

## Panel 29. Navigating the Grey: Assemblage Thinking and Digital Artifacts

### Convenors:

Kevin Carillon, *Université Catholique de Louvain*

Lilo Meier, *European University Institute*

Viadrina François Lambotte, *Université Catholique de Louvain*

Silvia Gherardi, *Università di Trento*

### Keywords: assemblages, digital artifacts, digital biographies, entanglements

Rooted in the work of Deleuze and Guattari (1987), assemblage thinking underscores the interconnected and emergent nature of phenomena. While long employed in disciplines like geography (McFarlane and Anderson, 2011) and urbanism (Sendra, 2015; Kamalipour and Peimani, 2015), assemblage thinking is now gaining traction in Science and Technology Studies, particularly in the examination of big data tools, algorithms, and AI—collectively termed 'digital artifacts'—in various contexts (Tanweer et al., 2016; Lee, 2021; Schjøtt Hansen and Hartley, 2023).

Within this approach, assemblage thinking enables us to analyze digital artifacts as intricate assemblages evolving across time and space (Williams and Pollock, 2012; Hyysalo et al., 2019; Glaser et al., 2021). Moreover, it empowers us to explore broader assemblages—technical, political, social, economic, and ecological—in which digital artifacts serve as components, contributing to their sociomaterial fabric.

However, the growing popularity of assemblage thinking should not overshadow the lingering epistemological, methodological, and practical challenges associated with its application for studying technologies. Furthermore, by questioning extant epistemological and ontological dichotomies, its capacity to challenge our understanding of what constitutes 'good' technology remains largely untapped. The panel thus aims to explore, entangle, and disentangle the potentialities and pitfalls of assemblage thinking for studying digital artifacts.

We welcome submissions from various traditions in diverse and creative formats, including theory papers, essays, and empirical work. Possible venues of inquiry include but are not limited to:

- How does assemblage thinking help us move beyond a simplistic view of technology to reveal diverse perspectives on digital artifacts, particularly in terms of accountability, fairness, and ethics?
- In what ways can assemblage thinking offer an alternative perspective for recognizing and embracing our entanglements and responsibilities within interdependent relationships between humans and more-than-humans?
- What are the underlying mechanisms that govern the emergence, development, and eventual demise of assemblages?
- How do these transformations affect the very nature of digital artifacts?
- How can we bridge competing theoretical and linguistic positions in the use and discussion of assemblages and beyond?
- How can we highlight dynamics of power and domination in relation to digital artifacts and, in doing so, address the critique of "flatness"?
- How can we study assemblages, and what new methodological approaches can help highlight them?
- How can assemblage thinking provide new tools for critiquing the development, deployment, and use of digital artifacts?

This panel invites participants to share their empirical cases, approaches and theoretical reflections on the conceptual toolbox of assemblage. The goal is to create a temporary space for collective exploration, discussion, and critique of the limits and potential of assemblage thinking in studying digital artifacts. Collectively, we seek to develop an evolving knowledge base for approaching digital artifacts through the lens of assemblages.



11 JUNE 2025 09.00 - 11.00

## ID 434 - The evolution of platforms as socio-material assemblages

*Davide Tanto, Università degli Studi di Milano - Bicocca*

**Keywords:** Platforms, Actor-network Theory, Controversies, Assemblages, Web 2.0

Twenty years ago, the term "Web 2.0" was coined to describe the radical transformation of the way the Internet was structured. A new model for digital companies based on the implementation of platforms, complex online infrastructures managed by algorithms, emerged. Users became the main actors in the novel paradigm thanks to their activity as creators of the content populating platforms. A centrality that generated great hopes about the final overcoming of many of the traditional barriers to people's engagement in the public sphere. The passage from a web of publishing to an Internet of participation was heralded.

The optimism, however, faded away very soon. The growing commercialization of platforms led to a re-thinking of the role of users, now seen as prosumers and as mere sources of behavioural data. Previously conceived as spaces of possibilities and interaction, platforms become architectures of extraction where people's activities are monitored and datafied for the sake of companies' economic profit. Although it reveals the dynamics of exploitation currently taking place on the Internet, this narrative is too unidirectional in describing this transformation. The development of platforms appears, indeed, to be fully guided by the imposition of corporations' capitalistic logic upon users by means of its inscription into powerful and ruling algorithms.

