

## 17. Interface

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The Graphical User Interface (GUI), even in its short-lived history, has been established as the stabilizing principle of contemporary computational practices. The emergence of the GUI allowed us to move away from the human-computer (O'Regan 144), physical-virtual (Ratzer et al. 5), and analog-digital (Keeling 2014) dichotomies that hounded the early years of personal computation, and immediately gave a material visual reference where the human and the computational can be seen to be interacting. From the first deployment of the WIMP (Windows, Icons, Menus, Pointers) elements and interactive functions on Apple's Macintosh machines to the ubiquitous flick, scroll, and pinch interactivity of our multisensory digital devices (Powell 1997), the GUI has been the cornerstone by which the ephemerality of computation could be understood as a material, embodied, and techno-cultural practice.

It is also paradoxically fascinating that the materiality of the GUI is not the surface it is made of. While it would be possible to think through the complexity and technical advancements of the tempered glass that forms the "black mirrored" surfaces of our digital devices, allowing for touch-based haptic and visual interactions to emerge, it is important to emphasize that the technicity of the interface is still opaque and that the GUI merely allows for reification rather than the visualization of that interaction. In this essay, devoted to the materiality of a digital interface, I am suggesting that the need for physical material which is present in our anxieties about ephemeral digitality might have to be suspended as we understand the GUI as an interface that facilitates digital data and information which can only be understood as traffic—something in motion, moving, rather a thing.

It is important to realize that the GUI was not just the site of encounter but also the surface that held computational practices and human perception together. While it is easy to think of the GUI as a thing we see, it has, in fact, two other vision functions: First, the GUI is something we see through. With the establishment of principles like What You See is What You Get (WYSIWYG), the graphical user interface became a porous invitation where we could see the human and the computational bleed and reconfigure (Howard). This reconfiguration responds to and co-constitutes complex tasks through visual rendering. Second, and more intrigu-

ingly, the GUI also held a “material agency” (Suchman 363) of witnessing the fleeting and quickly disappearing interactions between the human and the computational. Hence, the GUI has to be framed as a noun as well as a verb—a site where operations happen and an agential space that shapes the very contexts of those operations. The GUI, as Karen Barad would have it, was a space of “inter- and intra-action” (141), where it was making and being made, and also watching the unfolding of the making and being made, all at the same time. It has always encompassed these ambiguities, where it is hyper-visible because of its ubiquity and also invisible because of its multi-touch, natural use characteristics, which continue to shift our attention and focus to the rendered transparency and visual animation of dense and complex computation practices.

We have come to depend on the GUI through visual, haptic, and habitual cues to confirm and affirm our computational interactions through pixelated practice (Hoy). It is safe to propose that the GUI, in all its different consoles to black-mirror avatars, has become the material form through which we understand, analyze, and imagine human-computation engagements (Yue 261). It is the immaterial materiality—the seamless flow of digital information bookended by the physical materials of human touch and computational networks—of the GUI that gives us an ambivalence: It is a border that allows for the crossing and a boundary that contains the entwined transactions in discrete realms. This ambivalence has established the GUI as not just the default of our contemporary computational practices, but also the legitimizing adjudicator of our digitality. The GUI, it might be considered, is the material infrastructure of that moment when the computational and the human become a cyborg unit embedded in ontologies of hybrid fantasies (Nusselder 24).

Despite its centrality, the GUI is often declared obsolescent (Gates), redundant (Sujlana), or replaceable. With every new development in haptic, neural, sound, or immersive computational interaction technology, the bells toll for the passing of the GUI, only to be replaced by even more persuasive, compelling, and attractive visual interfaces that become the next big thing. The GUI is dead; long live the GUI! There is an excitement about prophesizing that this piece of material computational culture shall indeed be replaced or made obsolete because it promises a radical revolution and reimagination of how human-computer practices are described in digital user and design scholarship.

The narrative of a GUI in decline is not merely about technological development, but also about a complete reordering of the world that has been arranged in frameworks of identity, representation, voice, ownership, safety, freedom, rights, and entitlements that are informed by the mechanics, logics, and logistics of the GUI as an unstable stability. The collapse of the GUI as the site of all our actions and the witness of all our transactions, both the processing and the processed, would usher in a paradigm shift that would rewrite the very script of how we live with our computational devices.

Consequently, we see the continued blood-lust for the death of the GUI as a future horizon where we will enter our sci-fi futures of immersive and contextual computation that does not require the materiality of an interface. Concerns about this future shift attention and focus to the new interfaces and their governance, management, containment, and accountability infrastructures to ensure that the hard-won digital rights enshrined in the GUI carry forward to these new interfaces.

