

Acts of interfacing in an entangled life

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<https://doi.org/10.21606/drs.2024.779>

Abstract: Digital interfaces are becoming increasingly simple and intuitive. However, beneath the surface, the technological infrastructures underlying these interfaces are growing more complex and elusive. This paper draws on theories from human-computer interaction, software studies, and social practice to revisit the notion of the interface as a site of representation and control. By briefly tracing the historical development of digital interfaces, we propose to shift from ideas of representation and control towards a notion of co-performance and negotiation. Through this lens, we reconceptualize the interface as acts of interfacing—a new concept that captures the contested, constructive, and performative character of interaction within large-scale digital systems.

Keywords: digital interface; representation; control; co-performance

1. Introduction

On a spring weekend in 2023, one of the authors of the present paper traveled by train from the Dutch city of Rotterdam to Umeå, Sweden. On a journey that took over 24 hours and 5 transfers, the trains carried many people and things, traversing national borders and passing through changing ecosystems. Constantly switching between different vistas – objects appearing in the immediate vicinity and fleeting landscapes seen through the window – the co-author started contemplating their bodily encounters with interfaces of all kinds in transit. Scanning the QR code ticket to enter the station, checking the departure display, leafing through a book, pushing the button to open the door, and checking emails on their laptop, they interacted with interfaces that ranged from control objects and information surfaces to analog signs and digital screens. When scrutinized by a scrupulous gaze, these interfaces emerge not only as passive objects but as things that are actively engaged in the everyday and, consequently, alive with meaning. While they react, signify, mediate, and govern, these interfaces invite reflection on the effects they create, near and far, even in the most mundane of contexts.



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This paper examines, and seeks to redefine, familiar notions of interface. Digital interfaces, as we know them, have entered a state of radical transformation. While interfaces are becoming increasingly simple and intuitive, the broader technological infrastructures underlying them are growing less visible, more complex, and difficult to grasp. The challenge posed by these changes requires new perspectives. The paper begins by looking back at the early days of modern computing in order to trace the manifold histories of digital interfaces, highlighting how the development of digital interfaces and the notion of representation have been intertwined since the beginning. Then, we dive into the issue of control underlying the constellation of interfaces, users, and beyond, calling attention to the problems inherent in the logic of control. Contrasting the historical development with our contemporary conditions, we introduce two shifts that are intrinsic to rethinking interface: from representation to co-performance, and from control to negotiation. Through examples of current digital products and artistic projects, we demonstrate that our interactions with technological systems are becoming increasingly relational, performative, and engender wider effects. Departing from conventional *sites of interface*, we propose the new concept of *acts of interfacing* that helps us examine emerging practices in digital technologies.

Interweaving historical perspectives with contemporary technological conditions, we construct the concept of *acts of interfacing* and unpack their implications in the context of ever-shifting digital technologies. In doing so, we hope to open up a new space for designers to understand and engage with digital technologies in our entangled lives.

2. Interface and representation

2.1 User interface: the always-already representation

While the term "interface" first appeared in the 19th century in the natural sciences, its contemporary connotation is closely connected to the advent of modern computing some 80 years later. From punch cards to vacuum tubes and transistors, the development of digital electronic computers in military labs and private corporations inaugurated a new era for computing technology, thereby effecting the emergence of the digital interface.

In his canonical 1945 article "As We May Think," electrical engineer Vannevar Bush envisioned a personal device called "memex" that, with its screens, keyboards, buttons, and levers, could act as "an enlarged intimate supplement" to one's memory (Bush, 1945). This vision inspired Douglas Engelbart to develop a "conceptual framework" for "augmenting human intellect" (Engelbart, 1962). In 1968, in San Francisco, together with his team at the Stanford Research Institute (SRI), Engelbart demonstrated an interactive computing system composed of video screens, a keyboard, and the newly invented "mouse" corresponding to Engelbart's control. Establishing the real-time correspondence between one's action and its output, the mouse enabled the kind of "direct manipulation" advocated by Ben Shneiderman (1983).

Building on Engelbart's work, researchers at Xerox PARC developed the Xerox Alto (1973), which employed the first graphical user interface (GUI). Subsequently, in 1984, the launch of Macintosh by Apple marked the popularization of the user interface as we know it today.

