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Towards Sonic Opacity as Algorithmic Resistance

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ABSTRACT

The doctoral thesis *Beyond Recognition: Towards Sonic Opacity as Algorithmic Resistance*, presents an intervention at the intersection of critical theory, media studies, sound studies and artistic research that seeks to critically assess recognition as a regime traversing epistemological, ethical, aesthetic and technological domains. In particular, the thesis concentrates on *listening* as a sensory-specific mode of recognition; on human voice as the overdetermined object of auditory recognition; and on algorithms as contemporary technologies of recognition. Adopting a feminist, new materialist philosophical framework, *Beyond Recognition* understands recognition (in all of its modes) as a process that *produces*, rather than merely observes, its objects and subjects. Listening-as-recognition is thus decoupled from its purported neutrality, and exposed as contingent on ingrained racial, colonial, classed and gendered premises.

The first Part of the thesis takes up the methodology of situating to offer a critical genealogy of recognition as an episteme sustaining its operations across philosophical, colonial, and computational apparatuses of capture. Throughout this Part, the thesis aims to show how recognition is uncritically inscribed in philosophical and aesthetic models, as well as in technological assemblages such as algorithms. In a contrapuntal theoretical movement, *Beyond Recognition* aims to propose *opacity* (Glissant) as a conceptual and performative tool able to actively resist recognition.

The second Part of *Beyond Recognition* builds on the previous to substantiate it through a case study. This Part unfolds as a detailed critical audition of the "accent recognition" algorithm in use at the German Migration Office to process undocumented asylum seekers' applications, doing so by engaging with artist and researcher Pedro Oliveira's work. This critical assessment of the algorithm is grounded, on one hand, in media archeological methodologies and Actor Network Theory's practice of *script analysis*; on the other, it proposes a second-degree interpretation of Oliveira's own methodology, to highlight his radical and innovative approach to algorithmic audition, especially when confronted with the epistemological and practical limits of classic methods of analysis. In this case as well, *opacity* offers the conceptual and pragmatic not only to overcome this impasse, but actively resist to the voice recognition algorithm. The thesis concludes with an analysis of Oliveira's live sound art work *DESMONTE* (2022), first, framing it in the broader context of contemporary artistic research practice on voice/recognition/algorithm, and lastly by adopting a participatory perspective as a privileged listener, to put to the test *sonic opacity* as a practice able to move beyond recognition.

INTRODUCTION

PREFACE

In the contemporary present, we act upon and signify in the political field only to the extent that we are *recognized*. While the roots of this idea run so deep into the ground of Western culture that its fruits look natural, recognition is a notion with a history and a logic that can be put to work for different functions. However, "[insofar] as recognition is treated as the means for collective emancipation", as the editors of 'antipolitical' theory journal Hostis argue, "[it] is nothing more than a mirage that welcomes those upstanding citizens of Empire into civilization's warm embrace" (Hostis 2016, 1). What happens then, to those whose identities are considered illegible, and thus inassimilable into the 'politics of recognition'? And who gets to decide the coordinates of recognition as a such system of knowledge production? Should recognition be protested, or even refused, and from which grounds?

These questions become increasingly pressing as all aspects of social and political life become progressively mediated by technology. As the task of recognizing identity to regulate access to essential services, rights and spaces is being delegated to algorithms, the ethicopolitical character of recognition cannot any longer be ignored. If, as the members of activist collective Acid Horizon claim, "functions and practices of recognition inscribe meanings that allow for the identification of subjects, not only through the shaping of their bodies, but the shaping of their self-conscious identifications and in how others consciously and unconsciously identify them" (Acid Horizon 2023, 50) – if, in other words, we are increasingly entangled with algorithms that decide "what or who can be recognized, what can be protested, and which claims can be brought" (Amoore 2020, 10), what avenues can we take to resist this condition?

My project, titled *Beyond Recognition: Towards Sonic Opacity as Algorithmic Resistance* attempts to answer this question by taking the long road. It in fact considers this question as the last in a long, series of progressively interrelated queries, all of which it tries (yet inexhaustibly) to address: how is recognition *inscribed* and *reproduced* in different modes, such as recognition *by listening* and as performed *by*

algorithms? To what extent are the systemic failures of recognition to fulfill its promise (i.e. to produce truth-claims about identity and difference) traceable back to the epistemes that orient its logic and workings? What are the analytical, ethical, and aesthetical strategies that have been pursed in response to its failures, and why so often do they reproduce the same logic they claim to protest? What other forms of resistance can be pursued? In what degree a such practice can be grounded in a radical rethinking of the subjects and objects it claims to account for?

My hypothesis is that, by *situating* the epistemes of recognition, it will be possible to evaluate their impact on different forms and models of recognition, and show that it is by inscribing these notions and operationalizing them, that recognition does not much 'recognize' its objects in an objective way, but rather *produce* them according to the specific (aesthetic, cognitive, material, technical) coordinates of the systems and instruments of knowledge production that perform it. In doing so, I will argue throughout this thesis, recognition can only *know again*, and thus cannot accommodate the difference it claims to be able to account for. Rather, recognition demands its subjects and objects of knowledge to adapt to its own coordinates – *or else* be unrecognized.

Significantly and as a testament to the persistence of this notion, the epistemes that inform recognition have made their way even into the models that have attempted to move beyond it. By examining theories and practices of *listening*, which have often been mobilized as remedies to the limitations and violence of recognition, we can trace how its logic persists in its different modes. Today, when the task of recognition is increasingly delegated to algorithms, these technologies reproduce its violence in ways that systemically affect already marginalized populations, whose difference algorithms are often unable to 'correctly' recognize. By situating *algorithmic recognition*, I believe, we will be able to expose how their failures are attributable to the inscription of recognition's epistemes into its logical and technical premises.

In the case of algorithmic recognition as well, as I will demonstrate, the ethicopolitical models that have protested against the violence of its systemic failures are often predicated upon the same epistemes that they claim to oppose. By tracing the perseverance of recognition across different theories and practices, I believe it will possible to move a radical critique of recognition. However, as I attempt to *move*

beyond recognition, my project does not content itself with deconstructing its logic and situate its epistemes. Rather, I formulate the hypothesis that it will possible to find the means of *resistance* to recognition in a radical reformulation of its terms. What is needed, therefore, is not only a different theory of identity able to account for difference, but also of the *objects of knowledge* that recognition invests with the *ontological* and *epistemological* power to represent it.

In my thesis, I will argue that the figure of *opacity*, as an *onto-epistemological* mode of both the subjects and the objects of recognition, provides the theory and suggests a practice able to do precisely just so: to resist to recognition. As my attention is centered around a *voice recognition algorithm,* it will be thus in a different conceptualization of the algorithm as the recognizing subject, as well as voice as its object, and through the lens offered by opacity, that alternative forms of engagement with recognition will become possible. In this respect, if recognition, as I will claim, has the disciplinary power to orient its responses – to the point that even the models that sought to protest it systematically end up reproducing its logic – then too does opacity in prescribing different analytical, ethical and aesthetic practices that resist, rather than merely critique recognition.

In the second Part of this thesis, I follow the case study of artist and researcher Pedro Oliviera's practice of resistance to a specific voice recognition algorithm: that in use at the German migration office for the determination of the origin of undocumented asylum seekers. The analytical, ethical and aesthetic forms of Oliveira's practice, I will argue, are grounded in opacity as a figure that, through a reframing of the ontological and epistemological character of voice and algorithms, allows him to perform *sonic opacity* as a form of *algorithmic resistance*. My approach to my multiple objects of research in this thesis is thus perhaps counterintuitive, but is driven by the belief that complex subject matters call for a radical reorganization of the work of analysis.

In the case of this project, analysis is supported by (actually driven by) practice. In fact, it was through my work as a curator which guided me to consider these objects of research (recognition, voice, and algorithms), and to engage with Oliviera's artistic research practice – not the other way around. In this sense, my methodology of situating recognition, its objects and subjects, unfolding throughout the first Part of my thesis, is intended to prepare the ground for my engagement with Oliviera's practice of

description and then of *algorithmic resistance* in the second. In order to address the multiple questions I ask and attend to my different objects of research, I draw from and engage with a variety of authors and disciplines, whose multiple points of conjuncture and divergence I stress, and within which I position my line of thinking, driven by the belief that an interdisciplinary framework and methodology can suit the complexity of the topics at hand.

THE 'PRINCIPAL MEANINGS' OF RECOGNITION

The polysemy of the word 'recognition' lends this term to multiple, interconnecting interpretations. The verb *to recognize* etymologically stems from the Latin verb *cognoscere* (to know) preceded by the prefix *re* (again). To recognize is also always to recognize *something* or *somebody*: as a form of cognition geared towards an *object* and performed by a *subject*, recognition is also significantly grounded in empirical, and thus *aesthetic* experience. However, as its prefix implies, in order to recognize one must already have made an experience, cognitively captured an object of knowledge, which is only subsequently recognized in the new object. Recognition as a form of recollection, in other words, inherently entails *precognition*, as it necessarily rests on knowledge established *ex ante*. To recognize, in this sense, is also a form of *knowing*, a confirmation that an object of knowledge maintains a relation of identity with itself or with a cognitive category to which we have already ascribed it.

These aspects are considered by philosopher Paul Ricoeur, who dedicated his book *The Courses of Recognition* to this topic. Characterized this way, "the act of recognition", he argues, "does not differ in any decisive way from that attached to the verb *to know* in the active voice" (Ricoeur 2005, 20). We can draw on semiotics to understand recognition as a practice of knowing, and the role of its objects of knowledge with respect to interpretation. For the so-called father of semiotics Charles Sanders Peirce, new 'token' occurrences are always traced back to 'types', the class signs to which a specific instance of an object of knowledge belongs (Peirce 1906). Types thus act as more or less formal organization of signs into categories, to which new instances are related. What we *re*-cognize in new token objects, is therefore their belonging to types.

Umberto Eco has also considered this aspect in *Kant and the Platypus*. He calls 'cognitive type' the "schema" that mediates between "the concept and the manifold of the intuition" (Eco 2000, 130), that is to say between the specific instance of what is empirically perceived and that which we already know (ivi 131). Eco makes the example of a horse, seen for the first time by the indigenous Mesoamerican Aztecs at the time of Spanish colonization: before it is recognized as 'horse', the Aztecs recognize it as *maçatl*, a word designating the general category of quadrupeds. Features of the type (like the horse's four legs) create a model, and thus *typification* describes the creation of the model against which a token will be compared. For Eco, in relating tokens to types, we draw from formal and informal collective systems of organization of meaning, as well as on practices of interpretation that are socially and materially negotiated: what Eco calls 'encyclopedias' (Eco 1986; 2014). Recognition, in this respect, is a practice of *knowing* (*again*) grounded in *sensing* and culturally situated.

To recognize is also to *identify*, for example an object by its morphological features, like the horses' four legs. Recognition in this sense, identifies its objects of knowledge as identical to themselves, or to the categories they belong. Significantly, even when recognition is geared toward singularity (or *uniqueness*) of the token, we *correlate* among a multiplicity of types. To recognize is thus always to *recognize as*: *this* particular 'token' horse is first recognized as an animal, as a quadruped, then as a horse. As Eco teaches us, we rely on types for the recognition of objects in everyday empirical experience, as 'absolute' singularity – e.g. the horse as pure 'haecceity' – not only exceeds ordinary empirical experiences, but is itself a cognitive category, equipped with a history. Identity types can thus act as *normative* blueprints, against which empirical difference is compared. When we recognize something or somebody, Eco stresses, we also participate in the making of types: we inscribe the collective encyclopedia at each new instance of recognition.

Recognition, in fact, cannot be decoupled from *identification*, understood here in its etymological sense as a practice of *making identities* and *making identical* (*identitas* or *identĭcus* + *facĕre*, to make). This aspect is also able to bring out the *productive* (in the Foucauldian sense – Foucault 1977), or *performative* (in the sense Judith Butler gives to the term – Butler 1990) character of recognition. As Butler in fact argues, "the constative claim is always to some degree performative" (Butler 2011, xix),

which is to say that when we say we identify, we always to some extent participate in producing that very identity, consolidating it. Identification also exposes the circular logic of recognition, where what is produced is what is already known. Recognizing in this sense also participates to the regulation of identity: in this sense, recognition acts as a *disciplinary* production and regulation of normative types and categories of identity.

Finally, to recognize is always already to *discriminate* – also understood here in its etymological sense of 'to separate', 'to distinguish' between (id)entities. Recognition as *discrimination* foregrounds its empirical character, its material grounding and dependence on practices of sensing. This aspect often allows recognition to be presented as purely perceptual, discursively erasing its situated character and reliance on socially, materially and technically negotiated interpretations. However, as historian of science Jessica Riskin shows us, even scientific practices of knowledge empirically grounded in the senses as instruments of verification have endowed "sensibility" (i.e. the openness to sensing) with epistemological and moral meanings. Even in the period of the Enlightenment Riskin considers, when 'modern' sciences attempted to constitute themselves as rational and laic systems of knowledge against old superstitions, the disposition toward the quality of perception was charged with moral character: to see well was to know well (Riskin 2002).

In this respect, we must understand that (human as well as non-human, 'natural' as well as technically-mediated) practices of recognition as forms of *sensing* are also situated. They depend on techniques and competences that are learnt, unlearnt, reproduced or resisted, but always already negotiated in specific social and material spaces and times. Furthermore, the convergence of precognition, discrimination and identification, exposes how recognition depends on (equally situated) theories of identity and difference. Recognition in this sense implies a *self-identical* notion of identity, because entities must reliably cohere across time and space in order to be recognizable. Conversely, something *different* apprehended in the sensorium must stand out from an otherwise undifferentiated mass to be recognized: difference is difference *from the identity* I have known before and which I have established as norm.

For Ricouer, all these aspects are inextricably linked and constitute recognition's 'principal meanings' (Ricoeur 2005, 21). As the philosopher explains,

> [in] order to identify it is necessary to distinguish, and it is in distinguishing that we identify. This requirement does not govern only a theory of recognition limited to the theoretical plane; it governs, with the same insistence, all the uses stemming from the reversal from the act of recognition to being recognized – being distinguished and identified is what the humiliated person aspires to (ivi 25).

This latter aspect considered by Ricouer brings to light a further aspect of recognition as a practice of intersubjective *relation,* its ultimate ethical and political character. To recognize in this sense is to acknowledge, to 'give back' something that was denied, to extend rights and agency. Conversely, "the demand for recognition" in the passive sense (i.e. *to be recognized*) "expresses an expectation that can be satisfied only by mutual recognition, where this mutual recognition either remains an unfulfilled dream or requires procedures and institutions that elevate recognition to the political plane" (ivi 11). It is precisely in this sense that recognition has been mobilized in ethicopolitical theories: as a model for intersubjective relation grounded in the recognition of the 'Other' the rights and agency associated with ontological kinship of 'shared humanity'.

Recognition as an ethicopolitical model has a history that I consider in Chapter 1 of this thesis. Originally formulated by Hegel, theories of *recognition justice* were later reprised at the turn of the millennium when globalization demanded the articulation of models able to accommodate increasingly transnational and intercultural modes of relation. While an overview of the ethicopolitical model of recognition can place it within a historical context, my focus here is not on the history of recognition; rather, I aim to situate recognition and expose the extent to which its principal meanings of *precognition*, *identification* and *discrimination* are inscribed into this model. As I shall demonstrate, it is through this inscription, which models of recognition systemically fail to acknowledge, that recognition, as Ricoeur has evidenced, is a promise that 'remains unfulfilled'.

In situating the epistemes of recognition, I draw from the work of philosophers, psychoanalysts, political theorists and activists, particularly working from the positionality of those systemically unrecognized communities that recognition attempts to account for. Significantly in fact, critiques of recognition have exposed how recognition is dependent on normative paradigms (through precognition) which it produces and reproduces (as a form of identification), while at the same time it is able to present itself as purely empirical (recognition as discrimination). One of the main thesis of my project is that, by doing so, recognition is always already *misrecognition*: it cannot ever truly account for the difference it is supposed to acknowledge, but shapes it according to its normative ideas of identity.

In Chapter 1 of this thesis, I engage with ethicopolitical models of recognition to prepare the ground and build up for all my subsequent work. I consider the 'discontents' of recognition through the critiques that have been historically advanced against it. My analysis engages with literature from different fields and by different authors without privileging one over others, to render the polyphony of voices that have raised their concerns over its disciplinary power and "oppressive double binds" (Hirji 2021). In the first part of the Chapter, I particularly engage with the voice of Martinincan psychiatrist, philosopher and activist Frantz Fanon, whose work on recognition has set the tone for much subsequent reflections on this intersubjective mode of relation, especially with consideration to race as a category implied by, but disavowed, by recognition.

Feminist theories and theorists who have argued against recognition also offer us an extremely productive standpoint from which to problematize the normativity and unequal forms of power distribution engendered by recognition. The work of many philosophers and political theorists has been crucial in this sense, particularly that of Nancy Fraser (Fraser 1997; Fraser & Honneth 2003), Wendy Olivier (Oliver 2001), Lois McNay (McNay 2008) and Judith Butler (Butler 1997). In this respect, feminist and queer theories of gender have contributed with an attention to how recognition *performatively* regulates subject formation and identity construction according to its own "grid of intelligibility" (Butler 1990, 208).

The historical feminist attention toward embodiment and positionality are also crucial in the exposure of recognition as predicated upon discursive erasure of the sites from which recognition as a system of knowledge production is enunciated. By applying

the feminist practice of *situating* recognition, it will thus be possible to demonstrate how, behind a practice and a mode of intersubjective relation that presents itself as neutral, are concealed dominant subjectivities and forms of power. In order to do so, it will be necessary to consider recognition in all its 'principal meanings' in a such way as to expose its workings and its underlying epistemes. The work of situating, in this respect, is an analytical practice and discursive form of critique whose ethicopolitical potential, as feminisms teach us, lies in its capacity to envision avenues for the redistribution of power.

Recognition, as I argue in this thesis, intertwines the *ontological* (as a form of identity *production*), *epistemological* (it is a practice of *knowing*), *ethical* (as a model of *relation*) and the *aesthetical* (empirically grounded in *sensing*). All these characteristics of recognition constitute its 'principal meanings', and interlock at different levels, depending on one's center of attention – for example, *discrimination* and *identification* lend themselves to ethical and aesthetic interpretations; likewise, *sensing* carries epistemological and ontological significance. In the theories of recognition I identify, all these aspects come to the fore and are assessed to the extent that they allow us to expose their impact and capacity to orient the ethicopolitical bearings of the models in which they are inscribed.

As an example, recognition's *scopic regime* (Jay 1993), its grounding in "ocular" (Acid Horizon 2023) epistemes, shape its construction as a disembodied dialectic, unfolding in metaphysical non-space and reproducing well-known harmful dualisms. In presenting itself as mainly visual, however, recognition allows itself to be presented as schematic, teleological and diachronic, refusing to acknowledge its unfolding in socially and materially connotated "polyphonic" (Guattari 1995) space and time, marked by power-differentiated relations. It is in opposition to recognition's concealment of its inherent partiality and against the discursive erasure or *invisibilization* of the positionality of the subjects from which it is enunciated, as well as its overdetermination of the visual (*or auditory*) signifiers of its objects, that I advance the objective to *situate recognition*.

Although my attention to the scopic regime of recognition in this part of my thesis only serve the purpose to better situate my later considerations of other aesthetic modes in my assessment of recognition, some crucial insight can be gained

from an engagement with recognition's *ocularity*. In this sense, "to be within the space of ocularity is to be sensed by it – that is, to be impressed upon by the structuring classifications embedded in ocular practice, and to be recognized through those imprinted, ocular categories" (Acid Horizon 2023, 50). When assessed through its scopic regime, recognition is exposed in its reliance on fixed categories of knowledge and visual 'grids of intelligibility', which impose their coordinates on the subjects that appear in the sensorial field of the instruments (human *and* non-human) that perform it.

This aspect has been the object of much critical attention in *surveillance studies*, whose understanding of the entanglement of vision and disciplinary power, through the work of Michel Foucault on panopticism (Foucault 1977), has oriented its framework (Lyon 2006). This is particularly relevant for the present scenario, where ocular forms of surveillance are increasingly automatized and delegated to machines, whose inscription and performance of recognition at the same time reproduces its principal meanings and assigns it new ones. Although extremely relevant work is being carried out by surveillance studies in this sense (Browne 2015; Beauchamp 2019), I only tangentially engage with this literature, mostly to draw insights about the effects of surveillance on its subjects, and the attendant forms of bottom-up resistance that have been articulated in response to its power[1].

