How Do We Experience Digital Arts?
An Exploration through Latour's Modes of Existence

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Abstract

This article explores the divergence between practice and theory of technology observed through an interdisciplinary free improvisation workshop which critically engaged with (digital) technology. Bruno Latour's 'technical mode of existence' proposes an intriguing interpretation of this differentiation. What is it that we experience when we engage with 'digital art'? How does this bear on conceptualizations of technologies? The 'fictional' and 'reference mode of existence' further help to understand the notion of the digital as it pervades culture and media. Using examples from music, visual arts, and observations from the workshop, dystopian visions of technology are disentangled, re-configured. Embodied agency and kinaesthesia play a major role in this process.

Artistic Practice - Technophile Technophobes

When exploring technology in *free interdisciplinary improvisation* workshops that I ran on the subject of *music, space and interaction* [1,2], I was surprised at the number of participants describing themselves as technophobes. Many felt disenfranchised from digital technology, feeling that as artists and musicians they were forced into it by circumstance, in order not to be excluded from an increasingly digitalised, and technified practice. Ultimately, participants happily engaged in and with technology. However, many associated technology and *digital* technology in particular, with a sense of disembodiment, epitomized in *brains on sofas*, a dystopian trope they conjured up *verbatim*. Yet, the works they produced were almost exclusively what is generally considered to be *digital art*. The puzzling contradiction between technological *practice* and professed *conceptions* of technology seemed poignant, which motivated me to investigate it.

In the following I explore the trope of *brains on sofas*. Although the number of workshop participants was not sufficient to be representative for society at large, I believe that *brains on sofas* encapsulates a conception of technology which is quite common. But even if the workshop's experimental practice provides a valid case study for both the trope and my theoretical exploration of it, I am not aiming to "prove" neither the trope nor the theory right or wrong.

Instead I am trying to uncover the uncanny correlations and contradictions I see between the way we *conceptualize* technologies and the way we *enact* them.

Through the workshops, which took place in an arts-university setting between 2014 and 2018, I gathered information on both the conceptions of technology and technological practices: Interdisciplinary improvisation is an extension to participatory design principles [3], a *prototypical practice* from which new techniques and technologies emerge. The idea is that in a performative, situated, improvisational setting, immediate, simple solutions to technical problems can be found. Every session was followed by a discussion recorded in field notes [4] which captured not only technical ideas and reflection on our practice, but contextualised them in relation to a general discourse on technology and the (sonic) arts. Participants ranged from musicians, composers and dancers to scenographers, painters, poets, media artists, and others.
The discoveries from the workshop centred around the ideas that first, techniques and technology are not just related but, essentially, the same thing, and second, that new technology can be deconstructed into old technology. This is how I happened upon French philosopher, sociologist and anthropologist Bruno Latour's work which particularly reverberated with these experiences.

Latour's works provided the basis for an exploratory theoretical journey into technology. Of course, other theoreticians could have stood at the beginning. But I report on an *exploration* which started for me with Latour's concept of the *technical mode of existence* and the case study of the workshop's trope of *brain on sofas*. But during this exploration other tropes and other theories gained and lost importance, as I discuss below.

In *We Have Never Been Modern* [5], Latour attests to a discrepancy between theory and practice of the moderns: In modern theory, culture and nature are strictly separated, yet, in practice, they are inseparably mixed. According to him, modern theory was never put into practice — hence, we have never been modern. In *Inquiry Into the Modes of Existence, An Anthropology of the Moderns* [6], he revisits this problem, but rather than to state what we have not been, he approaches modern practices positively, and describes what we moderns *are*. Through a rigorous rethinking of modern theories, and an analysis of modern practices and values, he arrives at a multi-ontology of 15 nonhierarchical *modes of existence:* Beings exist in more than the binary modes of nature-culture or object-subject. The modes are empirical entities, so there might be more than the ones found so far. As different as they are, modes are defined by a plurality of truth-conditions set out in a "research protocol" [7]. In this article the *technical*, the *fictional* and *reference* modes are of importance.

Besides Latour, Alain Berthoz, Lucy Suchman and Carrie Noland, whose works I refer to primarily here, there were other important theoretical works, by Donna Haraway [8], Paul Dourish [9,10] and Anne Balsamo [11], for example. That none of them is prominent in media studies, is no coincidence: Media theorists like Manovich [12] and Grau [13], for

example, assume that the digital has a quality, even a materiality that can be directly experienced. This was contrary to my findings and made me look for an alternative approach.

