production and business consultancy usually requires a flexible reaction to often unexpected developments. Articulation tasks understood as the quite invisible effort to pursue the red line of the group's mission are needed quite often and play therefore a meaningful role here.
The paper focuses on the building and negotiation phase after the constitution of the group in a kick-off meeting. A great amount of work is invested in the collection, synthesis, and communication of the group views about the definition of the field itself (smart system integration) and the measures required to develop the topic regionally (such as networking events, conferences, trend analyses, etc.). These tasks are carried out via physical as well as ICT-based channels and are simultaneously supported by many IT tools more or less compatible to each other (such as project management app, time management app, scheduling, e-mails, CRM - customer-relationship management, etc). We consider these *back-stage* and *taken for granted activities* forms of articulation work and important parts of innovation itself. Their revealing analysis will theoretically contribute to the sociological theories of articulation and invisible work within STS.

TRACK 15
Standardization as a Driver of Innovation
Convenors: Stefan Reichmann (University of Graz, Austria), Teresa Macchia (Digital Catapult, UK)

Constructing the metagame – how innovations in gaming relies on building the standards

Paweł Gąska (Nicolaus Copernicus University, Poland)

No successful innovation in gaming has ever appeared out of thin air. This paper argues, that new ideas are derived from a state of a specific metagame at the time of their conception (and of their playtesting). A metagame is a complex set of rules and dispositions that shapes how a game will be played. It encompasses all the manners in which a particular type of game is supposed to be played, and all the different ways that the users actually wants to play it. Even though innovations provide new concepts to the specific metagame, they are still deeply rooted within this system and have to abide by its rules to succeed. Every so-called 'original idea' have to negotiate its continuous existence within the field of gameplay, which is heavily shaped by the metagame's standards. To convey a novel idea (and even to construct one in the first place) one needs to be well versed in the common concepts first.
For this paper I want to focus on the analysis of 4 major examples of games, that attempted to innovate something. Two of them will be stories of success (*World of Warcraft* and *The Witcher 3*), two will be stories of failures (*The Secret World* and *Remember Me*). I will look at some of their mechanics and inquire about their design processes and how they were received by the players. With this I can provide a thorough analysis of how they established themselves as 'good, innovative games' (or failed to do so) and how the metagame shifted due to their success. In my research I am using methodology of Actor-Network Theory, augmented with certain ideas of Pierre Bourdieu, which makes the whole model far more suitable to media studies or game studies.

Standardising professional vision in embryo imaging

Manuela Perrotta (Queen Mary University of London, UK), Alina Geampana (Queen Mary University of London, UK)

This paper aims at the exploration of the sociotechnical turn toward visualisation in biomedicine, looking at the case of the diffusion of Time-Lapse Imaging (TLI) tools in embryology. This paper stems from a research project that investigates the case of TLI in fertility treatments, which allows professionals (and patients) to carefully observe embryos during their life in vitro. TLI is now available for monitoring the development of embryos and is used as a tool for embryo selection.
The selection of embryos to be transferred is an area of great interest for IVF researchers. Several embryos can be produced in each cycle of treatment and transferring more than two embryos is discouraged, as this might induce multiple pregnancies that have potential complications and bring severe health risks. Therefore, to improve pregnancy rates, there has been extensive research in a variety of tools that enable prediction of which embryos have greater pregnancy potential.
Based on ethnographic data and document analysis, the paper examines how the TLP tools represent an attempt to inscribe the professional vision of embryologists into the design of in-house algorithms and automated processes of embryo selection based on morphological and morphokinetic criteria. Inspired by an STS sensibility, the paper investigates how the processes of standardisation of visual criteria and their inscription into algorithms and software follow different trajectories, showing how different approaches to standardisation require different strategies of mediation between local practices and universal criteria.
Particularly, the paper explores how professionals engage with the pursuing the ideal of mechanical objectivity in embryo imaging and the scientific research on embryo development, investigating how the processes of co-production of these tools are involved in the broader dramatic changes in the biomedical landscape.

Standardized innovation in small businesses, is it possible?

Cassia Corsatto (Universidade Federal de São Carlos, Brazil)

According Schumpeter, innovation occurs in strictly technological arena, observing impacts for firms, strategies they adopt and market survival. This concept evolved an approach that opposes the technocentric view of innovation, proposing an innovation that integrates business and society, is accessible to individuals and team's generators of innovative ideas. Nowadays, these approaches extrapolate the technological aspect, both in understanding about what is to innovate, as in characters who makes part of the process. This vision sees the innovation like an economic and social dimension, involving knowledge, technological or not, focusing on competitiveness and socioeconomic sustainability. These issues give rise to reflections about the importance of standardization to drive innovation and establish a new paradigm, shifting rules that drive the innovation performance. This context establishes challenges to remodel what is being done, to new ways to do, when transferring the creation of innovation to people, producing novelties and to entrepreneur when educates the market to consume them. So, how to use standardization as a driver of innovation? I defend a holistic-systemic approach, involving set of behavioral, social, institutional and market variables that impact innovation, with participation and interactions of actors like universities and others, can provide learning and act as preponderant factor to innovate, especially in Brazil, where there are large contingent of small companies and the understanding of how innovations occur is still unclear. A survey applied in 45 clothes manufacturing in State of Goiás, Brazil, showed that only three of them to know the meaning of innovation. If these issues are carefully observed by policy makers, it opens a field for interdisciplinary studies, taking possible the occurrence of standardization as a drive to innovation in small companies.

TRACK 16
From grassroot to citizen-centric innovation: the collective design of emerging innovation ecosystems

Convenors: Massimo Bianchini (Politecnico di Milano, Italy), Stefano Maffei (Politecnico di Milano, Italy), Paolo Volonté (Politecnico di Milano, Italy)

The Maker Movement and the future of work

Federico Ferretti (Joint Research Centre), Ângela Guimarães Pereira (Joint Research Centre), Paulo Rosa (Joint Research Centre)

The changing nature of work has recently become a topic of widespread interest in the media and online outlets as well as in policy, the academia, and among experts and professionals.
While institutions struggle to grasp the dynamics of emerging business models and how they affect organizational and managerial styles and social life, grassroots initiatives relentlessly advocate for always new forms of open and collaborative engagement. Every day new ideas, practices and tools are put forward by groups of 'social innovators' or simply, tech enthusiasts and community members.
We argue that the issue of the future of work needs a careful reflection beyond the mere aspect of employability, also focusing on how individuals respond to impending needs by imagining and inventing new ways of working that sometimes mismatch with those foreseen by the mainstream.
To address our enquiry we first depart from an analysis of the prevailing narratives on the future of work in the media and scientific literature, and subsequently make use of focus groups and in depth interviews with members of the Maker Movement as a particular context of experimentation with co-production practices, other than a social phenomenon receiving increasing institutional attention.
Through such preferred channel of investigation we are capable of unveiling what are additional drivers beyond the main circulating narratives on the future of work where IT is primarily looked at for its salvific role. Our study points out a number of elements (e.g. the heterogeneity of the Maker Movement, the different meanings of work, the community aspirations, etc.) that are considered fundamental in developing a vision on the future of work. Perhaps it is time to abandon the reductionism of a consistent single vision allowing space for additional 'futures of work' to be envisioned 'from below'.

In between collective design and collective construction: a case of collective architecture practice.

Alvise Mattozzi (Libera Università di Bolzano, Italy), Fabio Franz (University of Sheffield, UK)

We intend to present a specific case study of collective architecture, which we have observed by a short participation in it. The case study is a specific case of a broader research on eco-social design practices.
Whereas the case fits well with the general issue of "Technoscience from below" as well as with the more specific issue of grass root and citizen centric collective design, it touches only marginally the issue of novel technologies – at least as addressed in the call for papers with reference to maker spaces, living labs, experience labs. Indeed the kind of technologies we have observed and used on the construction site were quite "traditional" as for construction and carpentry.Nevertheless, we will show how this construction site works as a site of collaboration also thanks to collaborative technologies – especially internet based ones, such as arquitecturascolectivas.net or www.grrr.tools – which, however, do not play a direct relevant role on the very construction site. By describing our specific case, we will address few issues that we consider key for discussing co-design and co-production:

- the role of the designer in these processes
- the role of artifacts
- the role of blueprints, which in our case were missing (at least from the construction site)

We will tackle these issues comparatively, by taking into account STS literature about co-design, architectural practices, design practices.

Design come facilitatore delle logiche di accesso a prodotti, servizi e sistemi

Lucilla Calogero (Università Iuav di Venezia, Italy)

Le condizioni del contemporaneo determinano una modificazione del modo di intendere prodotti, sistemi e servizi caratterizzati dal processo complessivo e condiviso del design (Bassi 2014) nelle sue molteplici e puntuali declinazioni disciplinari.
Muovendo da tale premessa, il contributo approfondisce la rilevanza acquisita dalle logiche, non solo fisiche-materiali ma anche connesse agli immaginari e alle identità socioculturali (Magatti 2009; Floridi 2016), di *accesso* e *condivisione di prodotti, sistemi e servizi* fruiti senza forme e modalità di possesso, bensì attraverso semplice utilizzo e impiego istantaneo, temporaneo o permanente. Tali dinamiche non configurano il superamento della necessità di prodotti, sistemi e servizi ma introducono logiche di un diverso utilizzo quali-quantitativo delle merci, riferibili alla dimensione socioculturale dell'immaterialità (Flusser 2003) e al riproporsi delle opportunità dell'accesso allargato alle risorse, sia tecnico-fisiche che culturali-conoscitive e alle condizioni abilitanti.
Contestualmente, l'idea di *sostenibilità* rapportata al progetto evolve, assumendo un'accezione integrale che non riguarda unicamente il prodotto ma si estende a contemplare un sistema complessivo configurato da una dimensione insieme spaziale-sociale e socio-tecnica (Sanders 2008; Ceschin 2016) che ricongiunge valore economico e valore sociale in un'ottica di lungo periodo. Si parla in tal senso di *economia della contribuzione* e *generatività sociale* (Khanna 2012; Stiegler 2016; Magatti 2017) come modelli in grado di alimentare *forme di innovazione dal basso*.
Il contributo propone l'individuazione di alcuni orizzonti di senso di riferimento per il design volti all'innovazione intesa come processo integrale che investe la dimensione umana, culturale e organizzativa di un'intera comunità; tali prospettive emergono dal confronto con una serie di temi che riguardano: 1. la *decentralizzazione* come diversa forma organizzativa dei processi guidati dal design; 2. la rinegoziazione dei ruoli che assume il design e la riterritorializzazione dei luoghi entro i quali conduce la sua missione operativa di *costruttore di senso* (Krippendorf 2006; Verganti 2009 e 2017), attraverso un approccio *sistemico, sperimentale e clinico* (Maffei 2010); 3. lo sfruttamento delle potenzialità dell'*interconnessione* come reale metafora di uno spazio per l'insediamento di una semantica progettuale rinnovata, in grado di dialogare con gli scenari configurati dall' *Internet delle cose* e dall' *Internet dei comportamenti* (Celaschi 2017) e situata nelle condizioni della contemporaneità che caratterizzano le culture di riferimento per il progetto: l'impresa e la società.

Collaborating with whom? Enabling the sharing economy as a co-production with multiple local actors

Giuseppe Salvia (Politecnico di Milano, Italy), Eugenio Morello (Politecnico di Milano, Italy)

Sharing Economy (*SE*, aka collaborative consumption) defines the fast-spreading phenomenon of people granting each other temporary access to under-utilised physical assets (Frenken and Schor, 2017), e.g. empty rooms or rides.
Triggered by the economic crisis and enabled by the wide availability of ICT (Mazzucotelli Salice and Pais, 2017), this socio-technological innovation is reshaping the structure of urban practices and social dynamics, from hierarchical or dualistic (e.g. top-down) towards rhizomatic patterns (i.e. many to many).
SE services are generally based on interactions and transactions between peers, leading to forms of commons-based peer production (Benkler and Nissenbaum 2006). The conventional boundaries of the user interpretation become blurred, as people engaged in SE may be providers and clients simultaneously.
SE is attracting major investments and growing attention for the potential environmental sustainability, social inclusivity and business opportunities. Nevertheless, detrimental unintended effects are emerging. Such technical innovations are socially constructed and adapted into daily practices and routines (Pinch et al 1987; Shove et al 2012), which may not necessarily coincide with the ones envisaged by scholars or triggered by the niches of innovations.

The authors' research group contribution in the EC funded Sharing Cities project aims at better understanding citizens' needs and habits to inform the design and facilitate the uptake of novel urban sharing services. A participatory process was set-up to engage citizens of the Milanese pilot area through multiple research activities which explored levels of knowledge, perception and practices of sharing in the fields of mobility, food, energy, community and assets.
Drawing on these, we argue that SE technological measures should enable the co-production of artefacts and initiatives through the engagement of multiple type of actors (e.g. citizens, municipalities, businesses) who share their assets through a digital and offline platform for the achievement of a common goal, with positive impact at the (hyper-)local scale. The concept of a situated eco-system enabled by digital sharing platform will be presented at the conference, together with the proposal of a consortium of local and sovra-local actors for the connection of people-public-private partnerships.

Design e *open innovation*. Ruoli e processi abilitanti nell'Industria 4.0
Dario Martini (Università Iuav di Venezia, Italy)

Il prospettarsi di un paradigma industriale contraddistinto da un fitto regime di connessioni reciproche tra designer, utenti e imprese (*Industria 4.0*) apre a nuovi assetti progettuali che individuano i potenziali agenti di innovazione al di là dei tradizionali organi aziendali, in reti sociali aperte e collaborative.
Cambiano gli esiti del processo, nel momento in cui l'innovazione si individua sempre meno nelle qualità specifiche di un prodotto o servizio e sempre più in una dimensione di sistema, sulla base dell'impatto sociale, dell'innovazione di significato, del valore dei progetti in quanto parte di reti più estese (*Internet of Things*). Cambiano, di pari passo, gli approcci e gli strumenti progettuali, imponendo una revisione delle pratiche e della disciplina stessa del design.
La definizione di nuove teorie, strategie e ruoli non può prescindere da un confronto diretto con gli effettivi spazi e soggetti di questa "quarta" trasformazione, individuandoli – al di là delle logiche *crowd* e degli orizzonti*Big Data* – nella specificità di un contesto territoriale definito (*small-local-open-connected*).
A partire dalle considerazioni emerse nel progetto di ricerca FSE *«L'impatto dell'industria 4.0 sui modelli di business delle imprese del Made in Italy - Design e nuovo paradigma open per le imprese del Made in Italy»*, in corso di svolgimento presso l'Università Iuav di Venezia, il contributo mira a esprimere i rapporti fra i processi di *open innovation* e i corrispondenti atti di facilitazione, indotti dall'applicazione di metodologie progettuali caratterizzate dalla condivisione di ruoli (*co-design*) e informazioni (*open design*).
A partire dall'analisi empirica di un caso studio – l'azienda partner del progetto di ricerca, operante nel settore dell'automazione industriale – il contributo mette in discussione il ruolo delle cosiddette *tecnologie abilitanti*, individuando la necessità di collocarle, ai fini dell'innovazione, in percorsi valoriali consapevoli, abilitati da azioni e saperi progettuali.

User and design innovation in fashion practices within urban collaborative spaces: myths and truth.
Chiara Di Lodovico (Politecnico di Milano, Italy)

The study explores and analyses the recent development of open and collaborative fashion design and making practices in urban context. In recent years, the digital democratization has fostered a concentration of various kind of innovation urban spaces enabling citizens and creative communities to meet, evolving a collaborative innovation culture, including the field of fashion design. In particular, Fab Labs and makerspaces could offer services and promote activities to support users and designers to prototype personal and professional fashion solutions. Many experts are investigating the innovation potential developed by these spaces, adopting an optimistic perspective. Despite some studies about the open, shared and collaborative dimension of digital fashion, the literature review has enlighted no reasearch focused on its relationship with Fab Labs. Aim of the study is to start a critical reflection about the possible role of Fab Labs in collaborative fashion practices. A desk research was conducted through certified channels and global courses of the Fab Lab network, to identify activities, projects and main players related to the fashion field. Therefore, an empirical study - limited to the Italian scene - was carried on through interviews to Fab Labs staff members and other professional figures involved, in order to understand the real impact of this phenomenon. The final part of the study combines literature review and on field analysis, underlining opportunity and critical areas. In particular, the analysis

demonstrates that Fab Labs could improve fashion designers' digital skills, enhance SMEs' use of digital technologies, allow micro-production and distributed manufacturing, connect citizens, designers and SMEs. This collaboration stimulate the digital revamping of textile production tools and processes and the growth of collaborative experimental research. Most innovative projects came out thanks to cross-fertilisation of different professional knowledge and skills. On the other side some critical areas have been found. SMEs have shown in many cases lack of knowledge, trust and vision about the possibility to start collaborative practices with Fab Labs. The conclusion of the study stimulates the reflection about the ways how the innovation potential of fashion collaborative pratices can be expressed and implemented.