From surveillance studies I also borrow the attention to how identity categories (and especially racial ones) are reinscribed into recognition systems at the same time that they claim to operate under the neutral premises of pure observation. In this sense, the ocularity of recognition marks social material space as a "racially saturated field of visibility" (Butler 1993, 205) at the same time that it proclaims its objectivity. My engagement with the scopic regime of recognition allows me to lay the groundwork for my later assessment of the *sonic regime* of recognition, where listening invests its much

[1] At the same time, surveillance studies have historically been (and continue to be) marked by a certain ocularcentrism that privileges visual forms of forced recognition and identification over others, like the forms of auditory surveillance considered by philosopher Peter Szendy (Szendy 2016). It is my hope that my project can offer an intervention in this gap, though a modest one due to its divergent approach that only obliquely intersects with surveillance studies and its canonical literature.

more ambiguous objects with the same essentializing gaze (or *audit*, as John Mowitt proposes transposing into the term into a sonic regime – Mowitt 2015, 4-5).

In assessing recognition from all these perspectives, my work in Chapter 1 is modest in its eschewing of in-depth forms of critical analysis in favor of a literary overview. In this sense, I do not aim here to intervene in the field of philosophy or political theory: my ambition is rather modest. The plurality of voices I bring in my critique of recognition will serve my purpose to define the terms of engagement with my main object of research. It also allows me to track down the drawbacks of recognition when I will later encounter them inscribed in models that have attempted to move beyond it, but ended up reproducing its epistemes, such as those I consider in relation to *listening* and to *algorithmic recognition* I tackle in Chapters 2 and 3.

HAVING A VOICE, LISTENING TO VOICES

In my project, I privilege one aesthetic mode of recognition over others: recognition as it unfolds through the *sonic regime* of *listening,* as carried out by humans and non-human machines alike, through cochlear as well as microphonic *apparati* of sensing. Listening, in this respect, is also considered in relation to its ethical bearing, and often advanced as an alternative model to recognition's scopic regime. Listening's ethical and political potential has been observed by philosophers and critical theorists (Cavarero 2005; Nancy 2007; Voegelin 2018; Farinati & Frith 2017), often in conjunction with, or in opposition to, recognition. "Struggles over recognition and the concomitant acts of listening these often entail", sound studies scholar, artist and curator Brandon LaBelle argues,

> detail the ways in which sound and listening participate in democratic procedures, judicial systems, and scenes of self-governance or shared resistances. Sonic agency may be articulated by way of volume, and the modulation of noise and silence, but it is equally the affective relations shaped by listening through which such volumes work at shifting the delimitations of power. Listening opens an important view onto understandings of agency by underscoring the political not as a drama of appearance and outspokenness alone, but rather,

listening also reminds how recognition is effected by that sense of being heard (LaBelle 2021, 3-4).

The inherent spatiality and intersubjective mode of relation engendered by recognition in a *sonic regime* exposes how "acoustics … is fundamentally about questions of power" (ivi 3). This understanding has a multiplicity of implications which I seek to assess in Chapter 2 of my thesis. If power is inscribed in acoustics, it follows that listening and its objects can be as emancipatory as much as oppressive. In fact, as we shall see, models that have pit listening as a remedy against the shortcomings of recognition often rely on the same paradigms and end up reproducing the forms of power that they claim to protest. In tracing the inscription of power in ethicopolitical theories of listening, I consider the human *voice* as the primary object towards which they are geared.

Voice has been historically foregrounded in theories of listening as an intersubjective model of relation dating back to the beginnings of Western philosophy and political thought. The way voice was listened to at the time still informs our present understandings, particularly the neoliberal "sonic episteme" (James 2019) of the voice as an individual form of representation (Couldry 2010), exemplified by the phrases 'having a voice', 'speaking out', 'to make one's voice be heard', 'calling out', 'raising one's voice', 'giving voice', 'silencing', 'being voiceless'. These *ways of saying* mobilize the sonic figure of the voice to characterize political life as a dialogical arena prescribed on who gets to speak, how loud, who is silenced, and who is 'spoken by' through acts of "ventriloquism", leading philosopher Gayatri Spivak to seriously ponder, *Can the Subaltern Speak?* (Spivak 1994).

Historically, the establishment of voice as a primary medium for the articulation of ethicopolitical demands has been generally credited to Aristotle. In *Politics* Aristotle distinguishes between *phoné*, the "bare voice" (Agamben 2017, 16) of the animal, and human *logos*, expressed as *phoné semantike*, or 'articulated voice' (Aristotle, 1253a10–18). Aristotle's move has been considered so central to the development of Western ethics, politics, ontology and epistemology that, it has not only contributed to the establishment of the very category of the 'Political' (Agamben 2017; Rancière 2004;

Dolar 2006), but of the category of the 'human' itself: in this sense, as Giorgio Agamben has argued, it coincides with a form of "anthropogenesis" (Agamben 2003, 80).

In characterizing the political community as a rational dialogue among articulated speakers, however, Aristotle based his Politics on a logic of "exclusion-inclusion" (Agamben 2017, 19) in which belonging is centered around a specific notion of voice as a carrier of semantic meaning. In doing so, Aristotle not only excluded some speakers from the political community, but also barred access from the status of humans to subjectivities considered less-than-signifying and therefore, insignificant. Refusing to recognize the voices of women (Cavarero 2005), slaves (Garlan 1988), foreigners (whose *bar-baric* voices were considered asemantic – Boletsi 2013), children (Heller-Roazen 2008), the D/deaf-mute (Rée 2000) and non-human animals (Pettman 2017), Aristotle created a precedent whose echoes are heard throughout Western modernity.

Aristotle's conceptual move, in which ontology, epistemology, aesthetics and ethics are joined, evidences the fact that on different constructions of listening and voice depend different ethical and political models of relation. In opposition to this form of exclusion, voice has been repositioned as an embodied sonic medium able to vehiculate meaning *beyond* linguistic signification. Italian philosopher Adriana Cavarero's work is centered around the attempt to 'revocalize *logos*' precisely by mobilizing the voice's corporeality, from which she derives an 'ontology of uniqueness' (Cavarero 2005). However, as I will have the chance to argue in Chapter 2 of this thesis, her line of thinking leans dangerously on forms of *bioessentialism*.

When voice is considered beyond linguistic frames of reference, it often assumes the same role that visual signifiers of identity hold in visual models of recognition, like skin color. Sound studies scholar Nina Sun Eidsheim has considered forms of 'vocal essentialism' (Eidsheim 2019) that construct the voice as "stable and knowable" (ivi 2-3). In these approaches, Eidsheim argues "there is a perceived sense of inevitability" (ivi 10): voice becomes an essential *index* of identity, and speakers are not accorded the agency to *perform* the voice otherwise. When the voice's corporeality is charged with positivistic epistemological value, vocal identity is recognized in advance – in turn leaving speakers in the position to conform to the vocal norms imposed by the community of listeners, or renounce to be recognized. This is why the voice is not only a

medium around which complex forms of identification are articulated, but of *disidentification* as well (Muñoz 1999).

Aesthetic and ethicopolitical theories of listening that stress the voice's corporeality and its capacity to signify beyond language often rely on the figure of *timbre*. Timbre is an ill-defined, slippery concept according to all the disciplinary fields that have considered it (in musical aesthetics and sound studies – Fales 2002; van Elferen 2020; as well as in psychoacoustics – Bregman 1990; Siedenburg & McAdams 2017). It refers to "a quality of sound", a "perceptual attribute that enables us to distinguish" among instruments and voices (Risset & Wessel 1998, 113)[2]. Timbre is thus a sonic figure that ties in with recognition imagined as an aesthetically-grounded form of *discrimination*. As timbre is usually constructed as stemming from the individual corporeal setup of a specific resounding body, it becomes a corporeal figure of vocal *difference* – however, of a difference that is always dependent on identity as its normative referent.

Timbre, as Eidsheim observes, is mobilized when we frame recognition through the "acousmatic question … [which asks] in the act of listening to a human voice … *Who is this? Who is speaking?*" (Eidsheim 2019, 2). Considering the construction of timbral ontology on corporeal grounds, its epistemological investment with positivistic truth-values, its *indexicality* (namely, its capacity to *stand for* individuated speakers) and essentialism, Eidsheim has considered how practices of listening intersect with racializing body schemas. "While most racial essentialization of physical characteristics has been critically confronted (if far from eradicated)," she argues, "the West's long history of entwining voice and vocal timbre with subjectivity and interiority

[2] As musicologist Emily Dolan notes in her history of the emergence of timbre as a musical concept, its mobilization in theories of orchestration of the Enlightenment period served the purpose to assign each instrument with a psychological and moral character (Dolan 2013). This 'organological' view of timbre typical of musical aesthetics, and geared towards instrumental sound, rather than human voice, is not to be understood as separate from timbre-centered theories based on the latter, but rather contiguous with them in their inscription of anthropomorphist understandings of musical technologies as well as mechanistic views of the human. To know more about this topic I refer the reader to the work of Loughridge 2021; Varwig 2021; and Van Elferen 2022.

has contributed to such truth claims remaining stagnant" (ivi 5). In this sense, "vocal timbre … [is] one of the last areas still viewed as an essential trait" (ivi 25).

The production of vocal identities has been historically tied to the corporeal ontology of timbre in racializing and colonial practices. In this respect, the vague qualities of sound that timbre is supposed to signal but which can only be conveyed by way of metaphor, are imbued with ontological, epistemological, ethical values in conjunction with structures of oppression's agendas of social hierarchization and white supremacy. Vocal "coarseness" or "harshness" are understood in racial terms and established as signifiers of low moral character and socioeconomic class: the systematization and production of racialized timbral categories, as Grant Olwage has shown, is complicit with and aligns with colonial archival practices, legitimized by ethnographic ventures and biopolitical governmental motives (Olwage 2004)[3].

Eidsheim's work on the racialization of vocal timbre has been instrumental in breaking new ground in sound studies and reposition voice and vocal timbre as critical concepts; her research greatly informs my thinking in this project. Most importantly, her foregrounding of the active role of listeners in not only inscribing, but also *producing* vocal identities and concepts, is of great relevance and intersects at multiple levels with my reflections on recognition. Voice – its phenomenological qualities, the categories of identity it is supposed to index, as well as its very ontology and epistemology – from this perspective, cannot be understood only as defined *a priori,* and performatively reproduced through the reiterative citation of power (Butler 2011,

[3] Of course, the corporeal ontology of vocal timbre is not only mobilized to suit the production and enforcement of identity categories in a racial sense, but, as Olwage also stresses, intersects with classist, gendered, abled forms of discrimination. In this respect, my privileging of race and racial identity categories as organizing categories does not intend to refuse a confrontation with the intersectional character of identity, but is aimed at better fleshing out the often concealed inscription and mobilization of these identity categories in theories and practices of listening. The attention to the production of racial difference through listening in my project is also aimed at a better understanding of the case study I consider in Part 2 of this thesis, where a biometric algorithm is geared toward the recognition of the voices of undocumented asylum seekers.

xii), but also as produced *by* and *within* the situated acts of listening. Like recognition, listening *produces* its own objects of knowledge.

In this respect, Aristotle's construction of the voice as signifying *or* asemantic is exemplary of how a perceived dualism in the complex phenomenon of the voice participates in the production of the ontological and epistemological categories it claims to merely recognize. The (re)production of this type of dualisms have historically been complicit with discriminatory practices. For example, ethnomusicologist Ana María Ochoa Gautier has demonstrated how colonial settlers in 19th century Colombia, each from their own disciplinary context (literary, musicological, etc.) listened to the voice of indigenous population in ways that conceal an ethnocentric and scriptist bias, regimenting their complex practices of voicing and languaging along a divide of 'given' (i.e. natural) and 'made' (cultural) (Ochoa Gautier 2014).

As evidenced by postcolonial thinkers such as Walter Mignolo, humanist endeavors and disciplines have historically been and continue to be often complicit with colonial structures of oppression (Mignolo 2011). When considering the inscription and reproduction of binaries that divide the complex event of sound into different ontological categories and ascribe them different epistemological values, I assume Mignolo's insight as a given and attempt to trace the persistence of structures of oppression in the theories of listening I assess. If the erasure of the complexity of indigenous modes of being and knowing is understood as a form of "epistemicide" (de Sousa Santos 2014) or "epistemic violence" (Spivak 1994), practices of "acoustic separation" (LaBelle 2021, 170) such as those I have suggested can be construed as engendering forms of *onto-epistemic violence*.

Although mostly concealed and implied, these binaries are inscribed in ordinary practices of listening as well as in the theories of listening as a form of ethicopolitical relation that I consider in my project. Transporting Butler's characterization of the 'racially saturated field of visibility' into the sonic regime, we can refer to listening as marked by 'racially saturated field of audition', where "sonic color lines" sort speakers across racial divides (Stoever 2016) and 'pitch binaries' (Brett & Wood 2006) that "reterritorialize [the voice] on the distribution of the two sexes" (Deleuze & Guattari 1987, 308). These categories are not only assumed by practices of listening, but are produced and enforced through their reiteration. As opposed to this view, I advance an

immanent understanding of the objects of knowledge of listening that refuses such separations.

Voice, in fact, is not exclusively semantic *or* asemantic, natural *or* cultural, discursive *or* material. Voice cannot be understood through exclusively 'symbolic' models privileged by the humanities, or scientifical paradigms based on 'measurement' that cause "methodological splits" (Eidsheim 2019, 14). Either, it cannot be assessed only through the discourse of 'social construction' *or* ontologically 'realist' frameworks. Rather, it must be understood as a *continuum* across these poles, an ontologically hybrid and epistemologically indeterminate "complex event" (ibidem) effectuated by a plurality of discursive and material vectors. This understanding necessitates an equally hybrid framework equipped with the conceptual tools able to accommodate it.

My interdisciplinary approach, along with the *new materialist* framework I adopt in this project (which I will flesh out later in this Introduction) allows me to tune into voice's plurality without falling back on harmful dualisms, but rather consider how the latter are inscribed in theories and practices to advance specific politics. To adopt the framework of the interdisciplinary field of sound studies, its burgeoning subsets of *voice studies* (Eidsheim & Meizel 2019; Thomaidis & MacPherson 2019), *timbre studies* (Dolan & Rehding 2019) and *accent studies* (Rangan et al. 2023), along with their proliferating intersections with other inherently interdisciplinary fields, especially *postcolonial studies* and *critical race studies*, *media studies* and *critical algorithm studies* enables me to listen to my objects of research from a plurality of "points of audition" (Mowitt 2015, 4).

Particularly, the notion that listening and its objects are imbued with forms of "sonic agency" (LaBelle 2020) and power is instrumental to my line of reasoning. In centering my focus around listening and the voice, I position my work in continuity with the work of scholars before me, while finding crucial sites of intersection and divergence. Embracing a perspective focused on the *agency* of listening and other sonic figurations, does not mean in fact to accord them *inherently* emancipatory potential or oppressive authority. Rather, as already evidenced by LaBelle, it means to tune into the modalities in which power is inscribed into sonic concepts and practices, with multiple, explored and unexplored potentialities.

Refusing to idealize listening as a 'cure-all' solution to recognition, I am more invested in demonstrating how the 'principal' epistemes of recognition (even its 'ocularity') are inscribed in models of listening. By doing so, listening reproduces the drawbacks of the model it seeks to oppose. One of the central arguments of this part of my project will be in fact that the ethicopolitical bearing of models of listening is dependent on their construction of their objects of knowledge and of themselves as practices. Listening can be mobilized as an embodied, spatial, and therefore inherently situated mode of intersubjective relation, able to supersede the shortcomings of visual models of recognition; but it can also refuse to acknowledge its own participation in the reproduction of power and complicity with systems of oppression.

Adopting the approach of 'sounding situated knowledges' (Goh 2017) suggested by Annie Goh or 'listening to listening' proposed by Eidsheim (Eidsheim 2019), I thus seek to account for the inscription of power in models of listening, especially those which have sought a direct confrontation with recognition. Listening, in this respect, must be understood as a 'historically and tropically' (Haraway 2018) situated system of knowledge that has been mobilized in advancement of different agendas, and from a diverse range of positionalities. Furthermore, as one of the central tenets of sound studies teaches us, listening is a learnt practice comprised of encultured "audile techniques" (Sterne 2003, 23) that listeners invent, adopt, adapt to, or resist.

Finally, the understanding of sound as an ontologically hybrid actant charged with an agency of its own, as well as of the agency that humans have historically ascribed to it by framing it conceptually, will be crucial in evaluating the extent to which a different theory and practice of listening can be grounded on concepts that are often mobilized in implicit connivance with oppressive forms of power, like vocal timbre. In this way, the supposedly stable, reliable, and essential objects of knowledge around which the models of listening (as an aesthetically-grounded form of recognition) I consider are centered, will allow us not only to expose the concealed epistemes of the theories and practices they protest against; rather than mere instruments of critique, sonic concepts can be weaponized against recognition as means of *resistance*.

WHEN ALGORITHMS RECOGNIZE

In our technologically-mediated present, an increasing amount of tasks are delegated to *algorithms*. Algorithms perform practices of search, encryption, recommendation, data compression, prediction, simulation, optimization and, significantly, *recognition* (Kitchin 2016). As algorithms filter, sort and categorize, group together and match, create models, simulate and visualize, predict possibilities, regulate access to services and places, their *agency* (Bonini & Treré 2024) is profoundly political. Algorithms "play an increasingly important role in selecting what information is considered most relevant to us, a crucial feature of our participation in public life" (Gillespie 2014, 167); they "have the ability performatively to change the way events unfold" (Bucher 2018 28); significantly, they also "[decide] what matters in the world, what or who can be recognized, what can be protested, and which claims can be brought" (Amoore 2020, 10).

In foregrounding *algorithmic recognition*, I privilege the *sonic regime* of *voice recognition algorithms*. Voice recognition algorithms are a subset of "machine listening" technologies which, in the broad sense proposed by computer engineer Robert Malkin, comprises all sorts of devices that process and "derive information" from audio signals "useful for some computational or human purpose" (Malkin 2006, 3). The market of machine listening technologies has been in constant expansion and growth in the recent years (Turow 2023): the annual global market of voice and speech recognition technologies in 2024 is estimated at around 25 billion dollars (DMR 2024).

The growing incorporation of listening devices into technologies previously deprived, like cars and refrigerators, along with the diffusion of *smart home assistants* or *voice user interfaces* like Amazon Alexa and Apple Siri and their application for state and corporate surveillance (Zuboff 2019), have brought scholars from different disciplines to consider the aesthetic, ethicopolitical, ontological and epistemological implications of a present in which not only "one speaks, communicates, and acts 'assisted' by all kinds of … machines" (Lazzarato 2014, 29), but also where "machines 'speak' … with man, other machines, and 'real' phenomena" (ivi 87-88). In this scenario, "machine listening" is researchers and curators Sean Dockray and James Parker's proposed term to unify a field that has been connoted by disciplinary and methodological splits (Dockray & Parker 2023).

The fields of sound studies, media studies and data sciences have been interested in machine listening since their inception, although often referring to it in different ways as "machine hearing" (Lyon 2010) "machine audition" (Wang 2010) or "computer audition" (Friedland et al. 2017). By focusing particularly on *voice* recognition algorithms, I build on my engagement with their sonic objects of knowledge such as voice and vocal features from the perspective and adopting the framework of sound, voice, accent and timbre studies. Technologies that recognize voice and speech have up until now been mostly considered from a *media genealogical* point of view (Li & Mills 2019; Pieraccini 2012), while approaches that engage more directly with the ethicopolitical agency and effects of recognition algorithms have by a great extent eschewed considerations of voice in favor of the visual material-semiotics of the *face* as an object of recognition (Beauchamp 2019; Lee-Morrison 2021).

This form of *ocularcentrism* can also be observed in literature that has engaged critically with biometric recognition technologies (Pugliese 2010; Magnet 2011; Ajana 2013). A similar observation can be made in regards of the branches of surveillance and media studies that have privileged visual biomarkers in their consideration of race as an object of recognition (Browne 2015; Saini 2020). Although growing (Oliviera & Miyazaki 2022; Leix Palumbo 2024; Oliveira forthcoming), attention to voice in critical engagement with biometric recognition algorithms is still in its early stages. My aim with this thesis is to intervene in this gap. However, by focusing on a media-technical analysis of a voice recognition algorithm only 'by proxy' (i.e. through the work of artist and researcher Pedro Oliviera I consider in Part 2), my project is modest in its engagement with the much broader field of media studies.

