

Reimagining Algorithmic Governance

Cultural expressions and the negotiation of social imaginaries

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Abstract

This paper investigates the means through which a series of artistic works invite critical responses to algorithmic governance and the systems of surveillance and data capture these draw upon. In combining the theoretical frameworks of Cornelius Castoriadis, Jacques Rancière, and Chantal Mouffe, we conceptualize how, and to what possible effects, art can engage politics and focus the discussion on concrete techniques through which selected works and performances question contemporary systems of algorithm-based management and control. Firstly, we offer an introduction to Cornelius Castoriadis's [13] theoretical framework regarding an imaginary institution and reproduction of society. So far, his concepts have been treated in a rather metaphorical manner in the literature on algorithmic governance and we set out to provide a thorough theoretical grounding of this valuable framework. We then add Jacques Rancière's [49, 51] concept of a distribution of the sensible and draw upon Chantal Mouffe's [47] theories of art, democracy, and hegemony to account for art's political function. As a second step, we focus on specific media artworks that respond to concrete instances of algorithmic governance by defamiliarizing and transgressing received social imaginaries to enable an active reshaping of received technologies and sedimented practices. We identify and illustrate a selection of tactics available to artists to question and contain these increasingly automated systems; including appropriating, rejecting, inverting (perspectives, scales, values/norms), and creating alternatives. We show how these tactics are deployed to invite a subversion and reimagination of dominant algorithmic imaginaries and the specific frames of sensing, speaking, and doing they imply. Our objective is to give an overview of available artistic tactics, and to facilitate further research of, and critical engagements with, algorithmic forms of governance and their enactments of surveillance and automation. Through our inquiry, we hope to contribute to a further development of critical media literacy practices in art and higher education that can facilitate a creative reimagination and reshaping of the socio-technical systems that become increasingly constitutive of contemporary identities and societies.

CCS CONCEPTS • Applied computing~Arts and humanities~Media arts•Social and professional topics~Computing / technology policy~Surveillance•Human-centered computing~Human computer interaction (HCI)~HCI theory, concepts and models

Additional Keywords and Phrases: algorithmic governance, artistic practice, social imaginaries, critical practice

1 Introduction

Algorithmic systems of governance are becoming increasingly ubiquitous, opaque, and embedded in everyday life. From search results and recommendations on social media to insurance rates, allocation of social welfare, and predictive policing,

tacit calculations based on sets of big data about populations and individuals routinely prepare, or indeed themselves make, decisions that shape our daily lives. This entails problems regarding potential biases, a lack of transparency and accountability, as well as power imbalances that are potentially created and exacerbated by these systems [1, 3, 14, 20, 64, 17, 48]. Issues such as who benefits from and who is tacitly excluded or oppressed in datafied societies, and how this happens, are serious concerns that need to be addressed in research, policy, and activism. In this article, we focus on artistic responses that aim at reimagining and reshaping dominant forms of algorithmic governance.

Firstly, we offer an introduction to Cornelius Castoriadis' [13] theoretical framework regarding an imaginary institution and reproduction of society. So far, his concepts have been treated in a rather metaphorical manner in the literature on algorithmic governance and we set out to provide a thorough theoretical grounding of this valuable framework. We then add Jacques Rancière's [51, 52] concept of a distribution of the sensible and draw upon Chantal Mouffe's [46, 47] theories of art, democracy, and hegemony to account for art's political function. Thereby, we also respond to a recent call by Nick Couldry [15] who urges researchers to recover "the possibility of social critique" in encounters with datafied societies by looking at theoretical approaches beyond the confines of Science and Technology Studies (STS) and Actor-Network Theory (ANT). As a second step, we focus on five specific artworks that respond to concrete instances of algorithmic governance by defamiliarizing and transgressing received social imaginaries to enable an active reshaping of received technologies and sedimented practices (Simon Weckert's Google Maps Hacks; César Escudero Andaluz's *Inter Fight*; Clifton, Lavigne, and Tseng's White Collar Risk Zones; M Eifler's *Prosthetic Memory*; and Caroline Sindere's *Feminist Data Set*). Our objective in discussing those is to give an overview of available artistic tactics, and to facilitate further research of, and critical engagements with, algorithmic forms of governance.

2 Responding to Algorithmic Governance

Recently, algorithms and their implications and effects have become a frequent topic in a variety of disciplines and fields ranging from computer sciences via law [28, 35], sociology [4, 7, 23], political science [48, 20], media studies [3, 17], and anthropology [56] to history [44]. Common to most approaches are questions about 1) how algorithms influence the regulation and structuration of individual and collective conduct and 2) how these technologies themselves can be controlled and managed [32, 64, 65].

In this article, we follow a definition of algorithms advanced by, among others, Tarleton Gillespie [23]. He states that, in their most basic form, algorithms resemble systematic instructions that ensure the transformation of certain "input data into a desired output". This very basic definition includes phenomena ranging from simple hand-written cooking recipes to the complex calculations underlying an optimization of search results on the Internet or guiding the allocation of social welfare and the deployment of lethal force in drone warfare, just to mention a few. Our focus here aligns with the latter, digital type of machine learning algorithms that exert a new form of power over human conduct and cognition that has variably been termed algocracy [4, 19], the algorithmic Leviathan [34], algorithmic governance or regulation [32, 64, 65], and taking inspiration from Foucault, algorithmic governmentality [29, 54].