TRACK 17
Design, Development and Diffusion of Innovation through Collaboration: What Works (and What Doesn't)?
Convenors: Paolo Crivellari (Université Toulouse III – Paul Sabatier, France)

Tascapan. Critica di una rete collaborativa in Valle d'Aosta
Claudio Marciano (Università della Valle d'Aosta, Italy)

Tascapan è una start up che ha sede nel museo etnografico di Introd, in Valle d'Aosta. Nata come piattaforma di e-commerce per i prodotti tipici locali, si è trasformata in una rete collaborativa costituita da produttori agroalimentari, organizzatori di eventi, guide alpine e operatori turistici, impegnati nel riscrivere lo *storytelling* delle alpi valdostane: da simbolo del turismo insostenibile, fatto di impianti di risalita e seconde case, a luogo di sperimentazione dell'economia circolare. Dal recupero di un museo abbandonato oggi sede di mercati alla rigenerazione di una latteria antica adibita a laboratorio didattico, Tascapan è stata l'occasione per la sperimentazione di forme di cooperazione dietro cui si manifesta la ricerca di un'identità culturale fondata sulla sostenibilità e la condivisione. Il *paper* propone una critica dell'esperienza di Tascapan, in particolare alla rete di relazioni che ha creato al proprio interno e all'approccio collaborativo o conflittuale con altre reti territoriali più datate (cooperative, consorzi, comunità montane), attraverso le storie di vita dei suoi protagonisti e l'osservazione partecipante svolta durante alcuni eventi. L'obiettivo principale è quello di congiungere l'esperienza di questa start up con il contesto socio-economico della Valle d'Aosta, che negli anni della crisi ha subito profondi mutamenti, al fine di cogliere quali fattori del contesto locale costituiscono un freno o un acceleratore dei processi di innovazione collaborativa.

Translational regime, science and innovation
Pascal Ragouet (Centre Emile Durkheim, France)

After the Second World War, Western governments promoted economic policies that constituted technological innovation as a growth factor, thus contributing to defining innovation as the manufacture and marketing of technical artifacts. The idea that science should be as autonomous as possible in order to guarantee the production of knowledge necessary for inventions and innovations has been replaced by the idea that scientific research should produce applications capable of fueling the innovation process (Bontems, 2014). Although the autonomy of science has always been relative, it is now obvious that since the 1980s it has been undergoing a process of increased heteronomisation.
The objective of this communication is to propose, on the basis of the "transversalist research programme" in sociology of science (Shinn, Ragouet, 2005), an analytical framework for thinking about innovation; the idea is to take the transformations of the scientific field as starting point in order to gain a better understanding of the social environment in which collaborative processes in innovation field take place.
The heterogeneity of science has often been thought of in disciplinary terms and through the dichotomy fundamental research vs applied research. Shinn shows that the landscape is much more complex by proposing to distinguish four regimes of production and dissemination of science (disciplinary, transitory, utilitarian and technico-instrumental regimes) (Shinn, 2000; Shinn, Ragouet, 2005). It is precisely the composition of these regimes that constitutes the specificity of science at any given time. In recent work, Shinn notes a whole series of evolutions (emergence of a "new disciplinarity", reduction of the distance between disciplinary and utilitarian regimes, multiplication of interdisciplinary injunctions) (Marcovich, Shinn, 2011,2012) which could attest to the existence of a fifth regime: the translational regime. Its appearance would take place at the end of the 20th century, around the 1980s and 1990s, at a time when Western states were putting in

place public policies designed to strengthen the convergence of other scientific production regimes, to encourage collaboration between practitioners of different regimes in the production of marketable technical artefacts. The aim of the communication is to precise characterization of this regime, its impacts on science and collaborative processes in innovation.

The B side of social innovation. Grassroots technologies development and waste picker cooperatives in Greater Buenos Aires (Argentina)

Sebastián Carenzo (Universidad Nacional de Quilmes, Argentina)

This paper draws on an ongoing collaborative ethnographic research developed with *Reciclando Sueños* a wastepicker´s cooperative located in Greater Buenos Aires. This collective experience Currently has been developing experimentation skills for recycling materials recovered from households and industrial locations, managing to develop a sort of "verticalization" of its production process. In addition, they have focused its experimental praxis on post consumer plastic materials that lacks a market to be commercialized, and therefore, are buried in landfills. Drawing on an ethnographic analysis of this active experimental work I will focus on three related analysis lines:

In the first place, my current reflection raises an uncomfortable question: which actors are legitimately qualified to develop practices of technological innovation in the field of waste management in our contemporary urban societies? This issue becomes especially relevant if one consider that this creative/experimental praxis is carried out by "cartoneros" (wastepickers) who lacks the symbolic, economic and technical capitals required to socially legitimate these competences.

Secondly, my aim is to challenge the linear relationship between "value adding" and "technological development" when analyzing the situation of informal recycling. Specifically, I discuss the top-down, linear and deterministic approaches to adress social innovation issues that are promoted either from gubermental and non-gubernmental institutions.

Finally, a third reflection addresses the limits of this practice of innovation that does not follow established bureaucratic and procedural standards. Departing from the notion of epistemic (in)justice, initially proposed by Miranda Fricker (2008), I draw a critical reflection on the *requirement of transparency*, as a key issue that shapes innovation skills aimed at waste management, and defines what is still thinkable and (un)thinkable in this field.

Informal Progressive Collaboration with Bureaucratic Public Bodies and Power Asymmetry: A Case of Public Procurement for Innovation (PPI)

Najmoddin Yazdi (Sharif University of Technology, Iran), Ali Maleki (Sharif University of Technology, Iran), Sadegh Mohsennia (Sharif University of Technology, Iran)

Degree of collaboration among stakeholders (suppliers, procurer, buyers, users and innovation intermediator) is an important factor in differentiating different types of Public procurement for innovation (PPI). The present paper tries to shed light on reasons behind the unsuccessfulness of the informal collaboration of an innovation intermediator with a bureaucratic large public body (Iranian Ministry of Petroleum) in a technology-transfer-oriented PPI case in oil and gas industry of Iran.

In 2015, The Research Institute for Science, Technology and Industry Policy (RISTIP) was asked by the public procurer to help it as an innovation intermediator with the logic, design and implementation of the innovation procurement, but with limited and blurred boundaries of responsibilities due to the newness of the initiative. Due to the blurriness and newness of the project, and also the character of RISTIP members, the RISTIP semi-voluntarily and gradually got involved into an informal collaboration with the public procurer to save the first-of-its-kind initiative in Iran.

Progressively, it was felt that due to the power asymmetry and organizational culture of the public procurer, such an informal progressive collaboration on blurred lines of responsibilities and expectations would negatively affect the whole PPI process and innovation collaboration. Opportunistic behavior of the public staff coupled with the developing context of the country were postulated as the important outcome and contextual factor, respectively.

After the hackathon: on the problematic transition from hackathonian inventions to fullscale innovation projects

Peter Müller (Technische Universität München, Germany)

I studied hackathons as events of collaborative inventiveness by ethnographic, participant, covert observations at seven hackathons within a period of 18 month and subsequent project meetings where I had access to detailed insights into the production of initial ideas and the
very problems that arise when those, mostly, conceptual inventive drafts are lifted into tangible innovation processes. Hence, I want to present and discuss the tradeoffs between open, eventbased, and collaborative invention and a proper, long-term innovation projects.
This is, to some extent, a result of the tradeoff between the rather holistic, macroscopic requirements of innovation and the rather particular and spontaneous momentums of invention. However, concerning the project drafting at hackathons and the eventual project execution, also different interests, expectations and intentions of participants and organizers or other stakeholders clash. Another significant factor is the multi-functionality of hackathons for economic stakeholders. To them, hackathons are likewise time-spaces for well-placed advertising, marketing and recruiting. There is thus in some cases an enormous resistance already inside an organization to accept such external, hackathonian inspirations. However, hackathon innovation also fails the other way around: when tinkerers design astonishing inventions, prototypes and proofs of concepts, thus win the event, but are unwilling to further cooperate or support the further development. Nevertheless, hackathons are of great capacities for technological creativity, feed-backing designs, and bringing in different skills and expertise.
Hence, I want to share these ethnographic research insights and discuss the causes and possible countermeasures concerning the transition problems when stakeholders try to lift inventive concepts from hackathons into a full innovation project.

Tracks of Thematic Stream 4

Imaginaries, knowledge and networks from below

TRACK 19
Media and networks from below: amateurs, users, and marginal groups

Convenors: Paolo Bory (Università della Svizzera italiana, Switzerland), Maria Rikitianskaia (Università della Svizzera Italiana, Switzerland)

The DiY IoT Scene: Assessing Users' Involvement in The Internet of Things

Andrés Domínguez (University of Edinburgh, UK)

Communication infrastructures are largely dominated by capital-intensive network service providers, vendors and data aggregators, but it has been observed that users sometimes reject or displace such top-down and hegemonic arrangements and innovate on their own. Community wireless networks, decentralised architectures and distributed ownership of network infrastructure are examples of ways in which users have reclaimed control of technology. This paper discusses the case of "The Things Network", a global internet of things network that crowdsources its physical infrastructure to its users. As a free and open network, this organisation relies on voluntary contributions to provide an otherwise commoditised and industry-oriented service, with a model of distributed ownership and with competing reliability. I will present the preliminary findings from an ethnographic observation with the team of core developers of the network's backend and from interviews with voluntary "initiators" of some of the more active communities. The aim of the study is twofold: first to present an account of the phenomenon from a sociotechnical perspective and second, to offer explanations for the occurrence and survival of such bottom-up initiatives. The current case study serves as a basis to advance the notion of a "DIY IoT Scene" in Europe that strives in the context of a technological trend that has not yet reached mainstream adoption. With the recognition that there are various levels of expertise involved in user-led assemblages, I provide some nuance to the term "user" in the context of the internet of things drawing from the literature on user innovation and Science and Technology Studies. Furthermore, I argue that the cohesion of this kind of assemblages varies depending on their collective knowledge acquiring capacity, the existence of a common ethos and their pathways to sustainability.

Anonymizing the News: The Adoption of the Tor Network by Newsrooms

Philip Di Salvo (Università della Svizzera italiana, Switzerland)

In the wake of the Snowden case, encryption technologies have made their way into newsrooms and into journalists' toolboxes. The Tor Network - both with its Browser and its infrastructure –has become an increasingly common infrastructure for journalistic activities and also mainstream and legacy news outlets have now integrated it into their activities. This is happening on two different levels: a) for the launch of whistleblowing platforms based on Tor Hidden Services by the use of dedicated open-source software and b) for hosting their websites on the dark web, as done in 2016 by *ProPublica* and in 2017 by *The New York Times*. This paper will analyze the news outlets' motivations and rationales behind the decision of running some Tor-based services by looking at the articles published to announce their launch. In particular, a sample of international news outlets adopting the SecureDrop whistleblowing submission software (n=19) will be considered, together with the two aforementioned news organizations publishing on the dark web. The paper aims at contributing at the understanding of how journalism is adopting encryption software and how alternative, hacker and adversarial networks, such as Tor, are now becoming routinized in the news making process.

Performing Digital Commons in Practices: Socio-technical Agencements in the Italian Wireless Community Network

Stefano Crabu (Politecnico di Milano, Italy), Paolo Magaudda (Università di Padova, Italy)

This work aims to contribute to the ongoing debate on “networks from below”, which represents an increasingly important form of technology production and appropriation in contemporary society. To this end, the article presents the main results of an ethnographic study on Ninux.org, the largest wireless community network (CN) in Italy. CNs are distributed local communication infrastructures, generally built and self-managed by grassroots organisations of people. Empirical data has been gathered through multi-sited ethnographic observations and 14 in-depth interviews with key participants of four major local networks, with the aim to reconstruct the trajectories of each local group and to investigate the processes of participation in this project, paying particular attention to the discursive elements and the socio-cultural frames shared among participants in managing/shaping the concerned CN in terms of a digital commons resource. Analytically speaking, by adopting the notion of socio-technical agencement (Muniesa, et al., 2007; Hardie, MacKenzie, 2007; Callon 2008), the paper has an empirical goal oriented to disclose the multimodal and creative sociomaterial practices of alignment between activists’ values, competences and political frames, together with technical and functional features of the network infrastructure. In so doing, we explore the complexity characterising the interaction between practices, technology and political visions involved in digital commons production, arguing that the adherence to the paradigm of commons enacts a complex socio-technical process, in which specific conceptions of governing digital resources, political imaginaries and technologies are mutually adjusted and continuously realigned to perform in practice a digital infrastructure as a common-pool resources.

Citizen Journalism as Networks, Citizen Journalism as Publics: Reconciling Knowledge, Technology and the Public Intererst

Carl Bybee (University of Oregon, USA), Joshua Daniels (Western Oregon University, USA)

In the last decade, citizen journalism emerged from below to become a major force in international journalism. While not a new phenomenon, its scope and influence, powered by dramatic new technologies made possible through networked computer communication, dramatically contributed to populist uprisings on the left and right. One of the most dramatic battle lines between mainstream journalism and citizens journalism is being fought around “fake” news/disinformation, including the European Commission creating a High Level Expert Group to address these problems and strategies being developed in the United States, such as the Brookings Institute report on “How to combat fake news and disinformation,” calling for increased quality journalism, news literacy, technologies for identifying fake news, addressing who profits from fake news, and increasing online accountability.

We draw on the work of the American Pragmatists, and particularly what Bruno Latour called the “Copernican Revolution” launched by John Dewey and Walter Lippmann, in focusing the question of the public on the conditions that bring a public into existence. We argue that what is being missed is the opportunity to fully confront the consequences of the liberal and libertarian compartmentalization of thinking around the meaning of the public, its interest, the authority of knowledge, the quasi-science of objectivity, technology and democracy. Neither mainstream journalism nor citizen journalism will be able to find a way forward in the realization of a deepening of democratic culture and practice. What is needed we will argue, drawing on the Pragmatist tradition, is a fuller understanding of the conditions under which a self-aware public emerges, capable of expressing its interests, guiding the inquiry necessary to engage and act on those interests, and being clearly involved in the evaluation of the consequences of those actions and the decisions for how to act next in light of those consequences.

Negotiating with pop-culture. How collectives of hackers are trying to make change, and why it is so hard

Aleksandra Łuksza (Nicolaus Copernicus University, Poland)

It is a well known fact, that the mass media – like the radio or the Internet – were developed not only by the hands of scientists and engineers, but also by the struggle of various hobbyists' collectives. It is the one of many reasons that these media became so successful and widespread. In this context I wish to talk about a specific case of hacker movements from below. Regarding New Media, our laws and rights are still the objects of negotiations between various users, developers, distributors and other actors. The term hacking, that is being constructed not only by the giant corporations or governments, but primarily by the popular culture, is completely opposite to how the hackers from the hacker collectives perceive themselves. Grassroots attempts to change the image of a hacker are not just a fight to clear their name, but also a more complex struggle, to shape the Internet policies in a certain way, and empower other hobbyists and amateur groups (like modders or remixers).
In my paper I will talk about acts of negotiations between various human and non-human actors (individual and collective) to establish and stabilize their version of hacking. These struggles between hacker networks and media networks, between vocal acts of hacktivism and the pop-cultural representations of a hacker persona, make use of various artifacts and channels of communication, and I wish to examine them and determine their significance in this process. To do so I will use elements of Actor-Network Theory, and relevant sociological and anthropological discourse (works of Gabriella Coleman, Tim Jordan and others) and apply them to over twenty audiovisual works and case studies.

Fledgling data science: a study of the freelance football analytics community

Gian Marco Campagnolo (University of Edinburgh, UK), Giolo Fele (Università di Trento, Italy), Pietro Antonio Negro (Università di Trento, Italy)

In this paper, we will present early findings from our study of the freelance football analytics community. Bloggers, analytics football writers or ‘public analysts’ they are young graduates in computer science, mathematics or physics. Their work is found mostly in the blogosphere or on Twitter, where they attract the interest of thousands of followers. The football analytics community presents an interesting paradox. Despite data scientists being presented in other resources as a scarse resource, in football there seems to be an abundance of underpaid if not casual data science workers. Our study of the football analytics community thus becomes a reflection on data science. What do freelance football analysts do? Can it be called data science? We approach the question by trying to define the confines of the practice, by also looking at the interaction with other neighbouring communities of tactical analysts and professional coaches. Our data consists in interviews and observations at special events such as analytic conferences and hackathons, where these various form of expertise are made visible in their interaction.

TRACK 20
Science Fictions: Promising Technoscience, Performing Pop Culture

Convenors: Marc Audétat (University of Lausanne, Switzerland), Olivier Glassey (University of Lausanne, Switzerland), Paolo Magaudda (Università di Padova, Italy), Philippe Sormani (University of Lausanne, Switzerland)

1973-2018 –Representations of Robotics and AI in Michael Crichton's Westworld

Erik Stengler (University of the West of England, UK)

The 'great divide between the world of Science and the symbolic universe of Science Fiction' reached an important height in July 2017 when the European Parliament's committee on legal affairs made public a draft motion on "electronic persons". This was heavily criticised for being strongly influenced by fictional narratives, starting with Mary Shelley's Frankenstein all the way to Isaac Asimov's "three laws of robotics" and beyond. Such narratives have, until very recently, used robots and artificial intelligence as an instrument to explore aspects of the human being and ultimately what it means to be human. However, such a focus is not what is needed to inform policy related to the interaction between robots and society. Issues like legal liability, deception in care-taking robots, overreliance on technology, job losses to robots, etc... were not in the minds of most writers of those stories. If even policymakers cannot escape from inadvertently borrowing technoscientific promises from fictional narratives it becomes more relevant than ever to explore what these representations and imaginaries tell us (and them) about the relationships between technoscience and society, and how innovations and future scenarios will shape the interactions between robots and humans.
In this context, a comparative analysis between the promises (or warnings) and expectations depicted in the two versions of Michael Crichton's Westworld (1973) can provide an interesting insight into the evolution of the fictional narratives. I will present the results of such a comparative analysis that will comprise the original feature film Westworld (1973), its sequel Futureworld (1976) and the series Beyond Westworld (1980) that followed, and the first season of the current Westworld (2016) series. The 40-year gap between the two takes on Crichton's ideas will reveal the changes in public perceptions, fears and expectations about robotics and AI as represented by the filmmakers.