Rather, I identify the points of strength of my thesis in the deeper engagement with recognition as a theory and practice around which aesthetics, ethics, ontology and epistemology are intertwined, inscribed and performed by algorithms. Especially, I understand my project's greater contribution to the discussion of algorithmic recognition to lie in the analysis of a bottom-up practice of resistance to its oppressive effects, which only *diffractively* (Barad 2007) allows us to break through the technical-material workings of the algorithm Pedro Oliveira considers. In other words, in my case, the media-technical analysis of the epistemes inscribed and the operations performed by the algorithm mostly serve the purpose of understanding how they are able to orient

analytical, ethicopolitical and aesthetic work in conjunction with or opposition to algorithmic recognition.

In my consideration of algorithmic recognition, I assess algorithms' *more-than-human* (Dixon-Román 2016) *performative* (Mackenzie & Vurdubakis, 2011; Bucher 2018) agency and intrinsically ethicopolitical character, their ways of understanding their objects of recognition, and the grounding of this form of relation in aesthetic regimes. Algorithms claim to be able to recognize all sorts of human and non-human objects of knowledge: cats, tumors, cars, people, and even other algorithms, by aiming their *apparati* of sensing like cameras and microphones on their visual or in our case, sonic, features. Mostly, they recognize by *filtering noise* (i.e. irrelevant information), *extracting features* (i.e. relevant information) and *finding patterns* (i.e. invariable schemas) in their object of knowledge (Amoore 2020).

All of these material-technical operations are contingent on a sprawling variety of other operations and factors. Far from being neutral, these operations have a lot to do with the social and material world they exist in, and imply judgments, choices and interpretations (Gillespie 2014). The work of situating, *auditing* (Brown et al. 2021) or *describing* (Akrich 1992) algorithms must thus confront itself with algorithms' own computational and technical-material operations. This practice will allow us to understand how the "distributed, heterogeneous work processes of technoscience" (Haraway 2018, 141) are contingent on context, and thus not only expose algorithms and algorithmic workings in their partiality, but also open up possible avenues for their *reinscription* and *redistribution* of power and agencies (Akrich & Latour 1992).

In assessing algorithms this way, we can oppose the narratives of "mechanical objectivity": an "epistemic virtue" (Daston & Galison 2010, 18) commonly ascribed to algorithms and machines in general, which constructs them as impartial and neutral. This narrative, still connoting the discursive formation of *data sciences* – but which the interdisciplinary field of *critical algorithm studies* (Kitchin 2017) opposes – is mobilized to accommodate different agendas, economic and political objectives. Attending to how these narrative are crafted, their emergence from "epistemological worries" (Daston & Galison 2010, 35) that create discursive contradictions, "mistakes, denials and disavowals" (Haraway 2018, 144) will also allow us to decouple algorithms from objectivity, expose their partiality and the objectives that they are made to serve.

In foregrounding *algorithmic recognition* I aim to situate how algorithms inscribe and perform its 'principal' epistemes – and, at the same time, how their non-human forms of perception and cognition actively participate in reshaping our understanding of recognition as an ethical and aesthetic mode of intersubjective relation. In doing so, I build on the many points of conjuncture between algorithmic recognition and recognition in other modes, as well as on how algorithms inscribe and perform recognition differently. Furthermore, I seek to understand how algorithms recognize and thus reshape our notions of the ontology and epistemology of the objects of knowledge it targets, which in the case of the biometric algorithm I prioritize as a case study in Part 2, are voice and its sonic features.

Like recognition, algorithms only *know again* because some notion of what constitute the *essential* properties of their object of knowledge, the features *that matter* (and conversely, of what does not matter) for recognition, is inscribed into them by programmers and developers. Algorithmic recognition is thus dependent on forms of *precognition* which, as I have argued, is constitutive of all forms of recognition (Chun 2021). Furthermore, like all other forms of recognition, algorithmic recognition as well retains a *disciplinary* character with respect to its objects, which must conform to its *regime of recognition* (Amoore 2020, 68). In doing so, algorithms "do not merely recognize people and things in the sense of identifying — faces, threats, vehicles, animals, languages — they actively generate recognizability as such" (ibidem).

This is all the more evident in the category of algorithms that I mostly engage with in this thesis: those geared towards the recognition of human identity by their corporeal traits, called *biometric algorithms*. It should be noted, in this respect, that biometrics is not necessarily tied to its operationalization by algorithmic means: as Heather Murray has observed, it must not either be considered as a set of technologies *per se*, but must rather be assessed as "*a set of practices* contributing to the very socio-cultural discourses that in turn construct 'biometric technology'" (Murray 2007, 349, my emphasis). Biometric practices, in fact, do not necessarily originate in the digital present, but stem from earlier carceral practices of 'anthropometry' (Magnet 2011), colonial governmentality (Waits 2016) and even plantation slavery (Browne 2015).

In arguing that biometrics are a 'set of practices', Murray points to the fact that biometrics "cannot be separated from the socio-political, institutional, and material

practices that co-constitute it, and are constituted by it" (ibidem). Biometric algorithms, in other words, are contingent on the situated notions about the body and identity that they inscribe and reproduce, leading media studies scholars to argue that biometric technologies participate in a mutual feedbacking relation with the 'biometric socio-technical imaginaries' (Kang 2022) that inform them and on which they influence in turn. The main epistemes and operative principles of the biometric algorithms I consider in this thesis, which biometric representations reinforce by reiteration (Magnet 2011) are the ideas that the human body can be measured, and that relevant information about human identity can be inferred through these measurements.

All these, as I have argued, are characteristics of recognition in its many modes and unfoldings, in visual as well as in sonic regimes, which imbues its objects and their traits with positivistic epistemological values. Like all other types of recognition practices (algorithmic and otherwise), biometric algorithms not only inscribe a theory of identity and difference (van der Ploeg 2006), which they performatively enact in the world, prescribing their objects and subjects of knowledge to adapt to their regimes of recognition. The ethical and political implications of this logic are brought to light by the effects of the performance of algorithmic recognition on its objects, which in the case of biometrics is human subjects (Drage & Frabetti 2023). The performative approach I adopt in this project, whose details I will have the chance to flesh out later in this introductory Chapter, invite a consideration of the effects of algorithms as always already unfolding in discursive *as well as material* dimensions.

This is all the more clear when we consider the (growing) application of biometric recognition algorithms in regulating access to spaces and services connected to basic rights like banking, healthcare and insurance, airports, and most significantly for our purposes, *borders* (Ajana 2013). In this respect, biometric recognition algorithms actively participate in producing digital citizens (Isin & Ruppert 2020), who, however, must not be considered as disembodied, discursive and juridical formations implied by their 'digital' designation but, due to neoliberal capitalist states' growing reliance on interlocking technologies for the administration of *bodies*, must also be considered in material terms. Bodies, in this sense, are *produced* (Murray 2007), *materialized* (Butler 2011) or *corporealized* (Haraway 2018) in their encounters with

biometric algorithms: they acquire (or not) an ontology, as well as an epistemology, in accordance to algorithms' specific regimes of recognition.

Part of the popular 'technosolutionist' agendas of state and corporations in fact, the application of biometric recognition algorithms in the enforcement of national borders (for example through the determination of the origins of undocumented migrants and asylum seekers) rely on the general technoscientific narrative that constructs technologies as streamlining procedures and minimizing human error and bias (Madianou 2019). However, due to the dependency of algorithmic workings on a great number on contingencies, the performance of biometric recognition is far less than self-evident or predictable. The performative material-discursive effects of the capacity of algorithms to recognize in fact emerges in all its violence not so much when it succeeds, but when it fails to do so (Magnet 2011).

In this sense, not to be recognized by a biometric algorithm, for example such as that in use at the German migration office for the recognition of undocumented asylum seekers I consider in Part 2 of this thesis, "is equivalent to lacking a legal ontology, to being a non-being" (Pugliese 2005, 14). The performative effects of the disciplinary regulation of human bodies and identities for governmental purposes has lead many scholars to consider biometric recognition practices in *biopolitical* terms (ibidem; Magnet 2011; Ajana 2013) throughout multiple intersecting disciplinary contexts (Leurs & Ponzanesi 2024). In my project, although I eschew a biopolitical approach in favor of a new materialist one, I draw from the many intersections between these two frames of reference.

For example, the materiality of the effects of the performative construction of bodies engendered by the success or failure of recognition, as well as of recognition itself as reflecting the circular logic of production according to which a system of knowledge "[produces] what it claims 'only' to represent" (Murray 2007, 348), grounded in the Foucauldian framework shared by these two approaches, is a defining idea on which I build in my project. Yet my work does not excessively rely on the (again Foucauldian) methodology of *genealogy* often adopted by *media studies*, it relates to the work of situating the emergence of biometric algorithms from historically and tropically specific theories and practices, highlighting the epistemological and material-technical continuities and discontinuity with earlier technologies.

Indeed, I am interested in exposing how algorithmic recognition in general and biometric recognition more specifically, as well as the case study of *voice* biometric recognition algorithm I consider as case study in Part 2 of my thesis, emerge from historical practices. Particularly, I evidence their inheritance and reproduction of *colonial* practices and *racist* structures of oppression, by drawing on the crucial work of scholars whose work is positioned at the intersection of *postcolonial*, *surveillance, media* and *critical race studies*, especially prioritizing the voices from the positionalities mostly targeted by the systematic failures of recognition. However, because a guiding idea in my project is that recognition cannot ever fulfill its promise – namely, that all recognition is always already misrecognition – I am more keen to trace how algorithms intersect with, inscribe and perform the epistemes or 'principal meanings' I identified in recognition in all its forms.

Algorithmic recognition, like every other model of recognition, is a *precognitive* form of *knowing* grounded in *sensing* as a form of *discrimination*, which, by *identifying*, produces the identity it claims to merely recognize – and in doing so, creates new algorithmic politics of recognition (Chun 2021). As I argue throughout this thesis, recognition cannot ever accommodate for the difference it maintains to account for. It is in this sense that algorithmic recognition always fails. However, the fact that the failures of algorithm to recognize disproportionately and systemically affect already marginalized subjectivities and communities (Buolamwini & Gebru 2018; Noble 2018; Benjamin 2019) must be seriously taken into account and orient our understanding of recognition algorithms as engendering forms of "algorithmic violence" (Ọnụọha 2017).

In this respect, my project's relevance *vis à vis* algorithmic and biometric recognition lies not so much in exposing how its partiality generates racialized violence by situating its biases and the epistemes it inscribes – a work which has been done better and much more in depth by others before me, even in relation to the exact biometric algorithm I consider as a case study (Oliviera & Miyazaki 2022; Drage & Frabetti 2023; Leix Palumbo 2024; Oliveira forthcoming). Rather, my interest lies more in the analytical and practical avenues that have been pursued by researchers, artists and activists who have confronted the systemic violence of algorithms' failure to recognize. In doing so, I borrow from media sociologists Tiziano Bonini and Emiliano Treré the

notion of *algorithmic agency* as the forms through which *users* can exercise *resistance* to algorithmic recognition (Bonini & Treré 2024).

To this extent, the practice of *description* taken up by artist and researcher Pedro Oliviera in Part 2 of this thesis will not only allow us to break through the regime of recognition of the algorithm he engages with in depth, situating it in continuity with the problematically colonial and racist assumptions it inscribes and reproduces; it will also enable us to witness a practice of *algorithmic resistance* in its unfolding (ibidem). With Oliveira, I share the idea that a such practice must depart from a radical reframing of both the objects of algorithmic recognition (which I pursue through my reformulation of voice and vocal timbre as the objects of the specific algorithm Oliviera and I consider, and which I have already gestured toward in the previous Section of this Introduction), as well of algorithms themselves.

As argued by Amoore, an understanding of algorithms grounded in their own non-human modes of being and knowing their objects is not only able to reorient analytical work, but as well to the ethicopolitical articulation of claims against them. In adopting this view, I embrace the *posthuman* approach adopted by my new materialist framework and shared by the media studies and *science, technology and society* (*STS*) scholars whose work has greatly informed this thesis, which considers algorithms from the perspective of their own non-human mode of being and forms of cognition. Transported in the sonic regime, through the work of Oliviera, we will adopt the non-human point of audition of the machine, to listen to how this biometric algorithm listens to the voice. This fundamentally materialist approach will enable us to develop a radical critique able to move beyond "idealistic" claims (Ananny & Crawford 2018) and flesh out how a practice that actively resists recognition can be articulated.

FRAMEWORK: NEW MATERIALISMS

In order to assess the multiple objects of my research (i.e. recognition, voice, algorithms) my project assumes an interdisciplinary framework determined by the productive intersection of multiple discursive formations. In doing so, I am encouraged by the theory and practice of cultural analysis with which I have engaged in my graduate

formation. Cultural analysis understands disciplines as the regimented results of social and material forces that have historically atomized knowledges in self-enclosed discursive formation which, for example, divide academia in 'humanities' and so-called 'hard sciences'. From the standpoint of cultural analysis, individuated disciplines are inherently unexhaustive and oftentimes marked by parochialism, constrained by the historical sedimentation processes that fossilize their methodologies and frameworks, and the seals them in self-referential vacuums.

Still, cultural analysis does not refuse an engagement with the coordinates that disciplines set for themselves as domain-specific fields, but rather borrows theories and concepts through a performative understanding of these that affirms their productivity and right to travel across material and discursive fields (Bal 2012). Proposing the coming together of discipline and as a tentative remedial to disciplinary fragmentation, cultural analysis also attentive to the shortcomings of interdisciplinarity (van der Tuin & Pekal 2023). The absence of a domain-specific lexicon and framework for cultural analysis, together with its necessary lack of mastery in regards to concepts and frameworks (at least from the perspective of the disciplines from which it borrows them) have been long considered a drawback of interdisciplinary approaches to the humanities like cultural analysis (Früchtl 2008).

To this critique, cultural analysis responds by embracing its purported lack of domain-competence by recasting mastery as a combinatorial art of concepts and frameworks – an argument for which cultural analysis finds reason in the very meaning and history of philosophy itself (Bal 2008; Deleuze & Guattari 1996). Furthermore, cultural analysis argues for an object-oriented practice in which concepts and frameworks are called for by the objects of research at hand (Bal 2008). In this sense, 'thick objects' always already demand a plurality of perspectives (Bal 1996; 1999; 2002; 2009): an understanding that cultural analysis posits as an ethical and political response to the call of the inherently complex worlds with which academia is entangled with, rather than divorced from. In engaging with the 'thick objects' of recognition, voice and algorithms, I am called to interdisciplinarity by their inherent complexity.

In doing so, I draw concepts from and engage with multiple discursive formations and their subsets, among which: philosophy, cultural studies, political science, gender studies, feminist and queer studies, postcolonial and critical race

studies, sound, voice, accent and timbre studies, musicology, aesthetics, media studies, STS – most of which constitutionally interdisciplinary fields in themselves. However, despite the disciplinary promiscuity, I mostly adopt *one* philosophical framework – yet still a framework which emerges from and demands the influence and contamination between different disciplines: that of *new materialisms* (plural) (Coole & Frost 2010; Dolphijn & van der Tuin 2012). New materialisms is a tentative umbrella-term for a rich and growing intercontamination between theories and practices, and it can be productively put to use in different contexts.

In my approach to my objects of knowledge – i.e. recognition, voice, algorithms – I lean on new materialist frameworks and engage with them in a manner that refuses to reproduce disciplinary parochialism, but considers their inherent interdisciplinarity as an invitation to mutual contamination. For example, by putting new materialisms in conversation with other theories and concepts that have drawn similar conclusions from significantly different contexts (cf., the notion of *opacity* that I engage with throughout this thesis); furthermore, especially in Part 2 of my thesis where I apply new materialist theories in my analysis of a practice of *description* of an *algorithmic assemblage*, I build on the many points of intersection between this framework and earlier STS theories and practices that have significantly contributed to the conceptual and pragmatic backbone of new materialism.

Developed out of the coming together of intuitions from philosophy (Deleuze & Guattari 1986), queer feminism (Butler 2011), feminist technosciences (Haraway 2018; Barad 2007) and STS (Bijker & Law 1992; Latour 1999; 2007), new materialisms are recursively influenced by their frameworks – most importantly, they assume a *posthuman* standpoint (Halberstam & Livingston 1995; Hayles 1999; Braidotti 2013) in relation to ontological variety. The posthuman perspective of new materialisms seeks to move beyond Western traditional metaphysical binaries of categories of beings, such as human and non-human, natural and cultural, material and discursive, mind and body, Self and Other, organic and inorganic, and so on. To this binaries, posthuman theories such as new materialisms opposes an 'ontologically flat' standpoint that constructs ontologies as *produced* and never already given.

New materialisms borrow from the *radically immanent* (Braidotti 2001) philosophy of Gilles Deleuze and Félix Guattari, the understanding of entities as

transitory 'individuations' emerging from the material actualization of differential intensities at the virtual (Deleuze & Guattari 1987) as well as material (Simondon 2020; Ingold 2012) level. This understanding is able to reframe the ontological status of entities and identities from a fixed condition determined by 'being' to a state of processual *becoming*; it also raises serious epistemological questions in relation to these newfound entities: how to account for things that are in a state of constant motion? In my project, I take this question seriously and show how a such understanding of the ontology of my objects of knowledge demands me to restructure epistemological work, orienting analytical, ethical and aesthetic practices in turn.

The underlying posthuman and immanent framework of new materialisms also considers entities as ontologically *heterogenous*: each individuated entity is an *emergent* hybrid formation constituted by the *intra-action* and *entanglement* of different forms of matter and beings (Barad 2007). In this respect, the human body has been famously considered by Donna Haraway as a hybrid *entanglement* of human and non-human technological components (Haraway 2018). New materialisms extend this notion to the concepts of identity and difference: they are not only *co-constituted by* their relation but also *entangled within* each other – a view that these theories share with other disciplines (like gender studies and critical race studies) that have adopted the immanent framework of the 'philosophies of difference' of Gilles Deleuze and Jacques Derrida, which foreground *difference-in-itself*.

This aspect has great implications that reverberate across different areas of thought, which new materialisms assess with nuance. To understand its consequences one might start by considering the emergence of this philosophical strand from its critical engagement with theories of the *social construction* of identity and difference. From this standpoint, identity and difference are constituted by and in response to social forces that, through the work of Michel Foucault (Foucault 1977), are characterized as able to *normatively* regulate subjectivity according to their *disciplinary* power. Identity and difference, in this sense, are *performed* by subjects, rather than established *a priori* (Butler 1997; 2011).

In my assessment of recognition, I build on this framework to argue for the *productive* power of recognition in relation to its subjects and objects, and consider how subjects have responded to its *disciplinary* effects by proposing alternative

framings of identity and difference. Recognition in all its forms (human and algorithmic, optic and sonic), as I have already had the chance to touch upon in this Introduction, forces its subjects into a 'double bind' which regulates subjectivities according to its own coordinates and 'grids of intelligibility', leaving no room for the becoming and "polyphony" (Guattari 1995) of difference. Significantly, new materialisms are not only able to protest and expose the normative character of recognition, but find the means to actively *resist it* by offering different conceptualizations of identity and difference.

Throughout this thesis, Martinican poet and philosopher Édouard Glissant's notion of *opacity* (Glissant 1997) will be a guiding conceptual figuration with which I engage precisely in this sense, as by bringing together ontological, epistemological, ethic and aesthetic, it offers multiple avenues to resist recognition. Although stemming from a completely different context, Glissant's concept, I will argue by putting it in conversation with theories from this strand, is fundamentally new materialist. As Pedro Oliveira argues in fact, "there is nothing 'new' in 'new' materialisms'. In non-Western cosmologies, objects" and subjects, "are imbued with the power relationships they contain, they help construct, and that are evoked in them by the stories told within and around it" (Oliveira 2019a): in this sense, "new materialist genealogies" and "literacies" are always open to retroactive inscriptions (Bühlmann et al. 2017).