The Technical

In a memorable discussion, a workshop participant said: "All digital technology was developed for military purposes!" This is probably partially true, for example the internet was developed based on research commissioned by the United States Department of Defence in the 1960, and Alan Turing worked for the United Kingdom Government at Bletchley Park during WW II. Nonetheless, Turing did research before and after the war, and it was CERN's development of the worldwide web which gave the internet the form we know. A list of technologies used for war and killing could be expanded *ad absurdum* and whatever technology's origin — war is unthinkable without it.

I propose another path: Consider the spoon. Maybe you fed your child with one this morning, a model specifically shaped for the anatomy of the baby mouth, made of soft antibacterial plastic, or one carved of wood, treated with non-toxic, natural oils, maybe one made of stainless steel – most definitely a technological object through and through.

These materials too are linked to means of destruction, plastic is made of fossil fuel, a cause for war, metal a material for weapons and there is nigh nothing that cannot be made of wood, from spears to arrows, to catapults.
As Latour puts it, when somebody "However lazy he may be [...] is just shifting position in his hammock, it is through this hammock he must pass to keep himself up in the air. [...] everything, on this basis becomes technology. Not just the hammock but also the two solid tree trunks to which it is attached!" [14] — This is the *technical:* the materials do something for us, we delegate something to them: A spoon to feed a baby, a catapult to break a stone wall, or two trees to suspend a hammock — the material *wood* is delegated to perform the tasks of transporting food, hurl missiles or just keep you suspended in a hammock. The wood, however, is not the technical, not even the spoon, the hammock or the catapult. They are just "the objects the technical leaves in its wake" [15]. It is tempting to think of the technical as an abstract entity. Yet, I think it is, on the contrary, anything but abstract; not virtual, but actual — it has to be *performed* to be.

The technical is something we experience indirectly and through its failure. As long as it works, it does what it has been delegated to do: The bus brings us to work – if not slowed down by bad weather, in which case we'd send a text that we'll be late – if the phone's battery isn't flat, in which case we'd run from the bus stop and make up for time lost – if we don't sprain our ankle. If none of this happens, we just go to work. And that was that. — The *technical project* to get us to work requires the activation of a whole chain of objects which we only notice as *technical*

if the activation fails. (A bus, on a good day is *red*. On a bad day it's *late*. — It's *on time* only if you are afraid it might be late!)

We take the technical for granted. Nevertheless, artists and engineers constantly think about possible failures. Of course, there is joy in the technical *not* failing, for example when watching a tightrope walker. Celebrations of the smooth workings of the technical refer dialectically to the same thing as failure: Memories of well-crafted art prolongs the novelty of a technical twist, but the technical itself remains absent.

What is it that we experience when we speak of *digital art*? – And how does this experience bear on conceptualizations of technologies? For now, I expect the reader to accept that *digital*, *technical* and *computer-* pertain to the same notion, like in everyday language. I shall elaborate when this is not applicable.

According to Wikipedia — referred to here, not as an academic source but to signify the state of common knowledge — "Digital art is an artistic work or practice that uses digital technology as an essential part of the creative or presentation process" [16]. On this basis, I define four types of digital art:

1. It has been created using digital technology
2. It needs digital computation to manifest itself
3. It is presented via digital to analog conversion
4. It is about the digital/about computers

In short, I believe that only type 4 is aesthetically digital art. Counter-intuitively, this is the type for which the use of digital technology is the least essential: James Bridle's *Autonomous Trap* (See Fig.1), I saw the first time in a Symposium on digital art. It makes my point, as the car could even be any *non-digital* car! The photo could be taken with a digital camera, digitally generated, the car photoshopped into the picture - its meaning remains the same. It is digital art *only* according to type 4, as I will discuss below.

Fig. 1 © James Bridle: Autonomous Trap 001, 2017, installation
http://jamesbridle.com/works/autonomous-trap-001

Similarly, digital recordings of classical music are aesthetically *classical music* not digital art. Yet *Man Machine* by Kraftwerk [17], produced on analogue synthesizers and published on vinyl in 1978, is undoubtedly *computer music,* i.e., digital art of type 4. Music made with Synthesizers sounds digital or electronic because it sounds different from "acoustic" music. We might have learned to group such sounds as *electronic* through habit: Early electronic music, has "taught us" to recognize electronic music as such, even if produced with analogue circuitry.