Il futuro della Terra. L'immaginario tecnoscientifico e le sue narrazioni

Antonio Camorrino (Università degli Studi di Napoli Federico II, Italy)

Le emergenze di scenari utopici e distopici devono considerarsi il fisiologico precipitato dell'antica contrapposizione tra tecnica e natura: è nell'alveo di questa conflittuale antitesi che si risolve quasi per intero l'immaginario della *science fiction*, certo nelle sue molteplici declinazioni. Impossibile tacere di Frankenstein, monito mitico all'azione illimitata dell'uomo resa possibile dagli incessanti avanzamenti della tecnica. Se la modernità accoglie nel seno dell'ideologia del progresso questo mito come radicale metafora di emancipazione dell'umanità, esso – a fronte dell'erosione delle "grandi narrazioni" – nella contemporaneità si trasforma in inquietante spauracchio, minaccia capace di prospettare l'avvento di paesaggi potenzialmente apocalittici. Non è affatto casuale, in tal senso, la coincidenza temporale tra il tracollo delle utopie novecentesche e l'affermazione di massa del genere fantascientifico, ora luogo d'elezione immaginale dove inscenare possibili mondi alternativi. A ogni buon conto, il regime di "catastrofe fredda" tipico della società contemporanea sembra trasfigurare le previsioni della scienza – per esempio sulle questioni relative al *climate change*: la proiezione nel *futuro delle anticipazioni* dei timori e delle speranze degli uomini, ingenera una sensibile scoloritura dei confini che separano la narrazione scientifica della realtà da quella più prossima al dominio della *fiction*. Indagare i recenti sviluppi di tali attualissime questioni è l'obiettivo di questo contributo.

The Construction of Artificial Characters in Film

Jimena Escudero Pérez (Universidad de Oviedo, Spain), Erik Stengler (University of the West of England, UK)

The presence of robots and AI in society is growing fast, and there is an increased pressure on the robotics community to justify their research and innovation and provide promises about future developments. At the same time there is also a growing consensus among roboticists that public perception about robotics is strongly skewed towards fictional imaginaries, not least because robots and AI that enter the realm of everyday life lose the label "robot" and become "driverless cars, vacuum cleaners, assisted life, automated manufacture" etc. The name "robot" then tends to become circumscribed to the symbolic universe of science fiction, explaining the influence of films, TV series, novels and other fictional narratives. This influence has even reached to the level of European policymakers, whose first steps towards a legislation about "electronic persons" in July 2017 have been heavily criticised for being strongly inspired in fictional narratives.
It is therefore essential to explore the representations and imaginaries put forward by the most influential formats of fictional narratives. We are therefore exploring this on a large sample of feature-length fictional films, working back in time from the present time towards the beginnings of film. We will present preliminary results from our analysis of the first tranche of films spanning the period from January 2011 to June 2017. We are interrogating each film on themes related to their robot/AI characters such as gender, menace to humans, relationships with humans and other robots/AI, and other aspects relevant to the construction of their identity. Our ultimate goal is to create a large database with this information and extending it to other narrative formats so that it can be updated as new fictional works are released, and used to monitor the evolution of technoscientific promises and future expectations raised by science fiction.

Slavers or shepherds: competing imaginaries of AI in popular culture and their political implications

Ivana Damnjanović (University of Belgrade, Serbia)

Recent developments in AI research have actualized the debate about the implications of superinteligent general AI. The debate seems to pivot around the powerful image of *Deus ex machina*, present among the AI researchers (Armstrong, 2007) as well as in the popular culture – in Neil Asher's *Polity* universe and in the *Person of Interest* TV show, for example. This argument, that omniscient, omnipotent AI would be indistinguishable from God, further forks into two distinct imaginaries. One is that of a malevolent God, a slaver, who would imprison or destroy humanity, such as *Skynet* or the machines from *Matrix*. Another is the imaginary of benevolent shepherd, developed, among others, in the Asimov's *Foundation* series, and more recently in Asher's and Banks's works. Surprisingly, both imaginaries can be traced back to Samuel Butler's work *Erewhon* (1872).
The aim of this paper is to explore how these competing imaginaries shape the debate about political issues surrounding the AI research. These issues can be broadly divided into two categories. One concerns political decisions that need to be made in the course of AI research: do we actually want to go in that direction, and, if so, how shall we educate the nascent general AI and formulate its goals. The other regards the political implications of such an AI: what would be the consequences for the states, democracy and politics as such? Public discourse seems to oscillate between optimism and pessimism, and to reflect (and be reflected in) the works of popular culture.

Popcultural Conceptualizations of the Anthropocene

Adrian Zabielski (Nicolaus Copernicus University, Poland)

There is no doubt that we are currently living in an epoch which is greatly shaped by human activities. Global challenges like climate change will mark the upcoming years, as our exploitation of the environment continues. The term 'Anthropocene'(Stoermer, Crutzen) to describe this time of impact and struggle made a huge career in the academic world, while also being a source of technoscientific development and political decision-making. On the one hand it involves interdisciplinary environmental studies. On the other it is also a figment of its cultural background, intertwined with modern narratives. My presentation will focus on chosen works of popular culture which pinpoint some main features of the anthropocene narrative and could also serve us a critical point of view. I will use the utopian studies toolkit (Szacki, Jameson) to recognize the main utopian impulses

of this narrative which also happen to have their further consequences in global policy-making and in creating a cultural agenda. As a result its weaknesses will emerge, leading us to some alternative proposals.

Time Travel Popular Accounts. Objective rigour and fictional infusion

Mircea Sava (University of Bucharest, Romania)

Time travel and journeys to remote places in the Universe are preeminent themes of SF literature and SF film, but they are also not missing from the inventory of the most common topics that are scientifically explained in popular science books and in TV documentaries. At first glance, the proximity between the two categories of media products consists only in the common subject. But if we view them from the perspective of the Public Understanding of Science movement, we can identify in this transfer of the space-time journey theme a transfer of the functioning mechanisms of popular culture. These mechanisms have become today models of production and consumption for the genres of science communication and not only for the already established popular genres of SF literature or film. This paper aims to analyze the ways in which time travel and journeys to distant places in the Universe are exploited as themes in a series of books and documentaries of popular physics in an effort to explain science at the border with fiction, as an effect of adopting popular culture models in science communication. In Stephen Hawking's *A Brief History of Time* and Brian Greene's *The Elegant Universe*, and also in the series of documentaries derived from these popular science books, there is a considerable proportion that the joint themes with SF literature and film have in their construction. This has some implications for the endeavor of the boundary work between science and fiction, in which the producers of popular science engage. Explaining science through fiction produces cracks at the border between the two and proposes a shared territory. At the same time, the positioning of science near science-fiction highlights the factual poverty of fiction and thus strengthens the boundary between the two.

Science's Fictions as counter promise: the case of autonomous weapons

Marc Audétat (University of Lausanne, Switzerland), Olivier Glassey (University of Lausanne, Switzerland)

While the social sciences have excluded experiments of thought from their methods, science and technology in the contrary acknowledge it as a mode of research, and they also use it in formulating visions and promises. It explains that some authors of Science Fiction (SF) have been those thought experimenters missing in the social sciences. Haraway considers SF as philosophy in practice, and aligns it with other "SF", like speculative feminism, and scientific facts (minus their authority on other forms of knowledge). The increased competition to capture research funds goes with an increased need of credibility building far outside the decision makers narrow circles. The production of images, stories, scenarios of technosciences (in society), combines with the appetite of the media and cultural production. As a matter of consequence, a much more osmotic space of exchange appears where we used to locate a line of separation: between scientific facts and the imagination, there is likely now a continuous space for fictional production. Our contribution will focus on how boundaries between thought experiments, science, social sciences, politics, promises and SF, are purposely blurred within sociotechnical controversies. The controversy about autonomous weapons provide an interesting entry as it mobilizes numerous stories and iconic elements related to killer robots in popular SF culture. We will focus on how scientists diverted the archetypal format of scientific promise, namely a TED conference, in order to circulate online a counter fiction about autonomous weapons. This short SF video disguised as an actual conference would provide an example of what Citton calls "counter-scenarisation". It will allow us to analyse how scenarisation of technoscientific promises and their utopias/dystopias can undergo profound change in the age of social media circulation, providing the discussion ground about how these blurring processes can be a crucial field of research for STS.

The next frontier? Demis Hassabis On AI & The future of DeepMind With Prince Harry

Philippe Sormani (University of Lausanne, Switzerland)

On 27 December 2017, the BBC Radio 4 program *Best of Today* welcomed for a ten-minute interview Demis Hassabis, co-founder and CEO of *Google DeepMind*, the London-based neuroscience-inspired AI company. The topic: "AI and the future of DeepMind" – the interviewer: Prince Harry. On the same day, the interview was uploaded on youtube, the Google owned video-sharing website, titled "Demis Hassabis On AI & The future of DeepMind With Prince Harry" and illustrated by a photograph showing the two interlocutors seated at a shiny wooden table and a radio technician operating his recording equipment in the background (see https://www.youtube.com/watch?v=5Sd-zLdC7qc). Ten days later, on 6 January 2018, *The Economist* featured a special report on brain-computer interfaces, a report entitled "The next frontier: When thoughts control machines." So? To answer the question, this paper offers a multi-modal conversation analysis of the BBC Radio 4 interview, its multiple youtube commentaries, and the reflexively mediated character of techno-scientifically confident announcements (e.g., in terms of "the next frontier" in AI, neuroscience, or both). The paper thus offers an empirical analysis of digitally circulated, yet locally encountered "Science Fictions," the core topic of Track 20 at the *STS Italia* 2018 conference.

"Making Things thinkable". Science, science-fiction and the search for life elsewhere in the universe

Valentina Marcheselli (University of Edinburgh, UK)

In 1877, Giovanni Schiaparelli drew the first map of the Martian surface in which the so called *canali* (later translated with the word "canals") were described and represented in fine detail. It did not take longer than a couple of decades for many other scientists, whose efforts was led by another Italian astronomer, Vincenzo Cerulli, to disproof Schiaparelli's observations as mere optical illusions. But the era of science-fiction adventures on the Red Planet had already begun. In the following years and over the entire 20th century, the hype created by the many stories set on the Martian surface contributed, in turn, to boost scientific efforts toward the understanding and exploration of the planet.
After almost a hundred and fifty years, the collective imaginary about the red planet has changed, but the complex relationship between science-fiction and scientific research has not. In this paper, I explore some of the ties that bind science and science-fiction, focusing on the deployment of science-fiction imaginaries in the research of life elsewhere in the universe. Drawing from my ethnographic research among astrobiologists and SETI researchers, I discuss the performativity of promises and expectations embedded in science fiction imaginaries, giving shape to the present as they describe utopian and dystopian futures.

TRACK 21
Technopolitics of integration. Charting imaginaries of innovation in the European Union

Convenors: Luca Marelli (Katholieke Universiteit Leuven, Belgium), Ine Van Hoyweghen (Katholieke Universiteit Leuven, Belgium), Gert Verschraegen (University of Antwerp, Belgium)

Technological surveillance systems in the European Union: intersecting innovation and integration with geopolitics

Rafaela Granja (University of Minho, Portugal), Helena Machado (University of Minho, Portugal)

The expansion of technological surveillance systems for the purpose of crime control is at the heart of security policies in the European Union. The “power to innovate” and to incorporate “science and technology” plays an important part in the narratives about the necessity of development and expansion of surveillance systems, particularly in what regards the application of genetics in the identification of perpetrators of crime. In this paper we analyse the so-called Prüm system, a transnational infrastructure for large scale exchange of DNA data across EU Member States with the purpose of advancing crime control. By exploring the narratives of professionals directly accompanying operations of the transnational exchange of DNA data we reflect along the following questions: Which imaginaries of technological and scientific innovation are played out? How does its implementation and development relate to existing socio-political inequalities? What are the emerging tensions and frictions between the ideal of Europe united in the fighting of crime, and acute differences in technological and economic resources among Member-States?
The paper is based on interviews conducted in 21 EU countries with professionals operating the Prüm system with the purpose to focus on these social actors perceived asymmetrical proportion of benefits and risks of operating the transnational technological systems for criminal surveillance. We outline the technopolitics deriving from the intersections of innovative technological infrastructures, geopolitics, and categories of criminal suspicion. We argue that a dichotomy between Central and North Europe and Eastern Europe is played out, which is translated through narratives about the binary of transfer of technology *versus* transfer of criminality.

Acceleration of innovation or reinforcing established actors? The case of the European directive on alternative fuel infrastructure

Nuno Boavida (Universidade Nova de Lisboa, Portugal)

Electric mobility is an important part of the transition to decarbonise mobility. It is also an innovative area of significant uncertainty regarding markets, profitability and technology investments. This work will develop a case study where the initial goal of the directive was to promote the interoperability of the charging infrastructure of electric vehicles in Europe and, in the end, included regulations on gas, biofuels and hydrogen. The paper will argue that, in an move to promote innovation, the decision-making process of the European Union allowed established actors to co-shape the initial goal of the directive, reinforce peripheral technology interests, and hinder a transition to a more decarbonized mobility system by preying on the ambiguous meaning of sustainability. The work was based on desk research and twelve, semi-guided and face-to-face interviews to policymakers and lobbyists, in Brussels, during October 2017.

Disruption in the EU: Imaginaries of Disruptive Innovation and the Idea of Technology

Darryl Cressman (Maastricht University, The Netherland)

The concept of disruptive innovation has captured the technological imagination. From its origins as an obscure management theory to its widespread promotion amongst today's entrepreneurs and policy makers, disruptive innovation has become a contemporary panacea for economic growth and technological progress.
However, the ease with which technologies and sociotechnical processes are labelled "disruptive" has led to ambiguity regarding the term's meaning, leading some to consider it nothing more than an empty buzzword. In an attempt to clarify this ambiguity, in this presentation I follow Benoît Godin's (2015) conceptual history of innovation and suggest that disruptive innovation is an important concept through which European institutions envisage the world with a specific technical intention that is distinct from other conceptual engagements with technology.
Within the European Union, disruptive innovation is found across research funding schemes (Horizon 2020), policies for large-scale sociotechnical initiatives (reforming the energy system), commissioned editorials, and speeches (Emmanuel Macron's proposal for a "European Agency for Disruptive Innovation"). Across these different iterations, I argue, one can begin to trace the semantic field of the concept of disruptive innovation in the European Union.
In this presentation I begin this semantic tracing by examining how the idea of technology is articulated across different institutional discourses of disruptive innovation. Based on preliminary research, I argue that the idea of technology embedded in the concept of disruptive innovation is one that prioritizes the (imagined) transformative power of new and emerging artifacts and digital platforms independent of any other consideration. The consequence of this imagined future, I argue, is the reification of old and unchanging sociotechnical relations that cannot easily be transformed by disruptive artifacts or processes.

A Politics of Causality Facing Real-Life: Endocrine Disrupting Chemicals, European Chemical Regulation and the EDC-MixRisk Project

Nadav Even Chorev (Istituto Europeo di Oncologia, Italy), Giuseppe Testa (Istituto Europeo di Oncologia, Italy)

Humans and the environment are constantly exposed to multiple industrial chemicals, many of which are considered as affecting human and animal endocrine systems (Endocrine Disrupting Chemicals, EDCs). Mixture of these substances can be found in pesticides, numerous consumer products, cosmetics, pharmaceuticals and residues traced in food. Human endocrine system exposure to EDCs is lifelong, starts already at the fetal period, and is associated with multiple, complex adverse health situations such as autism spectrum disorder, diabetes, cancer and reproductive problems.
The European Union recently approved a set of scientific criteria for identifying substances as EDCs, to be annexed to major chemicals regulations. To identify a substance as an EDC, the criteria requires demonstrating a primary causal path between exposure to a chemical and an endocrine-related health disorder. A regulatory action of risk assessment follows, necessitating a lengthy process of estimating exposure probabilities at population level. Thus, the criteria match current European chemical regulatory paradigms and industry interests, based on single-substance risk assessment and on a linear assumption: the higher the concentration, the stronger the effect.
Research indicates that, in reality, EDCs act already at very low doses and in non-linear patterns. EDC mixtures may have synergetic effects, larger than the sum of the effects of mixture component chemicals. We argue that the ontological ambiguity stemming from how EDCs act entails real political implication for regulation. Such ambiguity also challenges the scientific-epistemic attempt to make sense of EDC mixture effects. We demonstrate how this vagueness is engaged with in the Horizon2020 interdisciplinary project EDC-MixRisk. The project aims to translate findings on the effects of EDC mixtures, themselves derived from real-life exposure scenarios and tested experimentally, into regulation improvements. The project represents science as an independent political actor, moving to reduce long-term adverse health problems while grappling with the ambivalence posed by EDCs.

Precision Medicine and its 'Infrastructures of Solidarity'. Probing the Social Contract in US and European Precision Medicine initiatives

Ine Van Hoyweghen (University of Leuven, Belgium), Erik Aarden (University of Vienna, Austria)

On a global scale, a 'race for innovation' between nations has set off for the building of Precision Medicine (PM) initiatives. To establish PM, various initiatives call on 'a new social contract' between citizens and the health care system. This contract implies that citizens recognize that they and everybody else will benefit from medical science if they allow data about their own genome to be collected and shared. Policy makers thereby mark PM not just with grand claims on scientific and economic benefits, but also with the formation of a new genomic citizenship. In this paper, we investigate the mobilization of the social contract in the economic competition between 'PM nations'. We show how the new social contract for PM is not only imagined as a critical part of the successful development of PM, but is materialized in infrastructures of health care delivery that serve both the establishment of medical innovation and social values associated with health care. Based on content analysis of primary sources of national government, policy and scientific reports and public statements on PM, we empirically explore across the contexts of the United States and the European Union how these social contracts are (re)produced through the materialization of social values and the mobilization of existing infrastructures. We thereby demonstrate how the successfulness of PM depends on infrastructures of health care delivery that perform as trust-generating techniques for the mutualization of benefits and rights. We consider the role of infrastructures of health care delivery, which we coin as "Infrastructures of Solidarity", as key markers for the implications of efforts to incorporate Precision Medicine (PM) in contemporary health care systems. We conclude by a reflection on what the new social contracts for PM entail for conditions of citizenship, access to health care, and the future of the welfare state.