While their aesthetics differ, today's computer interfaces owe their underlying logic to Macintosh, as it passed on its graphical and operational language. Today navigating a hierarchical "folder" on the "desktop" to open a "file" or move it to the "bin" still constitutes the routine interactions that take place when we use a computer, regardless of operating systems. What lies in the center of GUI is the use of interface metaphors that employ graphical representations (Laurel, 2013). These graphical representations offer familiar visual associations that act as "symbolic handles", the system is thus rendered intelligible to its users (Cramer & Fuller, 2008, p.149). The importance of representation is also underscored by Søren Pold's interface-cultural five-part feedback loop model. Composed of System, Semiotics, Interaction, Reception, and Culture, this model defines the interface as simultaneously "a functional tool" and "a representational medium" that makes it possible that a system "both measures and interprets" (Pold, 2011, p.96-97) its user's action. Akin to metaphors that render abstract concepts comprehensible, interfaces, through representation, simplify and signify complex processes, and make user interactions possible.

2.2 The empowerment of the individual user

The commercialization of computers brought about personal computing and liberated this technology from the confines of military and industrial use. It is in this process that the notion of the user was born. In his 1968 "mother of all demos", Engelbart addressed the viewers directly as "you" while demonstrating an interactive system where "you" as the user have the control to arrange their files, as observed by media scholar Wendy Chun. This interactive system, together with the way it was introduced, highlighted the neoliberal notion of "personal empowerment", as Chun (2011, p.83) argues. Delivered through a screen in a linear manner, Engelbart's demo acted as a window: as he operated a series of tasks, the audience, addressed directly, was drawn into his world, identifying with Engelbart as the "sovereign subject" (Chun, 2011, pp.85, 89). What was shown, as a result, can be seen as "the establishment of users who act and through their actions believe—all via a linear narrative that praises nonlinear processes as empowering" (Chun, 2011, p.84).

The conviction of user empowerment has also been a key focus in the field of human-computer interaction (HCI). In their analysis of the disciplinary discourse of HCI, Geoff Cooper and John Bowers (1995, p.62) note that the production of the user serves at once as a rhetorical and a functional instrument for cementing the discipline's identity. The "liberal, humanist, and antitechnicist rhetoric" (Cooper & Bower, 1995, p.51) of the user also gave rise to the "user-centered design" doctrine that came to dominate the field for decades to come. At the same time, the user interface became a central site for knowledge production and practice, "fundamental to HCI's disciplinary aspirations" (Cooper & Bower, 1995, p.52). No longer frustrated by the obscure functionalities of a complex system, the user takes delight in navigating an interface with clearly designed graphical symbols and information hierarchies, accomplishing the task at hand while experiencing a sense of control.

3. Interface and control

3.1 Personal control

In the beginning of the 1960 film "An Introduction to Feedback," which Charles and Ray Eames made for IBM, we are shown the footage of ships at sea and a clear message that "the control of situations through guiding and steering is among man's greatest accomplishments and yet remains his greatest problem." The issue of control, central to Norbert Wiener's cybernetics theory, was also crucial to the design of IBM's early computers. The commercially successful and influential model System/360, for example, features a control panel – a surface area that consists of different functional divisions – interfacing directly with its operator (Harwood, 2011, pp.89-90). What was in focus in this design is not only the mechanisms of control but also the ergonomics of it, beneath which lies "manifestations of a hidden and powerful subjectivity – perhaps discomfiting and controlling – lurking behind the plastic and metal skin of the module" (Harwood, 2011, p.91).

The advent of GUI, along with the popularization of personal computers, is often seen as instrumental in facilitating the empowerment of individual "users" (Chun, 2011). A pivotal moment of such a transition occurred when Apple launched Macintosh in its famous promotion video 1984: no longer serving as a surveillance tool for centralized control, interfaces were portrayed as friendly to its everyday users, bringing about new ways of interaction (Andersen & Pold, 2018, pp.157-158). What GUIs enable is a sense of personal control: complex systems are represented in simplified visual languages, opaque processes are rendered comprehensible, and users' direct manipulations (Shneiderman, 1983) are always greeted with timely responses. The resulting user-friendliness has become a pursuit in interaction design for years to come. Today, Apple's Human Interface Guidelines for the actions "drag and drop" reads, "Drag and drop is a dynamic process that can result in multiple outcomes. To help people feel in control of the process, it's crucial to provide clear and continuous feedback throughout." It is apparent here that the design of such an interface component aims to produce the sensation of control.