We don't have grounds to call *artificial* sounds any more technical than *natural* ones. One is as technical as the other; natural sounds are even

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more high-tech if compared to the 1500 years of development resulting in a violin or the 150 million years evolution resulting in the bird's voice.

Still, there is a *feel* to digital technology which is different to the feel of an acoustic or electro-acoustic musical instrument, or a brush, hammer, spade, or a spoon. And we know instinctively that Kraftwerk's work is *about* technology. So if it is not *technical*, what is it then? Is it *fictional*? – Latour would affirm this, emphasizing that fictional doesn't mean *merely* fictional.

The Fictional

"Fiction, designates not the field of art, culture, works of art, but the particular mode awkwardly designated by the adverb 'fictionally'." [18] To compare it to the technical, Latour describes a guardrail first as a technical entity: "the guardrail above a precipice that keeps you from jumping into the void keeps on protecting you with its steel uprights, whether you want it to or not." And then as a fictional one: "The hero threatened to throw himself into the precipice and was held back, at the last minute, by a guardrail of words." So for the fictional "The requirement of continuity is at once less strong than for the steel guardrail (you don't have to forge it) and stronger (you have to keep on holding it so that it will hold you!)." [19]

First, let's acknowledge that art is more than *just* technology. As was pointed out to me in a seminar, "A violinist can also perform as a traffic warden, demanding cars to stop on an up-bow, drive on a down-bow and turn left on a high note, right on a low note; this is technical, but it doesn't make it art." Interestingly, the professor used a fictional example, which shows that the fictional goes beyond the arts and assists in the finding of *objective knowledge* [20]. Latour shows that Einstein as well relied on fictional characters to prove his points [21]. Furthermore, the bowing traffic warden would have been a splendid artistic performance!

The white lines painted on the pavement in *Autonomous Trap* only carry meaning to a viewer who knows that autonomous cars follow such white lines demarcating the borders of driving lanes. So a whole complex of technical *figurations* [22] of cars, roads, sensor technology, robots, automation and AI is evoked: The *notion* of the technical and digital.

The narrative of the technical creation process can be essential to understanding an artwork. For example, the work in Fig. 2 is painted in menstrual blood. Not knowing about this situates the work in an entirely different way. The artist knows this and plays with it: On the one hand, she expects us to understand the figuration of *mother and child* as the motive of religious iconography. On the other hand, by letting us know about the technical creation process, she provokes an engagement on her own terms in subverting, for example, the doctrine of *immaculate conception*. Knowing about the technical process defines the narrative.

Yet, the artist could have used *any* material. By *telling* us that she used menstrual blood, she gives us access to the artwork's meaning.

Fig. 2 Nainen ja Lapsi, Hanni Haapaniemi, 2013 (© Hanni Haapaniemi)

Similarly, Kraftwerk's album *Man Machine* (see Fig. 3), by its title, cover-art, alienated voices, and use of synthesizers *is about* technology, computers. Its aesthetic owes more to the futurism of the 1920s than to science fiction, despite the use of (non-digital) sequencers, which was pioneering for 1978.

As Reference

We are closer now to the experience of the digital. Still something is missing. Let's call it the e-card effect: The disappointment to have received on the promise "I'll send you a postcard!" an emailed picture rather than a slightly worn, stamped and mail carrier-delivered cardboard postcard. Sending it by post means a physical loss for the sender so that the postcard *materializes* in the receiver's post box. The digital picture is a nonmaterial *reference*, a *data-set* we can share, but not give away. The digital in this sense belongs to Latour's mode of *reference*, the referential

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chain that provides access to knowledge: The more elaborately referenced knowledge we have of something, the more universally replicable that knowledge is.

Even though the use of blockchain technology can seemingly make datasets unique, the uniqueness is not in the experienceability of what the dataset encodes, but solely the uniqueness of the code. So an identical copy of the encoded artefact would still be possible — the blockchain (like a signature) would need to be consulted to verify its uniqueness. In a simile, the non-digital *non fungible token* equivalent of the Mona Lisa would be an arbitrary number of identical paintings, where only one bears the original signature by Leonardo da Vinci.

Fig. 3 Mensch Maschine, (Cover art for Kraftwerk's album of the same name, by Karl Klefisch. © Kling Klang 1978)

If we experience the digital in a recording of classical music, we either find the recording better than a non-digital recording, or we find it less accurate, a faulty reproduction. If the reference is of sufficient resolution, we cannot spot a difference between, say, a digital photo and a non-digital one: The resolution goes beyond what we can detect as pixelation with the bare eye. So we could imagine a world which is its digital copy: The world measured and digitalized, the world as its data – A reference to the world. Importantly, the world as its data, is not the same as a 1:1 copy of the world! If a map of the world is an exact replica of the world we would be as lost on the map as we are lost in the world [6,

pp.69-96], as it *is* the world according to the law of identity. So the digital reference is not a copy, but a *discrete numerical* reference, which needs to be *converted back to materiality* to be experienced.