TRACK 22
Building knowledge based on digital data: participation spaces, methodological problems and ethical implications

Convenors: Giuseppe Veltri (Università di Trento, Italy), Federico Neresini (Università di Padova, Italy)

Artificial identity. Ethics about humans and machines

Edmondo Grassi (Università di Roma Tre, Italy)

In 1816, Shelly used the metaphor of the monster of dr. Frankenstein to conceive one of the first forms of modern hybridizations between biological body and technical-technological instrument. In her novel, we find a clear critique of the first industrial revolution, asking to her readers specific questions: is progress de-humanizing us? Is our nature and our identity formation changing? Is the human being losing his moral compass? This incipit is necessary to understand how, in the fourth industrial revolution (A.I., machine learning, robotics), we are redefining, once again, the concept of "human being" through technology. The boundary of the skin is no longer the only space for social interaction, but has crossed the boundary of a second self, that of the virtual (Turkle, 1984); we are immersed in a defined infosphere environment, inhabited by inforgs, actors who constantly hold and exchange data and information (Floridi, 2015); the horizon of the body is getting closer and closer to the conception of the cyborg (Clynes / Kline, 1960). The aim is to investigate how the human being is changing its nature composed of purely biological aspects towards a being that, through technological grafts, lives a strengthening of its capabilities. If man has to be overcome (Nietzsche, 1884) and the technique is conceived as the destinal outcome of Western civilization (Heidegger, 1953), the question of techne and poiesis is the anthropological question par excellence. The development of artificial intelligences, of robotics, of biotechnologies raises open questions about the overcoming of anthropocentrism and human identity. It is necessary to produce a new ethics that contemplates the person-machine relationship.

From newspapers archives to big data analytics. The construction of large-scale data-sets through mediated data in social movement studies

Alice Mattoni (Scuola Normale Superiore, Italy), Elena Pavan (Scuola Normale Superiore, Italy)

Today, Big Data analytics applied to the digital traces that activists leave behind them when engaging with social media platforms constitute a new frontier for social movement scholars concerned with the forms and the substance of collective endeavors. Yet, from Protest Event Analysis relying on mainstream media coverage of protests to more recent usages of large-scale datasets of digital data, social movement scholars have always interacted with a diverse range of information technologies to investigate movement organizations and their mobilizations. In spite of the widespread usage of media as data sources, reflections on how the interplay between information technologies and scientific investigations in the production of knowledge about social movements remain rare. Starting from the claim that this type of reflections is of the utmost importance to put into perspective the opportunities and challenges offered by Big Data, this paper addresses how the methods to study social movements and, more particularly, protest have changed as newer information technologies became widely available and were adopted in the scholarly community. More particularly, we suggest that, in conjunction with the emergence of newer information technologies, specific socio-technical assemblages between technologies and social movement scholars come into existence and thus contributed specific ways of looking at social movements and of interpreting them as specific types of collectivities.
To explore these socio-technical assemblages, the paper adopts an encompassing and longitudinal perspective to discuss how social movement scholars have detected, assembled and analyzed large-scale instances of collective action in societies starting from media artifacts, practices, and contents. We first present three different socio-technical assemblages that emerged with regard to the diffusion of three broad types of

information technologies – the printed press, electronic media, digital media. Against this background and along the same lines, we discuss the most recent socio-technical assemblage spurring at the crossroads of big data analytics and the exploration of protest in the field of social movement studies. In this way, we seek to lay the ground for an epistemologically sound study of interplay between media and knowledge production about social movements – one that weights the potentialities and the limits of using media as tools for knowledge creation about democratic citizenship.

Algocracy, on algorithms that reshape social realities

Sandra Bermúdez (Datank.ai, Mexico)

Social dynamics are stressed by a radical force. The longtime dominant market order, democracy foundations and governance structures have been taken by a hidden mechanism that shapes our realities and setup what Morosov (2013) points as the "invisible barbed-wire".Strengthen by an omni-present digital infrastructure, the barbed-wire shapes the space in which we interact politically and socially and set the basis for transform governments into data powered administrations. These administrations rely on the acquisition of citizen's data and delegate the decision making to mathematical models and algorithms, which run as black boxes in an opaque and unregulated scenario (O'Neil, 2016) without the stress to justify themselves. Algocracy reaches maturity when every sphere of social interaction is mediated by information technology (Simitis, 1987) and governments bureaucracies replaces the political process with the smooth efficiency of a data-driven machinery.Authors from a variety of backgrounds have already addressed the phenomena. In this intervention I will explore on three types of reactions.

- The market solution. Proposals which claim that digital platforms and services should pay us for our data. The focus is on data privacy and data economy.
- The sabotage reaction. Implies a refuse the tracking and a strive for fooling the algorithms in a hackers way. Often appeals for provocative products (DiSalvo, 2012).
- The civic solutions. This discourse calls for a recognition of the algorithms not merely as technological artifact but as social constructs (Vedder and Naudts, 2017) which needs a policy to make them accountable of their operations.

Leveraging mass media informatics for the surveillance and understanding of disease outbreaks: The case of the Zika virus

Bankole Falade (Stellenbosch University, South Africa)

Introduction: Syndromic surveillance mechanisms monitor surrogate data sources to detect disease outbreaks earlier than would otherwise be possible with traditional public health methods. This paper suggests the widening of research beyond existing paradigms proposing that public understanding of science theoretical perspectives and mass media big data provide opportunities for significant contributions to disease epidemiological studies. Methods: The study uses computerized text analysis of the coverage of the spread of the Zika virus disease in the America's by two western newspapers, the Times of London (N=246), the New York Times (N=415) and two Brazilian newspapers, O Estado de São Paulo (N=813) and O Globo (N=503). It also uses data from Google trends. Data covered 01 January 2015 and 31 December 2016 and were downloaded from the NEXIS database. Findings: There is a similarity in the intensity of online information searches as shown by Google trends and the coverage of the disease by the news media in Brazil, UK and US indicating that both are used concurrently. We found evidence of the emergence of debates about 'Zika' in Brazilian newspapers several months before the alert by the Pan American Health Organization and the United States Centers for Disease Control (CDC) and the World Health Organization. Using a modified version of Gerbner's, (1969) cultural indicators, we also found significant correlations between newspaper coverage and searches in Google Trends in both the Brazilian and Western media. There were also noticeable cultural differences in coverage by the US and UK newspapers. The content of the debate showed a crisis of knowledge about the disease, the influence of old scientific knowledge about similar diseases and that attitude to prevention were formed even without stable scientific knowledge and also by religion, politics, culture, poverty, fear and conspiracy theories.

La digitalizzazione dei vecchi media e le nuove opportunità per la ricerca sociale
Andrea Rubin (Università Cattolica di Milano, Italy)

Le scienze sociali hanno raccolto la sfida lanciata dal fenomeno della datificazione. Sono stati soprattutto le numerose interazioni presenti nei social network a divenire ben presto l'oggetto d'analisi privilegiato delle scienze sociali computazionali. La miriade di interazioni che ogni giorno popolano i social hanno però monopolizzato gran parte del dibattito metodologico e degli sforzi empirici. A fianco del crescente ruolo assunto dalle piattaforme di social networking si susseguono, ormai da alcuni anni, anche gli sforzi per digitalizzare le più importanti raccolte di testi del mondo (biblioteche, emeroteche, collezioni, ecc..). La stampa quotidiana, in particolare, ha avviato un processo di digitalizzazione che le ha permesso di rimanere una delle principali fonti d'informazione per cittadini e policy makers. La digitalizzazione di milioni di testi si presenta come un'opportunità che appare ancora troppo spesso trascurata. A partire da un confronto empirico con big corpora testuali, il contributo intende discutere i vantaggi e i limiti della computational social science che utilizza i testi giornalistici come principale fonte di dati. Verranno inoltre affrontati una serie di problemi di carattere metodologico sollevati dai numerosi, e sempre più complessi, strumenti disponibili per analizzarli. Si cercherà, infine, di evidenziare come la questione dei Big induca all'assunzione di un nuovo "paradigma" per le scienze sociali che apra definitivamente la strada a una nuova sinergia metodologica.

Everyday Networks of Government: Citizenship from the 'Smart Home'
James Hay (University of Illinois, USA)

This presentation considers how an assemblage of "intelligent" devices have begun to coalesce into networks of domestic appliance, providing a new technological regimen/regime for managing household tasks in a certain class of housing in the 21st century. There is history of the Modern home that, for at least the last hundred years has conceived of domestic management ("home economics") as the operation of a matrix of electrical machines and that has supported Le Corbusier's early 20th-century description of the Modern home as a "machine for living in." However, the 21st-century household and domestic appliance are operationalized through a new regime of digital hardware and software, increasingly designed, promoted, and used as a personalized network. For instance, the LG "Family Hub," a "smart refrigerator" with a large screen interface, can be accessed through software on an LG phone that links the operation of the fridge to other devices in one's home.
This presentation examines this new regime of intelligent domestic appliance in part through a Foucaultian understanding of control, freedoms, ethics/conduct, and governmentality. The paper asks how we should understand current possibilities of Liberal subjectivity and citizenship up through everyday networks of "governance" (i.e., home management and domestic "appliance") such as the ones which enable "smart living" from the smart home.
The presentation considers the role of *amateurs* in the formation of media and communication networks through this lens—emphasizing that the technical training and capacities of operating and of being an actor/agent in everyday networks of governance are a basis for changing forms, possibilities, and limits of Liberal citizenship, as the government of the Self. The presentation emphasizes the relation of humans to smart devices in order to emphasize that the politics of network formation "from below" has always been a practice of "self-government"—albeit a practical and technological regime that has changed with the emergence of recent home designs and home life with smart appliances.

Big data assemblages: techniques and actors
Biagio Aragona (Università degli Studi di Napoli Federico II, Italy), Cristiano Felaco (Università degli Studi di Napoli Federico II, Italy)

The paper aims at presenting the first empirical results of the research project B-DATA (Big Data Assemblages: Techniques and Actors). Under the umbrella of Science and Technology Studies (Latour 1987), which have long been used to define data infrastructures (Star and Ruhleder 1996), and influential in more recent works about the 'social life of data' (Ruppert 2015), or the 'data assemblages' (Kitchin and Lauriault 2014), B-Data

inspects the practices and communities of three European data infrastructures to investigate the intertwined socio-cultural and material entities that produce/reproduce big and others digital data. The overall objective is to compare and contrast the practices of data collection and data management, and the interactions of the networks of actors that frame how data are produced and consumed. The results are drawn from focus groups and in-depth interviews of data teams, where respondents were questioned about the practices of setting objectives, design decisions and choices with respect to expert languages, influences, constraints, debates within team or with stakeholders. More specifically, the analysis presented in the paper focuses on three aspects: how interdisciplinarity is practiced and encouraged within the assemblages; the ethical implications of using digital data collected on a wide international scale and coming from a multiple network of administrations and corporations; some methodological issues of data curation (pre-analytics, metadata, harmonization, etc.) and data management (archiving, documentation, data security, storing and sharing, etc.) which arise in a context of multi-stakeholder informational needs and objectives.

Researching Social Media images: methodological and ethical issues

Elena Milani (University of the West of England, UK), Peter Webb (University of the West of England, UK), Emma Weitkamp (University of the West of England, UK)

Social media platforms increase the amount of available data (some sensitive) allowing us to study virtual communities, personal opinions, emerging social movements, and social media sharing of media such as images. However, the availability of digital data, especially of online images, raises methodological and ethical issues. This presentation explores how these issues are challenging social science research on online images and suggests possible solutions. For example, data collection should not depend only on the investigated topic, but it should also be designed considering the social media platform's characteristics and its terms of service, search keywords, language, and geo-localisation. Choosing a qualitative visual research method to apply is also challenging since social media images lack two fundamental pieces of information for visual analysis: the author and the potential audience. These pictures are not just produced and consumed, but they are shared, re-shared, modified, re-contextualised, and adapted to convey different messages. For example, a neutral image can be associated to either a negative or a positive text to convey an anti-vaccine or a pro-vaccine message, respectively; a research paper stating vaccines do not cause autism can become a screenshot of the "dangerous" content of vaccines. To interpret vaccine images from a social and communication perspective, may require more than one research method. Disseminating research findings is another problematic step since the actual ownership of the images becomes almost irrelevant on social media and this further raises ethical issues in the publication process of journal articles. Moreover, even though tweets are public, they may not be embedded in publications without consent from the Twitter users for ethical reasons. Anonymisation and finding the original picture (and author) may solve this ethical issue but can be challenging.

Predictive Effect of Basic Psychological Needs on Wechat Use

Jie Shu (Tsinghua University, China)

Wechat is the most popular mobile application of social networking service in China now. It claims to have more than 900 million registered users and collects large amounts of data in many aspects of their life. People use Wechat out of certain needs and motivations, which guide how they use Wechat and influence user behaviors. Meanwhile, the Wechat data contain much information of the users and can reveal who they are and what they need psychologically to some degree. Given the huge popularity and strong influence of Wechat in China, the study on how the users' behaviors relate with their psychological needs is of significance.
This study measured the basic psychological needs (BPNs) of Wechat users with the Basic Psychological Needs Scale (BPNS) based on the self-determination theory (SDT) and collected data of their Wechat use by a self-designed instrument in order to find out the correlations between BPNs and Wechat use and the predictive effect of the BPNs on Wechat use. Altogether 201 participants were included in the study.
The study shows that the BPNs are significantly correlated with Wechat use and different degree of BPNs satisfaction predicts different user behavior pattern. Specifically, autonomy predicts a behavior pattern of involving more direct interaction to facilitate communication and establish social connections without being

addicted to Wechat; relatedness predicts a behavior pattern of being more open to Wechat use and freer to explore many functions of Wechat; competence predicts a behavior pattern of performing more excellently in emotion intelligence and aspiration pursuit. The findings help to better understand people's psychological characteristics by analyzing their use of social networking APP as well as the user behaviors by figuring out their psychological needs.

Health communication on social networks

Patrícia Almeida (Instituto Superior Politécnico de Viseu, Portugal), Luísa Augusto (Instituto Superior Politécnico de Viseu, Portugal)

eHealth concept is part of the work of Dave Kerpen (2011) and defends the need of the brands to generate a digital personality, enabling health institutions to approach the public. Social networks needs to show authenticity and human interaction so consumers and suppliers have more confidence on the brand, share more content and the sales grows. (Kerpen, 2011, p. 106) Everything that goes online, including health entity, must meet the needs of the digital patients. The disseminated content should be able to generate sharing and co-creation of more content. (Baines & Fill, 2014, pp. 622-624) Social networks are becoming increasingly important in the contemporary society, reflecting the need of the human being for expression and recognition. (Afonso & Borges, 2013, p. 16) The process of social auscultation allows us to know what is being said about a brand on social networks. (Kotler, Kartajaya, & Setiawan, 2017, p. 143). This study aims to understand the role of social networks in health institutions. It presents the way organizations access their audiences and how audiences engage and access organizations and health issues using social networks. The methodology is based on content and interactions analysis of social networks in a sample constituted by the 10 best hospitals in the world and the 10 best ones in Portugal, based on "*Ranking web of hospitals*" study. To data collection, a grid was created to register the type of content shared, followers, likes, tweets, views and many others online interactions on the several types of social networks. This paper brings contributions to the academy and to online communication practices of hospitals. The analysis of a small number of hospitals (20) is a limitation of the study. Future research may apply this methodology to a higher number of hospitals or in other countries.

Performative Ethics: An AI Innovator's Discourse and its Discontents

Kevin Morin (National Institute of Scientific Research, Canada), Jonathan Roberge (National Institute of Scientific Research, Canada), Thomas Crosbie (Royal Danish Defence College, Denmark)

The novelty of innovation ecosystems in the field of artificial intelligence (AI) comes from their capacity to integrate new actors in a broader discussion about the social and ethical implications of these new technologies. Canadian innovators in AI have already come forward about the risks and consequences of AI, and the general use of deep learning algorithms. However, a critical discourse from the margins of computer science or other disciplines has pointed many overlooked flaws in the structure of these ecosystems and their connections to private industry. For instance, on an economic level, the concentration of funds in the hands of a few celebrity researchers places a lot of weight on specific techniques in AI at the expense of other innovative research. Controversially, only a few dare to speak about how a lack of explicative schemes for the choices made by deep learning algorithms can be dangerous when the knowledge produced is used without consideration of the social or ethical implications. Our study of Montreal's ecosystem, a community that self-identifies as an "open-science model," reveals a worrying epistemic culture. In these circles, ethical discussions largely take the form of performative socio-cultural hype, where the same discourse is repeated at every conference, in an almost hypnotizing way. Between the self-proclaimed "community of AI" and the critique of the close collaboration with web giants like Google and Facebook, we must look at the development of innovation ecosystems and open-science models more critically—especially now, a time of ever-expanding algorithmic cultures.

Sociologists from below. Heterogeneous reflections about the controversial status of digital methods and big data social science research, and one methodological proposal

Andrea Lorenzet (Università di Padova, Italy)

Heterogenous reflections is intended here as a meta-conceptual device for argumentation about controversial methodological issues faced by sociologists in the described crisis of empirical sociology (Savage & Burrows 2007, 2009). From the perspective of STS, it might be possible to describe the particular situation like the one of 'sociologists from below', in an age where social data are massively owned and stored by digital corporations (i.e. Twitter, Facebook). Provisionary answers to such methodological problem has been opened for reflection by the Macospol project, which focused on mapping controversies and digital methods; such a project attempted to provide novel tools for engagement, and therefore a possible path for the use of web/digital data and visualizations for doing useful reflections about 'mapping controversies'. Relevance of this strand has been nevertheless bound mainly to educational and engagement objectives and therefore seems difficult to consider today as a proper tool for doing empirical social research. Then 'big data' become a promise of further development but has ended up in being more a buzzword and/or an epistemic reflection than a novel establishment within the discipline. A further answer to the coming crisis of empirical sociology which can be envisaged deals with looking at data provided by search engines from a specific perspective, and namely by looking to search engine query results as a device for providing *samples* of relevant information, which could be useful for compiling a research diary to be used for qualitative social research about issues. This is thus suggesting the opportunity for 'web search diary' as novel qualitative method for the social sciences which could be said to be originating 'from below'.