We align to a body of research that perceives of algorithmic governance and regulation as situated, contextual, and enacted in and through everyday practices [19, 23, 56]. As such, we follow Gillespie [23] who asserts that we need to be attentive to "a multidimensional 'entanglement' between algorithms put into practice and the social tactics of users who take them up". As Seaver [56] argues, drawing among others upon Annemarie Mol's [45] praxiography, such a focus requires methods that assess not only abstracted algorithms as such, but their multiple and contingent enactments in the context of everyday life. The mere technical construct thus recedes and becomes conceivable in a wider frame as the "manifold consequences of a variety of human practices" [56]. Based on such premises, we set out to interrogate the social tactics of contemporary artists and activists – their aesthetic and performative responses to specific enactments of algorithmic governance and power.

In what follows, we survey a series of artistic tactics deployed to question, critique, appropriate, or resist algorithmic forms of governance, and illustrate each with reference to a specific artwork. However, to enable an understanding of the possible implications of both the respective systems of regulation and of the artistic ways of targeting them, we need first to address the question of how entanglements between technological frames, everyday practices, and social imaginaries function and

how they can be described. To achieve this, we will initially turn to the social philosophy of Cornelius Castoriadis and then supplement this framework with insights from Jacques Rancière and Chantal Mouffe.

3 Frames of Speaking, Doing, and Sensing: Art and the Imaginary Institution of Society

To prepare our argument concerning the potentials of cultural expressions to facilitate political conscientization and incite progressive change in relation to systems of algorithmic governance, we need to establish an understanding of how culture and artistic imagination can interfere in processes of shaping and re-shaping societies. We turn to the social philosophy of Cornelius Castoriadis, in particular as laid out in the monograph *The Imaginary Institution of Society* [13], before we supplement his ideas with reference to concepts developed by Jacques Rancière and Chantal Mouffe. So far, these approaches have not been systematically laid out as tools for critical analysis of algorithmic systems of governance. In presenting them in some detail below we 1) establish a theoretical basis to ground our empirical cases and 2) enable a better understanding of the political function of artistic defamiliarization and transgression.

In his monograph *The Imaginary Institution of Society* [13], Castoriadis offers a dense description of the complex processes through which societies take form and reproduce themselves. His argument can be divided into two main trajectories: 1) an ontological grounding of a first institution of any possible society; and 2) an account of structure and reproduction of specific societies as actually existing social-historical formations. In both cases, human imagination and creativity play key roles. Our inquiry will direct particular attention to the second area of focus and address algorithms and their logics as constitutive components of contemporary social-historical formations.

According to Castoriadis [13], it is impossible to derive any social formation from preceding determinate principles as these principles only make sense in relation to and within the frames of the societies they imply. As such, any given society emerges in and through specific creative acts that institute a particular identity-determinate logic that then predisposes its own reproduction in speech and concrete performances. In this line of thought, modern capitalism would, for instance, not be the necessary expression of a particular human nature defined by instrumental rationality but emerges as a contingent system instituted by individuals that have learned to perceive of, and imagine themselves, in this manner and act accordingly. Individual subjects, as such, become conceivable as both formed by and formative of this specific version of society – its social imaginary. This is true for all social formations, both present and past.

Castoriadis encapsulates this relation of mutual constitution between subjects, imaginaries, and institutional frames across space and time as “social-historical” – “the union and the tension of instituting society and of instituted society, of history made and of history in the making” [13, emphasis in original].¹ In this context, the questions arise of 1) where the original institution bringing all this into motion emanates from and 2) how a specific social-historical society, once it has been posited, can be resisted or changed.

Castoriadis finds the answer to both problems in the creative imagination, or more precisely, the capacity of the individual psyche to autonomously invent signs – “to produce an initial representation” [13] – and thereby constitute a foundation out-of-nothing that makes meaning in specific contingent configurations possible. According to him, this creative act cannot be subsumed under any allegedly primary principle or logic but becomes constitutive of the very foundation of any such framework. He introduces the term “magma” as a metaphor to conceptualize this emergence of contingent structure from a chaotic subterranean flow containing endless possibilities for sedimentation, however, in the end, only materializing in one apparently determinate form. Through the imaginary capacity of the human psyche, an endless magma of possible signification crystallizes into specific social imaginaries that predispose reproductive performances and that always already

¹ This conceptual move is reminiscent of the one taken by Ernesto Laclau and Chantal Mouffe [36] who in their theory of society postulate an indeterminable “field of discursivity” as an unstructured potential from which specific discourses as temporarily and partially stabilized systems of signification emerge. We opt for Castoriadis’s framework because of its explicit focus on the function of the imaginary and free artistic creation in such processes that remain under-emphasized in comparable approaches.

contain the seeds for their inevitable eventual demise.² This leads over to the second question posed by Castoriadis's thought: the problem of fundamental change emanating from within the apparently heteronomous³ identitary-determinant frames of specific social imaginaries.

For Castoriadis, social and therefore political being is always a being-thus – a being in relation to or with respect to something. The qualification -thus marks a transition from an ontology of being-as-such to an analysis of actual forms of being in relation to specific social-historical formations. In moving focus from an initial primary institution to concretely instituted societies and their contingent ways of ordering the world, Castoriadis re-enables politics as collectively coordinated acts of negotiating contingency including the possibility of bringing into motion again the temporarily stabilized frames of actually-existing societies. In such processes, a radical imagination can create new social imaginaries that articulate alternatives from the “inexhaustible supply of otherness” [13] that lies dormant in a limitless magma posing an “irreducible challenge” to every instituted order thus reasserting the autonomy of political subjects.

Change always happens within already established frames of being-thus and is dependent upon the fundamental human imaginative capacity to break out of these frames by first imagining and then actualizing alternatives. Radical politics is about subverting the actual by making new ways of speaking and doing – *legein* and *teukhein* in Castoriadis terms [13] – imaginable. Art and other cultural expressions, we argue in this paper, are uniquely fitted to instantiate such acts of the radical imagination that, according to Ross [53], imply a breaking out of “the tyranny of being as being-determined, the autocracy of what is over what could be” (emphasis in original). This brings us over to the understanding of art implied in our application of Castoriadis's work that enables us to better comprehend how cultural expressions can facilitate a re-assertion of autonomy in encounters with contemporary systems of algorithmic governance.