This perceived sense of control, however, often does not establish real governance; the empowered user may not hold actual power over the system. The personal control we enjoy when arranging music files in a folder on the desktop differs substantially from the more complex interaction of curating a playlist on Spotify, despite their similarity in the actions performed: while the former is relatively straightforward, the latter is subject to a system whose structures and relations are often intricate and dynamic.

The digital products and services with which we interact daily have become what Johan Redström and Heather Wiltse (2019) have termed fluid assemblages: computational and networked, they are things that are constantly evolving. Moreover, they are increasingly incorporated into our everyday lives and seamlessly integrated cultural practices. As such, we experience a paradigm shift to the metainterface (Andersen & Pold, 2018), where interfaces are "multiplied by a sense of exponential scaffolding of new cognitive networks" (Goffey & Fuller, 2012, p.166). As interfaces become more layered, establishing personal control through them emerges as a dubious pursuit.

Watching videos on streaming platforms such as Netflix, we are made to believe that we are in control of our individual choices. Yet often, we are presented with a feed as the result of complex algorithmic processes. The desire for personal control is confronted with the control logic of digital platforms; the user interface no longer acts as a control surface, but a field of underlying forces. As a result, the user's much touted control and personal agency in the context of corporate interfaces must for now remain elusive.

3.2 Fragmented control

Updating on Michel Foucault's concept of the disciplinary society, Gilles Deleuze states that "our present-day reality takes on the form of dispositions of overt and continuous *control*" (Deleuze, 1992, p.164; emphasis original). No longer based on spatial and institutional confinement, our society today, with its ubiquitous digital technologies, can be characterized by the constantly shifting control forces (Deleuze, 1995, p.179-181); in other words, we are living in control societies. In a world where we are increasingly connected with and through digital technologies, and our actions mediated, the control forces with which we are confronted, as philosopher Steven Shaviro notes, become "flexible, slack, and distributed" (Shaviro, 2000, p.31). As a result, we as users participate, at times unwittingly, at times knowingly, in the fragmented control and face different forms of power.

The logic of control societies agrees with that of surveillance capitalism: user actions, regarded as raw materials, are extracted and exploited as "behavioral surplus" to supply advertising revenues (Zuboff, 2019). Central to the mechanism is "click-through rates," the frequency of a user clicking on an ad through the interface. Pioneered by Google in the early 2000s as an integral element of the business model for its search engine, this logic has become standard for digital platforms and services. Despite the shifting roles a user plays when interacting with digital systems, so long as we enjoy the freedom and abundance these services promised, we are subject to "a network of nonvisualizable digital control" (Chun, 2006, p.9). In consequence, the behavioral patterns that users adopt in the hope of gaining personal control are, on the contrary, increasingly enabling others to gain control over these users.

4. Shifts from interface to interfacing

Interfaces as we know them are changing. When we greet a voice assistant, such as Amazon's Alexa, in the morning and ask about the day's weather forecast; when our fitness tracker, such as Google's Fitbit, reminds us that it is time to work out; when we put on a virtual reality headset, such as Meta's Quest, and wave hello to our friends' avatars, the digital interfaces to which we grew accustomed seem to transcend familiar surfaces and disappear in our conversations, movements, and spatial and bodily interactions with the technological systems. Acknowledging this phenomenon, Lars-Erik Janlert and Erik Stolterman (2015) propose faceless interaction as a new modality in addition to what they have defined as the four thought styles of the interface. No longer relying on a screen and being confined to "a surface of contact," "a boundary," "a means for controlling," or "a means for expressions and impressions," faceless interaction becomes contextual and

ecological: individual objects are replaced by "interactional force fields," the "user" becomes a traveling "inhabitant" (Janlert & Stolterman, 2015).

While the rapidly changing landscape of digital technologies has given rise to new interface modalities, it is simultaneously transforming what our once-familiar interfaces mean and do. Take for example, OpenAI's ChatGPT, a large language model launched in November 2022. Since its release, ChatGPT has sparked, in equal measure, amusement about the often sophisticated responses it generates, perplexity about its opaque inner workings only partially revealed to the public, and apprehension about the potential obsolescence of many jobs and even human creativity *tout court*. Despite the complexity surrounding ChatGPT's applications and implications, its interface remains palpably simple – a text-based conversational interface that consists of conventional GUI elements – a text field, a navigation bar with buttons and familiar icons indicating menu and settings. Similar to the simple interface, the interaction with it is straightforward: type in anything in the text field and press enter, a response will be generated and displayed within seconds. Thanks to the model's improved quality, these responses tend to appear sensible. For example, when prompted to predict the future of interfaces it responds with an unsurprising statement despite myriad other possibilities: "the overarching trend is towards more natural, intuitive, and immersive interfaces that leverage emerging technologies to enhance user experiences and make interfaces with technology more seamless and efficient".