Conversely, this implies that whatever is digitized will only be experienced in analogue material form. What we actually hear, when listening to a digital recording, is a rapidly oscillating cardboard-cone connected to electromagnets in a loudspeaker.

Whilst readers may agree that the aesthetics of digital art do not stem from the technical aspects of the digital; that the *notion* of digital is *fictional*; that digital art of type 2 and 3 is a *reference* in the Latourian sense, — I won't hold it against them if they still feel something's missing. What we discussed so far cannot explain the sense of disembodiment experienced by the workshop participants. Nothing so far accounts for the specter of the *brains on sofas*.

It is intriguing: *Brains on sofas* is scary not because it stands for a loss of agency (arguably, as *brains on sofas*, we can activate a plethora of remote controls), but because the agency is disembodied! This contrasts to another popular specter, the tale of *AI-robots taking over the world*: These are juxtaposed extremes of technology-mediated agency. On the one hand, agency with no body (*brains on sofas*), on the other hand, body with no agency (*AI takeover* [23]). To explore if the notions of *brains on sofas* and *AI takeover* are valid concepts of possible futures requires a thorough analysis of agency.

Agency

According to Actor-Network Theory [24], the term *social* is problematic, and hence replaced by the notion that everything that is associated with something within a network is an actant: people, as well as things. I paraphrase this as *distributed agency*. If everything is an actant, so are we. The brain on a sofa's agency encompasses not just the brain but also the sofa, remote controls, machines and actants necessary to keep it there. If we assent to this distributed agency the specter of the *brains on sofas* as well as the *AI takeover* remain isolated from their networks and even as fictions, when fleshing them out, we would end up building intricate networks to make them believable. Will they ever become a reality?

Anthropologist Lucy Suchman, investigated this question for the trope of the "human-like machine" (which is somewhere halfway towards our monsters). As a senior scientist at the Xerox Palo Alto Research Center, she addressed the social and material practices which make up technical systems. In *Human-Machine Reconfigurations* [25] she shows how boundaries between persons and machines are discursively and materially enacted. Stating that people create meaningful action by improvising based on their social and environmental resources, she challenges common assumptions behind human-computer interaction

design with the argument that human action is constantly constructed and reconstructed from dynamic interactions with the material and social worlds. She uses Donna Haraway's method of *figurations* [26] on the premise that "all language, including the most technical or mathematical, is figural."

Latour counts *figurations* as beings of fiction. This does not mean that they are not real, concepts, also scientific concepts can be accessed via the fictional mode. Latour explains this seeming contradiction: "Each mode grasps all the others according to its own type of existence [27]". So realities themselves are conceptually relevant fictions. This idea helps to disambiguate the many - possibly to this point contradictory definitions of digital I used so far. The digital as a *technical* being, as a being of *reference* and as a *fictional* being is wrapped up together in the figuration of the technical, because the way we experience the digital doesn't differ to other technical beings. What Suchman in this context is saying, is that *machines* are figurations which can not successfully be accessed via the technical mode, that it would constitute a *category mistake* to access them solely as technical beings. Of course there are many technical beings enacted in a machine, but principally as actants in a socio-material arrangement, which, *per se* is a figuration.

If "all language including the most technical or mathematical, is figural," human-machine configuration can thus be *reconfigured*: Distributed action provides a re-configuration of the human-machine situation, redefining machines as *situations*.

From the perspective of the machine as contingently stabilized interaction, where the person is essential part of a *socio-material* arrangement, the question wether machines one day might successfully mimic the "capacity of the autonomous human subject" seems slightly off, as it is not clear who or what is mimicking what or whom. Nor is it particularly interesting, as the real question is an ethical, rather than a technical one, because these arrangements' reiterations and/or reconfigurations are "the cultural and political project of design. [28]"

Evidently, this ethical dimension also raises the question of responsibility, which, according to Suchman "on this view is met neither through control nor abdication but in ongoing practical, critical and generative acts of engagement."