Confronted with the implicit logocentrism and culturalist bias of this view, in *Bodies that Matter,* queer feminist philosopher Judith Butler reconsiders her thesis on construction in a such way as to accommodate for the role of materiality (Butler 1993). Her theory of the *materialization* of the *corporeality* of sexual difference as the result of *performative* constructions which, through "reiterative and citational practice" (Butler 2011, xii) "[stabilize] over time to produce the effect of boundary, fixity, and surface we call *matter*" (ivi xviii) has been foundational for new materialisms, which applies this notion to different objects in different contexts. In my view, this understanding of "how matter comes to matter" (Barad 2007) has particularly significant implications in those disciplines that have most adopted 'realist' approaches to the phenomena they study, like science and technology.

Building on this ideas, the pioneering works of Donna Haraway and, later, Karen Barad, have proposed theories of the "corporealization" of "material-semiotic" objects of knowledge (Haraway 2018, 142) and of the "performativity of matter" (Barad 2003)

that are able to find a middle ground in a historical dispute in the philosophy of science: that which pits 'realist' and positivist approaches against 'antirealist' and constructionist ones (Hacking 2000). To better frame the new materialist position in relation to this centuries-old debate, we can draw from Ian Hacking's summary.

> Realism about theories says they aim at the truth, and sometimes get close to it. Realism about entities says that the objects mentioned in theories should really exist. Anti-realism about theories says that our theories are not to be believed literally, and are at best useful, applicable, and good at predicting. Anti-realism about entities says that the entities postulated by theories are at best useful intellectual fictions (Hacking 1990, 10).

As opposed to anti-realist and exclusively social theories of construction, new materialisms advances the idea that "bodies are perfectly 'real,' and nothing about corporealization is 'merely' fiction" (Haraway 2018, 142); while, on the other hand, in contrast to the positivism of 'entity realism', it posits that material-semiotic objects of knowledge are produced by the *intra-action* among subjects and objects of knowledge in the "distributed, heterogeneous work processes of technoscience" (ibidem). "Intra-action", in this sense, is Karen Barad's proposal for an understanding of intersubjective and interobjectual relation that moves away from a paradigm of *inter*-action, which presupposes ontological separation, towards one of co-implication, according to which entities are not given *a priori* but differentially emerge from *within* relation (Barad 2007, 139).

In other words, new materialisms do not dismiss the corporeality of matter as a purely discursive formation; on the other hand, material-semiotic objects of knowledge "are not 'discovered' in a vulgar realist sense, but they are not made up" (Haraway 2018, 142) – alternatively, we can frame this through Karen Barad's well-known dictum, "*relata* do not preexist relations" (Barad 2007, 140). What does this mean, and how is it relevant to my project? On one hand, the idea that material-semiotic objects of knowledge emerge from the processes that claim to merely 'recognize' them exposes both the *productive* character of recognition and its *situatedness*. Haraway's and Barad's consideration of the impact of technological instruments of observation on the

production of their objects of knowledge is especially relevant in my assessment of algorithms.

Technologies of recognition, in this respect, are understood as material *and* discursive, ontological *and* epistemological, constructing objects at the same time as they claim to observe them. Haraway stresses the materiality of non-human actants, such as "those made by humans, for example, machines and other tools, and those occurring independently of human manufacture" (Haraway 2018, 142) in the making of 'real' phenomena, whereas Barad understands them as produced "through complex agential intra-actions of multiple material-discursive practices or apparatuses of bodily production, where apparatuses are not mere observing instruments but boundary-drawing practices – specific material (re)configurings of the world – which come to matter" (Barad 2007, 140). From this understanding it derives an *onto-epistemology* that conceptualizes objects of knowledge, even material ones, as situated productions, rather than ahistorical inert matter awaiting discovery.

At the same time, instruments and processes of observation, like recognition claims to be, are decoupled from their purported objectivity and neutrality, but exposed as always already contingent on the materialities that effectuate them. Again, new materialisms are not 'new' in this respect: STS scholars have also considered scientific processes as contingent on multiple negotiations unfolding at both the social and the material level (Bijker & Law 1992) that result in the construction of objects of knowledge (Knorr-Cetina 1981); this insight, combined with media studies' *archeological* methodologies and their stress on the materiality of technical instruments and processes (Parikka 2012) predates and informs new materialist understandings of the impact of technologies on the production of knowledge.

The reframing of the instruments and systems of knowledge in a such way to emphasize their relational and material aspects, also reverberates on our understanding of their objects. In the case of the 'voice recognition algorithm' I consider in Part 2 of this thesis, for example, (where 'voice' and 'identity' are the objects of knowledge; 'recognition' is the system of knowledge; and 'algorithm' is the instrument through which it is performed) we can understand how voice and identity come into being as individuated objects of knowledge only through their encounter with the systems and instruments that regulate and establish how they can come to be known.

From the onto-epistemological perspective of new materialisms, as Nina Sun Eidsheim has argued, "there is no *a priori* voice to be known prior to the one formulated in response" to its encounter with the systems and instruments that attempt to know it (Eidsheim 2019, 6).

In my adoption of new materialist frameworks in my project, I am also informed by *assemblage* theories that, if one hand complicate further the terms of engagement with my objects of research, on the other they allow us to articulate truly materialist forms of analysis. The notion of "assemblage", whose conceptualization we once again owe to Gilles Deleuze, defines "a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them" (Deleuze & Parnet, 1987, 69). The concept of assemblage finds its first rigorous application in the sociological study of technoscientific knowledge production, where it has significantly informed the characterization of socio-technical 'networks' in the *actor-network theory* (ANT) and practice of scholars such as Bruno Latour, John Law, Madeleine Akrich, Annemarie Mol and others (Law & Hassard 1999; Latour 2007). In this respect, networks, or assemblages, are understood as distributed and ontologically heterogenous, made up of human and non-human components, as Haraway has already suggested.

ANT calls the participants of assemblages *actors*, while new materialist theories have reframed them as *actants* to stress their *performativity* and *agency*, their capacity to act on the world *beyond* human cognitive frameworks centered around intentionality that the term 'actors' otherwise implies. Both ANT and new materialisms however share an understanding of "actants" as "human or not, or, most likely, a combination of both" (Bennett 2010, 9). Furthermore, both these theories combine an understanding of each actant as recursively heterogeneous: actants are assemblages in their own respect – an understanding shared by Latour (Latour 1992), Barad (through her theory of *diffraction* – Barad 2007) as well as Jane Bennett, whose theory of matter as *vibrational* can be considered a successful combination of new materialist and ANT frameworks for the envisaging of new practices of analysis able to account for the multiplicity and becoming of assemblages (Bennett 2010).

Engaging with Bennett's work finally brings us to the *ethical* implications of the radical reframing of the processes, instruments and objects of knowledge engendered

by new materialism, where ontologies, epistemologies and ethics are conjoined in the multihyphenated notion of *ethic-onto-epistemologies* (Barad 2007, 38). When recast as heterogenous assemblages, for example, the ontology of entities is marked by its intrinsic hybridity: objects of knowledge are assessed as material-semiotic, "naturalcultural" (Haraway 2003), more-than-human, etc. For STS/ANT scholar Annemarie Mol, ontologies are always already political: she observes how understandings of what constitutes 'materiality' depend on history and place, and, most importantly, can be mobilized to suit different ethical and political agendas (Law & Mol 1995; Mol 1999).

This new frame of thought helps us comprehend how, when systems of knowledge construct entities through binary *either-or* logics, they always do so at the expense of some entities rather than others, where some 'matters comes to matter' and others do not, by operating strategic inclusions and exclusions. In my work, I apply this idea in my analysis of how the discursivity and materiality of the voice are constructed: with respect to the former, I have already pointed at how Aristotle's positing of the voice as purely discursive has regulated the access to political representation, while later in this thesis, I will assess how voice's purported corporeality has been mobilized in different senses and for opposing objectives, as a figure of recognition *and* as a figure of unintelligibility. We will also have the opportunity to analyze how algorithms inscribe and operationalize this logic engendering forms of 'onto-epistemic violence'.

Finally, the understanding of the impact of the processes and instruments of knowledge in the making of the objects and concepts through which we know the world, charges them with (ethical and political) power. In Haraway's famous words,

> It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters whit stories make worlds, what worlds make stories (Haraway 2016, 12).

How, then, does an understanding of processes and instruments of knowledge as assemblages impacts on our assessment of their intrinsically ethicopolitical character?

The capacity of this notion to restructure our methods of analysis and models of ethicopolitical claim-making were already acknowledged by early ANT practitioners such as Latour and Akrich, but its implications are weighed with more nuance by Bennett, who, in her *Vibrant Matter: A Political Ecology of Things* asks to which extent can we articulate forms of accountability when the notion of cause and effect are radically complicated by the understanding of all actants and processes as assemblages. With regards to the case of a city-wide blackout she considers, to what extent is it traceable back to the electrical grid, or to the corporation that manages it, when both are assemblages in their own regards (ivi, 37)? And who is to blame?

Against a such individuated 'monocausal' model of ethicopolitical agency, and thus of accountability, she understands that "[if] agency is distributive or confederate, then instances of efficient causality, with its chain of simple bodies acting as the sole impetus for the next effect, will be impossibly rare … Alongside and inside singular human agents there exists a heterogenous series of actants with partial, overlapping, and conflicting degrees of power and effectivity" (ivi, 32). The implications of this notion will become clear in my analysis of a practice of algorithmic *description* in the second Part of my thesis, where the question of where to locate accountability will come to the fore.

Now, I turn to introducing the methods of analysis I adopt in my project, where the framework laid out by new materialism is put to work in a context that, in my hope, exposes its productivity and potential. In considering the benefits of new materialist approaches for analytical practices, I not only adopt them myself, but also consider how they are put to use by artist and researcher Pedro Oliveira in his long-term engagement with the German migration office's voice recognition biometric algorithm, whose assessment through this lens is able to orient not only his methodology of analysis, but also the ethical and aesthetical terms of his practice of *resistance* against it.

METHODOLOGY: SITUATING KNOWLEDGES AND SCRIPT ANALYSIS

The necessity to bring together different concepts and theories, as I have argued in the previous Section, is driven by my objects of research, as per cultural analysis' proposed methodology. In this respect, one theoretical framework (i.e. new materialism) imposed itself over others as the main conceptual toolset from which I draw in my project – however, as we have seen, following this framework in all of its implications invites unorthodox contaminations and brings us back to interdisciplinarity. The same logic can be applied to my object of research. By initially engaging with the artistic research practice of Pedro Oliveira *vis à vis* a 'voice recognition algorithm', the multiplicity of objects implied in this work took me in different unexpected directions.

In order to properly assess this work in all its implications and expand on it with my own takes, I had to unpack all its components: 'recognition' as a system of knowledge, 'algorithm' as the instrument through which it is performed, and 'voice' as its objects were all given the proper consideration in respective Chapters in Part 1 of this thesis. Recursively, each of these objects demanded to be put in conversation with their own specific discursive fields and assessed each in its own terms, as well as becoming incrementally entangled, each leading its way into the following. In other words, as assemblages in themselves, the practice of Oliviera and its object, demanded a multiplicity of approaches able to account for all the actants involved.

If Oliveira's practice is the center of my focus in Part 2 of this thesis, in Part 1 I unpack all its components. The two Parts that compose my thesis share similar methodologies, but each elicit different considerations, also with respect to my own role. In the first, I bring my own observations in order to provide context for the second, expand on it and intervene in different areas of research; in Part 2, on the other hand, I take the backseat to follow a practice of analysis, and later, of *resistance*, in their making – still, my interpretative voice will be heard throughout this Part as well, as following my object of analysis does not limit my role to that of a passive observer or commentator; rather, I take up the task of expanding, contextualizing, stressing its salient points, and provide interpretative tools through which to understand the practice of Oliveira.

The three Chapters that make up the first Part of my thesis address each a respective object of research. The first considers 'recognition' in its ethicopolitical

sense to evidence the inscription of its 'principal meanings' in its formulation of models of claim-making. In arguing that it is precisely to this extent that recognition fails to fulfill its promise, I particularly concentrate on its presentation as an objective practice of knowing grounded in the self-evident appearance of its objects of knowledge (which, in the case of human objects of knowledge, finds evidence of the Other's purported identity in the 'empiricity of the flesh'). I characterize this as logic as a *perceptualization of recognition* that results in the *naturalization of power* inscribed in it and that it prescribes as a mode of ethical intersubjective relation – a dynamic that recurs throughout all forms of recognition I consider in this Part.

In exposing the workings of power in the models and practices of recognition I consider, I am guided and inspired by the feminist methodology of *situating*. Situating emerges from theories of feminist *standpoint* that sought to reinscribe women and subaltern positionalities in the production of knowledges that have been historically and systematically denied to them (Harding 2003). Situating, in this sense, assumes the idea that knowledges are produced from specific embodied standpoints, located in precise points in time and space, and, by adopting a Foucauldian perspective on power, it understands it as a force that circulates differentially across subjects, that can be inscribed and incorporated at different levels, rather a than fixed, centralized agential category inaccessible to those who are denied it. Thus, as a practice and method, situating not only seeks to provide alternative standpoints, but to *locate* power and its inscriptions, in order to gesture toward or act upon its redistribution.

This argument, famously formulated by Donna Haraway in her call for a practice of "situated knowledges" has proved particularly productive in the critical engagement with systems of knowledge production, like technosciences, whose discourses are predicated upon the systematic and strategical concealment of the sites of enunciation from which they are articulated (Haraway 2018). To situate knowledges (regardless of the discursive fields in which it is applied) in this sense, is to expose the *partiality* of the perspective from which they operate, concealed under the guise of universalism, and track the workings and circulation of power. In this regard, Haraway has famously characterized how technoscientific systems of knowledge production rest on *visual* regimes that facilitate their positioning as objective, and facilitate the discursive

removal of the partiality of their subjects of enunciation as all-seeing, 'nontropical', and thus universal gaze.

This "god trick" (ivi, 134) often conceals the partial perspective of Man, understood in the Foucauldian sense as the conceptual persona of dominant modern Western rational site of power, whose gendered (male) and racialized (white) identity is marked at the same time as it is constructed as neutral. Situating aims to mark the partiality of perspective and reinscribe it in knowledges, with a particular attention to *materiality* which feminisms historically derive on one hand from their engagement with the body as an inextricable site of experience and thus of knowledge production, and on the other from their (complicated) engagement with Marxist theories (Harding 2003). In the Marxist sense, situating can be characterized as a *materialist* practice not only to the extent that it seeks to map the unequal flows of power in the production of knowledge, but also to ultimately call for its redistribution.

To do so, feminist practices of situating combine historical materialism with Derridian *deconstruction* and Foucauldian *archeological* methodologies. The former's understanding of marked and ummarked terms in the unequal distribution of meaning across language (Derrida 1998), as well as the latter's understanding of *epistemes* as what systems of knowledge production have considered commonsensical *a priori* knowledge and thus uncritically inscribed in their discourses (Foucault 1994). Situating, in this sense, does not only aim to expose hidden partial positionalities but also mark the concealed epistemes that orient systems of knowledge production, to stress their *situatedness*: their emergence from multiple social and material, historically and tropically specific forces.

Political historian Sophia Rosenfeld and historian of science Lorraine Daston, however, respectively teach us that 'common sense' (Rosenfeld 2014) and 'objectivity' (Daston & Galison 2010) are themselves epistemes with histories and places, and, significantly, *uses*. As I have argued earlier drawing on Annemarie Mol's work, *materiality* too is a situated concept that lends itself to multiple mobilizations – although a particularly resistant one to the method of situating due to its 'realist' ontological connotation. For historian and philosopher of science Ian Hacking too, ontology has a history (Hacking 2004). In my thesis, encouraged by my new materialist framework, I use the term *onto-epistemes* instead of the Foucualdian 'episteme' at

specific times, in order to highlight the combination of ontological and epistemological constructions in situating the systems of knowledge production.

I apply the practice of situating in the first Part of my thesis to different forms and modes of recognition. In the first Chapter, for example, exposing how the principal meanings of recognition are inscribed into its modelization as an ethicopolitical form of intersubjective relation, helps me advance one of the central thesis of this project: that recognition condemns itself to failure precisely in the moment that it discursively erases its *productive* character: when it presents itself as an objective system of knowledge able to accommodate for difference, while it actually produces otherness, and *disciplinarily* condemns its objects and subjects to accord to its own coordinates. In this respect, Haraway's insight about the uses of visuality in the strategical concealment of the partiality of perspective are also useful in my examination of the ethicopolitical model of recognition, as I identify the same logic in recognition.

In Chapter 2, the work of situating becomes a practice of "sounding situated knowledges" (Goh 2017) or *situating sonic knowledges* to expose how models of recognition based on the sonic regime inscribe the visuality of recognition they seek to oppose. It is in this Chapter that the notion of *onto-epistemes* most come to use, as when listening is articulated as an (ethical and aesthetical) system of knowledge production geared toward the recognition of the Other's identity by means of the voice, it often mobilizes the latter's materiality in a such way that fixes corporeal difference according to *bioessentialist* logics. By doing so, listening is shown to reproduce the limitations of the systems of knowledge it originally sought to replace. In this work, I am mostly assisted by feminist new materialist musicologist Isabella van Elferen's groundbreaking work on the history and uses of the concept of 'timbre' (van Elferen 2020).

Finally, in Chapter 3, I put to use the practice of situating in relation to recognition performed by algorithms. If objectivity is shown by Daston and Galison to have a historical record of uses and applications, which I track across the forms of recognition I consider, this "epistemic virtue" (Daston & Galison 2010, 16) is further enforced when ascribed to non-human technological instruments, whose "mechanical objectivity" (ivi 2010, 18) presents them as neutral and impartial by discursively erasing the materiality of its role as an intermediator, the interpretative choices and guiding

principles by which it operates, and the sites from which it enunciates its claim to recognize. In this Chapter, rather than situating a specific algorithm (a practice I engage with through the work of Oliviera in the following Part), I consider how algorithmic recognition once again ties in with the epistemes that characterize recognition in all its forms.

Across all these Chapters, I am attentive to how models that have historically sought to pose as remedies to recognition have inscribed its own logic and epistemes, failing to establish themselves as viable alternatives. However, once again spurred by the new materialist conceptual and ethical standpoints I embrace, I do not limit myself to critique and deconstruction. As I believe that "it matters what stories make worlds, what worlds make stories" (Haraway 2016, 12), I understand Haraway's call to ethical "response-ability" (ivi 126) through a practice able to move from "deconstruction" to the "passionate construction" (Haraway 1988, 89) of new concepts, models, epistemes and systems of knowledge production. I therefore finish each Chapter with a proposal of a concept able to not only critique recognition, but actively resist it, identifying in Glissant's and Amoore's notions of *opacity* a such figuration.

In Part 2 of my project, the work of situating becomes a practice of *describing,* with which I engage *diffractively*. This Part is divided into two Chapters, both of which are centered around the work of artist and researcher Pedro Oliveira *vis à vis* a specific voice recognition biometric algorithm in use at the German migration offices for the determination of the origin of undocumented asylum seekers. In centering this Part of my project on the work of Oliveira, I attempt to simultaneously tackle multiple objects: the algorithm that Oliveira *describes* and his method of analysis, at the same time. Even the meanings of the *diffractivity* of my analysis are multiple: the practice of *reading* (and, in our case, also *listening*) diffractively is described by new materialist thinkers such as Karen Barad, Evelien Geerts and Iris van der Tuin as an attempt to move beyond critique grounded in the generative relation of texts from different disciplines (Barad 2007; Geerts & van der Tuin 2016).

My practice of analysis is also diffractive in the sense that, by looking (or better, listening) at Oliviera's practice, it multiplies focus in different directions. If the objects of research I dedicated each Chapters of the first Part can be retroactively understood as the effects of a such diffractive form of analysis (in their unpacking of all the terms

involved in a 'voice' 'recognition' 'algorithm'), the two Chapters of Part 2 are mostly focused on the algorithm that Oliviera considers in his analytical, ethical, and, later, artistic work. In examining both objects of research simultaneously, I emphasize how a different understanding of the materiality, agency, ontology and epistemology of the algorithm is able to orient the analytical, ethical and aesthetic coordinates of Oliviera's work, whose singularity across the panorama of critical engagement with algorithms I stress throughout this Part.