What we encounter in this example is more than a familiar conversational interface; instead, an encounter like this facilitates an act of interfacing that differs from our accustomed command and control interactions with technologies. What deserves our attention is not the syntax or grammar of the interface itself, but the very act of interfacing. Such an act of interfacing is relational, performative, and has wider effects beyond the immediate interaction. In their advocacy for a more-than-human design practice, Elisa Giaccardi and Johan Redström (2020) highlight the challenges of shifting from delegation and functionality to co-performance and responsiveness when designing with emerging digital technologies. In a similar fashion, we propose two conceptual shifts that are necessary for unpacking acts of interfacing.

4.1 From control to negotiation

In ChatGPT's unassuming interface, we still see the "symbolic handles" (Cramer & Fuller, 2008, p.149) that simplify the functions of the system and represent the action users are about to undertake. For example, the button containing a paper airplane icon, as in other messaging applications, indicates the action of sending off the prompt. Once the prompt has been submitted, the paper airplane changes into an animated loading icon, as if the invisible interlocutor is pondering and typing in the response. In this way, the interaction with the AI-powered chatbot is made to seem as mundane as the everyday interaction of messaging a friend.

Yet different from the process of one-to-one messaging, entering the text prompt in ChatGPT mobilizes layered interactions between a multitude of actors situated in its underlying system, regardless of the human interlocutor's divergent intents. The interface thereby becomes what Lucy Suchman (2007, p.263) calls "a relation enacted in particular

settings and one, moreover, that shifts over time". To interface here, as Ksenia Fedorova (2020, p.4) suggests, "means to activate the condition of an interface: to enter a dynamic framework of relations organized into a certain procedural structure." Compared to consumer chatbots that are widespread in various domains, the condition that enables ChatGPT's functioning is more complex and elusive. Behind ChatGPT's simple and static graphical user interface lie multiple entangled actors, ranging from the language model and those responsible for its development, to the unwitting authors whose texts are extracted as data for the model's training and the faraway data centers that house the servers storing the data. A planetary system at work, the complex interactions between these actors take place across time and space. Seemingly inconsequential, these relations come into a particular configuration at the moment of interaction, presented as a generated text for a timely response.

As the interface facilitates open-ended conversations, the language of control transforms into one of negotiation that emerges among different actors. With many layers of the nested system (Galloway, 2012, p.31) hidden from sight, this negotiation emerges as transitory and ambiguous, its effects unbeknownst to the user.

4.2 From representation to co-performance

In conversational interfaces, such as a voice assistant, the "symbolic handles" (Cramer & Fuller, 2008, p.149) as we know them disappear altogether. To receive the desired responses, we instead modify our speech, adding verbal cues and adjusting speed. Similarly, when interfacing with a generative AI, such as ChatGPT, the carefully crafted prompt by the human interlocutor often determines the quality of the generated answer. Indeed, the crafting of the prompt has become so important that it even emerged as a new type of job, with online learning platforms offering courses and the World Economic Forum welcoming it as a "job of the future" (Whiting, 2023). With graphic representations lost to view, the act of interfacing with ChatGPT becomes performative.

The shift from representation to performance happens not only with conversational interfaces. Consider interacting with recommendation platforms, such as YouTube. An ecosystem composed of a multitude of actors, the platform presents different interfaces that create opportunities for some users and limit possible interactions for others (Bratton, 2015): while a user is often encouraged to "Like" a video, its creator is permitted to observe the "Likes" it receives over time. Through these varying interfaces, YouTube brings together an ever-growing amount of content and spectators: watch hours multiplied, trending phenomena emerged, parasocial relationships formed, and communities established. As users, we browse and search while the platform takes note of our watch history, likes and dislikes, and engagement patterns, which determine what appears in future feeds. As the company itself has acknowledged in a recent Culture and Trends report (YouTube, 2022) – noting that the fluidity of trends and these trends' dissemination across multiple formats result in vastly different experiences of the same trend – no two people interface with the platform in exactly the same way.