We align to a critical conceptualisation of art as a form of signification that is characterized by its ability to afford transgression and defamiliarization thereby renewing subjects' perceptions of and performances in set socio-historical frames [11, 30, 31, 60].⁴ In Castoriadis' terms this means that transgressive and de-familiarizing works can cross constitutive boundaries of the actual. By challenging and potentially subverting habitualized ways of doing and speaking, such critical artistic expressions tap into the creative imagination to articulate alternatives and reassert autonomy. They draw upon a magma still in flux as Castoriadis would put it, to undermine sedimented social-historical formations and

² The work of Castoriadis has been subjected to various forms of criticism. Echoing and modifying parts of Habermas's [24] arguments, Jeff Klooger [33] purports that Castoriadis “proposes a far too deterministic and homogenous model” of society that does not sufficiently account for the internal plurality within social orders and the constant mutual adaptations between them. Klooger then rearticulates parts of Castoriadis's own theoretical framework to offer a more dynamic alternative. We only partly agree with Klooger's [34] criticism as we believe it underemphasizes the distinction between an ontological and an ontic level in Castoriadis's argument. As we see it, Klooger's critique only retains its full strength in relation to what Castoriadis writes about the conditions for an initial institution of society and does not equally well account for his thought on how actually existing societies are instituted and negotiated as concrete social-historical formations. See also Ross [53], who differentiates the ontology offered in *The Social Institution of Society* with respect to Castoriadis's ideas on autonomy and his later engagement on behalf of a philosophy of emancipation [12].

³ Heteronomous is a term often used by Castoriadis. In the sentence above it refers to the fact that societies apparently are constituted on the basis of processes, laws, or standards external to them. To retrieve an understanding of autonomy – of the ability to freely re-invent what is presented as externally given – is one of the prime functions of the radical imagination. See also Castoriadis [12] and Spannos et al [55].

⁴ We do of course not assume that all art serves this purpose. As for instance Paglen and Gach [21] have made clear, even art that presents itself as political or critical is often heavily commodified and regularly subscribes to market logics. Our focus is on activist art that is often performative and only rarely produces objects that lend themselves easily to sale and relocation to galleries or private collections.

facilitate change. Artistic expressions serving such purposes in relation to contemporary systems of algorithmic governance are the theme of our inquiry.

Unfortunately, Castoriadis does not interrogate in detail exactly how such struggles for transformation take place. As Dilip Parameshwar Goankar [22] puts it in an introduction to a special issue on new social imaginaries, “Castoriadis rarely engages the question of how change and difference are produced locally through the workings of the social imaginary’s significations at specific social-historical conjunctures”. Our aim in this article is to highlight such localized instances by looking at how specific works of art use techniques of defamiliarization and transgression to question and creatively re-imagine and re-do the social imaginaries that underpin contemporary systems of algorithmic governance. In this matter, the concept of a distribution and redistribution of the sensible by Jacques Rancière [51, 52] becomes a relevant tool for our inquiry that can supplement Castoriadis’s approach in an important manner.

According to Rancière [51, 52], political power in any given society is ultimately vested in the ability to determine who can be seen and who cannot, who gains a voice in public discourse and who is silenced, and whose lives and ideas matter and whose do not.⁵ He terms the specific configurations that organize such frames regimes of the sensible and argues that politics is essentially a struggle between forces aimed at policing a given distribution of the sensible and movements creating dissensus – attempts to unveil the power-relations and inherent aporias of received orders and to institute active redistributions that enable an inclusion of previously invisibilized forms of life thereby inciting political change. Not unlike Castoriadis, Rancière is interested in a peculiar form of critical political art that, through its potential to defamiliarize and transgress, can facilitate a re-distribution of the sensible giving rise to new ways of seeing and sensing that then can open up new ways of speaking and doing. In including Rancière’s concept, we add the important dimension of aesthetics to the dualism of *legein/teukhein* (speaking and doing) posited by Castoriadis.

Responding to Boltanski and Chiapello’s ideas about a ubiquitous and all-encompassing power of capitalism to co-opt even attempts to critically respond to or resist its ‘new spirit’, Chantal Mouffe [46] develops an understanding of critical art that is deployed to “oppose the program of total social mobilisation of capitalism” and to “undermine the imaginary environment necessary for its reproduction.” Surprisingly, Mouffe refrains from using Castoriadis’s and Rancière’s terminologies when outlining the basis of an emancipatory art aimed at subverting received social imaginaries and at reasserting the ultimate contingency of any social order. According to her, critical art facilitates the creation of “agonistic public spaces” from where hegemonic orders and dominant consensus can be challenged by “giving a voice to all those who are silenced within the framework of the existing hegemony.” In this paper, we align her suggestion that art can “offer spaces for resistance that undermine the social imaginary necessary for capitalist reproduction” [47], while also considering “forms of artistic resistance as agonistic interventions within the context of counter-hegemonic struggles” (ibid).

In connecting Castoriadis, Rancière, and Mouffe in this manner, we purport that a radical imagination constantly institutes, negotiates, and re-institutes societies through a perpetuated framing and re-framing not only of ways of speaking and doing, but also by means of predisposing our capacity to sense. In other words, *legein* and *teukhein* both have an aesthetic dimension that, so far, has been underemphasized by Castoriadis. Adding Mouffe’s theory of art, hegemony, and democracy to the mix enables us then to better account for the political function of artistic challenges to received social imaginaries and the dominant frames of speaking, doing, and sensing these imply. What remains to be seen now is how the dynamics and practices of an imaginary institution and reproduction of hegemonic versions of society play out in relation to highly complex contemporary socio-technical systems. How can an algorithmic social imaginary be conceptualized within the given framework and how can it be artistically questioned?