In analyzing the analysis of Oliveira, I foreground *script analysis* as a theoretical and methodological compass. Formulated in the context of STS and ANT by Madeleine Akrich, and further developed by colleagues Bruno Latour, Michel Callon and John Law, script analysis lays out some key methodological principles through which, I believe, we can frame Oliveira's approach to the algorithm at the center of his work. In my engagement with script analysis I seek to reappraise Akrich's proposed method as a pioneering, though overlooked contribution not only to for the history and sociology of design from which it emerged, but also as a productive practice able to take up the analytical challenges posed by un understanding of algorithms as *assemblage*s. In this respect, script analysis has proven extremely prescient.

In an influential 1992 article titled "The De-Scription of Technical Objects", Akrich lays down a methodology and a vocabulary for the analysis of "technical objects" centered on the notion of "script", which Akrich considers in its multiple meanings as both a noun and as a verb. A "script", she writes, encodes the "vision of (or prediction about) the world" of the designer of a technical artifact, including expected users' "tastes, competences, motives, aspirations", as well as the environment in which the object is predicted to be employed (Akrich 1992). A script thus manifests as an injunctive, though mostly implicit, text which instructs users of the expected use of the object. A script is thus "in-scribed" by "the engineer, inventor, manufacturer, or designer" (Akrich & Latour 1992, 259) in the "technical content" and affordances of the technical object (Akrich 1992, 208).

In the voice recognition algorithm Oliveira considers, for example, the script can be summarized by the question: 'where are you from?': a script that the algorithm attempts to answer through the *program* of recognition by deploying different technical-material operations and actants, each according to its own scripts and programs, and

each a hybrid assemblage of different components in itself, charged with different forms of agency and power. If the work of script analysis entails consideration of how a 'technical object' performs its script, how this is negotiated between developers, the materiality of the technology itself, and users, then when applied to *algorithmic assemblages*, this practice also entails the adoption of the non-human forms of being and knowing of the technology, the study of whose workings are necessary for this practice's multiple goals of exposing the technology's contingency on a multiplicity of factors, which in turn allows for the power it is invested with to be redistributed in more equal ways.

Script analysis is similar to the practice of *situating* to the extent that it seeks to expose the implicit epistemes and logic of a (technical) system of knowledge to decouple it from the 'virtue' of objectivity and redistribute agency. When operationalized by an instrument such as an algorithm, however, the coordinates of the production of knowledge are determined by the material-technical operations enacted by the technology, which script analysis attempts to account for. In emphasizing the material aspects of technical knowledge production, script analysis intersects with *media archeological* methods of analysis, which also considers the 'inner' workings of a technology at the material level (Parikka 2012). With media archeological frameworks, script analysis shares the idea that (onto-)epistemes are *inscribed* in the technology at different material, technical and discursive levels, and are reproduced by it in ways that orient the performance of knowledge production.

However, to media archeological methodologies, script analysis supplements an attention to the relations and distribution of competences laid out by a technical instrument. In doing so, script analysis is able to account for some characteristics of algorithms that are generally perceived as limitations to their analysis. Though I tackle all these in detail in Chapter 3, Rob Kitchin's summary is useful at this point. Kitchin characterizes algorithms' mode of being and knowing as: "blackboxed"; "heterogenous and embedded"; "ontogenetic, performative and contingent" (Kitchin 2017, 7-8) – characteristics which are generally considered as a hindrance to the work of 'audition', understood here as the practice of examining algorihtms' inner workings for critical scrutiny.

In regards to the first onto-epistemological character of algorithms (that which describes them as *opaque* 'black boxes') script analysis responds by casting *description* as a form of "unblackboxing" (Latour 1999) or "depunctualization" (Law 1987; Callon 1987). In *Pandora's Hope: Essays on the Reality of Science Studies*, Latour invites us to weigh the implications on methodologies of analysis when "the action that we are trying to measure is subjected to blackboxing, a process that makes the joint production of actors and artifacts entirely opaque" (Latour 1999, 183). The practice of description is thus presented by Latour as precisely a such "opening up" of the black box – a process that has alternatively been referred to as 'depunctualization'. Whereas 'blackboxing' or 'punctualization' entails individuation, enclosure and simplification (Law 1987; Callon 1987), depunctualization consequently entails "showing that what appears to be simple or reified is in fact messy and contingent … the work of mapping a network's inner heterogeneity and exposing it to view" (Gehl 2016, 38).

However, description as a practice of depunctualization or unblackboxing is denied to Oliviera by the algorithm's inaccessibility. If most analysts would understand this as an impasse and reorient their attention to the demand for access and 'transparency', by refocusing his attention on other actants that compose the *algorithmic assemblage*, Oliviera is able to break through the algorithm's *regime of recognition*. As I will show, Oliveira does so by examining the discourses aimed at "obfuscating" (Pasquale 2015, 6) the algorithm to keep it from external scrutiny. Oliviera understands the 'complex mistakes, denials and disavowals' in the narrative around the algorithm as clues through which to gather information about its technical-material operations. In doing so, Oliviera's practice of analysis is distinctive in that it is not hindered by opacity.

Script analysis can also establish itself as an alternative to ordinary practices of auditing to the extent that, by contextualizing technical instruments in *socio-technical networks* (or what, through a new materialist frame, I have called assemblages), it does not delude itself with idealistic forms of individuating centralized actants whose agency singlehandedly dictates the behavior of a technology, but rather, understanding technical instruments as determining complex arrangements of power and "specific geography of responsibilities, or … causes" (Akrich 1992, 207), it concentrates its effort on those "heavily trafficked" (Bennett 2010, 24) passage points where power and

agency sediment in a such way as to define an assemblage's "emergent properties" (DeLanda 2016, 9).

It is at this point that the practice of description can give way to forms of *deinscription* and *reinscription*, where the actants most charged with the power to carry out the *program* of the algorithm can be understood as the starting points for agential redistributions. In foregrounding this aspect, script analysis is able to envisage bottom-up forms of agential redistribution grounded in users' practical engagement with technical instruments. When taken up pragmatically, script analysis is able to achieve what the work of situating often only suggests through critique. In this sense, script analysis employs the discursive form of analysis only to gesture towards more practical forms of engagement. In Chapter 5, I engage precisely with such practice by considering Oliviera's work of 'reverse engineering' of the algorithm.

Oliveira *deinscribes* the actant he finds most charged with the agency to perform the program of recognition to *reinscribe* it in order to carry out the *antiprogram* of opacity. Grounded in the shared belief that critique and deconstruction, by themselves, are limited in their scope and cannot effectuate transformative change, Oliviera's practice is also considered as a testament to an understanding of algorithms that: a) refuses to be limited by their opacity; b) is truly materialist in its capacity to account for all its human and non-human components in the terms defined by their respective modes of being and knowing; c) considers the flow of power as contingent and never defined *a priori*, and thus liable to be redistributed; d) understands this idea as a call for ethical intervention; e) and finally, *resists*, rather than only critiques recognition, by finding the means of resistance in the very subjects and objects that the algorithms claim to be able to recognize, but ultimately fails to do so.

It is significant in this sense that Oliviera articulates his form of *algorithmic resistance* through the live performance of a work of sound art. Through the means of sound art, I will argue, Oliveira is able to demonstrate the productive aspect of recognition by turning to the situated material and social space of the live performance in an embodied laboratory where different forms of relation that resist recognition can be experimented. His sound art piece *DESMONTE* (Oliveira 2021), with which I engage in Chapter 5, is based on the *reinscription* of the algorithm we will have examined through his work. In this Chapter, I begin by providing context for this work within the

current burgeoning panorama of artistic research projects engaging with algorithms and especially, voice recognition algorithms.

To conclude, by drawing on the opportunity I have had as a curator to organize public presentation of the work in two separate occasions, I reinscribe myself and my own positionality into this work, by offering readers a tentative account of the listening experience proposed by *DESMONTE*. In doing so, I take up the challenge to try to apply forms of listening that resist recognition. Attending to Oliveira's performance of *sonic opacity* from an embodied participant positionality allows me to expose the active role of listeners in the making of subjects and objects of knowledge, and thus redistribute power and agency in a such way as to foreground unexplored potentials and more just forms of relation.

PART 1: SITUATING RECOGNITION

1: RECOGNITION AND ITS DISCONTENTS

INTRODUCTION

The relational dimension of recognition is already implied in what, with Ricoeur, we have called its 'principal meaning'. Recognition as a cognitive, empirical process can also be considered along the lines of a relation, describing an encounter between a recognizing subject and a recognized object. It is in this sense that recognition has been historically mobilized to appoint a form of ethicopolitical relation. Characterized in this way to recognize means to acknowledge, to include, to extend rights: "to bear witness through gratitude that one is indebted to someone" (Ricouer 2005, 12); to 'give back' something that was denied to the Other[4]. This meaning appears to cast recognition as a form of redistribution (of power, of agency, of resources) – however, as we shall see, significant aspects of this notion of recognition distinguish it from redistributive models.

On the other hand, "the demand for recognition" in the passive sense (to be recognized) "expresses an expectation that can be satisfied only by mutual recognition, where this mutual recognition either remains an unfulfilled dream or requires procedures and institutions that elevate recognition to the political plane" (ivi 11). Recognition in this sense is an ethicopolitical intersubjective model of relation between Self and Other, identity and difference, subjects and objects. As an ethical model however, as I will argue in this Chapter, recognition is less based on the mutuality that relation presupposes, but rather in a dialectical schema that leaves the structures of power that (ontologically) separate the subjects and objects of recognition intact.

This aspect will become evident through my engagement with critiques of recognition in this Chapter. Mostly credited to Hegel, recognition as an ethicopolitical model has proved influential, especially as a paradigm for relation across identity (intercultural, interracial, interclass, etc.) divides. Tracing critiques to recognition,

[4] Throughout this Chapter, I have chosen to write the terms 'Self' and 'Other' with capital letters, as in Lacanian psychoanalysis, to emphasize the ontological divide that recognition presupposes between its subjects and objects – if only to argue against it.

especially those advanced by thinkers whose positionality belongs to the communities systematically left out by this model, will expose the discontents of recognition. Particularly, the fact that recognition cannot ever supersede the divides it seeks to resolve is a common problem identified by many thinkers.

Furthermore, as much as recognition as an intersubjective ethicopolitical model retains some autonomous significance, it significantly leans on and intertwines knowing, identification and discrimination that characterize its principal meaning. Recognition as a practice of knowing will be shown as contingent on precognition: implied in its re-cursive prefix, recognition cannot ever truly know its objects anew. Recognition, in other words, can only recognize what it already knows. The pre-established categories of subject and object recognition presumes, act in this sense as norms that recognition cannot truly move beyond, relegating the Other to adapt to the norms established by the recognizing Self.

Moreover, recognition's fundamental link to identification is able to reframe it as a productive practice, where identity and alterity are produced in relation. However, one of the most salient characteristics of recognition is that it never acknowledges this form of power. Recognition manages to discursively erase its productive, performative power through its construction as a purely empirical process. It is in this sense that recognition preserves its principal meaning of discrimination: by presenting itself as merely perceptual, it naturalizes power precisely in the moment that it reproduces it. By doing so, recognition overdetermines the signs of the Other's alterity, of which finds its evidence in the "empiricity of flesh" (Pugliese 2005, 94). In presenting the difference of the Other as self-evident, recognition constructs its own conditions of veridiction.

What is more, it excludes its performative character, its ability to construct difference along the lines it sets for itself and to which it forces the Other to adhere, or else be denied recognition. In this Chapter, I will engage with what I identify as the most important critiques of recognition. Significantly however, to the extent that I am aware of the limits of critique, I end the Chapter by giving consideration to a model that attempts to move beyond recognition. The notion of opacity, formulated by Édouard Glissant, will suggest forms of ethicopolitical and aesthetic forms of resistance ro recognition, grounded in a radical reframing of the ontological and epistemological character of difference as its object.

THE ETHICS OF RECOGNITION

German philosopher G.W.F. Hegel is commonly credited with the first modelization of the ethics of recognition along the lines I have described. In *The Phenomenology of Spirit* (1807) Hegel describes social, political and existential struggle as a struggle for recognition between masters and slaves. In this 'social drama' unfolding in a plantation scenario, recognition is something that the slave aspires to and the master can concede or withhold. For Hegel, "to recognize someone is to accept that person's authority, validity, or legitimacy" (Chun 2021, 186), to accord 'shared humanity' and rights to the recognized. Although Hegel's dialectic aimed to supersede subject-object divides, synthesis as the teleological end goal of recognition, always remains unfulfilled: for as much the master recognizes its dependency on the slave's labor, he does not concede freedom to the slave. It is revelatory, in this sense, that Hegel believed that "humankind has not liberated itself from servitude *but* by means of servitude" (Hegel 1917, 875, my emphasis).

Hegelian understandings of recognition have proved of great endurance and vast influence on the articulation of ethicopolitical models and their attendant forms of claim-making, up to today. As Chun evidences (Chun 2021, 215), the most fervent critiques of recognition have been advanced precisely from the very subaltern groups and marginalized communities that 'recognition justice' aimed to seek reparation for. Some of their contributions predate theorists the argumentations of theorists like Fraser and remain invaluable for this conversation. Most famously, Martinican-born, Algeria-based creole psychiatrist, decolonial theorist and activist Frantz Fanon, in his book *Black Skins, White Masks*, has engaged explicitly and implicitly with theories of recognition (especially Hegel's) in a complex manner (Fanon 2008).

Although the details of his application of Hegelian recognition in the context of Algerian colonialism and anticolonial resistance exceed the aims and scope of this project, for our current, it is relevant to note that Fanon's engagement with Hegel's master-slave dialectic is grounded in a different reading of each term:

> For Hegel there is reciprocity; here the master scorns the consciousness of the slave. What he wants from the slave is not recognition, but work. Likewise, the slave here can in no way be equated with the slave who loses himself in the object and finds the source of his liberation in his work. The black slave wants to be like his master. Therefore he is less independent than the Hegelian slave. For Hegel, the slave turns away from the master and turns toward the object. Here the slave turns toward the master and abandons the object (Fanon 2008, 195).

For Fanon, in other words, recognition justice as it was formulated by Hegel fails to capture the complexity of settler-colonized relations and offer a concrete model for emancipation. If to a great extent Fanon's characterization of recognition follows a structuralist psychoanalytical framework that would later become associated with Jacques Lacan's (according to which the constitution of the subject always already depends on an Other who 'recognizes' them[5]) Fanon has also been critical of the reliance on externally-bestowed recognition. For Fanon, the appeal to an external source for the granting of agency causes in the colonized an internalization of racist colonial oppression (which he addresses in terms of an 'epidermalization of inferiority' – Fanon 2008, xv).

In her analysis of Fanon, philosopher Kelly Oliver writes: "because the oppressed are forced to compare themselves to their oppressors who put themselves up as the *norm* or *standard* against which the oppressed are found inferior, the oppressed are thrown into a vicious circle of finding their own self-worth by virtue of this impossible comparison" (Oliver 2001, 36). Bound by the dialectic grip of recognition, the systemically unrecognized, oppressed racialized subject has no alternative but "try to make myself white: that is I will compel the white man to acknowledge that I am human" (Fanon 2008, 98).

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[5] Self-consciousness exists in itself and for itself, in that and by the fact that it exists for another self-consciousness; that is to say, it is only by being acknowledged or recognized … Man is human only to the extent to which he tries to impose himself on another man in order to be recognized by him. As long as he has not been effectively recognized by the other, it is this other who remains the focus of his actions. His human worth and reality depend on this other and on his recognition by the other. It is in this other that the meaning of his life is condensed (Fanon 2008, 191).

Recognition thus conceals normative blueprints against which it measures its objects. Recognition can only understand the Other's difference through the normative category of identity. This dialectic is paradoxical in that it acts against its own commitment to difference. As Fanon also gestures towards, the normativity of recognition unfolds as a *disciplinary* (Foucault 1977) process. It has, in other words, an effect on the subject that claims it or is subjected to it. For Fanon, the capacity of recognition to demand transformation has existential and psychological effects on the unrecognized subject. This is the *performative* (that is, *productive*) character of recognition as a theory of *identification*, of *constructing*, rather than merely recognizing identity. The effects on the oppressed's own subjectivation are the object of Fanon's concern in *Black Skins, White Masks*.

The oppressed subject's struggle for recognition, according to Fanon, is foreclosed by its necessary recourse to the 'master's' compassion. "The desire … to be recognized", continues Oliver, "is the paradoxical desire created by oppression. It is the desire to become objectified in order to be recognized by the sovereign subject to whom the oppressed is beholden for his or her own self-worth (Oliver 2001, 24). Furthermore, "it is only *after* oppressed people are dehumanized" – that is, they are denied recognition – that they seek acknowledgment or recognition of their humanity. More perverse is that they see recognition of their humanity from the very group that has denied them of it in the first place" (ivi 26). This aspect is for Fanon what binds the oppressed to the oppressor as a necessary reference for the bestowal of agency.

Hegel's master-slave dialectic of recognition is thus denounced by Fanon and many of his readers for its reproduction of colonial forms of power, not only in the production of oppressed subjectivities, but also to the extent that the only imagined alternative to oppression is to oppress in turn: a reversal of roles in the plantation drama. In other words, the dialectics of recognition submit subjects to what Sukaina Hirji calls "oppressive double binds": "mechanisms that both are a product of, and serve to reinforce oppressive structures" (Hirji 2021, 649). The *or-else* logic of recognition leaves the oppressed subject with the only option to assimilate and assume the 'master''s identity – and thus take the role of the oppressor – or renounce to be granted agency and the rights associated with the juridical-ontological concept of 'shared humanity'.

It would be ironic, if it was not so dramatic, that, in order to present themselves 'recognizable' as subjects in the eyes of the masters, the subaltern must perform identities that are not their own: either in the key of 'racial uplift', through the presentation of a version of themselves that fulfils the terms set by the oppressor (Gaines 1996); or, alternatively, by way of the adoption of "strategic use of positivist essentialism in a scrupulously visible political interest" (Spivak 1987, 205) – that is, by assuming collective forms of identity renouncing complexity in favor of legibility[6]. It is as if in order to be granted a voice in the ethicopolitical arena, the oppressed must allow the oppressor to speak for them (what Spivak and Haraway call 'ventriloquism' – Spivak 1994; Haraway 1999) or make an 'impression' of the oppressor (what Bhabha calls 'postcolonial mimicry'[7] – Bhabha 2004).

Fanon addresses this problem in (existentialist and psychoanalytical) terms of subjectivation. For Fanon, subjectivation is shaped by both "ontogenetic" and "sociogenetic" processes – however, it is the latter, externally-derived cultural, social and political forces, that overdetermine the ontology of the racialized oppressed (Fanon 2008, 11; Wynter 2001). The right to self-determination is thus taken away from the systematically unrecognized, who is "acted upon" (Fanon 2008, 220). From this Fanon concludes that racialized, marginalized, colonized and subaltern groups must enact forms of "effective disalienation" (ivi 4), articulate new forms of self-actualization arising from their own experiences, free from the dependency on colonial masters: in the words of Oliver, "active meaning-making and self-creation are necessary to fight oppression and overcome the psychic damage of colonization" (Oliver 2001, 29).

The paradigm of recognition is thus exposed as crucially depending on external bestowment and intrinsic normativity, and thus constitutively coercive and precarious:

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[6] As Julia Kristeva notices, this 'logic of identification' is always already grounded on a primordial sacrifice, which will then be lived by the subject as a constitutive lack (Kristeva 1986, 194).

[7] It is important to note, however, that practices of 'disidentification' (Muñoz 1999) such as that which Homi Bhabha relates in terms of 'postcolonial mimicry' (Bhabha 2004) can be strategically utilized against colonizers to expose the violence of their understanding of difference. A similar concept has been proposed by Judith Butler in the context of the performance of 'butch' lesbian identity (Butler 1996).

the 'slave' of Hegel's dialectic is shown as fundamentally subordinate, unable to free themselves from the grip of recognition as a dialectical movement. Furthermore, when recognition is imagined as a warlike struggle between archetypical figures of 'master' and 'slaves', it simultaneously hypostatizes situated categories of subjectivity, while at the same time depriving them of their historicity: Hegel's recognition theory thus emerges as predicated upon a diagrammatic "naturalization of power" (McNay 2008, 75-6), devoid of any embodied specificity[8]: 'masters' and 'slaves' are not anymore historical figures, but archetypes of subjectivity that conceal the situatedness of power.