This contribution aims to advance an alternative understanding of this evolution premised upon the theorization of platforms as socio-material assemblages. According to it, the current shape of digital platforms in terms of practices, policies, and infrastructure emerges from the relationships between users, companies, and algorithms and their continuous redefinition. Platforms, thus, become fields of constant negotiations between companies' race for profit and users' interests in performing their digital activities according to their needs.

This approach entails an original strategy of research that recognizes the fundamental role played by users and algorithms in the Web 2.0 paradigm without limiting its focus on digital companies' logic. Platforms' economic model is based upon network effect and, thus, cannot work without users' central activity as content creators. This confers great bargaining power to them because corporations cannot lose them and, so, must adapt their policies to their requests and concerns. At the same time, the role of algorithms cannot be reduced to mere intermediaries of companies' will. Surely, specific aims are inscribed in their design, but, when deployed in the assemblages, they modify in unpredictable ways the social reality due to users' often unexpected perception and adaptation to them. Therefore, adopting a concept of actor-network theory, they can be defined as mediators. Following these acknowledgments, to understand the evolution of platforms is fundamental to look at the relationships established between these three elements. In particular, as suggested by actor-network theory, the focus must be on controversies, namely on the moments where these links are contested and redefined. The study of these crucial events not only can highlight the distributed agency in the shaping of platforms but can also explain and compare the different evolutions of digital assemblages and of the practices there performed.

11 JUNE 2025 09.00 - 11.00

## ID 645 - "Unpacking the Digital Border: Accountability and the Assemblage of Power in Contemporary Border Governance"

*Ismini Mathioudaki, Scuola Normale Superiore*

**Keywords:** border assemblage, digital border, artefacts

This research investigates the digital border through the lens of materiality and multi-sited infrastructure, proposing that digital borders should not be seen as immaterial or purely abstract constructs, but as an



assemblage of interconnected, material and non-material components. Drawing from the idea that these systems possess a dual nature, being both socially constructed and society-shaping, this article examines the digital infrastructure of the contemporary border as socially constructed artefacts interacting among themselves to achieve specific objectives. By drawing on the "polychora" metaphor, this study argues that the digital border is not a monolithic entity, but a fluid, multi-dimensional space, emerging through a complex web of technological, spatial, and temporal dynamics. This assemblage includes not only the digital technologies employed in border management—such as biometric systems, risk assessment algorithms, and surveillance infrastructures—but also the actors and institutions operating them, including developers, border authorities, policymakers, and those subjected to them. These diverse elements interact across multiple layers and locales, contributing to a dispersed, yet highly territorialized, border regime. In contrast to conventional depictions of digital borders as 'black boxes'—opaque, inscrutable systems that evade scrutiny and accountability—this research argues that approaching the digital border as an assemblage enables a more robust framework for identifying the actors involved and their respective responsibilities. Automated systems for sharing information across large-scale IT infrastructures often obscure lines of accountability, allowing those responsible for decision-making—whether designers, developers, or border enforcement agencies—to evade scrutiny for the impacts of their actions. The study contends that by re-framing the digital border as an assemblage, we can begin to map out the multiple, interconnected layers of decision-making, enabling a clearer delineation of responsibility across both human and non-human actors. This approach challenges the prevailing notion of the digital border as a singular, de-territorialized space by emphasizing its material and spatial multiplicity. Hence, by highlighting how the digital border, far from being a static or immaterial phenomenon, is shaped by the tangible infrastructures that mediate it, spanning both physical and digital realms, and mapping out the various actors involved, can render the accountability gap smaller. This framework thus pushes for a rethinking of how we understand accountability within the digital border context. By acknowledging its materiality and complexity, we can better address the opacity of current systems and move beyond simplified portrayals of borders as unchanging, fixed, or invisible entities. Instead, we recognize the digital border as a dynamic, multi-sited infrastructure—a "hybrid border"—in which the interplay of human, technological, and legal forces plays a crucial role in governing mobility and shaping societal boundaries. Through this lens, the research offers a more nuanced, multi-dimensional understanding of the digital border as a highly contingent and ever-evolving assemblage, with responsibility and accountability distributed across a complex network of actors and components.