⁵ Judith Butler [10] offers a similar framework when introducing her distinction between grievable and un-grievable lives in contemporary politics. We opt for Rancière’s approach due to the specific attention he directs at artistic expressions and practices.

4 Speaking, Doing, and Sensing with Technology: Algorithmic Governance and Contemporary Social-Historical Formations

Katja Valaskivi and Johanna Sumiala [61] argue for the necessity to adequately understand the role of technology in relation to social imaginaries. They assert that in particular media and communication technologies deserve critical attention as they constitute a salient dimension of collective coordination and the circulation of values and meaning in contemporary societies. A similar point is made by Spannos et al. [55] who first historically locate Castoriadis' work in a specific moment of Western philosophy before they draw a line to contemporary society offering a critique of network technologies and new modes of management and control. Finally, the authors speculate in the capacities of these technologies to serve as vehicles for future autonomy and democratic change.

In our view, two ways of studying the intersections of technology and social imaginaries become conceivable. Either 1) research can address how particular technologies operate upon the conduct of subjects – how they predispose ways of sensing, speaking and doing specific to contingent social-historical formations; or 2) scholars can engage the question of how given social imaginaries represent specific technologies and thus make their potentials imaginable within the frames of a given being-thus. In the second view, technology does not only become socially and politically relevant due to what it actually achieves, but also due to what people imagine and believe it is capable of achieving [8, 9, 38].

Focus on technology as a factor impacting upon human perception, communication, and interaction is suspiciously absent in the work of Castoriadis that, in this respect, emerges as not only characterized by a “staggering eurocentrism” [22], but also as inherently anthropocentric. Similarly, Ranci re refrains from interrogating the role played by technology in the formation and potential subversion of historically specific regimes of the sensible. Thereby both scholars brush over the issue of how mediation and the political economy of communication frame and predispose such processes [25]. As Paglen and Gach [21] and Mouffe [46, 47] assert, such an omission of socio-economic and technical frames also runs in danger of distorting the potentials of art to challenge a received status quo and quickly reduces counter-hegemonic expressions to market-conform empty gesturing.

Technology and the economy, we purport, matter as more than mere instruments deployed to meet human ends. Technology looks, speaks, and acts back [26]; it co-constitutes both human subjects and societies and therefore needs to be taken seriously on its own terms.⁶ Something similar holds true for the economic frames limiting the ability to act for both artists in need of selling their works and activists mindful of the consequences of their acts of transgression. Critical art might serve genuinely political purposes, merely constitute a radical sales pitch, or, indeed, both. In this article, we deploy the works of Castoriadis, Ranci re, and Mouffe to theorize the potential role of critical transgressive art and performances in re-asserting human autonomy in the context of hegemonic systems of algorithmic governance.

Few studies have so far tapped into Castoriadis's complex theoretical framework to gain a deeper understanding of how a social imaginary and algorithmic forms of governance interact at the current social-historical conjunction. We perceive this as a missed opportunity as employing his concepts opens up new perspectives on dynamics such as “deep mediatization” [16], “productive measures” [6], or “predictive retention” [49]. Combining Castoriadis with Ranci re and Mouffe, then, allows for a more accentuated conceptualization of the possible roles a radical imagination and circuits of cultural production can play in the context of algorithmic forms of governance.

Algorithms add a specific technological dimension to processes of formation, reproduction, and potential subversion of social imaginaries and the specific, historically contingent forms of being-thus these imply. The artistic tactics we identify below are means of reasserting human agency and autonomy in relation to these systems. They constitute situated practices and interventions that re-contextualize the often-abstracted operations of algorithms and re-locate them in concrete life worlds [23, 56]. As several scholars have demonstrated, this enables forms of artistic and activist resistance aimed at undermining, appropriating, replacing, or reforming received structures of algorithmic regulation and control [59, 41, 42, 62] including Geert Lovink [39] and Rita Raley [50] who show how networks and media can be deployed tactically by

⁶ Following Dafoe [18], we avoid dichotomies such as technological constructivism versus technological determinism.

Instead, we argue for the necessity of studying every technology in its specific contexts of application and as one among many components in complex and mutually constitutive processes [22, 52].

artists and activists to “engage in a micropolitics of disruption, intervention, and education” in which sedimented structures are set into play “and critical thinking becomes possible” [50].

Luke Stark and Kate Crawford [59] have mapped aesthetic responses to the politics and ethics of digital technologies. They highlight how artists use their works as tactical media in the sense of Rita Raley [50] to defamiliarize computational technologies and enable critical engagements with them. In a related manner, Annette Markham [42] has recently issued a call for increased efforts in artistic works and practices to not only raise awareness for contradictions and possible pitfalls connected to the implementation of ever-new digital ‘solutions’, but also to actively transgress, disrupt, and break received frames, and thereby facilitate the imagination of different digital futures in a progressive and critical manner. In a similar way, Velkova and Kaun [62] advocate for artists to not only subvert and critique, but also reform and repair technical systems perceived as flawed or biased, while Manghani [41] demands that artists should aim at effectuating real change by going “beyond ‘anonymous’ forms of critique, to actually operationalize and ‘expose’ new ways of understanding”. Finally, Heemsbergen, Tréré, and Pereira [27] have outlined how a tactical algorithmic politics can facilitate change along “three disruptive traits [of] aesthetic, amplification, and queer(ing) data”. What brings these five approaches together is their insistence on human agency in individual and collective encounters with socio-technical systems that become conceivable as susceptible for critical interventions and reappropriation.