SUBJECTIVITY, IDENTITY, DIFFERENCE

[8] Critiques of recognition from a feminist framework have also been advanced from similar grounds. An early condemnation of Hegel's recognition theory can be found in Italy's own feminist activist and art critic Carla Lonzi's pamphlet *Sputiamo su Hegel* (Lonzi 2003). For Anna Camaiti Hostert,

> *Lonzi focused her attention on the* Phenomenology of Spirit *and on the slave-master relationship that serves as its guiding principle. This relationship, thanks to its capacity to subsume within the principle of rationality and therefore of reality the man-woman relationship, prevents the latter from being inscribed in the human-social realm. While the master-slave relationship is a relation between men on which all social coexistence and dialectics are based, the man-woman relationship may be construed as a stable and natural datum, centered on a sexual essentialism and a hierarchical structure with man at the top and woman at the bottom. But revolutionary Marxian dialectics is also based on the slave-master dialectic, for while it has criticized and subverted the bourgeois connotations of Hegel's position, it has maintained intact its theoretical structure, without altering 'social roles and without 'a substantial change in values.'* (Camaiti Hostert 2008, 21).

In the anglophone and American context, along with the aforementioned Fraser, feminist and intersectional critiques of recognition in similar keys have been advanced by Judith Butler (Butler 1997), bell hooks (hooks 1991) Lois McNay (McNay 2008; 2014) and Kelly Oliver (Oliver 2001).

At the heart of every model of recognition is a theory of intersubjective relation between identity and difference. Recognition along the lines of Hegel, is also a theory of subjectivity. Or rather, recognition can be construed as a model of *identification* or *subjectivation*, of making and being made into a subject – political, existential, social subject. The conjunction of the precognitive and performative character of recognition, however, makes it so that recognition can only capture and *produce* its subjects along the coordinates of the ontological categories of identity, difference, subjecthood (and even 'humanity') it presumes. However, recognition is able to conceal this power under the semblance of empiricism, which enables recognition to present itself as a diagrammatic, objective schema: a structural diagram of signification that Deleuze and Guattari call an "abstract machine" (Deleuze & Guattari 1987).

As Fanon evidenced, recognition implies a struggle for the constitution of subjectivity. Critiques of recognition ethicopolitics have thus centered around their 'naturalization of power', significantly overlapping with critiques of similarly structuralist diagrams of subjectivation, such as Jacques Lacan's and Louis Althusser's. Although a proper engagement with these theories is beyond the scope of my project, a brief overview allows us to evidence a fundamental shortcoming of recognition. Structural psychoanalyst Jacques Lacan's theory of subjectivation follows a diachronic schema similar to Hegel's: in his notion of the 'mirror stage' the child, by seeing themselves reflected in the mirror, acquires an awareness of the Self, aways conditioned by alienation, as the mirror reifies its image (Lacan 2007)[9].

Significantly, Fanon engaged directly and implicitly with Lacan's mirror stage to situate it in the embodied social sphere of the Algerian colonial context. Through this standpoint, the 'mirror' is not a neutral objective form of representation but a disciplinary one, that casts the image of the oppressed through the normative and distorting gaze of the oppressor. For Fanon, this is the cause of the colonized's alienation (Fanon 2008, 11), which he considers in terms of the 'epidermalization of inferiority' (ivi xv), an inscription of the racial body schema of recognition onto the

[9] It is possible to trace the influence of Hegel's master-slave theory of recognition on Lacan's 'mirror stage' theory back to Lacan's attendance of Alexandre Kojève's history of philosophy classes in the 1930s (Van Pelt 2012).

oppressed's psyche. Another significant critique of the mirror stage as a theory of subjectivation is Félix Guattari's, for whom subjectivation processes are ontologically embodied, and conditioned by a multiplicity of vectors that cast recognition as constitutionally *polyphonic* and unstable, as opposed to the teleological diachronicity of Lacan's theory (Guattari 1995).

On the other hand, Althusser's constructivist theory of subjectivation as "interpellation" is similarly predicated on subjects' internalization of the response to recognition, vocally enunciated by law enforcement and other state *apparati* by the phrase 'Hey, you there!' (Althusser 1984). Most importantly, by drawing precisely from Fanon, Judith Butler has disengaged interpellation from its universalist connotation, to re-situate it in the "racially saturated field of visibility" through which state *apparati* operate (Butler 1993, 15). Fanon's well-known account of his encounter with a white boy in colonial Algeria, who, upon seeing him shouts, 'Look! A Negro!' (Fanon 2008, 89) resonate with Althusser's scene in which, the subject is visually recognized and vocally interpellated – a scene which, however, for Butler, cannot be understood without assessing the import of the racist body schema that overdetermines skin color.

Ethicopolitical theories of recognition and theories of subjectivity and identity have thus significantly intertwined. This is due to multiple factors: 1) because, as we have seen, recognition is at its core a theory of identification (from the perspective of the recognizer and in a semiotic frame), of subjectivation (from the perspective of the recognized and in an existential key), of and subjection (from the perspective of power) 2) because recognition necessarily requires the *a priori* precognition of its objects and subjects (of the oppressed as to-be-recognized, of what constitutes the difference of the 'Other', of humanity as a juridical-ontological category); 3) because philosophical theories of identity and difference in the Western metaphysical tradition are predicated upon the same dialectic logic.

What the model of recognition has in common with theories of identification, or subjectivation (and conversely, what their critiques aim to expose) is the *productive* (i.e. disciplinary) character of recognition, concealed under its *empirical* façade, which allows for recognition to be cast as a moment of *discrimination*. Both theories of recognition along the lines of Hegel's, and theories of the making of the subject as an existential (Lacan's) or political category (Althusser's) are teleologically preempted,

dialectic schemas that occur in metaphysical void: the Self (in Lacan) or the Other (in Althusser) is phenomenologically encountered in a non-space which, although these authors connotate through scenarios, like in Hegel, remains nondescript, instrumental to the construction of recognition as a dialectical relation, empirically self-evident.

By stressing the role of the overdetermination of racial phenotypes, Fanon and Butler expose the discursive removal of these theories of intersubjective relations as unfolding in connotated social and material spaces and histories. On the other hand, by reframing subjectivation through the figure of polyphony, Guattari allows us to understand recognition as contingent on ontologically heterogeneous forces, which makes it constitutionally unstable and thus impossible to predict through the diachronic and teleologically simplistic schemas of Hegel, Lacan and Althusser, which foreclose any possibility of transformative encounters by positing two preestablished subjects. As a theory of the *production* of subjects and identities, implicit references to recognition have also been advanced in the context of the relation between identity and difference, with a particular attention to the question of the social construction of the ontological divide between Selfhood and Otherness, with different results.

Theories of identity and difference have been mobilized to expose how the dialectics of recognition are predicated upon *a priori* overdetermination of the difference of the 'Other', in terms of transcendental, irreconcilable 'radical alterity', or in the normative terms of identity, both notions that reify and essentialize difference. In this context, early interventions from postcolonial and feminist perspectives adopting the same constructivist approach that informs my project have proven enormously influential. Advancing a relational, rather than dialectic, ethicopolitical model, constructivist thinkers have not only exposed how the difference of the 'Other' is based on normative notions of identity, but also shown how difference is produced by and within situated practices of relation, such as recognition. If identity and difference are constructs, these theories argue, it follows that recognition is a *performative*, rather than objective, process of *othering*, situated in embodied historical time and space, and traversed by power relations (Oliver 2001, 2).

Many postcolonial and feminist thinkers have criticized the notion of identity and difference prescribed by recognition, by appealing to post-structuralist philosophical frameworks grouped under the umbrella-term of 'philosophies of

difference' (Donkel 2001; Currie 2004). As is widely known, these theories have confronted the classic Western metaphysical notion of identity as given, self-enclosed and self-identical, and of difference as its negative downside, upon which recognition and structuralist theories of identity and subjectivity such as Lacan's are predicated.

Too numerous to count, many scholars have argued for a radical reformulation of identity and difference, often by leaning on the philosophical framework of thinkers such as Jacques Derrida and Gilles Deleuze. The latter's notion of difference-in-itself attempts to liberate subjectivity from its normative dependency on essentialist constructions of identity (Deleuze 1995). For some thinkers like Spivak, as I have shown, identity must be mobilized only in conjunction with 'strategic essentialist' forms of claim-making aimed at pointed political objectives, (Spivak 2006). For other thinkers from marginalized groups, the exclusionary, ethnocentric and essentialist understandings of identity and difference of classic Western metaphysics have entailed a moving away altogether from the category of identity as a figure around which ethicopolitical demands can be advanced and community can be organized (Appiah 2019).

Others still have foregrounded difference as a category of subjectivity that refuses the organizing and hierarchical principles of identity (Irigaray 1993). In a similar way, postcolonial theories of *diasporic* identity have significantly contributed to the decoupling of identity from normative grids. Theories of postcolonial and diasporic identity like Stuart Hall's pioneering work (Hall 2021), Paul Gilroy's "fractal" notion of the "Black Atlantic" diasporic identity (Gilroy 1993) or Homi Bhabha's (Bhabha 2004) share with philosophies of difference the understanding of otherness as *immanently* co-implicated with identity according to which we "emerge as the others of our selves" (ivi 56). The forced displacement and the imposition of colonial and racial structures of oppression like colonialism, for these theories, makes diasporic identity resistant to the univocal, simplistic readings along the lines of national identity: diasporic subjectivities are rather formed at the intersection of many forces that make them polyphonic and hybrid.

Approaches to identity and difference grounded in the postcolonial experience of diaspora often reappropriate 'minor' figurations like the 'margin' and the 'periphery' in ways aimed to decenter dominant ways of knowing and being imposed by colonial

powers. Postcolonial theories of difference share with the new materialist theories that inform my project some core ideas in their shared grounding of philosophies of difference: the foregrounding of difference and immanence, the historicity of ontologies, the performativity of systems of knowledge, are all basic concepts shared by both discursive fields, with points of intersection and disjunction. Throughout this thesis, I will often put these theories into relation, by 'diffractively reading' through different texts. These theories orient my thinking and, in the next Part of this thesis, will allow us to better understand the stakes at play in the complex relation between algorithmic systems of recognition *vis à vis* the difference of diasporic subjectivities such as asylum seekers.

Recognition as a theory of identity and difference, has also been considered in its relation to *identity politics* as its attendant contemporary form of claim-making. In the contemporary context, an influential recuperation of recognition along the lines I have described (particularly that of Hegel and Althusser) are liberal political theorists Axel Honneth and Charles Taylor's. Honneth and Taylor's theory of 'recognition justice' is significantly grounded in moral philosophy and fundamentally retraces Hegel's in positing recognition as a phenomenological intersubjective experience on which an ethics of social relations can be based. Like for Hegel, for Honneth and Taylor all social struggles are struggles for the recognition of shared humanity, a basic ontological property and a grounding of ethics. To deny recognition is to discriminate, deny access to basic commons and rights (Honneth 1995; Taylor 1994; Chun 2021, 214; McNay 2008, 66).

From the standpoint of these two authors, systemically unrecognized groups, such as those of poor, subaltern, gendered, racialized and (dis)abled subjectivities can thus center their forms of claim-making around recognition. Following Honneth and Taylor's reappraisal of Hegel, recognition has made a return as an object of critical debate in the context of ethics, political theory and philosophy in the 1990s, when globalization and its ensuing multicultural politics necessitated a model through which to ethically attend to intercultural encounters. Recognition has thus been posited as a general theory of the ethical relation with difference – a difference which, however, recognition cannot truly ever accommodate.

On the opposite end of Honneth and Taylor, the most vocal critic of recognition has been feminist political theorist Nancy Fraser. Fraser has observed how, following the fall of the Berlin wall and the rise of globalization, struggles for social justice, especially from the political Left, have been reframed from a paradigm of 'redistribution', based on the elimination of economic inequality and the preeminence of 'class' as an organizing category to understand power relations and organize resistance, to one of 'recognition', where social inequality is traced back to a denial of basic rights grounded in the refusal to recognize the ontological basis of shared humanity (Fraser 2014). Grounded in the phenomenological empiricity of encounter rather than in the materialism of economic resources and power, recognition, for Fraser, is dangerously ambiguous.

For the political theorist, recognition intersects with the 'identity politics' in its foregrounding of identity and difference, selfhood and otherness, which recognition as a dialectical model presumes. The upswing in economical disparity and neoliberalism, whose privileging of individual freedoms fits well with the rise of so-called 'identity politics', along with the increasing abandonment of models of social struggle based on redistribution, has led Fraser to advance an integrated approach (Fraser 2000). For Fraser, the advent of globalization at the turn of the millennium and its ensuing 'multicultural question' have kept these debates alive to this day. The subsumption of identity politics into neoliberal capitalism – which, under the banner of representation and in conjunction with the rise of platform power has been able to reinstate forms of racial profiling, for instance – resulted in the renunciation of redistributive ethicopolitical models by marginalized subaltern groups in favor of recognition justice (Fraser 2014).

Fraser's early millennium observations have proven prescient. While Taylor scholar Jocelyn Maclure has conceded that recognition politics are at an "impasse" (Maclure 2003), as Chun has evidenced, the most poignant critiques of recognition and identity politics have been advanced by thinkers from the positionality of the systemically unrecognized. More recently, philosopher Olúfémi O. Táíwò, in his history of identity politics, has noted how this model, which has since become the hegemonic form of ethicopolitical claim-making in the West, has been "captured" by capitalist and neoliberal "elites" (Táíwò 2022), writing about its logic of representation in terms of

"epistemic deference"(Tuhus-Dubrow & Táíwò 2022). Táíwò is not the only contemporary philosophers and political thinkers to have manifested discontent with identity politics and attempted to overcome it.

In the recent years, following the global rise of the far-right and of racial violence, problematizations of the ethicopolitical model of 'recognition justice' in the keys we have explored thus far have also been advanced in the context of the upsurging 'Afropessimist' strand of critical race studies (Sexton 2016; Wilderson III 2021)[10], as well as among indigenous rights struggles, for example by Canadian First Nation political scientist Glen Coulthard. A passage from his own reappraisal of Fanon in a book aptly titled *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition* can serve us as a useful conclusive recapitulation of the most salient keys of this overview:

> instead of ushering in an era of peaceful coexistence grounded on the ideal of reciprocity or mutual recognition, the politics of recognition in its contemporary liberal form promises to reproduce the very configurations of colonialist, racist, patriarchal state power that Indigenous peoples' demands for recognition have historically sought to transcend (Coulthard 3 2014).

Though still minoritarian, arguments along the lines of Táíwò's and Coulthard's are growing in popularity in cultural studies and political theory due to some characteristics of the present conjuncture, marked by an increasingly polarized political discourse characterized by the hegemonic force of capitalism and neoliberalism across both ends of the ideological spectrum, the failure of the cosmopolitan and 'post-racial' promises of globalization, as well as with the inscription of recognition into governmental systems of control and surveillance. It is in the awareness of the political

[10] Though I find Afropessimism and its attendant ethos of self-determination decoupled from white-bestowed recognition of great interest and extreme relevance in the current conjunction marked by the convergence of neoliberal and far-right racial politics, it also has been found complacent with certain forms of 'methodological nationalism' in its hypostatization of the figure of the (African American) slave as ultimate marginalized subjectivity, thus participating in what critics call 'oppression olympics'. For a critique of Afropessimism in this sense, see Greg Tate's (Tate 2021).

present that I situate my thinking and focus my attention to recognition as a paradigm which, although of whose discontents we have been aware for a long time, subtly makes its way back both into the systems that capture subjects, and the politics that attempt to resist it.

THE SCOPIC REGIME OF RECOGNITION

Critiques of identity politics as recognition's attendant form of claim-making have often considered its 'scopic regime' (Jay 1993), the 'ocularity' (Acid Horizon 2023) of recognition schemes that ties visibility and representation with knowledge and power. Attention to these critiques can expose further drawbacks of recognition. Since its early formulation as well as "in contemporary discussions, recognition is often accompanied by *visibility* as its political partner. Demands for recognition are also demands for visibility" (Oliver 2001, 147, my emphasis). From this perspective, to be able to see the signs of humanity in the 'Other' is to account for them; on the other hand, being seen is to be empowered, afforded agency – conversely, to invisibilize equals to unacknowledge; not being seen is to be disempowered, denied the rights and agency.

Recognition along these lines is figurated as a one-to-one encounter occurring in the broad daylight of the metaphysical non-space of diagrammatic schemas of the structuralist thinkers we have considered. Kelly Oliver directly relates recognition's underlying scopic regime with a dangerous reification of relations, where subjects and objects are imagined as irreconcilably separated. In this understanding of recognition, for Oliver,

> vision is reduced to an objectifying gaze. Recognition or misrecognition supposedly results from vision attempting to bridge the abyss of empty space between the subject and its object. Vision supposedly fixes the object in a gaze either in order to examine it or as the result of misrecognizing itself. Either way, the seeing subject is imagined as cut off from its object by the abyss of empty space that vision must span in order to reconcile subject and object … It is this notion of vision as both alienating and bridging, and the notion of space as empty abyss, that gives rise to many problems with theories of recognition/misrecognition. Only if we imagine

ourselves forever cut off from others and the world around us do we need to create elaborate schemes for bridging that *gap* (Oliver 2001, 11, my emphasis).

In other words, from the point of view of critics like Oliver, recognition's underlying visual episteme conceals the inherent material, situated character of power relations. Vision, in this sense, conceals the forces and vectors of power that situate embodied encounters in material and social space, by presenting recognition as purely empirical, rather than historically and tropically specific and performative. This *perceptualization of recognition* has been discussed in terms of a naturalization of power in feminist (McNay 2008) and critical race studies (Bonilla-Silva 2013) frameworks as a discursive othering device that maintains social categories and hierarchies. Recognition is able to perceptualize itself by discursively erasing the positionality of the character of the subjects from which recognition is enunciated, as well as of the historicity of recognition itself as a practice. By invisibilizing situatedness, recognition naturalizes power structures, and participates in their maintenance.

We have seen this operation at work in Lacan's and Althusser's models of subjectivation, in which recognition is a diachronic schema that occurs in visual fields. One other well-known example of a fundamentally visual construction of recognition as an empirical process acknowledgment of difference is Emmanuel Lévinas' grounding of ethics on the embodied encounter with the uniqueness of the Other's face, a sign of their 'shared humanity'. Though presented through a phenomenological frame that emphasizes embodiment, Lévinas' ethics naturalizes power by depriving encounters of their historical and tropical specificity (Lévinas 1995; Oliver 2001). The embedding of recognition in a visual regime along Lévinas' lines can also reinforce the historical overdetermination of phenotypes as signifiers of 'otherness': let us recall here Fanon's encounter with the settler boy: here, the perceptualization of recognition naturalizes "racial body schemas" (Fanon 2008). By presenting itself as perceptual, grounded in the 'empiricity of flesh', recognition ties back to its principal meaning of *discrimination*.

Such forms of perceptualization often rely on an invisibilization of whiteness as the concealed normative site of enunciation from which recognition (as vision) emanates (Dyer 1997). The invisible white gaze can capture the racialized subject in the oppressive double bind of recognition, *invisibilize* in turn or render *hypervisibile*, like in

Fanon's case. The spectrum that racialized subjects must navigate between visibility and hypervisibility has been a central topic of concern for postcolonial studies and especially Black feminism (hooks 2014), and has surged back to prominence in the recent years as human encounters are increasingly technologically-mediated by surveillance and automated recognition technologies exacerbate unbalanced power relations (Browne 2015). As the collective Acid Horizon suggests in their recent pamphlet *Anti-Oculus: A Philosophy of Escape,* recognition is predicated upon the episteme of "ocularity", of which

> racial ocularity is one of, if not *the*, oldest continually operating form of ocular practice … The word 'race' itself is etymologically derived from recognitive schemas — that of recognizing distinct breeds of animals in agriculture and distinct theological breeds of humans. Christians in Muslim-controlled Spain used the term '*raza*' to describe Muslims and Jewish people … One of the most effective techniques of the ocularity of race was the production of racial categories that came with in-built presuppositions of naturalized metaphysics or being 'natural,' i.e., that racial categories of recognition and identification were none other than pre-given 'natural kinds' (Acid Horizon 2023, 80-81).

For the members of Acid Horizon, "functions and practices of recognition inscribe meanings that allow for the identification of subjects" (ivi 50), but through their presentation as empirical practices of "sensing" (ivi 56) they discursively erase those very identity categories they prescribe and constitute.