11 JUNE 2025 09.00 - 11.00

## ID 805 - Talks like an object, walks like an assemblage. Let's talk about PDF

*Mace Ojala, Ruhr-Universität Bochum*

**Keywords: assemblages, digital artifacts, infrastructure, format**

The Portable Document Format, the PDF, is everywhere. For example, the call for papers this abstract is responding to is a 4.6 kB PDF file downloadable from the STS Italia conference website. Academia is one of many sites of high PDF intensity, and so are bureaucracies, travel arrangement, commercial exchanges, contractual situations, death, citizenship, libraries and archives, and when megacorps trawl the web for training their models. What is going on in your Downloads folder, within which this legacy format tends to accumulate? The PDF was originally developed at Adobe thirty years ago. As such, it is an very interesting example of an old technology, a digital artifact which gives surprisingly much shape to what is possible today and in the future. PDF has been in the custody of the International Standardization Organization (ISO) since 2008 as the ISO 32000-1:2008. The association with Adobe is still strong, not least because of Adobe products such as Acrobat Reader, which I dare to bet is installed on the computers of most participants of STS Italia 2025.

This banal, everyday technology is understudied and undertheorized, as is the case with so often with infrastructures which tend to recede to the background (Star 1999). Study of infrastructure has a strong tradition in STS. Formats are a productive object of STS research, and some of this work has already been



started in media studies (Jancovic, Volmar, Schneider 2020; GfM 2020). An influential, longer format study was Sterne's 2012 MP3. The Meaning for a Format.

The chapter 12 of *A Thousand Plateaus* (Deleuze and Guattari, 1987/2005) provide a classic critique of hylomorphic schema (Ainsworth, 2024), offering assemblage thinking as an alternative to it. In their expansion of containment from "holding within" to "holding together" Schoot and Maher (2022) already offer a bridge from forms towards assemblages (Angerer et al, 2024). I would like to use the opportunity of the Navigating the Grey: Assemblage Thinking and Digital Artifacts panel at STS Italia 2025 to develop assemblage thinking of the PDF file format as an alternative to PDF as a form/format, and offer some insights from my ongoing excavations into PDF files.

#### References:

- Ainsworth, Thomas. (2024). Form and Matter. SEP.
- Angerer, Marie-Luise, Ingrid Richardson, Hannah Schmedes and Zoë Sofoulis. Containment. Holding, Filtering, Leaking.
- Deleuze, Gilles and Felix Guattari (1987, 2005). *A Thousand Plateaus*.
- GfM (ed). *Media Format* (2020). ZfM. Issue 20.
- Jancovic, Marek; Axel Volmar; Alexandra Schneider (eds.) *\*Format Matters. Standards, Practices and Politics in Media Cultures\** (2020).
- Schoot, Ignace and Charles Mather (2022). Opening Up Containment. ST&HV.
- Star, Susan. (1999). *Ethnography of Infrastructure*.
- Sterne, Jonathan (2012). MP3. The Meaning for a Format.

11 JUNE 2025 09.00 - 11.00

## ID 826 - Assembling Sustainable Development: Constructing a Multi-Layered Framework for Analyzing SDG Dashboards

*Koen Borghys, SMIT*

*Rob Heyman, Vrije Universiteit Brussel*

*Koen Borghys, Prof Dr Rob Heyman*

**Keywords: Assemblage thinking, SDG dashboards, socio-technical imaginaries, actor-network theory, critical data studies**

This paper develops a multi-layered theoretical framework for analyzing how SDG dashboards shape the localization of Sustainable Development Goals (SDGs) in the Brussels-Capital Region (BCR). Drawing on assemblage thinking (Deleuze & Guattari, 1987), actor-network theory (Callon, 1987; Iliadis & Russo, 2016; Latour, 2007), and critical data studies (boyd & Crawford, 2012; Dalton et al., 2016; Iliadis & Russo, 2016; Kitchin & Lauriault, 2014) this paper conceptualizes SDG dashboards as sociotechnical artifacts that actively shape, reinforce, and challenge dominant understandings of sustainable development.