In our overview of artistic tactics of transgression and de-familiarisation, we follow Paglen and Gach’s [21] twofold understanding of how art can offer critique and facilitate change. In their terminology, creative figurations function at two levels: attitude and performance. Cultural expressions issue messages and at the same time do things, and the analyst needs to take both these dimensions into account when assessing their potential political effects. Paglen and Gach’s terminology allows for a critical grasp of often-encountered contradictions in the relation between art and politics that have for instance been highlighted by Mouffe [46, 47]. Consider for example a piece of art that issues a critical message concerning the detrimental effects of current processes of commodification (level of attitude). While issuing this message, the work is simultaneously offered for sale on private art fairs where its material practices actively reproduce the very conditions the work attempts to critique (level of performance). Paglen and Gach’s framework mirrors the interconnected logics of speaking, doing, and sensing that we identified through our earlier combination of Castoriadis’s and Rancière’s theoretical apparatuses, and that is focused on art practices in Mouffe’s call for an agonistic artistic activism cooperating with a variety of societal actors in coordinated efforts to overcome hegemonic systems of power and oppression. Such theorization finds resonance with the concepts used on the fields of software studies and interface aesthetics, which have long analyzed the “material explorations of technology that are found in the arts practices,” [2] and how these are used to critically question and defamiliarize the very same technologies [58, 63].

In our inquiry we assume an active audience in the sense of Hall [25]. This means we suppose that spectators will not passively reiterate the messages issued by artists, nor will they without further ado engage in the changed practices offered by artistic works and performances. The complex negotiations of meaning taking place in situated contexts of reception are an interesting and valuable area of inquiry. Nevertheless, for the sake of conceptual clarity, we here refrained from focusing on actual audience responses to the artworks we discuss. Rather, we describe how these works invite certain understandings of algorithmic governance and how they facilitate, yet not determine, critical practices bent towards autonomy and emancipation. This nod towards formal analysis, rather than empirical audience research, allows us to focus on dominant potentials for meaning and action inherent in specific artworks and to conceptually connect these to a series of intentionally deployed tactics. We offer an overview over how artists invite for critical stances towards algorithmic governance, not a typology of audience responses to these invitations.

5 Appropriating, Rejecting, Inverting, and Creating Alternatives: Artistic Responses to the Social Imaginaries of Algorithmic Governance

The list of artistic tactics we present below is the result of an inductive inquiry, in which we discussed and analyzed several different artworks by different artists. We repeatedly engaged with a series of artworks and, through our discussions, gradually converged on the four tactics we summarize in the following section – appropriation, rejection, inversion, and

creation of alternatives. In the following, we firstly offer a general overview, before we illustrate each tactic by describing one work that, in our view, most clearly exemplifies the respective category. Accordingly, what we present here is not a systematic typology, but a heuristic attempt to order a complex field that claims to be neither exhaustive nor comprehensive but issues an invitation to scholars and practitioners to further develop the presented ideas and terminologies.⁷ Our methodology thus did not seek an extensive overview of the field, but rather to experiment with how the previously discussed theorization regarding social imaginaries applies to artistic practice.

1. **Appropriating:** This category contains artistic endeavours that use dominant technologies of algorithmic governance, bring these to the attention of users, and bend their functions to enable new ways of sensing, speaking and doing that serve counter-hegemonic goals.

2. **Rejecting:** Under this header we summarize artistic works and practices that resist hegemonic algorithmic technologies by hacking, disturbing, and obfuscating their apparently seamless operations thereby stopping them from delivering the expected results. The category also includes Luddite acts of deliberate destruction of machines that are perceived as illegitimate or detrimental to human life and well-being.

3. **Inverting:** This category contains artistic techniques and expressions that alter frames of perception, analysis, and performance specific to hegemonic systems of algorithmic governance to deliberately play with and subvert the regime of the sensible, sayable, and doable these systems imply and reproduce. This category has two subtypes.

3.1. **Gaze:** This subcategory includes works that challenge received epistemologies naturalized in hegemonic systems of algorithmic governance. In questioning and inverting the power-laden perspectives implied in these systems, and in re-asserting their ultimate contingency, works and practices brought together under this subheader reveal the limitations of an allegedly objective, top-down gaze.

3.2. **Scales:** This subcategory includes works and performances that problematize the use and effects of abstracting, global, quantitative, and objectifying methods implied by algorithmic systems of assessment and regulation. It offers, instead, embodied, contextual, qualitative, and phenomenological life-world-perspectives.

4. **Creating alternatives:** This category comprises works and performances that draw attention to and fix flawed systems of algorithmic governance or that create inclusive and non-commercial technical alternatives that enable new ways of doing, speaking, and sensing thus reasserting autonomy and facilitating progressive change.

We will now illustrate and exemplify each artistic tactic described above through brief engagements with the following artworks: Simon Weckert's *Google Maps Hacks* (2020), César Escudero Andaluz's *Inter_Fight* (2015), Brian Clifton, Sam Lavigne, and Francis Tseng's *White Collar Risk Zones* (2017), M Eifler's *Prosthetic Memory* (2020), and Caroline Sinderson's *Feminist Data Set* (2017-).

5.1 Appropriating: Google Maps Hacks

Growing out of a long-term engagement with digital and other technologies, Berlin-based artist Simon Weckert's (<http://www.simonweckert.com/index.html>) performance *Google Maps Hacks* (2020) uses a tactic of appropriation to subvert the logics and power-relations intrinsic to algorithmically driven commercial mapping applications. Weckert walks the streets of Berlin equipped with a handcart loaded with 99 operable mobile phones and tablets that all have the Google Maps application turned on. As a consequence, the automated data gathering and feedback loops of the carried devices signal a conjunction of requests that are read as a traffic jam by the system, which subsequently colors certain roads red and re-directs cars away from the apparently congested area. Through such a creative appropriation of the Google Maps app, Weckert enlists a series of affordances of corporate technologies that usually remain underneath the radar of the average user to create a subversive tool that can be employed to rid neighbourhoods of excessive traffic. By directly intervening in apparently smoothly functioning systems of algorithmic regulation, *Google Maps Hacks* enables practices of counter-mapping that draw upon existing commercial devices but turn their intrinsic logics to counter-hegemonic purposes.