In his proposal for a "post-representational cartography," geography scholar John Pickles (2003) regards a map not as a static object that presupposes an authoritative narrative but

rather as a process of constant becoming. In this way, the boundary between making and using dissolves; in actuality, it is through moments of its use that the map is repeatedly made and remade (Grootens, 2023, p.201). There emerges a similar deconstruction of the make-use divide in the context of digital technologies, as Elisa Giaccardi and Johan Redström (2020) maintain that what deserves our attention is "the *co-performance* of people and things" (emphasis original).

Returning to YouTube, we can observe co-performance between many different actors, such as the content creator, the viewer, the advertiser, and the recommendation algorithm, as a result of their divergent ways of interfacing. Take for example watching a livestream video. The viewer notices a video with a pronounced red "LIVE" label, posted by the channel to which they have already subscribed, appearing in the feed, and clicks to tune in. The interface transforms, unveiling the live video, with title and detailed information, together with a live chat box hovering below. The live stream is ongoing, as is the discussion in the chat box. The streamer responds to some of the questions that have popped up in the chat, while occasionally calling out, "smash the subscribe button". As the interface here mediates rather than represents, the act of interfacing becomes constant performing with different actors, as relations are continually configured and reconfigured. In cases such as this, the acts of interfacing that we need to attend to are quite different from the one-to-one, spatially and temporally contained, couplings between action and effect that characterize, for instance, the bodily performances involved in gesture-based interfaces or the more or less performative acts involved in using a tool. Indeed, while the notion of *interface* (and the acts associated with using them) often turns our attention towards typically stable 'surface interactions,' the notion of *acts of interfacing* proposed here seeks to engage with what we might instead think of as 'deep interactions' that evolve over time.

5. Interfacing and its effects

As we shift from interfaces to interfacing, it is necessary to examine not only what acts of interfacing do and mean, but also what effects they produce. Media studies scholar Alexander Galloway (2012), in his conceptualization of interface effects, calls attention to a multiplicity of processes that constitute interfaces. Such processes both cause transformation of realities and, in turn, are caused by the interplay of various social, political, and organizational forces. Playing the popular augmented reality (AR) game Pokémon Go, the player interfaces with a hybrid space that merges the digital with the physical. While this amalgamation imparts novelty, such interfacing is subject to the perpetuated marginalization in both digital and nondigital contexts, including misrepresentation and restricted access to public spaces (Layland et al., 2018). Ordering a meal on the food-delivery platform Deliveroo, one is assured by the tracking of the delivery progress on its sleek interface, yet the precarious conditions for the carrier, the exploitation of the workers, and their ensuing resistance rarely come into view (Cant, 2020).

When the act of interfacing becomes increasingly relational and performative, understanding the multitude of its effects comes to be ever more crucial, as getting a handle on these effects might offer insights into how we can design new conditions for interfacing.

In what follows, we discuss two artistic projects that explore the effects of interfacing by intervening with familiar digital platforms. As their critical acts of interfacing both reveal and subvert, they may help us grapple with interface effects as well as posing questions crucial for designers.

5.1 Reconfiguring the spatial: Simon Weckert's Google Maps Hacks

In 2020, artist Simon Weckert (2020) created a virtual traffic jam on Google Maps by walking through a number of quiet streets in Berlin with 99 borrowed and rented smartphones. In the video documenting this act, we see the largely deserted streets making space for the artist's stroll, with a small cart filled with smartphones trailing behind him; and, by contrast, on the juxtaposed screen recording of Google Maps' web interface, the green line, indicating low traffic level, gradually turns first orange and then red. Simple and performative, this act of interfacing at once reconfigures spatio-temporal relations and creates a new spatial reality. While the physical space around Weckert's trail remains largely unchanged, his bodily interfacing destabilizes the data space governed by the algorithmic logic of the Google Maps platform. A new story emerges as perceived busyness, represented by a reductive red line in a digital interface, soon to be viewed by countless other users, who may change their route planning on account of the new reality.

The stark contrast between the empty streets the artist walked through and the "crowded" route mapped on the platform's interface underscores the dissonance between how space is experienced physically and how it is represented digitally. As we often hastily subscribe to the logic of digital platforms, we become accustomed to the new reality their mediations create. Such a new reality often has effects that expand beyond a single user and the interface with which they interact. In *Google Maps Hacks*, Weckert's simple act of interfacing challenges the prevailing model of one-to-one interaction where an individual user is represented and thereby reduced to a single data point. In doing so, the artist not only reconfigures spatial relations but also destabilizes established power relations between him and the all-encompassing platform. This subversive power of interfacing offers inspiration for us to design new ways of negotiation.