Moreover, by presupposing a subject and an object, the visual paradigm inherent to recognition construct and reinforces the (Cartesian and Kantian) 'gap' between them as ontological and metaphysical, thus irreconcilable. It is also through the understand of beings as fundamentally separate entities that recognition becomes *discrimination* (again understood here in its etymological meaning of *separation*) among different ontological categories. Finally, from a political standpoint of the forms of claim-making entailed by this understanding of recognition, perceptualization also allows to conflate recognition with visibility and representation, facilitating an understanding of recognition as an end in itself, where seeing and being seen are mistook with the attribution of agency.

Motivated by similar concerns, Martinican poet and philosopher Édouard Glissant's characterization of the universalism and coloniality of Western ethnocentric systems of knowledge in terms of 'transparency' applies to our context. In his philosophical anthology of texts *Poetics of Relation*, Glissant considers ethics and aesthetics as inter-related and co-constitutive. He dedicates two chapters of his book, titled 'Transparency and Opacity' and 'For Opacity' to the language politics of translation and the possibilities of resistance of diasporic language practices (Glissant 1997). Glissant's treatment of transparency and opacity is grounded in a broader preoccupation with the politics of multiculturalism engendered by an increasingly globalizing world (the book being first published in 1990) that exceeds the context of the politics of translation, lending themselves to be transposed into our examination of the ethicopolitics of recognition as a relation grounded in (and producing) specific notions of identity and difference.

As scholar of French Caribbean literature and translator Celia Britton writes, in fact, "Glissant [is] concerned with cultural difference. How do we, as individuals and as communities, relate to what is socially and culturally *other*? Central to this is the critique of colonialism and racism, which underpins all Glissant's writing" (Britton 1995, 309, original emphasis). Transparency and opacity can thus be mobilized as conceptual tools with which to simultaneously critique the ethicopolitics of recognition as a form of relation reproducing neocolonial structures of oppression, and its embedding in technoscientific practices, as well as offer possible avenues for resistance. Transparency and opacity are thus conceptual figures in which ethics, politics and aesthetics intersect.

The poet describes transparency as the impulse to 'comprehension' (which he understands in his etymological meaning *taking-with*, appropriating) that marks Western politics of translation *vis à vis* diasporic, postcolonial language practices. However, his considerations can be transported onto our characterization of recognition. One of the most relevant takeaways of Glissant's line of thinking for our purposes is his understanding of the 'transparent' politics of translation as grounded in the discursive erasure of its own situated and performative character, which translation achieves by presenting itself (as well as its objects) as transparent – that is, universally knowable along objective coordinates. The figure of transparency thus invokes a

"clarity" which, "historically, has … been the prerogative of the colonial power" (ivi, 310). "A generalizing universal", Glissant writes, translation as transparency "is always ethnocentric" (ivi 117). Recognition, as we have seen, is predicated upon the same epistemes.

Presenting itself as transparent, translation manages to conceal the distortions introduced by its interpretive lens, its role of mediator, and thus of its non-neutral, situated character. Like recognition, it naturalizes power by presenting itself as empirical observation. Glissant highlights how transparency has the capacity to reshape in its own image the very objects it claims to merely recognize, in the same way that recognition translates its objects according to its preordained categories. For the poet, the politics of translation based on transparency are marked by an injunctive (that is, disciplinary) quality: faced with the illegibility of linguistic difference, transparent translation renders legible what is constitutively illegible: "both learning a language and translation have in common the attempt to give 'some transparency' back to a text" (ivi 115). This aspect brings to light the performative and disciplinary character of translation.

In considering language politics, Naoki Sakai has written that "translation is not secondary or derivative to meaning or language; it is just as fundamental or foundational in any attempt to elucidate these concepts" (Sakai 2009, 170). Here Sakai simultaneously points to translation's ability to present itself as objective, while gesturing to its performative agency, which, in its attempt to clarify, is able to transform a text according to its own pre-established coordinates of legibility: languages as individuated objects of knowledge emerge in their encounter with translation. For Sakai, regardless of its efforts to present itself as transparent, translation intra-actively shapes the objects with which it comes into contact, to the point that we can 'know' its objects only through translation.

For Glissant, transparent translation also follows a monolingualist episteme. Postcolonial and translation studies scholars Simona Bertacco and Nicoletta Vallorani consider that this idea of translation "has not only replaced actualized translation … but also prescribed the conventional way of seeing languages and cultures as *neatly distinct and separate* (Bertacco & Vallorani 2021, 25, my emphasis). Transparent translation thus assumes pre-established categories and notions of (ontologically

separate) languages and cultures. Unable to grasp the complexity of postcolonial and diasporic language practices that elude its coordinates of legibility, 'transparent' attempts to clarify them end up reducing them into fixed, essentialized objects of knowledge. Either, as I have argued, recognition can accommodate for an immanent, *polyphonic* notion of its objects and subjects: Glissant's transparency and my characterization of recognition also share this 'monocausal' episteme.

As evidenced by Sakai, translation, like recognition, is performative: it shapes its objects of knowledge. As we shall see in a moment, the idea of 'languages' itself, and their 'subset' categories of 'accents' and 'dialects' emerge from within their encounter with translation. As we will see following Glissant into the next Section, for all the attempts of translation to make legible diasporic language practices, it necessarily clashes with their own irreducible *opacity*. In this sense, by positing linguistic difference as an object of knowledge it cannot ever truly account for, *all translation is mistranslation*. Like recognition, whose objects are shaped in the encounter with its 'grids of intelligibility', Glissant and Sakai argue, we can only encounter the objects of translation after they come into contact with its distorting interpretative lens.

Again, Sakai's reflections are instructive here: "translation", he writes, "indicates the trace of contact with the incomprehensible, the unknowable, or the unfamiliar, that is with the foreign, and there is no awareness of language or meaning until we come across the foreign" (Sakai 2009, 170). Glissant's notion of transparency is thus a powerful critical tool through which we can assess recognition, and from which we can advance a radical critique. Like recognition (human and algorithmic, through sight or listening) transparency invests its objects with positive epistemic values: literary and oral cultural productions, as well as the identity itself of the diasporic 'Other' are considered in their capacity to be comprehended and made legible. This translation however cannot but originate in the *a priori* establishment of fixed notions of its objects – in turn transforming them according to its pre-established categories and according to its own coordinates.

The notion of transparency thus lends itself to being transported into our own assessment of recognition, and allows us to further situate the discontents of recognition extending into the multidimensional aspects that I will consider in the next Chapters. Recognition in the aural regime of *listening*, as well as operationalized by

machines as *algorithmic recognition,* recognition preserves its fundamental epistemes that transparency allowed us to expand upon. Significantly however, Glissant is not only interested in situating and criticizing the transparency of translation, but also takes up the challenge of proposing radical alternative frameworks through which not only to understand the limitations of transparent ethicopolitical models and systems of knowledge, but also to attempt to move beyond them. Glissant's response to the discontents of transparency is the notion of *opacity.*

OPACITY

Though emerging from a different context than our own, Martinican poet and philosopher Édouard Glissant's definition of opacity can offer us a model able to overcome and resist recognition. Opacity, as Glissant defines it, is a right to be exercised, grounded in a framing of difference as constitutively unrecognizable. Opacity can thus be mobilized as a tactic of resistance, carried out by aesthetic means, against the intercultural and intersubjective models of relation of Western modernity, marked by neocolonial practices and characterized by the episteme of transparency, like recognition. Like his consideration of transparency, Glissant's notion of opacity also lends itself to multiple adaptations. In particular, opacity is a productive conceptual figuration to think through the objects of knowledge I will consider in the next Part of this project, where an algorithm attempt to recognize the voice of asylum seekers.

However, my own mobilization of opacity for a different context than that from which it emerged must not either be universalist in intent. In fact, a proper consideration of the context in which Glissant developed it, allows us to shed new light to our own subject matters as well. Glissant defends diasporic language practices' "right to opacity", to resist Western translation policies, marked by asymmetrical power relations and operating under the banner of transparency (Glissant 1997). Glissant's notion of opacity, for Britton, "is a defence against the objectifying gaze of" systems of knowledge and relation based on the episteme of transparency, such as translation and, in my understanding, recognition as well. "Opacity, in other words, resists and contests *understanding*. It asserts that the act of understanding, however well-meant, is either an objectifying reduction of the other to pseudo-universal categories, or a false

identification of the other with oneself that annuls his difference" (Britton 1995, 310, original emphasis).

Opacity thus describes the right of diasporic language practices (as well as the identity they are supposed to stand for) to right to resist translation – or rather, any translation that, by assuming a transparent episteme, forces language practices to turn into the essentialized version they prescribe. As a productive aesthetic, ethicopolitical and, as we shall see, ontological-epistemological concept, opacity can be mobilized in opposition to recognition, and becomes extremely productive in the context of our survey of possible models able to not only critique it, but actively resist it. Although, as I argue, opacity transcends its use in the context of literary studies, an attentive consideration of this concept from within the specific instance of the politics of translation can further nuance this concept to expose other aspects useful for our purposes.

For Glissant, diasporic language practices are involved in a relational exchange with the world that keeps them in a state of constant transformation. The changing nature of language practices, for Glissant, is both an effect of the forced and unforced coming into contact of cultures, through colonialism, globalization, or diaspora. He calls this historic process *creolization* (Glissant 1997, 34). For the poet, the creole language practices that are its subjects, are marked by historical structures of oppressions: colonialism has forced them into contact with other cultures that imposed their own systems of knowledge, transforming language in the process. Significantly, he also understands the contemporary liberal politics of intercultural translation as a continuation of the ethnocentric practices of categorization and systematization of cultures and identities typical of colonialism.

Glissant acknowledges how historically unbalanced power relations of colonialism produced and systematized language practices into fixed objects and hierarchies, privileging 'national languages' against 'dialects', 'creoles' and 'pidgins'. We find echo of this idea in Louis-Jean Calvet's 1974 book *Linguistique et Colonialisme: Petit traité de glottophagie* ('Linguistics and colonialism. A little treaty on glottophagy') in which he observes how, as a para-scientific discipline, linguistics has been historically complicit with colonial practices and narratives in their shared effort to provide scientifically and metaphysically justified hierarchies to legitimize the

subjugation of indigenous people (Calvet 1974), resulting in the 'epistemicide' (de Sousa Santos 2015) of their language practices, which he relates as a form of 'glottophagy'.

For contemporary sociolinguist Cécile Canut, even the notion of 'languages' itself as individuated, clearly differentiated, fixed objects of knowledge is the product of colonial structures of oppression and of what she calls the "order-of-language", a "linguistic ideologic apparatus" operating by "the reduction of language practices into fixed categories called 'languages' (*langues*), erected as the only legitimate objects by linguists, objects then instrumentalized in political ventures" (Canut 2022, 46). Linguistics' impulse to the systemization and categorization of languages must then be contextualized within colonialist enterprises' dependance on, and its consequent advancement of, social and 'hard' scientific disciplines and practices in maintaining racial hierarchies (Bauman & Briggs 2003).

Linguistic objects of knowledge such as 'accent' and 'dialect' are also shown to emerge from colonial structures of oppression. Barbadian poet Kamau Brathwaite, in his seminal lecture on Caribbean literature *History of the Voice*, writes that

> dialect is 'inferior' English. Dialect is the language when you want to make fun of someone. Caricature speaks in dialect. Dialect has a long history coming from the plantation where people's dignity was distorted through their languages and the descriptions that the dialect gave to them (Brathwaite 1984, 266).

Dialect, for Brathwaite is an othering device produced by colonialism and slavery's coercive comparison of indigenous languages with 'proper' national languages of the settlers. Similarly, the authors of a recent, foundational text in the emerging field of critical accent studies write that "[accent] is a universal category masquerading as particular; it is an ineluctable feature of collective expression trafficked as a sign of individual identitarian difference" (Rangan et al. 2023, 3–4). For these authors, dialect and accent are not natural linguistic categories to be apprehended through a positivistic (i.e. transparent) recognition schema, but are rather coterminous with it: as objects of knowledge they emerge only through contact with the systems of knowledge that claim to merely recognize them.

We can also understand Glissant's, Calvet's and Canut's account of the effects of colonialism on language practices along the same lines of Ochoa Gautier's consideration of colonial *mishearings* of indigenous Colombian vocal practices I have mentioned in the Introduction. Whereas Ochoa Gautier considers this system of knowledge production an "acoustic assemblage" in which many practices and disciplines come together in the production of categories of voice that suit colonial structures of power (Ochoa Gautier 2014, 22), these authors' accounts of the production of linguistic objects of knowledge could also be characterized as a 'linguistic assemblage'. As we have seen with Sakai, in fact, individuated objects of knowledge such as the 'unique voice' or 'national language', are not only historically and tropically situated, but can only be encountered through the systems of knowledge that, in attempting to capture them, end up producing them.

Glissant is acutely aware of the continuation of colonial practices language politics in the present, inherited by neoliberal attitudes towards multiculturalism and its attendant language politics, predicated upon essentialized, objectified versions of 'authentic' 'native' languages. His attention to the impact of colonialism on the establishment of fixed linguistic objects of knowledge called 'languages', 'dialects' or 'accents' situates practices of intercultural relation (such as translation and recognition) in historical and tropical specificity. Against the tendency of these practices to naturalize power by presenting themselves as purely perceptual (again, transparent), it shows how situated and unbalanced encounters with difference predicated upon these assumptions always already *produce* the 'Other' according to their pre-established coordinates.

The creolization of diasporic languages "carries along … into the adventure of multilingualism and into the incredible explosion of cultures. … It is the violent sign of their consensual, not imposed, sharing" (Glissant 1997, 34). Worldly encounters with other cultures and languages are an inherent part of diasporic and postcolonial oral and literary meaning-making. Diasporic subjects, migrants and asylum seekers must in fact continuously adapt and reinvent their practices of languaging to face unprecedented circumstances. It is these survival communication techniques that foreground diasporic language practices as marked by opacity. Long and perilous migration journeys not only put diasporic subjects in contact with a multiplicity of other languages

(of their peers, of the countries they traverse and to which they are forcibly moved or detained, of the country of destination in which they seek and must negotiate asylum), but also reshape their linguistic competence with regards to their mother tongue (D'Agostino 2021).

Diasporic and migrant subjects' multilingual practices of code-switching (which sociolinguists define as "the use of several languages or dialects in the same conversation or sentence … [affecting] practically everyone who is in contact with more than one language or dialect" – Gardner-Chloros 2009, 4) exceed any practice of recognition predicated upon univocality (i.e. monocausality, monolingualism) , necessarily compelling their failure. However, opacity, for Glissant, is also the *onto-epistemological* character of *all* language practices. It is not in fact only the experience of historical structures of oppression such as colonialism to keep diasporic language practices in a constant state of transformation. For Glissant, in fact, the multiplicity of diasporic languages does not emerge exclusively from (coercive or otherwise) interlingual encounter.

In a few significant passages, he gestures towards the ontological (that is, inherent) multiplicity of *all* languages. Still, his line of argumentation arises from his concerns in the ethical and aesthetic possibilities necessitated by the instrumentalization of diasporic languages, both from the side of the side of Western 'order of language' and its attendant transparent politics of translation, as well as a reaction to them on the part of diasporic writers and speakers in the key of a 'strategic essentialism', where linguistic identity is given back to Western translators in the purportedly authentic 'nativist' version they expect. This is what brings him to conclude that,

> the bolstering of old oral, vernacular, or composite languages, their fixing and transcription, will necessarily be subjected to the hazards of this *internal complexity* that is now part of the *system of languages*. It would be almost futile and even dangerous to defend these languages from a monolinguistic point of view, because this would enclose them within an ideology and a practice that are already outmoded. Next, any method of learning or translation today has to take into account this *internal multiplicity* of languages, which goes even further

than the old divisions of dialects that were peculiar to each language (Glissant 1997, 118-9, my emphases).[11]

For what concerns our present aims, it is relevant to unpack what Glissant calls the 'internal multiplicity' of languages.

Here Glissant's understanding of diasporic languages is remindful of Mikhail Bakhtin's notion of 'heteroglossia', the coexistence of language variety *within* each individual language, constantly shifting their boundaries from *within* (Bhaktin 1982). For Bakhtin as well, the *internal* variety of each language complicates any simplistic categorization of languages along the coordinates of the 'order of language' of classic linguistics, its hierarchical privileging of national languages as standard referents and subjugation of vernacular language practices. Like Bhaktin, Glissant points to multiplicity as an internal, that is, an *ontological* character of languages: this feature is not exclusive to diasporic language practices only, then, but to every language that does not refuse "to participate in worldwide entanglement" (Glissant 1997, 120).

Opacity emerges precisely from this internal multiplicity, which, for Glissant, is an effect of languages' lively becoming and entanglement with the world: their (too often coercive and predicated upon unbalanced power relations) relation with other languages, cultures and systems of knowledge. The epistemological indeterminacy emerging from languages' ontological multiplicity has also been considered in its ethical implications by Jacques Derrida in his text *Monolingualism of the Other, or the Prosthesis of Origin* (Derrida 1998). Derrida's conceptual move is, akin to Glissant and Bhaktin, grounded in a fundamental othering of *all* notions of language, even monolingualist and hegemonic 'national languages':

> the One of a language, which escapes all arithmetic (ac)countability, is *never determined*. The One of the monolanguage of which I speak, and the one I speak, will hence not be an arithmetical identity or, in short, any identity at all (1998, 30, my emphasis).

[11] A similar argument is made by Paul Gilroy in *The Black Atlantic* when, considering oral diasporic aesthetics, he is skeptical of the recuperation of asemantic practices of languaging and vocalizing by black artists as the image of the 'inarticulate' subaltern (the slave in the particular case he considers) is and has been a powerful othering device (Gilroy 1993)

Significantly, when Derrida (an Algerian-born French-speaking immigrant), in an oft-quotes passage, writes: "I only have one language; it is not mine" (ivi 1)[12], he is not (exclusively) pointing to his acquisition of French as a colonial imposition: in fact, he clarifies that "when I said that the only language I speak *is not mine*, I did not say it was foreign to me" (ivi 5, original emphasis), thus also gesturing towards the otherness *internal* to every language, even one's own native language, which renders impossible any attempt (self-)recognition according to the onto-epistemic schema of transparency[13].

The ontologically multiple and processual character of diasporic languages has been observed by a host of other postcolonial literary scholars and thinkers, too many to report within the scope of my project (Bhabha 2004; Capstick 2020). David Farrier has considered the ethics, politics of asylum, leading him to appeal to Bhaktin's notion of *double-voicedness* to consider asylum seekers' language practices, where "no instance of language [is] monologic, because each utterance contains multiple utterances and moments of speech" (Farrier 2013, 6). Rey Chow's reflections on 'postcolonial languaging' practices, also illuminate the "fundamentally plural and

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[12] The Italian reader will probably have heard in the echo of Derrida's words the voice of our greatest interpreter of this idea, Carmelo Bene, whose artistic and theoretical work is a sublime testament to the notion that we are 'strangers to ourselves', and to the ontological otherness at the core of linguistic and vocal identity.

[13] Postcolonial literary studies scholar Rey Chow has engaged in depth with Derrida's ethics of mono- and multilingualism in her brilliant *Not Like a Native Speaker: On Languaging as a Postcolonial Experience*. Here she contends that

whereas for Glissant endorsing the 'multiplicity' in multilingualism is the ethical way to 'confront the massive leveling force of language continuously imposed by the West,' for Derrida such multiplicity resides rather within language as an ontological given (Chow 2014, 32-3).

However, I argue that, due to his constant referral to the multiplicity of languages as 'internal' (as we have seen, an implicit adoption of Bhaktin's theory of heteroglossia) Glissant also establishes this as an ontological property of all languages.

multiple" that makes them "indeterminate" (Chow 2014, 31). These insights will be of great relevance for our case study in the next Part of this project, when I will consider algorithms that claim to be able to recognize the origin of undocumented asylum seekers from vocal linguistic markers. The failure to do so, I will argue, lies precisely in the impossibility of the voice to exceed any indexical signification of monocausal origin.

If on one side, the failed encounters with the opacity of (vocal, linguistic) identity is precisely what warns us against the flawed assumptions of these systems of knowledge; on the other, individuated objects of knowledge such as 'languages', 'accent', 'dialect' and ultimately 'vocal timbre' emerge as unknowable prior to their encounter with the material-discursive practices that shape them. Subjects systematically unrecognized by any system of knowledge presented as objective can thus claim a 'right to opacity' grounded in their processual liveliness and internal multiplicity that makes them 'untranslatable', irreducible along the coordinates of transparency. Glissant's notion of the internal multiplicity of languages giving way to onto-epistemological opacity is a powerful ethicopolitical intervention against the attempts of all practices of recognition (whether human or algorithmic, literary, visual or aural, biocentric or logocentric) according to 'transparent', positivistic coordinates, which inevitably transform their objects of knowledge and subjects into the essentialized version they claim to merely recognize.