⁷ In practice, each artwork we discuss draws upon more than one tactic. For the sake of clarity, we decided to highlight only the type we perceive as most salient.

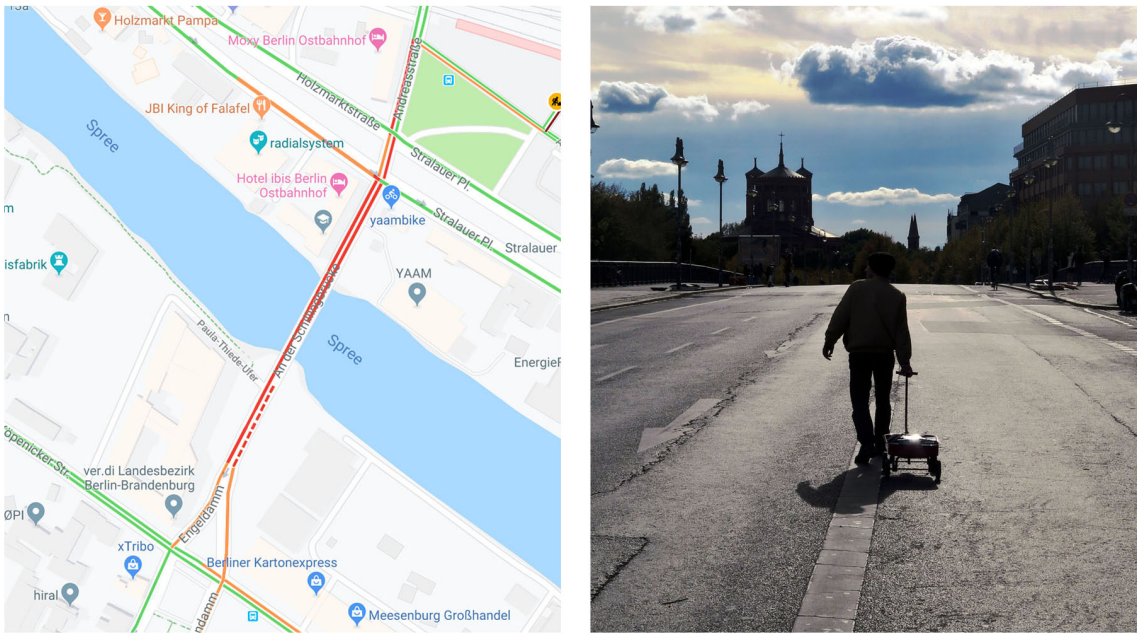


Fig. 1 – Virtually congesting deserted city streets: Weckert’s Google Maps Hacks at work. (Source: Artist)

In his work, Weckert consciously combines a critical attitude conveyed through images and technical information available via his website with concrete performance effects that re-assert the autonomy of individual subjects vice-versa complex algorithmic systems. His work defamiliarizes received paradigms of sensing the world through technology and challenges established practices regarding the automated regulation of traffic in inner-city environments. Weckert transgresses the affordances of commercial mapping applications and reappropriates them for new purposes. In Castoriadis’s terms, his act of creative re-imagination facilitates new ways of doing and sensing that challenge received imaginaries and benefit new constituencies – by empowering citizens to decrease traffic in densely populated urban spaces. The technologies behind his subversive practices are detailed on Weckert’s website and can be copied and replicated with comparative ease thereby enabling reuse and continued effects.

5.2 Rejecting: Inter_Fight

The Spanish artist and activist César Escudero Andaluz’s (<https://escuderoandaluz.com/>) work *Inter_Fight* (https://escuderoandaluz.com/2015/06/08/inter_fight/) uses the tactic of rejection to comment upon, challenge, and disrupt the almost ubiquitous data gathering and commodification practices of digital capitalism. For his project, Andaluz developed small physical robots which he termed ‘data polluters’. The spider-like small machines were constructed with conductive materials on their feet that emulate the human skin and are designed to randomly interact with the material interfaces of touch-screens. As described by Andaluz on his website, “these untraceable bots, [behave] as intruders: tapping, clicking, scrolling randomly, opening and closing applications or taking decisions, in order to provide wrong information for tracking and website analysis.” Through their randomized operations, the robots leave chaotic traces that blend with regular human activities thus disrupting the data gathering and profiling practices of a global digital surveillance machinery [3, 66]. Moreover, Andaluz’s creative re-imagination also de-familiarizes the increasingly ubiquitous touch-screen interfaces of digital technologies thus bringing their hidden functionalities to the attention of users.



Fig. 2 – Breaking the system? Obfuscating automated surveillance in Inter_Fight. (Credit: César Escudero Andaluz)

Through a creative act of obfuscation, Inter_Fight targets received ways of algorithmic sensing, speaking and doing in the service of hegemonic power relations, unhinges these, and subverts their expected outcomes. The work develops tools that muddle with the tacit background operations behind the digital economy's dominating business model by 'throwing a wrench' in the apparently seamless mechanisms of automated data capture (algorithmic sensing) and monetization (algorithmic doing) thus subverting feedback-loops back to users (algorithmic speaking). Inter_Fight highlights unequal power-relations and biases in access to and control over data in the digital surveillance economy and empowers users to resist and subvert these. Similar to Weckert, also Andaluz consciously aligns his work's critical message to its performance effects thus challenging received social imaginaries of algorithmic governance at the levels of both discourse and practice. His website contains a series of images, short videos, and articles explaining his approach and detailing the technology behind his data polluters. This open form invites for copying and wide distribution of his ideas and technical concepts.