Exploring the use of twitter in health communication for public engagement. Risk, challenges and opportunities in its usage Twitter, Bogota's case of study

Julián Cuervo Pulido (École des Hautes Études en Sciences Sociales, France)

Twitter with its inner rationality and dynamic provides a picture of the contemporary society through its net of interrelations, connections and messages delivered. Drawing how we react as society to different subjects and the manner how the information and communication is drive in real world communities. The study explores what kind of information can be learned from the official twitter account of the main health care organization in Bogotá, Colombia (@SectorSalud) to influence or modify people behavior and about what. The research aims were, first to identify the communication techniques used via twitter from the Secretariat of Health of Bogota (@SectorSalud). And to characterize the discussions, social behavior, and the information shared about specific health issues and social manifestations scenarios in Bogotá. The data were gathered during timeline 2014/01/01 to 2016/05/08 Using Twitter search-advanced tool and deploying socio-semantic maps to give insight into unstructured textual data. It was obtained up to 53.545 statuses (tweets, retweets, and replies) from @SectorSalud. Where @SectorSalud authored 20.045 tweets and the other network users authored 33.500 tweets. The dataset and network users were classified in specific social and health clusters to facilitate network analysis. The preliminary results evidences a high prevalence of political-related information posted in contrast with a lower spread of health information contents. Besides, the network dynamic generated a culture of constrained set of ideas, means and ends expressed by the scarce health information attention gave it for example to zika or chikungunya outbreaks, and the prevalence of political-related contents associated with particular party affiliations and interest.

Non-users of digital health systems: empirical evidence from a regional experience

Alberto Zanutto (Università di Trento, Italy)

Following the literature regarding digital health systems, we are often interested in users and their acceptance of specific aspects of these infrastructures. Such aspects include graphic user interface practices, clinical practices, users' practices in connection to specific tools, their clinical based support, user communication and so on.

As suggested by several works (Woolgar 1991), the main objectives of these systems are to open up the health sector to a new quality of health services (Tang et al 2006; Tang and Lee 2009; Moen and Brennan 2005). Over time, a set of tools has subsequently been deployed by citizens to focus their attention on health data, with the aim of reducing costs, as well as achieving a better quality of health. These ideals, however, have not always been realized when utilizing such systems. More often than not, the lack of design, organizational culture, and of integration with many other systems has resulted in losses in efficiency, money, quality and services – thereby impacting severely on patients' expectations. (Piras and Zanutto 2010; Fritzpatrick and Ellingsen 2013; Bjorn and Østerlund 2014).
This contribution intends to shed light on those groups who are in fact not using these tools – whilst investigating the corresponding reasons for their lack of participation. They can often harbour specific issues, which consequently leads them to criticize the tools, or as is also often the case, simply not finding them necessary. In both cases they are not included by the target addressed by the system. We can therefore compare these groups by asking searching questions, such as what the differences observed are between users and non-users of digital health systems.
Methodological and theoretical reflections consequently arise regarding users, that is to say, those selected as a universalistic audience of "any" digital services. Quantitative and qualitative data allows us to observe at least three groups of nonusers. These are, firstly, non-users owing to "access" permission to the system, secondly non-users as critical users, and thirdly non-users in relation to personal data management strategies.
These groups are, in any case, working with local health authorities and with their personal health challenges, although their needs are not included by the system. Whilst analysing answers collected from recent on-line surveys, we would like to suggest some reflections from below regarding this atypical population from the context of regional health digital systems.

Echosystem Creation: Controlling Efficiency and Creativity Through Algorithmic Automation

Ilirjan Shehu (Carleton University, Canada)

As automation becomes ubiquitous, our understanding of the transformative effects resulting from it is in need of much research. On both the liberal and critical sides of the debate, and despite fundamental differences, it is usually assumed that competition among firms is the push behind innovation and technological automation. Others, like Jacques Ellul, have argued that technological automation has become an autonomous process over which humans have lost the ability of control. The debate centers around questions of the use of technology: is it inherently beneficial to humans or should its application be restricted? More recently, scientists and public figures such as Jaron Lanier, Elon Musk and Steven Hawking have intervened in the debate by expressing their worries over the ownership of machines (servers, computers, networks) and share of profits. These approaches however, miss the crucial point that technological automation is not about control of machines *per se*. The purpose is control of information (i.e. data) to which machines are only intermediaries. Control of information is achieved through the creation of algorithmic (rules based) echosystems. I use a power perspective where power is defined as the ability to control efficiency and creativity in society, a notion pioneered by Thorstein Veblen (1908) and developed by Nitzan and Bichler (2009). I also borrow from James Beniger the idea of information control. This means, as John von Newman put it, that there is 'end-directedness' or purpose which is an essential property of control. In this sense, we can think of automation and the use of algorithms as control of efficiency and creativity via control of information (data) in order to increase power. Through an empirical exploration of cases such as Uber and Tesla my research contributes to further developing an understanding of the relationship between automation and social power as an important theme in STS.

Participatory Data Design: Co-design and Co-construction of Knowledge in an Era of Digital Data Opportunities

Torben Elgaard Jensen (Aalborg University, Denmark), Andreas Birkbak (Aalborg University, Denmark)

In a recent series of projects at the Techno-Anthropology lab at Aalborg University Copenhagen, STS researchers have developed a new style of interventionist research. In these projects –which we call

Participatory Data Design (PDD) projects –we intentionally move away from the idea that STS researchers should merely make ethnographic descriptions of the data practices of others. Instead, we explore workshop formats that allow us to work closely with stakeholders and practitioners, whose work is currently subject to radical change from the digitization and datafication processes. Through the PDD projects, we involve practitioners in producing, structuring, and analyzing data and digital prototypes in ways that are responsive to their situation. In particular, we and the project participants attempt to explore how the new availability of digital data may create opportunities for developing new knowledge and work practices.

The talk presents the key features of our PDD approach. These features include (1) involvement of stakeholders in all phases of the project, (2) datafication, the strategy of working with problems by gathering large amounts of data about them, (3) flexible visualization, the strategy of rendering data in visual forms that allow the workshop participants to see and explore the data in multiple ways, and (4) tangible outcomes, the demand that all workshops should strive to produce tangible prototypes or projects, which may become starting points for continued collaboration between researchers and stakeholders

In the final part of the talk, we reflect on some of the methodological and ethical issues that have emerged in recent PDD projects.

Tracks of Thematic Stream 5

Including and connecting from below

TRACK 23
"Digital migrants": Digital media, data infrastructures and migration

Convenors: Guido Nicolosi (Università di Catania, Italy), Annalisa Pelizza (University of Twente, The Netherlands)

Viapolitics and apodemics. Frontex Information System PeDRA and the production of knowledge of traveling and migration routes

Silvan Pollozek (Technische Universität München, Germany)

In recent years ,"viapolitics" has gained more and more attention in critical migration and security studies conceptualizing „mobility as an accomplishment that is always contextual, and enacted by means of specific assemblages of bodies, machines, infrastructures, communication devices, [or] conduct" (Walters 2015: 473). To keep moving as well as to monitor and control mobilities very much depends on the production, distribution and retrieval of knowledge of traveling, such as travel routes, contacts on sites, who (not) to trust etc. This is what Feuerhahn (2001) calls „apodemics" and which is nowadays very much connected with digital media and data infrastructures. In this talk I will elaborate on viapolitics and apodemics by looking at the side of Member State and European Agencies, which have set up infrastructures for not only making migrants re-identifiable (Broeders 2007) or monitoring state borders (Tazzioli 2017), but also for identifying and controlling migration routes (Hess 2010). Based on ethnographic fieldwork and on document and template analysis of Frontex information system PeDRA, I will analyze how information of traveling and migration routes is gathered by so called Frontex Debriefers, inserted and distributed via online templates and then sent to Risk Analysis Unit where it is brought together and analyzed.
Finally, I will discuss different modes of apodemics, that is different ways of gaining knowledge of traveling and migration routes.

The making of digital space for European border politics

Paul Trauttmansdorff (University of Vienna, Austria)

Since the 1985 creation of the Schengen space, European borders have continuously been mediated by digital technologies. European attempts to regulate borders and govern mobility have to a large extent been based on the continuous roll-out of information and communication technology and the build-up of large-scale databases, most notably the *Schengen Information System* (*SIS*), the *Visa Information System* (*VIS*), *Eurodac*, but also recent smart border projects. While existing literature often focuses on the securitization effects of this steady development and on the changing nature of European border governance, less thought has been devoted to how digital *space* has been made for the mobility governance, co-produced with the so-called "digital borders" (e.g. Broeders 2007). Looking at the *spatial practices* (Harvey 2008), in which actors and technologies are involved and enacted, can illuminate not only the imaginaries (Jasanoff 2015) of a *European space* of (digital) security, but also contribute to a better understanding of the co-production of digital infrastructures, science and border politics.
I aim to conduct a qualitative content analysis of policy documents, information and statistical material related to the aforementioned IT projects/systems, with a specific focus on the documental data that is now gathered and provided by *eu-LISA*, the European agency for the operational management of large-scale IT systems. Thereby, I will apply David Harvey's conceptual "grid" of spatial practices and use Sheila Jasanoff's idiom of co-production in order to carve out the spatial dimensions of digital border politics, notably the aforementioned *SIS*, *VIS*, *Eurodac* systems. I argue that the making of digital space for enabling European governance of mobility is an essential element in explaining the overall digital transformation of borders and that an analysis of the spatial practices involved will contribute to a better understanding of (digital) border politics in Europe *and* the resistances against it.

L'uso del tempo delle famiglie migranti

Antonia Cava (Università degli Studi di Messina, Italy), Maria Gabriella Campolo (Università degli Studi di Messina, Italy)

L'Italia è caratterizzata da una forte asimmetria di genere nel mercato del lavoro (Boccalo 2014), nell'attività domestica e di cura dei figli (Sartori 2009) e nel tempo libero; asimmetria presente in tutti gli stadi della vita.
Se è vero che l'allocazione del tempo familiare è influenzata non solo dal potere contrattuale dei partner ma anche da norme sociali e dal background familiare e culturale, in questo lavoro proveremo a comprendere se persone residenti in Italia ma nate in altri stati, con norme culturali e sociali differenti, subiscano lo stesso processo decisionale nella divisione dei ruoli. Ciò potrebbe far emergere problematiche nuove e diverse rispetto a quelle cui vanno incontro le famiglie italiane che, nonostante i problemi di conciliazione famiglia-lavoro, possono comunque contare su una rete parentale di sostegno che, nella maggior parte dei casi, è assente per le famiglie straniere.
Usando i dati Istat *Uso del Tempo* (2013), indagheremo su eventuali differenze nelle strategie allocative del tempo (lavoro, famiglia, tempo libero, uso dei media), tra famiglie italiane, straniere e miste, con l'obiettivo di capire se, le dinamiche che stanno alla base del gender gap marcatamente presente nella popolazione italiana, siano presenti nella componente straniera.
Incrociando questi dati con quelli del Rapporto Istat *I redditi delle famiglie con stranieri* (2011), in cui emerge che il 49% dei componenti delle famiglie straniere è a rischio povertà, si evidenzieranno criticità dalle forme complesse che non riguardano solo il reddito, ma anche l'accesso ai servizi, sistemi di protezione sociale, opportunità di cittadinanza attiva e politiche di conciliazione famiglia-lavoro (Reyneri 2017).

Of Data Cultures and Data Colonialisms: Mobile Bodies, Predictive Mutations, and Decentering Data Futures

Stefania Milan (University of Amsterdam, The Netherlands), Anita Say Chan (University of Illinois, USA)

Salvationary accounts of big data applications as offering a "universal" solution to securing futures for diversely situated subjects –and precarious populations in particular –have prompted a range of reactions from states, development organizations, and academic researchers, alike to develop new big data literacies as the central means to manage and distribute resources. Such a pointed urgency and fixation on data as a matter of high priority and concern, and as means to avert crises large and small, has increasingly prompted service providers, agencies and development organizations to seek out new institutional partnerships and novel, often experimental collaborations with commercial actors and data industry experts in the interest of predicting precarity and fixing "secure futures" for at-risk subjects instead. Drawing from ethnographic accounts of data's supposedly "rescued" subjects and migrant bodies in Latin American and European labor markets, this paper takes stock of the conceptual tools that underscore the centrality of feminist and decolonial lenses in critical data studies. In the midst of data's accelerating pursuit among global development actors are diagnostics of a growing fetishization of data systems that displace attention from the actual bodies and lived experiences of the human lives big data ecologies, algorithms, and archived information traces are projected to represent and speak for. What seems to have been re-animated instead is a certain technological determinism around data systems as new black-boxed technologies that can now register feedback, and immediately process the "realtime" interactions of subjects across such expansive terrains and rapid temporalities that subalterns allegedly no longer need to speak themselves. Underscoring the often muted voices and narratives of labor migrants themselves, this paper highlights the need to develop methods and analytic lenses into Data Cultures that detours from an exclusive focus on big data as either a discrete technological system with universal impacts, or as a kind of abstracted technological force that can be read as removed from the embodied subjects they mean to represent –or the fleshy entanglements and affective ecologies in which they were developed.

Social networking in a digital and mobile world: the case of environmental migration in Bangladesh
Ingrid Boas (Wageningen University, The Netherlands)

How does the increased use of ICTs interact with the dynamism of migrants' social networks? It could make it easier for migrants to reconnect with old ties, to maintain strong ties, or to make new connections relevant for their travel and settling in a new place. Much change is expected from ICTs giving greater access to new ties through which new information and opportunities arise. In this context, some go as far as to argue that ICTs may *transform* the nature of social networks that migrants rely on.
In this paper I further interrogate what influence ICTs have on social networks and migrant's decision-making: Does it transform migrants' social networks, making weak ties more crucial? Or is its impact rather mediated by existing social network dynamics? In other words, do ICTs have a transformative impact on migration, and if so, in what form? I examine this for internal migration dynamics taking place in the context of environmental change in coastal Bangladesh, heavily impacted by cyclones, erosion and salination. I centre on five steps within this process: leaving, travelling, arriving, dwelling in destinations, and possible return.
Based on this analysis, I make two key arguments. First, ICTs do not so easily *transform* the social networking of these environmental migrants. Instead, people still largely draw on existing network ties to make decisions about moving. Second, this lack of proliferation of weak ties does not mean that the role of ICTs is slim. It has provided migrant communities with more means to rely on their strong and latent ties whilst not being proximate – in facilitating long-term and temporal migration (incl. return), in maintaining whilst reshaping a sense of belonging, and in assisting those still in places of origin.

Image of the other - online ghettos as an inspiration to religious extremism
Hasan Saliu (Kolegji AAB, Kosovo)

The development of communication technology has led individuals from different countries to communicate with each other and discuss about a particular place they see as an emigration option. In the Internet age, immigrants, even within the host country, have the option of selecting information for consumption, selecting the topic for discussion in the public virtual sphere, but also to disseminate information. Through social networks these individuals discuss different issues in society. Using these networks a certain image for the host country is often created. Though the image of a country is created from readings in schools and not only, through media, visits, etc., however discussions within various forums online and in closed facebook groups create the possibility of demonizing a country for religious reasons or cultivating the feeling of victimization within immigrants. The research question here is what is the role of this online communication where different groups or forums promote the language of hatred, intolerance and extremism? Through the survey of some online forums in Kosovo where debates are held for religious issues, the findings prove that online media has today enabled the creation of *ghetto* communication groups. These online communication ghettos spur the extremist spirit by refusing to communicate with other *ghettos* that deal with issues of general interest or that could also affect the mitigation of negative attitudes towards the host country. Interconnection between these communicative pockets in cyberspace is a challenge both for fighting hate speech and safety in general.

A Useful Migrant - The role of new media in creating an anti-migration political community during 2018 Italian general election campaign
Mattia S. Gangi (Università di Catania, Italy)

Ugly, dirty, mean but also useful. During the last Italian general election campaign, migrants had a central role as dominant topic. For this reason, this paper aim is to analyze the role of new media in creating a political community grounded in an anti-immigration sentiment. A counter community based on the hate against 'the others'; Initially identified as the southern Italians, as for the Lega Lombarda of the origins, and now generically as 'migrant populations'. Migration and the others connected issues –such as cultural coexistence, tolerance, economic crisis and racial hate –have been used as identity demarcation line for the different political parties during this brief campaign.

New political subjects, that strongly claim space in the national political arena, seem to have built their identities on the difference between tolerance and fear for what is different from 'Us'. The new Matteo Salvini's Lega, the 'french ambitions' of Giorgia Meloni and her Fratelli d'Italia, and now the new mediatic exposure of neo-fascist movement such as Casapound and Forza Nuova, impose an agenda where immigration and cultural coexistence is almost the only topic. A mechanism in which these political actors, due to a younger leadership, operate strategically trough new media and social media.
There are samples of this strategy in Matteo Salvini's Facebook live broadcasts, or in the redundant production of news spread through Facebook and Twitter profiles of Right-wing deputies and politicians. It is also possible to observe the same logic in the capacity to bring minor current events into public national debate, or in the viral spread of Facebook pages and websites full of racial prejudices and fake news.