If we apply these insights to *AI takeover,* and consequently also to all forms of automated decision making, it becomes evident that the whole conception stands on the shaky legs of an isolated agency that could exist outside of an actor-network it essentially needs to persist. Even if the "autonomous human subject" is as much of a tall tale as our *specters*, (human autonomy is not self-evident if we agree on a distributed agency), it shows how unhelpful it is to think of ourselves positioned in a human-machine *opposition*. If, however, we think of machines as socio-material interactions, we integrate the machine into our practice without a need for hierarchical value systems.

As socio-material practices, machines are never autonomous either: As a configuration, even a robotic lawn mower relies on a lawn to be mowed, a charging station, spare parts in a store nearby, firmware updates, etc. If it avoids collision with a turtle, it does so in *response* to its negotiated design as a "socio-material practice", a "cultural and political project". Yes, in that sense the robot acts *responsibly*, but it is a responsibility distributed in a network of these "ongoing practical, critical and generative acts of engagement" [29]. Similarly, it is hard to see how a *brain on a sofa* could persist as an actor without a network.

All this doesn't still quite answer why we concocted that troubling vision of the *brains on sofas* during the improvisation workshops: Our worry was not about losing the power of decision-making, epitomized by *AI takeover,* but that our existence should become *disembodied*. Immediately, I hear protest rising from the audience that thinking with the brain is also an embodied act and yes, that is true too. Still, something is missing. I argue that it is the lack of kinaesthetic experience.

Tool or Machine?

According to Latour, the technical encompasses both techniques and technologies. Yet, how come that we experience a physical *tool*, like a spade or a guitar as fundamentally different to a *machine*, say a tape recorder, or a conveyor belt in a supermarket? Obviously, it is to do with embodiment, as the difference is that the machine takes a process out of our hands – literally when the conveyor belt transports our goods to the cashier.

In the field of *embodied action* there are many paths one could follow, for example, the works by Noë [30] or Gallagher [31]. I happened upon Carrie Noland's work *Agency and Embodiment* [32] first, and as it focuses on the embodied experience of agency manifested through gestural movement, it struck a chord with what we experienced in the workshop. Corporeal gesture is not a prominent concept in the works of Suchman and Latour. Noland makes the case that "kinaesthetic experience, acts of embodied gesturing, places pressure on the conditioning a body receives", as an alternative to constructivists' inability to produce a convincing account of agency." She asserts that "kinaesthesia – feeling the body move – encourages experiment, modification and, at times, rejection of the routine." Her most compelling argument for this embodied agency is her reading of neurophysiologist Alain Berthoz's *The Brains Sense of Movement* [33].

Berthoz is primarily interested in perception, but argues that perception neurologically constitutes an *action*. This is inherently a type of motor-neuron theory of perception, introduced by Berthoz with "William James's concept of an anticipatory neuronal pathway" [34] (see Fig. 4): If a sensory cell S is excited, it activates a motor neuron M which induces a muscle contraction. A kinaesthetic cell K detects the movement in the muscle and modifies the motor neuron. James proposed that there might
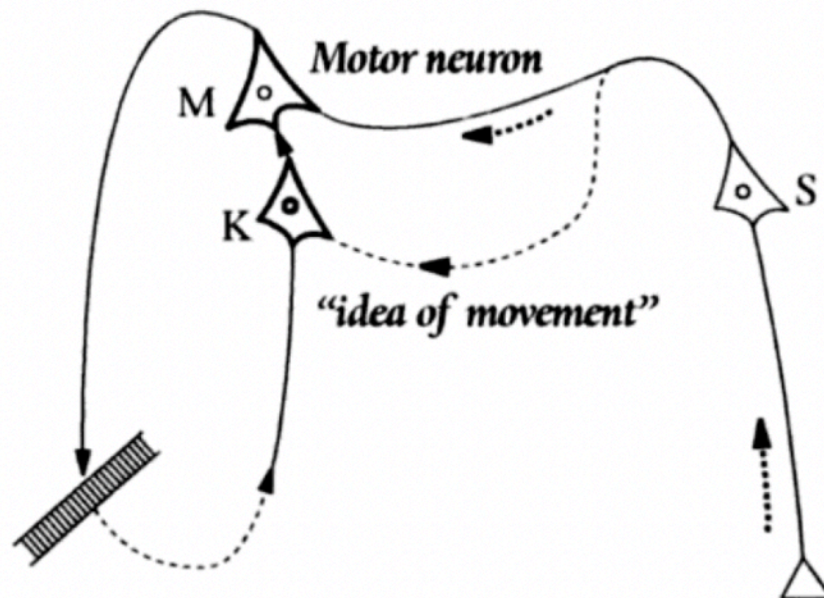
Fig. 4 William James's concept of an anticipatory neuronal pathway.
© Odile Jacob, 2005)

be an additional path from the sensory cell *directly* to the kinaesthetic cell, enabling the kinaesthetic cell to modify the motor neuron even before it activates the muscle. The kinaesthetic cell can thus *anticipate* how to modify the motor neuron. Importantly, the kinaesthetic cell's actions are informed by the feedback from the muscle *as well as* from the sensory cell, in a continuous adaptive loop.