5.3 Inverting Gaze: White Collar Risk Zones

Situating itself at the intersection of data science, art, and critical social studies, White Collar Risk Zones (<https://whitecollar.thenewinquiry.com/>) employs a new state-of-the-art predictive policing tool and risk modelling application to create an algorithm-based White Collar Crime Early Warning System [37]. The system employs data from the US Financial Regulatory Authority combined with specific geohashes to create an interactive heat map that visualizes location and likelihood of financial crimes to occur at different spots in the country. Upon zooming in on specific hot spots marked in yellow and red, the application then automatically generates the visual representation of the most likely facial features of a suspect typical for the area. Conciliating message and performance effects, the work both draws attention to the tacit biases of algorithmic systems of control and offers an application enabling alternative practices of crime prevention.

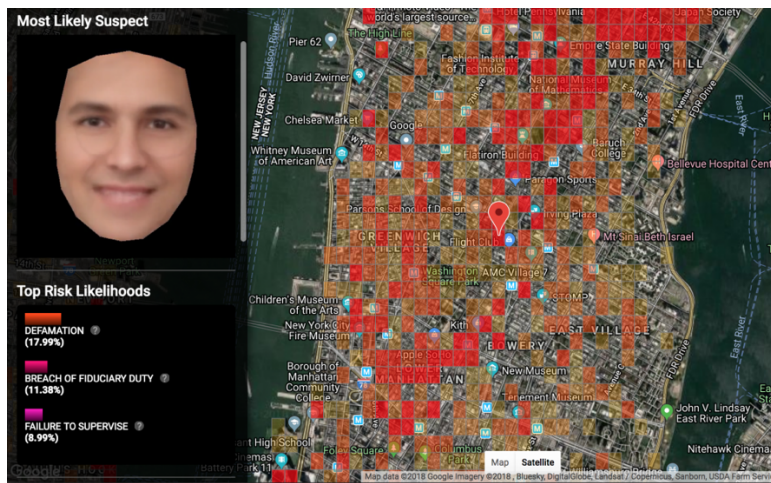


Fig. 3 – Inverting the gaze of the system: A usual suspect in White Collar Risk Zones. (Credit: Sam Lavigne, Brian Clifton, and Francis Tseng, and The New Inquiry Magazine)

Using a tactic of inversion, White Collar Risk Zones redeploys hegemonic technologies of power to turn the gaze of systems of algorithmic governance around making them responsive to the interests and values of groups that are often marginalized in such efforts [5, 20]. Enabling an identification and potential deterrence of financial rather than street-crimes, Clifton, Lavigne, and Tseng use their tool to point to the often-severe biases of algorithmic systems of governance. At the same time, the work undoes habitualized ways of seeing and imagining crime through algorithmic means and actively engages in the design of an alternative solution. In transgressing the boundaries of predictive policing in this manner, the work redistributes the algorithmically sensible to enable new ways of seeing and doing in relation to crime prediction and prevention. The methods used to create the White Collar Risk Zones application are detailed in publications by the developers and thus open for free repurposing and further dissemination.

5.4 Inverting Scales: Prosthetic Memory

In the work Prosthetic Memory artist and researcher M Eifler (<http://www.blinkpopshift.com/>) uses the tactic of inverting scales to critically reflect on what it means to capture and store life experiences and events. Due to a brain injury, M Eifler lost their long-term memory. The project Prosthetic Memory became both a practical and an artistic response to this life condition. In combining hand-made analogue forms such as diary entries and drawings with digital photography and video, Eifler developed multimedia and multimodal representations of their own past that they were biologically unable to retain. These analogue and digital traces are brought together by means of a custom-made machine-learning algorithm trained to associate the various materials, thus forming externalized memories of specific events which they (and audiences) can traverse and relate to. Beyond this individually tailored operationalization, the work also addresses the issue of surveillance and capture of personal data in systems of algorithmic governance and questions an often-assumed accuracy of big data-based algorithmic assessments. Eifler demonstrates that machinic sensing, speaking, and doing can be made conducive to human autonomy and emancipation.



Fig. 4 – Individualizing and re-embodying algorithmic retention: Mnemonic work in Prosthetic Memory. (Credit: M Eifler)

Prosthetic Memory reverses the scale of machine-learning applications from the abstracted and anonymous big data of algorithmic governance to the embodied, individual, and intimate level of contextual small data. In doing so, the project challenges one of the key assumptions of a hegemonic algorithmic imaginary – a pre-eminence of large-scale quantification as source of objective knowledge about lives – and proposes a concrete alternative that enables new ways of doing and a potentially subversive redistribution of the sensible towards individual, embodied, and situated phenomena [40, 43]. By creating algorithms for their own body and situated position, Eifler combines a critical message with concrete performance effects and shows that machine learning can be designed and trained to adhere to emancipatory goals. Prosthetic Memory challenges received social imaginaries by creatively re-embodying and re-contextualizing data as a small-scale alternative to big data-driven mechanism of capture and commodification. M Eifler’s work is freely accessible online, serving as inspiration for others interested in re-imagining and re-doing computational systems for corporate data-capture as user-centric techniques of algorithmically supported personal retention.