New Technologies and new sources of data for integrated system to measure migrations and social integration: Recent achievements and new challenges

Simona Cafieri (Istituto Nazionale di Statistica, Italy)

The latest statistics provide a snapshot of Italy as a country with a resident foreign population of more than 5 million, around 8,3% of the total population (1st January 2017) with heterogeneity among Italian regions and urban areas.
Over the last years the migration pattern in Italy has completely changed: the inflows of migrants are decreasing and have a complete different composition with a growing component of asylum seekers and person under protection. In 2007 the work permits represented the 56,1% of the total inflows. In 2015 the work permits represent only the 9,1% of the new inflows. At the same time the permits for asylum and humanitarian reasons accounted for the 3,7% in 2007 and for 28,2% in 2015. These changes have consequences on characteristics, behaviors and needs of new arrived people and – of course- on the governance of migration flows.
At the same time Italy continues to deal with the integration of migrants arrived between 90's and the early 2000s. There is a growing number of foreigners that acquire the Italian citizenship. In four years, from 2012 to 2016, they have more than tripled: 65.383 acquisitions of citizenship have been registered in 2012 and 201.591 in 2016.
The "second generation of migrants" represents today a relevant part of the new generations with specific needs and expectations, as recently demonstrated by an ad hoc survey carried out in 2015 by Istat. So we are in a phase of transition, considered 'epochal' from a lot of experts of migration studies, first reception and integration. This is also a new challenge for Statistics, called to provide adequate governance tools for an increasingly complex phenomenon.
The integration of administrative data, the use of specific survey and a longitudinal approach represent an important resource for studying both the new inflows of migrants and the integration of settled foreign population.
Migration statistics are under European Regulation since 2007.The aim is to promote the harmonization and the integration of data through the cooperation between data producers within the country and between the different Member States. Following the Zaragoza Declaration, another important step has been made with regards to the principal indicators of integrations. Finally, Regulations 1260/2013 on demographic statistics represented a milestone in the harmonization process regarding population stocks and flows.
The paper illustrates the steps made from a system of different sources of data towards an integrated system to measure not only migrations but also social integration and the new challenges offered by the integrated system of Registers, permanent census and social surveys.

TRACK 24
Social learning and technoscience from below: uses of digital devices and knowledge construction

Convenors: Mariacristina Sciannamblo (Madeira Interactive Technologies Institute, Portugal), Assunta Viteritti (Sapienza Università di Roma, Italy), Letizia Zampino (Sapienza Università di Roma, Italy)

Interpreting personal data and creating knowledge in sports. A coaches' perspective

Lia Tirabeni (Università di Torino, Italy), Amon Rapp (Università di Torino, Italy)

Wearable technologies can support the individual self-monitoring in different domains. They produce detailed biometric data that may be collected by the individual and then shared with others (Lupton, 2013). In the sports domain, self-monitoring is a means to improve athletes'
performances (Kirschenbaum et al, 1982), and more in general to guide training and stimulate self-awareness and self-knowledge as well. Thus, wearable technologies may offer athletes and coaches opportunities to achieve a deeper knowledge of the athlete's body through the collection of a variety of data.
The use of wearable devices and related collected data has been mainly investigated from the athlete's point of view, while the coach's perspective has been received almost no attention. In particular, we do not know how coaches interact with data to support elite athletes in increasing the knowledge about their body and performance. Our contribution aims to fill this research gap by answering the following question: how can wearable devices support, mediate, and integrate the knowledge of coaches concerning their athletes' work?
A qualitative methodology has been adopted: we in-depth interviewed coaches belonging to different sports disciplines comparing their perspective with that of their elite athletes. Our results support the idea that wearable technologies can provide coaches with a greater degree of certainty about athletes' performances during training and races, as well as a deeper "exact" knowledge of their physical condition, finally enabling new forms of learning with relevant implications for theory and practice.

Creating digital knowledge through numbers: notes from a field-study

Veronica Moretti (Università di Bologna, Italy), Barbara Morsello (Università di Roma Tre, Italy)

In recent years, self-generated data has proliferated into numerous spheres of individual activities, creating a new form of (lay)knowledge. Self-tracking activities can simplify information collection by giving users access to graphs, tables, and statistics about their physical and psychological conditions. Apps and wearable devices therefore facilitate self-knowledge through numerical data. Created through self-tracking, these numerical data are socially constructed elements which do not offer a neutral world view. On the contrary, they both describe our reality and influence user behavior; moreover, numerical data are not describing reality, but creating it.
Our research focused on understanding how users generate a set of personal knowledge and how the use of apps and wearable devices reinforce the mechanisms of learning– the creation of the so-called quantified self. Through 20 semi-structured interviews with members of two Quantified Self communities (Turin and Cambridge), we observed how the creation of data foments a new form of self-awareness, especially when shared with experts/other quantified-selfers. During the meeting, the quantified-selfers showed what they learned and how they learned by sharing their ideas and experiences.
Self-tracking allows the 'datification' of one's own experience and activities by effectively transforming numbers into knowledge. This study exposes both the strengths and limits of the relationship between humans and technological devices when they are inserted into daily practices.

Scientific and Individual Knowledge in Period Self-tracking Apps
Letizia Zampino (Sapienza Università di Roma, Italy)

Digital self-tracking technologies are playing an increasingly role in the knowledge construction. This contribution presents a theoretical and empirical analysis of the technoscientific knowledge embedded in one form of self-tracking technologies, which is menstrual period apps used to monitor and transform into data everyday mods, activity, and bodily functions.
Therefore, the contribution focus on self-tracking literature based on three principal critical approaches about the concept of data. The first one read the small data aggregated in big data like a kind of self-surveillance in order to manage and discipline citizens (Kitchin, 2014). The second one emphasise the awareness that data can produce in the users through a constant reflective selftracking (Ruckenstein, Pantzar, 2015). The third one underline new ways of participatory democracy by these technologies with the emergence of citizen-science (Gabrys, 2014).
Self-tracking technologies are embedded in healthcare and in research projects for the possibility to collect real-time data. These digital devices became socio-material assemblages in which are embedded scientific and individual knowledges. The aim of this contribution is to open the black box of three period track Apps through online content analysis: Glow, the modern care for the fertility; Clue, a way to break the taboo through the engagement of users; and Period Calendar, a simple tool to track and predict menstrual period. The objective is to shed light on how they record and collect small and big data, enabling a bottom-up reconfiguration of scientific and lay knowledges.

E-assessment and biometrics: the “one-way glass” authentication via TeSLA
Nathan De Vos (Université de Namur, Belgium)

As a researcher from the CRIDS (Research Centre in Information, Law and Society), my work consists in insuring the ethical acceptability of digital technologies currently developed in the context of research and development projects. TeSLA, a project which has requested my expertise, is aiming to design an authentication system with biometric instruments (facial recognition, vocal recognition and keystroke dynamics) dedicated to the remote assessment of online learners. While learners are fulfilling assessment activities using TeSLA, instruments return metrics to enable teachers to gauge the presence of cheating. The system embeds social representations coming from the two main groups of developers: e-learning pedagogists who want to prevent from cheating and increase the legitimacy of their field, and computer security experts working on the implementation of their “ready to be used” biometric algorithms. Indeed, metrics produced by TeSLA classify learners by measuring indicators whose reliability is taken for granted. Moreover, these indicators do not take account the numerous personal features of the learners and the contextual diversity of use. The designers foresee the output of the project as a normatively neutral toolbox in which academic institutions and teachers can freely pick up the instruments and the settings they prefer without undergoing standardization of their assessment practices. However, despite this will of a certain adaptability within the system, both learners and teachers tend to resist underlying representations embedded by the designers. Learners are suspicious toward the system because of the opaque “one-way glass” judgement induced by the use of biometric instruments while teachers have very personal and unexpected interpretations of the supposedly objective metrics provided by the instruments leading to various ways to evaluate learners' behaviours.

Self-care practices and data production from below: the case of diabetes
Ludovica Rubini (Sapienza Università di Roma, Italy)

In the healthcare system there are multiple technologies that help patients in self-care practices. Among self-care activities, self-tracking plays a key role especially in the case of chronic diseases where the daily monitoring of some parameters becomes necessary according to the features of the disease itself. In the case of diabetes, particularly type 1 diabetes, the delegation of responsibility to the patient is very strong: for the patients it means the development of self-management skills through a long educational journey and the

collection and production of data from below thanks to devices miniaturization as well as their accessibility. The aim of this study is to investigate how wearable technologies, monitoring sensors and the use of mobile app help patients not only on the level of physical well-being but also to improve their engagement. The case study illustrated is about a diabetic centre in Rome where the use of miniaturized technologies is strongly recommended by the sanitary team. For example, sensors for measuring blood glucose, watches for tracking calories, carbohydrate counting app are all instruments which would promote a different approach to the disease and would make less onerous the practice of monitoring by the patient. On the other side, the adoption of the digital technologies involves a reconfiguration of the care practices and an effort to learn the use of the technologies. Monitoring blood glucose, insulin calculation, weighing food and carbohydrate counting become monitored data, made up through the use of technologies which create different configurations for each patient.

Redesigning Access to Encyclopaedic Knowledge in Developing Countries: The Offline-pedia Project

Joshua Mateo Salazar Mejia (Yachay Tech University, Ecuador), Jorge David Vega Bazantes (Yachay Tech University, Ecuador), Sergio Minniti (Yachay Tech University, Ecuador)

The presentation focuses on the *Offline-pedia* project developed at the Yachay Tech University. Offline-pedia is a device designed to function as a rural digital library nucleus whose aim is to make the Wikipedia database accessible in contexts where access to the Internet is limited or not available. The main objective of the project is that of overcoming the digital divide by “re-materializing” encyclopaedic knowledge through the transformation of Wikipedia into a physical device that can be accessed without any connection to the Internet. Currently in phase of prototyping, Offline-pedia will be installed and tested in educational institutions located in Ecuadorian rural communities.

The device itself consists of a low-cost, “open” microcomputer, Raspberry Pi, connected to an analog TV display via an RCA connection and implemented through the use of free software (Debian-based operative system and Kiwix Wikipedia downloader). This configuration makes the device inexpensive (less than 100$) and the project sharable and replicable.

The project adopts a “critical technical practice” perspective (Agre, 1997) and thus proposes an alternative configuration of technology that redistributes access to knowledge and makes knowledge appropriable in disadvantaged contexts. Other issues addressed by the project include:

- the design of technology as a commons rather than commodity, so that technical artifacts can be owned and cared of by local communities themselves;
- the inclusion of recycling and repair work into the design process, thus adopting a “critical repair” approach that, in this case, entails the reuse and adaptation of the analog TV sets that will become obsolete on June 2018 when Ecuador will switch from analog to digital broadcasting signal, in order to prolong the life cycle of such obsolete technologies and reduce the impact and amount of technological waste in Ecuador.

A Critical Making Approach to Actor-Network Theory: “Game of ANT”

Sergio Minniti (Yachay Tech University, Ecuador), José Gerardo Acosta Arias (Yachay FabLab, Ecuador)

“Critical making” is an umbrella term for various distinctive practices that link traditional scholarship in the humanities and social sciences to forms of material engagement in order to explore new ways of studying the relationship between technologies and social life by bridging the gap between physical and conceptual exploration (Ratto, 2011). The aim of critical making is “to articulate and develop novel modes of intervention into dominant systems of information exchange and knowledge generation” that “focus on assembling rather than deconstructing within the modern technological society” (Ratto, Wilie and Jalbert, 2014: 85). In order to reach this goal, critical making practices “theoretically and pragmatically connect two modes of engagement with the world that are often held separate –critical thinking, typically understood as conceptually and linguistically based, and physical “making,” goal-based material work” (Ratto, 2011: 253). Such practices can thus be conceived as engagements between design and social research, implying the exploration of societal issues and social theories through the fabrication of material, interactive prototypes.

Drawing upon the critical making approach, we have developed a project called “Game of ANT”, which focuses on the fabrication of a series of Arduino-based interactive devices reproducing the behaviour of actor-networks within the socio-technical world. “Game of ANT” adopts the Latourian vision of technoscience as war (Latour,

1987) and physically embodies this idea by proposing a sort of war game during which participants play the roles of human or non-human actors engaging with the dynamics of socio-technical life. Using pre-assembled and coded components, participants construct and play with simple, electronic actors/actants that are able to associate and dissociate with each other, thus forming multiple actor-networks that compete for gaining power within an imagined socio-technical world. To win the game, an actor-network needs to crystallize and become a “black box”. The working of the game thus reproduces the basic principles of actor-network theory (ANT) and “translates” the sociology of translation into a gaming experience through which scholars and students can conceptually-materially engage with ANT, hence exploring and approaching it from novel points of view.

How the public male body is being made. A case of Body Mass Index algorithm

Piotr Maroń (Nicolaus Copernicus University, Poland)

The paper tackles the problems stemming from practical implementation of Body Mass Index measurement tool employed in British National Health Service internet platform. The methodological perspective of science and technology studies (STS) will be applied. In particular, Jerak-Zuiderant (2015) theory of situated standardization and Roberts (2016) notion of on bio-psycho-social body will inform my theoretical perspective. Paper argues how problematic, complex and politically charged is the assumption of universality of specific algorithm – Body Mass Index –in the context of private and public health. It argues for the redefinition of the notion of universality as a key attribute of standardizing processes. Subsequently, this paper argues how particular knowledge structures are rendered onto a measured private male body and how the body is ultimately being produced and made public. Furthermore, the trajectory of private body –captured by the NHS measurement tool – is standardized and made public. Consequently, this paper – seeks to unearth the directions and consequences that are suggested for the body in the making.

TRACK 25
Between the local and the global: connection, sharing, and entanglement in the history of technoscience

Convenors: William Leeming (OCAD University, Canada), Ana Barahona (Universidad Nacional Autónoma de México, Mexico)

The fate of locality and top/bottom ontologies under technoscientific conditions

Karen Kastenhofer (Austrian Academy of Sciences, Austria)

This paper is grounded in an empirical case study, zooming in on changes in the Austrian academic landscape during the past decades with a focus on biology and the life sciences. It puts the general question up for discussion: how do locality and local hierarchies (determining 'the below' and 'the top') fare in premodern, modern and postmodern techno/scientific ideals and arrangements and how do we as STS researchers connect to these divergent framings of locality and constructions of hierarchy?
The Austrian academic life sciences pose an interesting case as they have undergone several rather abrupt and tangible changes in the recent past. Around the turn of the millennium they simultaneously adopted organisational changes related to new legal settings pertaining to Austrian Universities, personnel changes related to an almost simultaneous retirement of one generation of scientists and paradigmatic changes related to the late 20th century general shift from organismic to molecular life sciences. In other words, facilitated by simultaneous personnel and organisational changes, they faced a drastic change in scientific community and culture to the extent that the legitimacy of speaking of 'them' as one entity has to be called into question. Rather, I suggest speaking of a biology in Vienna pre 2000 and life sciences in Vienna post 2000 – two cases connected more or less accidentally by geography from a phenomenological point of view. Within each case, locality gains different meanings and 'the bottom' and 'the top' (within academia and in its trans-academic environment) are configured in different ways while the rivalling epistemic paradigm and organisational arrangement is depicted as highly problematic (aka 'underdeveloped'). Needless to say that any STS approach resonates with the two conditions in very distinct ways and interferes with the local hegemony.

Innovating Male Contraception in an International Field of Research – Decolonizing and Bottom-up Interventions

Miriam Klemm (Technische Universität Berlin, Germany)

In the 1970s the WHO established a *Male Task Force* to develop a long-acting, reversible contraceptive for men. The task force coordinated various research projects worldwide and brought international experts together. In the beginning, the researchers in this emerging field of male contraceptive development explored several approaches, for example, immunological, hormonal or plant-based ones. However, in the following decades, a technoscientific path manifested around the hormonal approach, the so-called *Male Pill*. Non-hormonal approaches became disconnected from the endeavor. The specific network around the *Male Pill*, consisting mainly of actors in the USA and Europe, became the center of the international field. It set standards for clinical testing of male contraceptives and took most space in academic reviews and conferences on the topic.One disconnected non-hormonal approach is the gel RISUG, developed by Indian scientist since the 1970s. Despite important links to the WHO in the last century, more recently, the researchers around RISUG have focused on their own national resources and framed RISUG as an *Indian innovation*. Doing so, they aim to legitimize India as a place of origin of innovation. This is necessary as the center reproduces Eurocentric narratives, such as, contraceptive research and innovation from the Global North is needed to stop overpopulation and human suffering in the non-innovative, passive Global South.

Meanwhile, activists in the USA have adopted the concept of RISUG and try to develop the non-hormonal male contraceptive for the US-American market. The activists explicitly question the dominant hormonal paradigm in male contraceptive development and demand cheaper, easier and less invasive methods.
In this paper, I want to discuss how scientists from India and activists from the USA negotiate the dominant scientific discourse and practice of male contraceptive development and question its Eurocentric and elitist tendencies with *decolonizing* and *bottom-up* strategies.

When (post)soviet scientific schools go transnational
Tatiana Medvedeva (Université Paris Diderot, France)

Since the fall of the Berlin Wall, several waves of emigration from the East Block come to mark the international research scene. On one hand, crises and rapid deterioration of the infrastructure were pushing scientists to chose between their career and their home-country, and on another, some areas of studies were flourishing in the East making specialists highly demanded in the global research market. Post-soviet mathematicians and theoretical physicists fall under such a category.
Driven by a complex combination of ideological, geopolitical and economic aims, the USSR have produced a large number of high quality researchers in this field. Although working under totalitarian control and serious restrictions (including discriminations based on ethnicity), by many means isolated from the western mainstream science, soviet math-physicists managed to contribute to the global scientific development by advancing in research programs overlooked outside (Graham&Dezhina,2008, Kojevnikov,2008).
In fact, political context forced soviet math-physicians to form a parallel, somewhat aconformist social infrastructures and to promote specific deontology, ethos, praxis, mode of sociability. Many research groups grew within this –what actors themselves call “Russian” scientific tradition” –and formed internationally known “schools”, that are now transnational. As my findings suggest, collective identifications to these “schools” and “traditions” continue to play a role in the international circulation of (post)soviet math-physicists and professional collaboration practices.
Drawing on the example of a few “schools” in maths and theoretical physics I analyse the genesis and evolution of this “Russian” scientific tradition” and how it performs within changing political contextes and entangled socio-professional networks (local, transnational and global) –and thereby influences fundamental research agenda in the top international scientific centres.