However, it is important to realize that the GUI is being replaced, but not because of the emergence of new interfaces. As is seen in most multi-modal, multi-sensory, self-learning, and evolving interfaces, the GUI is not being replaced but being accompanied by multiple modes of engagement which still rely on the GUI as a site of visual reassurance and an affirmation of a completed cybernetic feedback loop that allows for narrative continuity of our digital interactions. The future threat to our digital rights, premised upon a decline of the GUI, is not hypothetical because the real space where the GUI is being made redundant is not in the human and the machine but between the machine and the machine, which is increasingly the most extensive traffic and bandwidth of networked computation.

In her wonderful thesis on *Machine Therapy*, computational artist Kelly Dobson points out that machines do not need interfaces, but surfaces (19). Making a conceptual difference between an interface and a surface, she shows in her prototype robots how the surface is a point of contact. In contrast, an interface is a point of translation. Even when these translations are practices of opaqueness, as demonstrated in Kate Crawford and Vladan Joler's evocative work on *Anatomy of an AI System*, the interface does the work of visualizing, and rendering visible, specific and selected practices of interaction between the two acting agencies. Mercedes Bunz has pointed out that the GUI makes transactions visible and renders them into anthropomorphized, affective, almost juvenile icons and symbols that allow for human actors' ease of usage (194). As Wendy Chun reminds us, these selections are shaped by political decisions and expressions of power, deciding what gets shown and what remains in the nexus of invisible tech-military-governmental powers. The interface performs not just access to a system but access to the mechanics of a system (122). The GUI is fetishized because, in its moment of interaction, it privileges the human watcher as the address of its outputs. Within machine-machine interaction, the human addressee is not needed. With the dispensing of the human user as a destination for the flow of information, there is a new era of ubiquitous computing where machine-machine interaction is the default. The emerging AI-driven, self-learning, computational networks produce a machine intimacy that does not need the mediation of an interface.

We see this machine intimacy—an intimacy between machines (Shah 2)—in the Internet of Things and autonomous neural networks contingent upon massive information shifting rather than in information translation. In such systems, the GUI persists, but only as a secondary appendage that visualizes, abstracts, and graph-

ically renders outputs for consumption rather than offering space for transaction and negotiation with this information. The GUI was a way by which human intention and scale were inserted into computational practices, materially changing the speed and scope of computation and allowing for intervening in the digital circulation circuits through human time. The GUI forced a management, shaping, typifying, and taxonomizing of information sets so that the human could track, trace, shape, interject, object, and modify the information produced in that moment of interaction. The Surface does not follow this logic of the interface. It is shaped by the protocols of computational devices and vectors of information querying and flow. It does not need a visual screen or a moment of humanly readable witnessing of the trace and movement of information.

The emergence of this surface as a replacement of the GUI is a silent process. The GUI is becoming increasingly ubiquitous, from large public signs to wearable computational devices. We see more and more smart devices wearing graphical interfaces inviting us to interact more, often, and with habitual ease. However, the proliferation of the GUI and focusing only on its material presence belies the fact that underneath the visible network of GUIs lurks a larger machinery of connected surfaces that shape the material and informational patterns of how we live, love, and talk with our computational devices.

Once a witness to our conversations, the GUI has been reduced to becoming a silent spectator of our reception—information is just a commodified aesthetic output rather than a malleable and live thing. The GUI stops being an interface and becomes a visual rendering, pretending to be interactive, but largely just communicating informational mandates through cute and accessible graphics. The Interface in the GUI has receded both in form and function, and in this process, it has naturalized a hidden network of surfaces that carry information, perform translations, create archives, and produce meanings that are obfuscated from human knowledge and inquiry. The GUI has stopped being an interface and, in the world of No-UI, has become a reification of power that works through techno-cultural spaces to create an almost sinister network of control and execution of politics. Precisely because the GUI retains the material attention of touch and visualization, it also produces opaque systems that present algorithms as neutral—mere interaction between machines that escapes human detection or oversight—thus making it difficult to counter the algorithmic decision-making hidden under the hypervisual materiality of the GUI.

The demise of the GUI has to be read, not in terms of its invisibility or technological evolution, but in its production as a symbolic space. The new surface of machine-machine interaction becomes the truly material and infrastructural space where information politics will be played out. Material cultures of digital technologies have focused almost exclusively on the GUI and its different manifestations in thinking through tough questions of agency, control, power, ownership, representation, and

political economies of living within computational paradigms. I argue that once the materializing force of the human-machine interaction, the GUI has been rendered obsolete, not by its removal, but by being replaced by the surface. This replacement of the interface by surface demands a new critical apparatus, framework, and approach to understand the futures of digital materiality and the material consequences of the GUI as caught in the paradox of being hyper-visible and obsolete simultaneously.

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