5.5 Creating alternatives: Feminist Data Set

Feminist Data Set is a project by Caroline Sindors (<https://carolinesindors.com/>), a US-American machine-learning-design researcher and artist whose work examines the multifaceted relations of technology and society from feminist and intersectional vantage points. Feminist Data Set is a long-term project that aims at 1) a critical interrogation and dissection of all steps involved in creating machine-learning algorithms, 2) the identification of hidden assumptions and premises that prestructure analytical outcomes, and 3) the development and implementation of a better and more inclusive alternative. Predominantly employing the tactic of creating alternatives, the project uses public workshops and co-design forums to build more inclusive and emancipatory machine learning tools from scratch. By these means, the often-assumed accuracy

and veracity of algorithmic calculation can be subjected to critique as demanded by for instance Amoore [1] who points to their inherent partiality and asks for new methods “of reinstating doubt at each point in the iteration of data to model.”

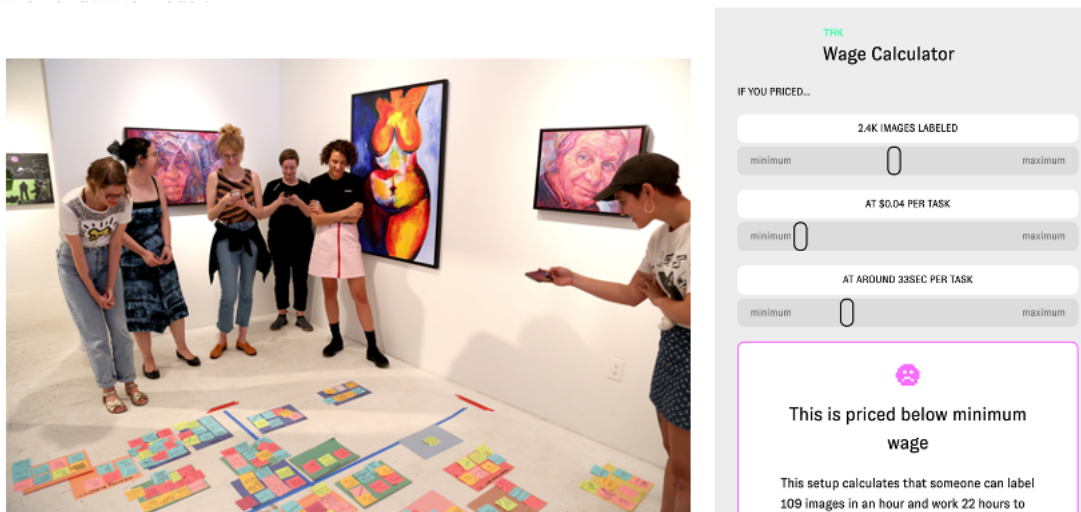


Fig. 5 – Building data sets from the bottom-up: Creating alternatives to received system of algorithmic governance in Feminist Data Set. (source: artist)

Sinders’s work questions and challenges the received algorithmic imaginary according to which algorithmic analyses of big datasets offer neutral access to reality as it actually is [1, 7]. Through her work she points to the intrinsic biases of algorithmic regimes of the sensible and conducts a fundamental feminist critique of the implicit assumptions and premises that tacitly structure hegemonic ways of machinic sensing that then informs the doing and speaking of both human and non-human subjects. By means of developing alternative sets of input data and designing solutions to process these, Sindere shows what algorithmic governance could look like if it were built experimentally from the ground-up adopting different, more inclusive values. Thereby she facilitates a radical re-imagining of apparently given frames of sensing, speaking, and doing implied by this technology. As Sindere [57] puts it, “provocations within art and design can create imaginaries for new realities” that can help to reveal systemic injustices, as well as overcoming these by identifying viable alternatives. Combining a critical message with the practical development of concrete alternatives, Sindere offers a template for data base construction from below thus turning the hegemonic structures of algorithmic data gathering and assessment around. Each in their specific manner, the different tactics illustrated above defamiliarize and transgress key aspects of a contemporary social imaginary of algorithmic governance and the specific distribution of the sensible, sayable, and doable this imaginary implies. In either turning hegemonic technologies against their original purposes (appropriating), disturbing or interrupting their intended operations (rejecting), questioning their underlying assumptions and inherent biases (inverting), or by developing more inclusive and less discriminatory alternative solutions (creating alternatives), the works discussed in this article aim at either problematizing established – or enabling new – ways of sensing, speaking and doing in complex socio-technical systems. In opening new opportunities for perception, thought, and action that are bent on challenging and changing the frames that tacitly privilege an “autocracy of what is over what could be” [53], the tactics presented in this article grow out of a radical imagination that puts autonomy above heteronomy and therefore, following Castoriadis [12, 13], constitute an important element in any project of liberation and emancipation. Through their interventions, the different artworks presented here deploy these tactics not only to reflect about existing frames, but to actively produce new knowledge and new practices.

6 Conclusion

In this article, we have described artworks and performances that question and challenge hegemonic systems of algorithmic governance. Responding to Couldry's [15] call for a theorizing of datafication beyond the frames of STS and ANT, we deployed Cornelius Castoriadis's theory of an imaginary institution of society and brought this framework together with Jacques Rancière's notion of a distribution and redistribution of the sensible, as well as Chantal Mouffe's theory of counter-hegemonic potentials of art. We did this to gain a terminology that allows us 1) to understand how contemporary datafied societies reproduce themselves by tacitly predisposing the speaking, doing, and sensing of subjects and 2) to show how a radical imaginative capacity can re-assert human autonomy in relation to increasingly complex technical systems of management and control.

With this theoretical framework as a background, we engaged with a series of art works and identified specific tactics used by artists to critique hegemonic technologies and develop concrete alternatives. We ordered the approaches we observed in four categories – appropriating, rejecting, inverting, and creating alternatives – before we illustrated each type with reference to a particular work. Through this process, we mapped how artists can engage with and question received social imaginaries of algorithmic regulation and control at level of both their works' attitudes and performance effects. Our study shows how the tactics we described tap into a radical imagination and, therefore, become key components of contemporary political struggles aimed at autonomy and sustainable emancipation.

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