The Electric Cooperatives in Indonesia: Entangled and Competing Sociotechnical Imaginaries
Anto Mohsin (Northwestern University, Qatar)

In the mid-1970s the United States Agency for International Development (USAID) offered the government of Indonesia to sponsor a study to determine the feasibility of employing rural electric cooperatives in the country. The offered was accepted and thus began a collaboration to figure out how to best setup electric cooperatives in Indonesia. In the ensuring years, the USAID provided both technical and financial aid to help its Indonesian counterpart the Directorate General of Cooperatives (DGC) to identify, plan, and build three electric cooperative projects in Indonesia. The USAID recommended a few strategies and provided training courses for relevant cooperative personnel. Some of the USAID’s suggestions were accepted while others were not followed by the Indonesian government. Finally, three areas in three different islands in Indonesia were identified as suitable sites for the pilot project of electric cooperatives. By the early 1980s, the cooperatives were ready to operate. Later, however, there were many issues arose that interfere with the smooth functioning of the electric cooperatives. These problems continued and in the end, all three electric cooperatives collapsed. Their operations, customers, and assets were transferred over to PT PLN, Indonesia’s state-owned electric company. In this paper, I will discuss the entangled and competing sociotechnical imaginaries of the USAID and of the Indonesian government in setting up the electric cooperatives in the country. USAID’s well-intentioned assistance had a certain implied vision in how to provide electricity to the rural areas in Indonesia that was not necessarily compatible with what the Indonesian government envisioned at the time.

Between local and global there is a way to free technoscience from industrial military power?

Elisabetta Della Corte (Università della Calabria, Italy)

Western modernity, over time, has discredited and destroyed traditional knowledge, to the benefit of a new tradition: that of continuous innovation. We know how the scientific development in the so-called advanced capitalist countries is linked to the war industry and then again in other sector as the medical one. In this scenario, the more scientific research is organized, planned and subsidized, the more depends on political power.
This paper intends to shed light on the transformations underway, trying to answer the question of whether it is possible to imagine a new science, "decolonized", released e.g. from the industrial-military apparatus, imagining, for example, a different relationship between local and global, or different forms of participation.
This contribution, taking into consideration the studies on the subject, starts from a brief reconstruction of the question of science and technology from the ancient world to the modern era, then moves on to the relationship between technoscience and industrial military apparatus and the possible ways of liberation from the apparatus of power towards other forms of development.

From Global Sequencing to Local Biology: How Native Organisms Create Bridges in Contemporary Australian Biosciences

Rachel A. Ankeny (University of Adelaide, Australia)

Many Australian native species have joined the push for whole genome sequencing, with the platypus and koala recently leading the way. Such efforts in other domains have sometimes resulted in generating isolated information that is primarily valuable at the comparative genetic level. Relying on lab interviews and observations, this paper will show how in the Australian context, such work has depended on and led to development of collaborative research with researchers in other fields, notably environmental and conservation biology. This example provides an interesting case study for exploration of the emergence of entangled relations between fields and techniques, as well as the development of decidedly local forms of bioscience in the contemporary context.

TRACK 26
Gendering processes in technoscience. Innovative practices and critical reflections

Convenors: Maria Carmela Agodi (Università degli Studi di Napoli Federico II, Italy), Cristina Mangia (Consiglio Nazionale delle Ricerche, Italy), Ilenia Picardi (Università degli Studi di Napoli Federico II, Italy)

Women scientists in STEM: A case study about National Research Council Researchers

Ilaria Di Tullio (Consiglio Nazionale delle Ricerche, Italy)

European Commission latest data show that female researchers in the universities and in laboratories are still the 33% (EC, 2016) and, even if women represent the 47% in doctoral scientific paths, only 1/3 of them choose to study STEM. These data highlight a remarkable gender inequality in scientific field.
Gender issues are settled in institutions which are not *gender neutral* but they contribute to the reproduction of the traditional organizational structure based in male dominated culture (Acker, 1990). From a cultural point of view, it persists an embedded unconscious bias, which consider women closer to the theoretical thought, to the family-care responsibilities, and for this not adequate in fulfilling high scientific positions. Instead, men are considered more talented for the rational and scientific thought and consequently more suitable in performing at high-level positions (Castilla and Benard, 2010).
Through a qualitative research addressed to 19 National Research Council female STS researchers, we carried out interviews aimed to explore the relation between the construction of female personal identities as scientists, the perception of their self-efficacy (Bandura, 1977) and which factors influence life's choices and attitudes.
We explored several areas concerning: career progression, mobility, work environment, work-life balance and the role of CNR in supporting gender equality. Based on the characteristics carried out from the analysis we identified three different profiles: the *Affermata* who consider herself as "I am good and organized at my job, where there's a will there's a way, science is neutral"; the *Frustrata* who perceive herself as "I am good at my job but I don't receive rewards for it. Science is not neutral" and the *Imbrogliona* who consider herself as: "I am a swindler and I do not have esteems, science is not for women".
At the conference I will present reflections on feminist approach in STEM, some of the outcomes of the study, such as the three profiles and a synoptic table of the typology of discrimination came up during the interviews.

Of Data Cultures and Gendered F(r)ictions: Training, Transformation, and Decentering Data Futures from Below

Anita Say Chan (University of Illinois, USA)

Accounts of Big Data as the latest global technology to arrive for universal takeover have prompted a range of reactions among interdisciplinary researchers –from calls for more "algorithmic transparency" to demands to "audit the algorithm" to enable users and researchers alike to be granted more access to the underlying code of digital platforms. Yet even as such urgency has grown among researchers to make algorithms more transparent and legible via such critical strategies, feminist STS and critical data scholars have begun to diagnose their concern for a growing "fetishization of algorithms'' that have left missing any treatment of the human actors, publics, and institutions around which big data ecologies diversely function and are produced. What they stress seems to have been re-animated is a certain technological determinism to algorithms as the new black-boxed technology that can be read as removed from the embodied subjects they mean to represent –or the fleshy entanglements and affective ecologies in which they were developed. This

paper offers an ethnographic lens into one data-driven start up –the Code Academy Laboratoria in Latin America –that has been celebrated for "transforming" women from economically-challenged areas of Latin America into employable coders in six months. Taking a cue from feminist STS and critical globalization scholarship, this project argues for the need to develop methods and analytic lenses into Data Cultures and their frictions that detours from an exclusive focus on big data as either a discrete technological system with universal impacts, or as a kind of abstracted technological force that can be read as removed from the institutional contexts and local sites in which they were developed, used and deployed. And it takes seriously the power of globalizing frameworks of Technological Universalism that project new digital technologies as imbued with inevitable impacts that would set local sites onto a single line of evolution towards a future already pre-determined by Northern "innovation" centers and high-tech capitals.

Prospettive di una pedagogia "radicale". Genere, tecnoscienze ed economia dei corpi

Anna Grazia Lopez (Università di Foggia, Italy)

Le tecniche legate alla riproduzione stanno progressivamente trasformando il corpo femminile in una macchina funzionale al concepimento.
Anche in passato la biologia riproduttiva è stata utilizzata come forza-lavoro. Ricordiamo come l'allattamento al seno dei figli delle donne appartenenti alle classi più abbienti da parte delle balie abbia rappresentato un antecedente nell'uso dei corpi femminili nel mercato del lavoro. Tuttavia, oggi con l'affermarsi della bioeconomia si stanno facendo strada nuove forme di utilizzo del corpo femminile.
Dunque, a un'economia fondata su beni immateriali come la conoscenza si sta affiancando un'economia la cui merce è qualcosa di assolutamente materiale come appunto i corpi (utero, cordone ombelicale, liquido seminale, ecc) su cui si fonda il mercato transnazionale della riproduzione.
Pur nella consapevolezza che ci troviamo di fronte alla naturale evoluzione dell'esperienza umana non si può non riconoscere la problematicità di questi mutamenti e proporre un modello formativo che sia *radicale* come sono radicali i cambiamenti che questi avvenimenti provocano. La pedagogia per la sua identità e la sua funzione critica e contestativa, intrecciando il proprio impegno con la *politica*, intesa come progetto di civiltà, e con *l'etica*, che ha come fine l'umano, può immaginare modelli di formazione "inattuali", capaci di rifiutare il narcisismo e il conformismo che segnano la contemporaneità. Sul piano della prassi, invece, può intervenire nella formazione: di *chi fa ricerca* e che a causa dell'eccessiva parcellizzazione dei saperi, non riesce sempre ad avere quella visione d'insieme necessaria per prevedere le conseguenze degli esiti del proprio lavoro; e della *collettività*, sempre più inconsapevolmente succube di un progetto ideologico neo-liberista che ha messo in atto un'opera di persuasione nei confronti degli individui e causato una "rinuncia al pensare" e ad affrontare le problematiche legate alla salute delle donne e delle generazioni future.

Revisiting Public and Private: From Separate Spheres to Co-living Spaces

Cansu Guner-Birdal (Technische Universität München, Germany)

Co-living spaces, a form of shared housing specifically designed for entrepreneurs, emerged as a new mode of entrepreneurship in the last five years. In co-living spaces, residents who generally consists of start-up communities, do not only share housing, dishes and food; but also networks, communication, technology, ideas, norms, expectations and the like. Such new way of engagement in entrepreneurial activities has already been a common practice in places like Silicon Valley. This practice is also travelling around the globe, becoming more and more prevalent in different regions.
Co-living practices which bring home and work together into one place, revives the old discussions of boundaries of public and private spheres. Back into nineteenth century, the representation of women in public spheres is taken as a "triumphalist accounts of Western modernity". Today, we are witnessing a turnaround, a destruction of the modern division of social life into public vs. private spheres. With the introduction of a new mode of entrepreneurship, private and public realm as well as work and home become highly entangled. However, how such entanglement is gendered remains as a question. Using the case study of co-living spaces in Munich, this study aims to bring the discussion of the construction of public and private back into feminist theory with a new edge.

Drawing on feminist STS, I aim to research on how femininities and masculinities are situated, performed and coded in co-living spaces. I argue that the new mode of entrepreneurship as a technoscientific project, uses blurring boundaries of public and private spheres as a leverage to dominate all aspects of living. Empirically, I based my research on an ethnographic study in Munich. Situational analysis, in-depth interviews and ethnography are planned to be main methods.

Reproductive technology in the complex confluence of postponed motherhood, social constraints and personal choices

Lucia Martinelli (MUSE, Italy), Lucia Busatta, (Università di Padova, Italy), Arne Luehwink (Arco ART Center, Trento)

Human reproduction – 'natural' and medically assisted – is an interesting field to analyze the complexity of a topic with relevant private and social impacts. In Italy, the contemporary economic pressures and the lack of services combined with rigid working conditions tend to discourage women in the most fertile age to embark in motherhood because of the impossibility to conciliate it with work load or with a precarious job. Thus, women in reproductive age are often addressed with messages related to the necessity to have children at the "right moment". Timing is particularly stressed in medical narrative and merges into a more general debate over aging European societies, caused by low fertility rates, stereotypically attributed to the selfishness and carelessness of young generations. A paradigmatic case study is represented by the controversial Italian campaign 'fertility day' addressed to young generations to increase awareness of infertility risks related to postponed parenthood. The disappointment produced by this campaign shows the complexity of institutional communication and demonstrates how communication dynamics play a key role in public awareness. To solve the childbearing delay ending up with involuntary infertility and/or impossibility to get a pregnancy, assisted reproduction technologies and more recently social freezing are going to be offered as opportunities, in the complex confluence of female reproduction, aging and labor market. When these techniques are proposed as new opportunities to conciliate professional needs and pregnancy, a question arises: should a more inclusive society find rather concrete structural solutions for supporting women to conciliate motherhood with professional lives? In our presentation we discuss how the development of structures and work dynamics more oriented to reconcile work and family life could solve the risks of postponed motherhood and help the career development, also of women in science.

Gender analysis in environmental and health research: cases studies and reflections

Cristina Mangia (Consiglio Nazionale delle Ricerche, Italy)

Gender analysis in environmental and health research involves different plans: methodologies, questions and impacts.

Being characterized by a high level of uncertainty, interests and values at stake, to be meaningful a research activity in this fields requires a "post-normal" approach (Funtowicz and Ravetz, 1993). This demand an enlargement of subjects authorized to participate in definition of research questions, work methodologies, collection of relevant information, with a plurality of values and views inside and outside of science. By questioning the idea of objectivity as "seeing everything from nowhere" and recognizing that all knowledges are situated and partial, participatory approach embraces the concepts of Donna Haraway's (1999) of *situated knowledge* and *multiple ways of producing knowledge*. In this framework, the methods of participatory research embody characteristics that several scholars consider feminist methods of research (Schiebinger, 2008).

In terms of environmental impacts assessment, sex / gender analysis allows i) to broaden the interpretation of the results of a research, ii) to avoid underestimating health problems in one sex or another, iii) to avoid that health problems are attributed to causes other than environmental ones. (Mergler, 2014)

But if many of these aspects are well recognized in social science studies, there is more resistance in the so-called hard disciplines with the consequence of increasing conflicts between scientific research, public institutions and citizens on environmental issues.

Starting from my experience as air pollution scientist in areas at environmental risk, in this paper I will present some reflections on how gender analysis has enriched the interpretation of scientific results (Gianicolo et al.

2013, Gianicolo et al. 2014, Mangia et al. 2015) and also their impact on the political, economic and social level (Mangia et al .2016).
Furthermore, I will discuss within a gender framework the participatory research in environmental epidemiology that was implemented in Manfredonia (Italy) with a group of citizens that supported each phase of the research (De Marchi et al., 2017).

Looking backword, looking forward: gendering processes, innovative practices, critical reflections
Maria Carmela Agodi (Università degli Studi di Napoli Federico II, Italy)

About ten years ago, in her book, *Sciences from Below,* Sandra Harding argued feminist science studies and postcolonial science studies had vital contributions to make to social studies of science. Since then, constructivist frameworks and standpoint positioning have been widely adopted by scholars within the STS field. Feminist STS and women's studies in science have provided different perspectives such as exploration of gendered character of technoscience and the study about gender construction through practices, both in the lab and outside of it. Gendering processes and gendered practices are involved in structuring and distributing agency. They enter constitutively in qualifying relevant assemblages and rules in heterogeneous environments, in which techno-science is embedded and collective and individual decisions are at stake. Questions about ignorance, trust and testimony have been the focus of intense attention by feminist epistemologists – denouncing overt cases of silenced evidence, testimonial and hermeneutical injustice (Fricker, 2007) – as well as by exemplar STS (Wynne, 1980, 1992) and postcolonial studies (de Sousa Santos, 2014).
Today, on the one hand, public institutions and funding authorities – as the European Commission –have been accepting some of these hints (Schiebinger, 2011) and highlighting the relevance of sex and gender analysis as a factor contributing to the development of new ideas in research and to fostering innovation, so encouraging the development of gendered innovations (Gendered innovations Report, 2013). On the other hand, women and gendered self-identified groups are more and more active among minorities who place themselves as alternative or even antagonistic points of view around issues of knowledge co-construction, technoscientific impact and access to innovation, particularly its transparency and democratization. This contribution focuses on the gender dimension as a reflective access point for assessing investment in technoscience, intervention policies and involved social groups' contribution to resulting outcomes.

Paradigmi a confronto nella medicina: il ruolo delle donne nella costruzione del sapere ostetrico
Ilenia Picardi (Università degli Studi di Napoli Federico II, Italy)

La campagna mediatica #bastatacere, attivata sui social network nel mese di aprile del 2016 per denunciare le dimensioni del fenomeno *Violenza ostetrica*, ha portato alle luci della cronaca gli abusi subiti dalle donne durante il parto, denunciati dall'Organizzazione Mondiale della sanità (OMS) e registrati in Italia dalla ricerca nazionale realizzata dalla Doxa per conto dell'Osservatorio sulla Violenza Ostetrica Italia. Secondo i risultati di questo studio il 21% delle mamme italiane con figli di 0-14 anni dichiara di aver subito un maltrattamento fisico o verbale durante il primo parto, con episiotomie effettuate senza consenso informato per 1,6 milioni di partorienti. D'altronde, nonostante le indicazioni dell'OMS che propone protocolli "leggeri" di assistenza alla gravidanza nei casi di basso rischio (4 visite, una sola ecografia ostetrica, una sola analisi del sangue) le pratiche mediche condotte in numerose strutture ospedaliere vertono verso l'eccessiva medicalizzazione della gravidanza e del parto. Secondo i dati forniti dal Ministero della Salute, nel 2014 i **cesarei** sono stati il 35% dei parti, con una punta del 60% in Campania, contro l'indicazione di percentuali di parti cesarei non superiore al 15% riportata dall'OMS (Rapporto CeDAP 2014).
Il paper propone uno studio sulle pratiche di condivisione e accrescimento di conoscenza messe in atto da reti di donne con l'obiettivo di potenziare le competenze nella fisiologia della gravidanza. La ricerca è realizzata mediante focus group e osservazioni etnografiche delle pratiche di mutualismo messe in atto da associazioni di donne che, con il sostegno di ostetriche e *practitioner*, costruiscono un sapere dal basso, alternativo al *groviglio di potere e sapere* messo in atto negli ospedali (Foucault, 1969) e dal paradigma dominante nella Ginecologia e nell'Ostetricia, affinché possano vivere la maternità e il parto in modo consapevole, nel rispetto delle loro individualità e culture.