5.2 Reconfiguring the self: Lauren McCarthy and Kyle McDonald's Voice In My Head

Since the launch of ChatGPT, this large language model has been widely employed in everyday life, from writing job applications to generating fictional narratives (Sample, 2023). Just as auto-completion has changed the way that some of us compose emails, ChatGPT is transforming how many write and think. "What happens when AI is inserted directly into your thoughts?" is the question that US-American artist duo Lauren McCarthy and Kyle McDonald pose with their work *Voice In My Head* (2023). Taking the widespread application of generative AI to an extreme, *Voice In My Head* envisions an AI that is integrated in every aspect of one's social life. The AI takes the form of a simple wearable and listens to every conversation and social interaction its user is engaged in; in exchange, the AI gives real-time guidance to its user as a means to "augment" their ways of being in and interacting with the world beyond the biological confines of the self.

In this project, the act of interfacing not only mediates how someone engages with the wider world, it also fundamentally challenges what constitutes the self. Inserting itself directly in social contexts and beyond, the AI becomes a co-performer of the self. Through recursive actions of learning and instructing, the act of interfacing emerges as multi-directional and as such, reconfigures relations within and beyond the self.

6. Acts of interfacing in an entangled life

As a counterpoint to habitual conceptions of interfaces, we suggest understanding interaction with large-scale technological systems in terms of *acts of interfacing*. By focusing attention on these acts, we are concerned not so much with the aesthetics and immediate functionalities of buttons and widgets that populate our screens, as with what, as part of a larger assemblage, they do and mean. Instead of being composed of static representations to be decoded, acts of interfacing bring to the fore active processes in which relations are constantly configured and reconfigured. These processes are not fixed; they change as we socially construct new meanings for interfacial actions and as things leak in and out of the media containing them.

Considering digital technologies that are planetary both in their infrastructure and scope, we find their interfaces scattered around the globe, with each 'user-facing' point of contact becoming a means of capturing, and capitalizing on, human behavior. As a result, a key mode of interfacing emerges that encompasses myriad aspects of our everyday lives without regard for our awareness or consent. When we look at complex digital systems, such as the Google-owned social media platform YouTube, and trace their discretely located interfaces, we soon notice that its system presents many different interfaces to its different users: for viewers it displays a never-ending stream of content, for creators it allows for the publication, analysis, and monetization of their content, for advertisers it acts as a venue for reaching customers, etc. By connecting the actions of these multiple actors, the system, in turn, makes possible new kinds of interfacing. Acts of interfacing, in this context, reconfigure relations as they mediate between individual actions and social sensemaking.

Redirecting attention from interfaces to acts of interfacing offers fresh insights into designing interactions with digital technologies. As digital interfaces are becoming at once hyper-individualized and globally structured, it is inadequate to solely consider the relationship between an individual user and the system with which they are interacting through a singular point of contact.

The *acts of interfacing* concept compels us to look beyond the correspondence between one user and one interface, urging us instead to consider how different relations emerge when multiple users engage within expansive planetary systems. These systems, composed of multiple human and nonhuman actors, not only present different "faces" – i.e., interfaces affording various functionalities – to different individuals, they also manifest in varying ways through differential activities. In other words, designing for acts of interfacing means to understand how intentional relations emerge among a multitude of human and nonhuman actors. Considering interfaces not merely as collections of elements and features but as

processes that unfold over time, acts of interfacing compel us to not only consider the immediate interaction but its often invisible effects that ripple across time and space.

7. Conclusion

Just as the train journey related in the introduction prompted contemplation about interfaces, this paper has opened up renewed perspectives on modes of interfacing. Traveling through the historical and the contemporary, we show how digital technologies are transforming the way in which we conceptualize interfaces. Reflecting on notions of representation and control that have been intrinsic to our understanding and design of interfaces, we highlight two key shifts that orient us towards performative and relational ways of interacting with technological systems. Specifically, we propose acts of interfacing as a new concept for thinking about and designing our interactions with large-scale digital technologies. We hope that the reconfiguration of the *interface* as *acts of interfacing* can shed light on the entanglements of digital systems and the diverse actors with whom they interact, inspiring new ways to designing conditions for interfacing.

Acknowledgements: This work is part of the DCODE project. The project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 955990.

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