This '"enactive perception' the cornerstone of which is the agentic, decision influencing role of kinaesthetic sensation" [35] fills the conceptual gap Latour's modes of existence somehow left: Our disenchantment with a possible, if imagined reality of a world where the lack of kinaesthetic experience disconnects

us from active engagement is expressed in the *brains on sofas* trope because kinaesthetic proprioception *is* our sense of agency! If Perception is action, it intrinsically constitutes an agentic kinaesthetic experience: When we hear, see, or touch, we are active on the neuro-motoric level. If all action that we perceive as *agentic* is intrinsically *motoric,* i.e., a kinaesthetic experience, we have a sense of agency, when and because we experience something kinaesthetically. Maybe this heightened sense of agency can explain the experience of authorship, the sense of achievement we feel when we contributed to an art project or artefact [36].

Concluding Remarks

The notions *brains on sofas* and *AI takeover* express the fear of our own extinction. Poignantly, they were voiced in an improvisation workshop with the aim of developing techniques and technologies, and therefore endorsing machines! Instead of feeling relief that technology is doing our

work, we are afraid of technology taking away our work. Work that as craftspeople, we enjoy doing. The workshop provided many examples for how to engage with technology is an empowering, enabling process: Participants' unease with technology as it pervades cultural discourse was not borne out in their practice.

If we conceptualize our relation with technology through the popular discourses of technology of the type expressed through *AI takeover* and or *brains on sofas*, we forfeit our say, stake, and responsibility for how we design machines and technical systems. As a counter strategy, I have tried to show here step by step, how from a discrepancy between practice and cultural conceptions of technology, a re-thinking of the digital through Latour's modes of existence is possible. This is congruent with observations in the workshop: Participants did engage with (digital) technologies once they recognised them as not essentially different to their craft's *techniques*. This is how the rethinking of technology becomes possible — from within its practice. The fictional construct, the figuration of the *brains on sofas* cannot serve as an objective technical description of the digital. The digital as a *technical being* is a tool of reference, and escapes direct experience. Therefore digital technology cannot endow nor institute the dystopian concepts of *AI takeover* and the workshop participants' fear of *brains on sofas*. These specters are neither digital nor technical, but a fictional *tale* of the technical, a figuration. Interestingly, like the specters, machines too are figuration. Taking the tale apart, we see that agency in a machine is distributed across a network within which we find ourselves too, not helplessly entangled but as individual actants amongst others constituting the network, shaping and negotiating our relations with the technical. Workshop participants engaged in technical processes through actively con*figuring* machines and realising their stake in technical *actions*, rather than in the machine as an *object*.

By connecting to the neuron theory of perception, I hope to have reestablished that a sense of authorship arrives from kinaesthesia, which explains why we still feel pride in the instant of realisation of "I made this", even while being fully aware, and rightly so, that the agency necessary for the work's completion was distributed, and authorship only established after the *fact* of making the arte*fact*. In the workshop's focus on spatial interactivity, the gestural body as a *technical* entity was fundamental. As a collective, participatory practice, the distributed nature of the creative process was paramount. The sense of authorship nevertheless experienced by workshop participants provides evidence for this role of kinaesthesia in *technical action*s.

That we agree to socio-material arrangements wherein we are disenfranchising ourselves from our embodied practices — in the belief that *it's technology, so it's out of our hands* not only shows that we do not grasp the responsibility we have and should take in constituting these arrangements; it also exposes how we build machines and how we actively *mis*-conceptualize technologies. The call for an engaged, participative understanding of the *technical* was consensus amongst workshop participants, the experimental practice a step towards it.

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[34] See [33] p.10.

[35] See [32] p. 10.

[36] *Nota bene*, according to Latour, this sense of authorship comes *after the fact*, as "Competence, here again, here as everywhere, follows performance rather than preceding it." in the technical [6, p.228].

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