Health and gender: the role of TRIGGER in gendering science and technology

Rita Biancheri (Università di Pisa, Italy), Rosa Maria Bruno (Università di Pisa, Italy), Eleonora Da Pozzo (Università di Pisa, Italy), Stefania Landi (Università di Pisa, Italy)

The Horizon 2020 European project TRIGGER (Transforming Institution by Gendering contents and Gaining Equality in Research) sustained the development of several gender-aware studies. The efforts of the Italian group from the University of Pisa were oriented, in particular, to 'gendering science and technology contents and methods' through the establishment of multidisciplinary working groups (with physicians, social scientists and engineers).
A first track – in the field of medical studies – was related to the psychosocial determinants of cardiovascular risk. The authors investigated how the adoption of a gender perspective in its broader declination (that means introducing gender as a product of social processes) contributes to improve knowledge in a sector – that of hypertension – where many studies are still reductive and often contradictory. A second track concerned the usually lengthy and costly process of drug development and deepened the possibility that its high rate of failure could also be linked to gender. Sex differences in drug absorption and efficacy, indeed, have been largely described, and strongly emerged during the last decade. In this regard, it is highly significant that in Italy additional regulations were introduced concerning the female population proportion that should be involved in clinical trials. A third track, finally, was aimed to focus on the role of healthcare spaces within the therapeutic process, starting from the healthcare centers for chronical diseases and, in particular, from those realized in historical hospital. To this end, a gender-sensitive method was developed for analysing patients' perspective on environmental quality and perceived comfort.

Making sustainable menstrual management possible? Gender, technologies and sustainability

Jacqueline Gaybor (Erasmus University Rotterdam, The Netherlands)

In the autonomous city of Buenos Aires, Argentina waste from disposable feminine hygiene products is the fourth largest component of the total solid waste. This type of waste has no post-use treatment, ending up in the landfill and taking hundreds of years to decompose. A wave of innovation of reusable technologies for the management of menstruation has emerged in the last decade -led by women entrepreneurs- to tackle this and other environmental and health-related issues. Innovators propose to redesign the management of menstruation through reusable menstrual technologies, while trying to establish a more sustainable society by means of preventing waste production, changing consumption habits and promoting re-use.
In this article, I explore the vision of the innovators and the users of reusable menstrual technologies. I analyze how, on the one hand, the innovators inscribe their gendered vision of the world in the design of technologies and in the discourses built around them. On the other hand, I analyze the experiences of the users of these technologies, their correspondences and not correspondences with what is prescribed by their designers regarding the use, nature, and purpose of these devices. My analysis is grounded on Feminist STS to explore the process of social transformation in terms of technological innovation in menstrual management. I draw on qualitative research conducted in Argentina, to argue that making a sustainable management of menstruation is partially possible through the technical potentials of reusable devices, as users' environmental ethics became articulated through the technology's use. However, these efforts tend to be limited to a particular socio-economic status of women.

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Male and female citizenship: producing and consequences. Neoliberal and solidary policy in the philosophical perspective

Michał Bomastyk (Nicolaus Copernicus University, Poland)

The producing of citizens in the Western-European society is realized by constructing two spaces in which male and female bodies were situated: private and public one. If we say that Cartesian "mind-body" dualism was interpreted by male values and aims then we can claim that this dichotomy led to constitution of different understanding of masculinity and femininity. Hence, the dualism "mind-body" in the patriarchal society determines male bodies as privileged to show in the public space. This stabilization of relations of power is realized at the cost of marginalization and exclusion of female bodies, which are situated for this reason in the private space.

In my paper, I claim that female bodies are marginalized and excluded because the public space is determined by neoliberal rules. They do not allow for interests and needs of all bodies but only those which are privileged in the society. Thus, I argue that neoliberal policy is homogeneous.

What is more, it is necessary to destabilize the way of functioning of the neoliberal institutes and propose, following Judith Butler and Donna Haraway, a new way of pursuing a policy because all bodies should own the same right to show in the public space regardless of gender or social and economic status. In my opinion, a pattern of new policy is the pattern of solidary policy which allows for heterogeneous, relational and egalitarian perspective (Butler 2016) to live-with, think-with, become-with and stay together with the trouble (Haraway 2017).

Competing Sociologies: An interpretative Review of Apps against Cyberbullying

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Over the last decade, research on cyberbullying has increased very rapidly, as demonstrates the high number of literature reviews summarising determinants, consequences for mental health, existing prevention or intervention programs and their assessment (Kiriakidis & Kavoura, 2010; Kowalski et al., 2012; Aboujaoude et al., 2015; Nocentini et al., 2015; Cioppa et al., 2015). The reason for this attention is the recognition of the phenomenon as a serious and ubiquitous public health issue affecting a significant number of children and adolescents. Interestingly, the digital nature of cyberbullying pushed many developers to build and release smartphone applications to contrast the phenomenon. These are however very heterogeneous in design, content, and scope and to date have not been fully examined (Topcu-Uzer & Tanrikulu, 2017).

Based on these considerations, this contribution provides an interpretative review of the existing native applications meant to contrast cyberbullying. Since most of the research in cyberbullying has been conducted by computer scientists, psychologists, and criminologists, the overarching aim of this work is to provide a complementary lecture. In a sense, we would like to 'make the familiar exotic and the exotic familiar' respectively to computer scientists and STS scholars approaching the theme.

We partly draw from Greenhalgh et al. (2005; 2009) method of 'meta-narrative review' in order to make sense of the heterogeneous body of applications that can be found in the digital market. In other words, not only we search and categorise what has been produced thus far, but we also unveil the underlying assumptions of the different approaches and show how they resonate with three main sociological frameworks. More specifically, we first identify all the apps in iTunes and Google Apps Marketplace that aim to fight cyberbullying as a primary or ancillary objective. Hence, we distinguish between 5 different typologies, namely *content-based*, *parental control*, *community-based* and *automatic screening*. For each category, we disentangle the underlying

assumptions of each typology regarding the phenomenon itself, the role of technology, the role of teens, parents and significant others, and the proposed solution. We then illustrate how these underlying assumptions resonate with three main sociological frameworks, namely Rational Action Theory (RAT), Foucauldian Studies (FS), and Actor Network Theory (ANT), and highlight how the limitations of the theories go hand in hand with that of the applications. We associate RAT to content-based applications, namely the apps that provide didactic information on the nature and consequences of cyberbullying. In this light, the phenomenon can be solved by filling the knowledge gap of parents and teens: once in possess of the information regarding how to prevent or intervene, they will act rationally for 'avoiding the pain' caused by cyberbullying. Parental control and community-based applications resonate instead with FS, and particularly with the idea of a digital panopticon: their underlying objective is to discipline and secure teenagers by increasing control over their use of technology. Finally, ANT is well suited to highlight the active and partially independent role of applications that employ automated technologies to establish a dialogical engagement with teenagers. We conclude by suggesting possible lines of research for social scientists and some food for thought for app developers and computer scientists.

Participatory culture: new shapes of civic participation through digital platforms

Inês Santos Moura (University of Aveiro, Portugal), Vania Baldi (University of Aveiro, Portugal)

The values of democracy and diversity are present in a participatory culture and, therefore, in the interactions among their members. As a result of that, users have the chance to discuss issues that concern them, perform decisions collectively and individually and, consequently, they can express themselves through different shapes and practices (Jenkins, Ito, & boyd, 2016). The participatory culture promotes citizen participation and integrates the methodology and work principles of digital platforms, where it is promoted the change of a social reality through the use of different technological tools, through participation and the engagement of a group of people for the accomplishment of that transformation. There are many digital platforms that contribute to the development and strengthening of a citizen participation, such as the "OpenIDEO" (https://openideo.com/) that allows people from different parts of the world, and with different professional and social backgrounds, to work collaboratively and voluntarily to solve and respond to global issues related to education, health, human rights and others social matters. The "OpenIDEO" project is based on the work methodology of design thinking, where social issues are treated as challenges. The challenges are cooperative work processes that create spaces for community members to contribute and strengthen each other's contributions on a given topic. "OpendIDEO" provide the conditions for implementing these ideas into the offline world and it is relevant to mention that the participatory culture is not restricted to a platform or to a set of technological definitions, it must be understood as a sociocultural phenomenon in which individuals are responsible for their creation and execution (Jenkins, Ito, Boyd, 2016).

Taking responsibility in agricultural innovation: the case of a network of organic rice farmers in Italy

Elena Pagliarino (Consiglio Nazionale delle Ricerche, Italy), Stefano Bocchi (Università di Milano, Italy), Francesca Orlando (Università di Milano, Italy)

Since the green revolution in the 1960s to the current one based on sensors, satellites, digital technology and robotics, a typical top-down transfer of technology has massively characterized agriculture all over the world. In intensive cultivation the degree of autonomy, creativity and responsibility of farmers is limited by the continuous external inputs of chemicals such as pesticides and fertilizers, technologies, scientific knowledge and policy measures.

The issue of sustainability has brought complexity and uncertainty in this mainly linear process of innovation, fostering agriculture towards alternative models. Agroecology represents an innovative paradigm in which external inputs are minimized and the internal resources of the farm and those of the territory are valorized. In the transition to agroecology, there is a need of farmers' direct management of resources and their involvement in the governance of the agricultural knowledge and innovation system.

The work focuses on the experience of a group of farmers who are applying organic practices and methods to rice production in one of the most intensive and profit-yielding area of Italy. The informal network that a dozen farmers coming from three different regions set up is open to other farmers who can join and it includes

academic researchers, public officials and private companies managers. They periodically meet to discuss agricultural practices and results, criticalities and opportunities for innovation. They stimulate and participate in research projects.
The study uses a case study approach and a combination of ethnographic methods such as participant observations and deep interviews to explore the process of co-learning, mutual support and empowerment among this heterogeneous group.
The evidences of the research contribute to the definition of concrete strategies and policy recommendations on how multi-actor participatory research can support the process of assumption of responsibility and participation in decision-making on agricultural science.

Youngsters and Collective Action: narratives of the city and the (re)construction of social ties and the citizen participation

Ana Garcia (Universidade do Porto, Portugal), Eunice Macedo (Universidade do Porto, Portugal)

Within the context of the capitalism system, the present occidental society has revealed the weakening of the community ties, the social bonds and the solidarity (Paugam, 2008). In the contemporary world, the community is an important context for the development of the interpersonal relationships, solidarity, participation and for the social well-being. And the youngster population has a significant role in the construction of those connections and in the intervention processes. Although, is considered problematic the relationship of the youngsters with the citizen participation and the political system, because it is not presenting an effective answer for their needs, interests, identities and diversity (Pais, 2005), so it is necessary to create plural spaces of new educational experiences and free expression, where the youngsters can have visibility and “voice”, participating in the decision-making and to suggest creative solutions for the problems that are affecting them. Therefore, beyond of the creation of a juvenile social research group, of participation and artistic/cultural production, guided by participatory investigation processes, the present research project is developing a multimedia book and a collaborative and interactive digital platform with a group of youngsters from a social housing in the city of Porto, Portugal. One of the main aims is generate an online and offline network between the different communities of the city, to enable and establish a cooperative interface of participation and sharing of the coproduced contents of the participant group with other groups and local government. All this collective process, besides increasing skills of self-management, collaboration and democratic practices, creates a basis for enriching citizenship and for social and human development.

Perspectives on the Ontological Turn debate: Methods, Politics and Ontologies

João Duarte (Universidade de Lisboa, Portugal)

Facing technoscience “from bellow”, taking a great variety of grassroot practices, means the inclusion of other social actors. In the growing polissemic interests in including these others in the technoscientific developments, there is a clear interest in the recognition and valorisation of these efforts. This work turns its face to one contemporary debate that takes place in the field of Anthropology, in which the regard of others implies valuable considerations over the practice and theory of the discipline. The will of stating experimental ethnographies brings together several authors and has as a mentor figure Eduardo Viveiros de Castro. His research over Amazonia has already made him vocal over Amerindian Perspectivism: “The truth of the relative is the relation”, by which the ethnographer experiments over the viewpoint of the native. This “turn of the epistemological screw” is focused upon an exercise of experimenting and multiplying, towards the 'ontological self-determination' of the people. The role of the anthropologist is here reframed to include a certain ontological diplomacy, built from Latour's concept of 'cosmopolitics'. David Graeber is an oponent to this movement, anchored in the one reality of Critical Realism and accusing the incommensurability of the ontological approaches. Still he stated the same practice of theoretical re-conceptualisation coming from his field work in Madagascar. The analysis of the Ontological Turn debate between Graeber and Viveiros de Castro frames three dimensions of interest. First, a methodological contrast is set between the traditional focus on the *episteme*, as construction of knowledge and the Ontological Turn' experimental, playful and even anti-epistemological way. Second, a political dimension is understood from both authors research interests and practices. Graeber is allied with global anarchism, with an alter-globalisation viewpoint, as Viveiros de Castro is part of the plural indigenous peoples from Amazonia and their 'localist' perspective. Finally, two very striking

ontological positions are taken. The Monism of the one true reality is challenged by the consideration of these different ways of being as a form of Ontological Pluralism.

Is VAR technology really helping the game? Public debate in Britain and Italy

Marco Rangone (Università di Padova, Italy)

The application of technology to professional sport practice has been influential in the last decades, and STS have tried to keep up (e.g. Kerr 2015). Most recently, technology has been used to help umpires to make correct decisions on the field of play (Collins, Evans, Higgins 2016).
While the technology used, as well as the time and pace of its introduction, have varied among different disciplines, soccer has proved to be very unsusceptible. It's only very recent the adoption of VAR (video assistance referee) technology that would support refs in dealing with the most delicate situations.
Collins et al. have showed that allowing tv audience, commentators or even the crowd at stadia (as in rugby, for instance) reviewing actions on screen in real time and often with better angles heavily reducee referees' epistemological privilege thereby undermining their ontological authority. Although this may help reduce unjust decision, it may be also damage some crucial aspects of the game in the longer run.
We would like to enquiry this aspects by analizing how journalists and commentators have discussed the introduction of VAR in soccer as well as the specific episodes in which it was involved in the British and Italian main competitions (League Cup and Serie A, specifically). We will make a comparison of the articles dealing with VAR issues in two British and two Italian newspapers in the 2014-17 period, as made possible by the TIPS (Technoscientific Issues in the Public Sphere) research project carried on by the Pastis Research Group at the University of Padua.

Responsibility and the Living Lab approach

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An emerging question is how Responsible Research and Innovation (RRI) concerns the educational process with reference to people taking part -responsibly- in the decision making processes, that more and more affect socio-technical components, related to own personal, social and political spheres.
Among the main keys to RRI, education and science education bring with them the main dimensions that have been debated in the last 30 years -*cultural, useful, democratic, social, participative*- that further challenge the "conceptual indeterminacy" of the notion of responsibility.
Two on-going Erasmus plus projects -DESCI and DIYPES- are facing the issue: in particular, the DESCI project - Developing and Evaluating Skills for Creativity and Innovation- is focused on students' and actors' involvement in alternating training processes. The project takes advantage of the Living Lab approach and tests it in co-designing, implementing and evaluating alternating training scenarios, considering the school as asocial hub connecting societal actors.
Coherently with the debate on RRI that shifted in last years, from being centred on "responsible science" to including "responsible governance", the RRI approach does not simply increase the number of "responsible people facing the citizen", but rather includes individual and collective responsibility for the action to be performed, both considering the social practices and the multi-direction of the relation of responsibility. For instance, in domotics applications related to "The house of grandparents", Living Labs must allow, define and foster relations of responsibility of students and tutors towards "grandparents", territory and community; teachers towards students; external tutors – eg: research centers enterprises, they too expression of the territory- towards the school environment; school towards stakeholders; alternating training actors towards society as a whole.
The main dimensions of RRI introduced by literature -anticipation, reflexivity, inclusion/deliberation and responsiveness-, are conceptually admissible within the Living lab practice. Nevertheless, they must be ascertained with reference to the variety of learning environments, also considering cognitive and normative references.

Moreover, according to the notions of “responsibility” and of “political act” adopted, the Living Lab may be required to play different roles in social and political action and also, following Hanna Arendt perspective, focusing on the individual creative dimension implicit in the political action.

Towards an Integrated Information System for University Sustainability (ISUS)

Alessandro Sciullo (Università di Torino, Italy), Dario Cottafava (Università di Torino, Italy), Laura Corazza (Università di Torino, Italy)

According to the multidimensional nature of the processes behind the sustainability of contemporary socio-economic systems and organizations, University of Torino has established an organizational unit (UniToGreenOffice-UniToGO) aimed at promoting research and activities in five intertwined fields of sustainability: mobility, waste, energy, green procurement and food. UniTo’s sustainable performance can be better managed using the *hardware* represented by UnitoGO, and a *software* relying on data retrieval. Collecting. processing and spreading information is in fact a complementary and instrumental way to achieve university sustainability as well as corporate’s sustainability.

Our contribution is aimed at describing the main concepts and tools that could be implemented as a way to layout a tool inspired by and devoted to Integrated Information System for University Sustainability (ISUS). Current Examples of ISUS are software and web-apps like EcoWebDesk, EcoEnterprise, Verso. Our work offers theoretical insights to go beyond the current ISUS considering the potential benefits connected to an effective integration:

- among the organizational processes that ordinary provide data in order to avoid overlapping and waste of resources
- among quantitative heterogeneous data produced by administrative, technical and monitoring processes and qualitative data coming from the active involvement of university’s users that should be considered as the main sensors (perceptions) and leverage (behaviors) for supporting the improving of sustainability
- among the different organizational needs that an information system can fulfill and namely management, control, assessment and reporting

The main expected result of implementing ISUS will be the efficient valorization of the existing resources both on the side of producing more effective information by activating a better qualification of data from the bottom-up and also on the side of providing a wide basin of shared information that can be approached from the many different perspectives derived from the growing systems of indicators to assess Universities’ sustainability efforts (e.g. Greenmetrics, GRI, Rootability).