While SDG dashboards present themselves as neutral data infrastructures, they are embedded in political priorities, governance structures, and technological constraints that influence how sustainable development is defined and measured (D'Ignazio & Klein, 2020; Kitchin & McArdle, 2017). By integrating concepts from sociotechnical imaginaries, data assemblages, ANT, and affordance mechanisms, this framework provides a multi-layered approach for critically analyzing how SDG indicators are selected, visualized, and interpreted through digital infrastructures like data dashboards.

This framework is designed to support an in-depth investigation of three key questions: 1) How is sustainable development renegotiated between global frameworks and their local interpretation? 2) How do data infrastructures mediate and reshape understandings of sustainable development? 3) How is sustainable development reframed to fit the medium of dashboards?

Using the BCR's SDG monitoring practices as a case study, this paper contributes to ongoing debates on assemblage thinking by demonstrating its potential to reveal the context-dependent, relational, and evolu-



ing nature of digital artifacts like data dashboards. It extends assemblage thinking by showing that SDG dashboards are not passive measurement tools but dynamic governance mechanisms that actively shape sustainable development implementation, policy and decision-making and monitoring.

By critically engaging with the epistemological and methodological challenges of assemblage thinking, this study provides an analytical tool for future empirical research, enabling a more nuanced examination of local SDG monitoring tools and frameworks.

11 JUNE 2025 09.00 - 11.00

## ID 881 - Assemblages of security for public gatherings

*Roger Von Laufenberg, VICESSE Research GmbH*

*Michaela Scheriau, VICESSE Research GmbH*

**Keywords: Security, Public Gatherings, desire, Surveillance**

The occurrence of tragic incidents with mass casualties at public gatherings – such as the Hillsborough disaster in 1989 in Sheffield or the Loveparade disaster in 2010 in Duisburg, as well as a general trend of securitization and the fear of terrorism following 9/11 has significantly contributed to an increased focus on how to purposefully design public gatherings of all kinds – concerts, fairs, sport events, demonstrations – which emphasise the provision of security and safety for the attendees of these events. Ranging from accurately placed barriers for so called crowd management, over increasingly digitized and 'intelligent' means of surveillance in the forms of CCTV (with or without facial recognition), drones and others, to the wider architecture of the venue in which careful security design decisions have been undertaken. Crucial for the security design of these measures is that they operate as assemblages of technologies – increasingly shifting to the digital realm, infrastructures and human actors such as police and security personnel in order to be able to provide for security.

While many of the developments towards the security assemblages for public gatherings contributes to the good for most, there is ample evidence that these developments can be hostile for others. Based on case studies of the surveillance and security of public gatherings in Europe, we turn the focus to the instances where safety and security assemblages at public gatherings also create hostile environments with exclusionary characteristics. We discuss in our contribution, how the framing on security and safety is largely done through an anticipatory and preventive logic, in which desire for security is a main driver for developments towards digitalized security assemblages. This means that potentially insecure and unsafe events are desired to be secured and hence require a future oriented, anticipatory logic, to mitigate any instance of such events to occur and for security personnel to be able to act before a state of insecurity is attained. This particularly shows in 'intelligent' and digitalized surveillance assemblages, where security risks are generally defined and operationalised through the 'suspicious behaviours and characteristics' of certain individuals, which need to be identified to be able to act on.

Assemblage thinking, which has a long tradition in the field of surveillance studies (Haggerty & Ericson 2000) contributes significantly in the analysis of both the multiplicity of the (digitalized) security assemblages that are brought into place as a means for securing public gatherings, as well as thinking of power structures in these assemblages as the desire to exert power (Patton 1998; Deleuze and Guattari 1987). With our contribution, we want to shine light on these multiple assemblages of digitalized security, their powers and desires, and how these create instances which puts certain groups, such as young male migrants, under increased scrutiny or even more so, purposefully keeps them out of public gatherings. Concluding we aim to discuss the ambiguous and mutable nature of safety and security assemblages in creating the desire for both good environments, while also being exclusionary and hostile.