The ethical import of Glissant's notion of opacity also lies in its foregrounding of unknowability as an aesthetic strategy of resistance to coercive recognition. Moreover, I argue that the power of Glissant's ethical and aesthetical figure resides in its twofold understanding of opacity as a 'right' to claim *and* as an onto-epistemic property of any lively object of knowledge. Opacity, in other words, must be ethically claimed and aesthetically performed, but is also *constitutive* of all lively objects of knowledge: languages, voices, bodies, identities. It is this character of opacity – which, expanding on Barad, we can call *aesth-ethic-onto-epistemological* (that is, grounding its ethical and aesthetical claims in the ontological properties of objects of knowledge) – that allows us to, at the same time, advance a radical critique to recognition and move beyond it.

Having situated opacity in its original context of language politics and postcolonial literary translation, from which Glissant's notion emerges, I now seek to

weigh the affordances of this concept to our discussion on voice recognition. Opacity, an optical metaphor, lends itself to being transported into the sonic realm. Rather than a conceptual stretch, my own unfaithful 'translation' of opacity as a sonorous concept is based on the inherent oral and aural character of all language practices. "To the Antillean", Glissant writes in fact, "the word is first and foremost a sound. Noise is a speech. Din is a discourse" (Glissant 1976, 96). It is also this sonorous aspect that makes, in fact, language practices ontologically multiple and thus, epistemologically unknowable. Significant similarities can be traced between Glissant's understanding of language as opaque and my characterization of the voice, as well as between the poet's account of translation as transparent and my own understanding of listening practices.

CONCLUSION

Throughout this Chapter, I have engaged with recognition as an ethicopolitical paradigm, interrogating its epistemes and exposing what I, through the work of many thinkers, identify as its discontents. I attempted to bring these discontents into focus by first engaging with Hegel's master-slave dialectic of recognition, where the ethical promise of mutual recognition is revealed to rest on asymmetrical and coercive power relations. Recognition, in Hegelian terms, is a violent confrontation that inscribes difference through opposition and negation. The dialectic does not resolve the division between master and slave but reproduces it. Fanon's decolonial critique of Hegel makes clear, the promise of recognition for the colonized subject is structurally foreclosed by the very terms of the dialectic: the oppressed are rendered legible only in relation to the oppressor, compelled to seek affirmation through the norms of whiteness and humanity defined by those in power. In this framework, recognition becomes a form of dependency that alienates the oppressed.

The limitations of recognition thus extend beyond political failure to epistemological foreclosure. If recognition is premised on a structure of *precognition* it is necessarily conditioned by prior knowledge, by an anticipatory schema that renders the Other intelligible only insofar as they conform to preestablished notions acting as norms. This recursive logic, in which recognition can only identify what it already knows, reveals the deep complicity of recognition with the operations of discrimination and

normativity. As such, recognition does not merely register difference: it constitutes it through its own 'grid of intelligibility' in which alterity is made visible only within the parameters set by dominant epistemologies. In this sense, the empirical 'recognition' of the Other is conflated with regulation.

In doing this, recognition ties with its 'principal meanings' of *(pre)cognition, identification* and *discrimination*. As a form of intersubjective ethicopolitical relation, recognition is presented as a gesture of acknowledgment of the Other's difference, as well as of its 'shared' human ontology and thus as a subject of rights. However, precisely in doing so, recognition overdetermines the Other and its 'otherness' based on the situated ideas and notions of alterity and of its signs. Although it presents itself as purely empirical, recognition ends up shaping its objects and subjects in the form it precognitively establishes. It is, in other words, a practice of *identification* (of *making* of identities) disguised as a cognitive process of *discrimination*, a term which I mobilize in its double meaning of empirical distinction among entities, and of segregation. The *perceptualization of recognition,* I have argued, *naturalizes power*.

Recognition's discursive erasure concealment of its own *disciplinary, performative* power allows recognition to reproduce systems of domination under the guise of justice. In doing so, it demands from the systemically unrecognized to become legible, *or else* risk being unrecognized. The oppressed, in other words, is left with no other option than to assimilate, or become an oppressor themselves. This is what I, with Hirji, have called recognition's *oppressive double binds*. As I have also attempted to expose, it is precisely in this demand for legibility that recognition reveals its *coloniality*. First, Hegel's positing of recognition as a struggle between a master and a slave is revelatory of the historicity of this form of power relation; at the same time, however, by positing these figures as archetypical and ahistorical, Hegel and his followers reproduce, rather than overcome, the unbalanced power relations that separate them.

Against this backdrop, I have also examined the intersections between recognition and broader theories of subjectivation, by pitting Lacan's and Althusser's models against the critiques advanced by Fanon, Guattari and Butler. These interventions have illuminated the ways in which recognition both reflects and sustains structural diagrams of power, in which subjectivity is constituted not through mutuality but through alienation, interpellation, and disciplinary capture. Butler's mobilization of

Fanon in her critique of Althusser, in particular, has underscored the discriminatory aspect that recognition is able to conceal under its empirical façade. Recognition, for Butler, is always already enunciated by historically and tropically specific subjects and positionalities, that can mark social and material 'fields of visibility' along gendered, racial and other discriminatory coordinates.

Recognition was also exposed to rest on visual paradigms. The *scopic regime* or *ocularity* of recognition, on top of overdetermining visual signs of difference as empirically self-evident (along the lines of Lacan, Althusser, and Levinas), is also able to cast the representation enabled by visibility as a form of justice in itself. The *politics of identity* that derives from this understanding of recognition have also been increasingly protested, especially from the oppressed, systemically unrecognized positionalities that recognition is geared towards. Glissant's intervention, in this sense, was able to bring to light further discontents of recognition and of its visual paradigms. The poet's characterization of the ethnocentric universalism of Western systems of knowledge that present themselves as objective, such as recognition, in the optical terms of *transparency* was also instrumental in my critique.

Although emerging from a significantly different background, Glissant's notion of transparency allowed to be transported in our context. In this sense, it afforded us to further substantiate how forms of intersubjective and intercultural relation, such as recognition and translation, discursively erase their performative and disciplinary character by posing as objective and neutral. What is more, it evidenced how these systems of knowledge rest on univocal (*monolingual* in the case of translation, *monocausal*, for recognition) paradigms, foreclosing their ability to account for the emergence of difference from a multiplicity of forces. Against the transparency of Western systems of knowledge, Glissant argues for the *opacity* of (linguistic) difference as emerging from the entanglement of a multiplicity that exceeds their coordinates.

I have identified in Glissant's notion of opacity a figuration able to not only move beyond recognition but actively resist it. When constituted by a heterogenous multiplicity, difference is cast as opacity. Emerging from *creolization,* a form of relation which, as Glissant significantly stresses, is marked by the violent history of colonialism, diasporic linguistic difference can locate in its own untranslatability the means of resistance. Transported into our own context, opacity argues for the unassimilable

incommensurability of difference as the object of recognition. Opacity bridges together aesthetics and ethics to find the means of resistance to violent epistemologies in the very ontology of difference. Opacity is thus an *aesth-ethic-onto-epistemological* concept that orient my thinking, in which I identify possible strategies of resistance against the aural and algorithmic practices of recognition I consider in the following Chapters.

2: LISTENING TO RECOGNITION

INTRODUCTION

Listening has been mobilized as a figure for ethics and politics in multiple senses, both as a form of recognition and as an attempt to move beyond it. In this Chapter, I trace some uses of listening as an aesthetic ethicopolitical practice to expose the inscription of recognition into models of listening. I argue that listening does not *inherently* entail justice – rather, the possibilities of its ethical dimension emerge from the way it is constructed and in the way it constructs its objects. In this sense, I will turn my attention to how different theories of listening as recognition have centered around the figure of the human *voice*, and especially of *timbre* as the imagined marker of corporeal difference, with different implications. As I pledge not to limit myself to critique, I will end this Chapter by surveying theories that have proposed listening as a practice of resistance against recognition, weighing their benefits and drawbacks.

Philosophers, political thinkers and cultural theorists have moved to the *sonic regime* of *listening* as a political figuration in response to the predicaments of recognition's scopic regime. Listening as an aesthetic faculty, is a learned process: it forms through the acquisition of 'audile techniques' – however, as we shall see, like recognition in a visual key, it can also be constructed as purely empirical and self-evident. It is also, as Eidsheim has noted and as I pointed out in the Introduction, negotiated between listeners and speakers – and yet, as I will point out, it can reproduce the same ontological divides posited by recognition as an 'ocular' model. In doing so, listening inscribes recognition's *perceptualization* and its consequent *naturalization of power*.

These aspects become particularly evident when listening is geared toward the voice and timbre as their target objects. The voice of the Other as an object of recognition can come to occupy the same role in the production of (gendered, racialized, etc.) difference as visual corporeal markers like skin color in visual recognition. Thus, I seek to situate how different formulations of listening as an ethicopolitical model have foregrounded timbre and especially *vocal timbre* for different

aims. By constructing timbre as voice or sound 'in itself' however, these theories have often reproduced the main discontents of recognition. This Chapter thus inscribes in my attempt to situate the historicity of (sonic) ontologies, but attempts to move beyond them by proposing radical alternatives.

THE SONIC REGIME OF RECOGNITION

As Robin James has recently evidenced, ethical theories of intersubjective relation, and their attendant politics, have been grounded in 'sonic epistemes' since the beginnings of Western ethical and political thought in ancient Greece. Particularly in the last decades, as a result of the increasingly evident drawbacks of a politics based on visibility, as well as in conjunction with a 'sonic turn' in cultural studies, listening and other acoustic figurations have been mobilized as alternative ehticopolitical model, in response to what we have identified as the discontents of the scopic regime of recognition. However, as James has pointed out, not all these are able to overcome the problems they lament, but reproduce them in different form (James 2019). For many sound studies scholars such as Salome Voegelin, in fact,

> [vision], by its very nature assumes a distance from the object … Seeing always happens in a meta-position, away from the seen, however close. And this distance enables a detachment and objectivity that presents itself as truth. Seeing is believing. The visual 'gap' nourishes the idea of structural certainty and the notion that we can truly understand things, give them names, and define ourselves in relation to those names as stable subjects, as identities (Voegelin 2018, xi-xii).

Whereas vision assumes ontological separateness, reifying perception and its objects, Voegelin argues, listening foregrounds entanglement. Understood this way, listening can repair for vision's *perceptualization of recognition* and its consequent *naturalization of power*. Furthermore, Voegelin argues, listening can 'blur' the contours of Self and Other, filling the 'gaps' between them with uncertainty. From this perspective, ethicopolitical theories based on listening, as opposed to vision, seem to recognize that "space is not an empty void. It is full of air, light, and the circulation of

various forms of electrical, thermal, mechanical, and chemical" (Oliver 2001, 12). Whereas space is constructed as an 'empty void' in visual-based theories of recognition, theories of listening, by foregrounding immersion and horizontal spatiality, can acknowledge the multiple forces that participate and mediate relations.

As Nina Sun Eidsheim has evidenced, however, the role of material mediators such as environmental conditions of the space in which listening as a form of communication occurs has been systematically erased in Western theories and practices of listening (Eidsheim 2015). Much like in visual theories of recognition that characterize space as an 'empty abyss', material and social space can be discursively erased precisely in virtue of its immersiveness, which renders it invisible. In Eidsheim's argument. environmental media is both a material phenomenon and a metaphor for the systemic concealment of situatedness in Western theories of listening. Similarly, electroacoustic musician, writer and curator François J. Bonnet has employed atmospheric phenomena as metaphors for the materiality of the space of listening[14]. His use of the figure of the 'fog' attempts to introduce onto-epistemological uncertainty into the space of listening.

[14] Another instance of a mobilization of environmental media in the same sense, is worthy of note to the extent that it by far predates Eidsheim's and Bonnet's new materialist theories of listening. Though firmly grounded in Enlightenment's faith in rational progress through dialectical argumentation, in the short 1805 essay *On How we Gradually Make up our Thoughts while We Are Talking*, Hegel's contemporary, Romantic 18th century writer, Heinrich von Kleist compares, the dialogue between an orator and his audience to an exchange of electrical charges (Kleist 2019, 43). Kleist's foregrounding of invisible material forces that elude the control of rational man in the production of (oral) meaning-making can be considered an early example of new materialisms' attention to non-human actants in the co-constitution of human worlds. Its relevance in the context of our discussion on the ethicopolitics of listening-as-recognition is made clear when we consider its exceptional character among Western traditional characterizations of recognition as a rhetorical struggle which, since ancient Greek philosophy, have been grounded in an understanding of the space of the political as a metaphysical arena in which articulated, rational, Men fully in control of their utterances, dialectically negotiate their demands by means of vocal intervention and listening (Rancière 2004).

For Bonnet, rather than an unequivocal relation occurring in transparent space, listening occurs in an 'infra-world' marked by uncertainty, able to blur subject-object 'gaps' (Bonnet 2017). The idea that the situatedness of listening entangles relations between Self and Other, introducing uncertainty between its subjects and objects, is reiterated by Voegelin: as opposed to vision,

> hearing is *full of doubt*: phenomenological doubt of the listener about the heard and himself hearing it. Hearing does not offer a meta-position; there is no place where I am not simultaneous with the heard. However far its source, the sound sits in my ear. I cannot hear it if I am not immersed in its auditory object, which is not its source but sound as sound itself (Voegelin 2018, xi-xii).

However, contrary to Voegelin, Bonnet admits that most Western theories of listening "[are] founded on the principles of identity and recognition, activated under the assumption of a relation of 'sameness', and with recourse to the reic [i.e. objectual] modality of the sensible" (Bonnet 2017, 6). As we shall see later, this is also true of practices of listening that, precisely in an attempt to overcome sonic recognition end up reinstating the universalizing gaze of vision, by idealizing the figure of 'sound itself'. Furthermore, as Veit Erlmann has noted, contrary to Voegelin's statement, most theories of listening in this vein assume the meta-positionality of an implied "invisible listening body", the "Western aural self" as the normative site from which listening as a form of recognition is enunciated (Erlman 2016, 164).

Listening can be mobilized as a reparative figure and practice able to materially fill the 'gaps' of vision, as Voegelin has proposed, offering a situated form of relational engagement decoupled from subject/object dialectics. Listening has thus often served the purpose of offering a discourse and a practice able to move beyond the drawbacks of the implied ocularity of recognition. More often than not, however, listening-based theories of recognition reinstate the dialectical logic and quasi-transcendental order of the scopic regime of recognition. This is most evident in recognition theories grounded in the figure of the voice. By centering listening around a specific notion of the voice (and, as we shall see, of vocal timbre), theories of listening as a model for ethical relations reiterate the harmful effects they seek to oppose. When "emphasis is placed

on the staging of the political voice" (Labelle 2021 4), however, the role of listeners in the *making* of the voice is often concealed.

Theories of listening as models for ethicopolitical human relations have often been grounded in the figure of the voice (Farinati & Frith 2017). As we have seen in the Introduction, Western metaphysics have considered the voice as a manifestation of the soul of speakers at least since Aristotle (Dolar 2006). The same philosophical lineage has also understood the voice as a symbol for political representation, as the primary medium through which ethicopolitical claims are advanced (Rancière 2004). However, by basing this understanding on a specific notion of the voice (articulated, intentional, significant), the right to vocal representation was not extended equally among all: the voices of women (Cavarero 2005), slaves (Garlan 1988), 'barbarian' foreigners (Boletsi 2013), children (Heller-Roazen 2008), the D/deaf-mute (Rée 2000) and non-human animals (Pettman 2017), considered less-than-significant, were excluded from the political community.

This logic of exclusion-inclusion grounded in voice's ability to signify (the speaker's moral character, their demands) has even lead contemporary philosophers to characterized this move as the founding gesture of the very category of the 'Political' in Western thought (Agamben 2017). The systemic exclusions engendered by a such understanding of the voice has brought philosophers to propose ethicopolitical theories of listening grounded in the voice *beyond signification*. The most important contribution in this sense, to which I will turn to in the following Section, has been Italian philosopher Adriana Cavarero's, whose project of 'revocalizing logos' grounded in the 'uniqueness of the voice' have been vastly influential in studies of the politics of sound and the voice. However, listening to 'sound itself' in the vein of Voegelin, or 'voice itself' in the way proposed by Cavarero, I will argue, can reinstate the discontents of recognition.

THE ONTOLOGY OF UNIQUENESS

In her book *For More than One Voice*, Cavarero proposes an ethics of listening based in the figure of the voice. In the framework of feminist political thought, Cavarero seeks to recuperate *logos* from the universalizing, transcendental order of Western metaphysics, by appealing to voice as a figure of embodiment and situatedness. For

Cavarero, voice can sound out the positionality of speakers beyond linguistic representation, thus *revocalizing logos*, and framing listening as a materially grounded form of ethicopolitical human relations.

Listening to the Other beyond semantic signification, attuning to the corporeality of their voice, for Cavarero, can repair for the systemic discursive removal of the body of classical Western metaphysical and ethicopolitical thought. Listening to the Other's voice, in Cavarero's model of relation, is to listen to their 'uniqueness', the embodied singularity of their identity, and thus being able to recognize them as human subjects of rights. Cavarero's characterization of listening as oriented to the corporeal humanity of the voice. Centered around voice 'itself', captured by the notion of *timbre*, her ethicopolitical theory of listening gives way to an "ontology of uniqueness" that forms the basis of ethical relation (Cavarero 2005).

However, when understood as the essential property of an individual, by way of which subjects intervene in the ethicopolitical arena, I argue, voice (and the identity it purportedly stands for) lends itself to multiple criticalities. Cavarero's ontology of uniqueness is an ethicopolitical model of recognition based on listening to the Other's voice thus assumes a biocentric and bioessentialist onto-epistemology of the voice that is more constraining than emancipatory. Here, voice necessarily signals the Other's alterity: though always already embodied, difference is not understood by Cavarero as produced within relations, and thus inextricable from power relations and from situated practices of voicing and listening, but as an essential property that marks speakers against their will, beyond their control, and thus always 'gives them away' lending subjects to recognition.

In the effort to decouple voice from the coercive power of language, opening up the field of signification to disengage *logos* from its implied transcendence, Cavarero's ontology ends up depriving vocal subjects of the right to self-determination, and voice of its agency – limiting its political as well as *aesthetic* transformative powers: it becoming. Cavarero's 'uniqueness' is a device of othering that fixates voice in an essentialist understanding of corporeal (especially sexual) difference, and then invests it with epistemological positivity. As Eidsheim has noticed, "there is a sense of inevitability in these approaches" (Eidhseim 2019, 10). It implies a form of

bioessentialism that "[limits] the possibilities of change and thus of social reorganization" (Grosz 1995, 48).

In voice-based models of recognition such as Cavarero's, the 'Other''s vocal difference is decoded through situated understandings of the voice and its features. For example, 'frequential binaries' overdetermines pitch as a biomarker of sexual difference (Brett & Woods 2006), while 'sonic color lines' divide white and non-white timbres (Stoever 2016). Listening in this vein not only reproduces but *produces* vocal difference. The inherent bioessentialism of Cavarero's theory condemns the Other to a normative relation to sameness: they are left no choice but to sound out the listener's idea of what their voice should sound like – *or else* be misrecognized, or silenced altogether. Furthermore, by neglecting the situatedness of auditory cultures, the diversity of audile techniques, and discursively erasing the active role of listeners in making sense of the voice – in other words, the emergence of vocal meaning from *within* relation – Cavarero's ontology of uniqueness *de facto* naturalizes power.

From the standpoint of models of recognition grounded in the 'material' voice, such as Cavarero's, "failing to respect the inherent differences between voices means … failing to recognize voice at all" (Couldry 2010, 8). Difference, however, is not understood by Cavarero as emerging through relation, but rather as an essential and fixed property of individuated subjects and objects. Cavarero's model thus reinstates the drawbacks of visual-based models of recognition, figurating listening as an epistemologically positivist practice which, even if grounded in voice beyond signification, reintroduces it by the back door of voice's materiality. As a corporeal figure for vocal difference allowing recognition beyond semantic signification, timbre's corporeal onto-epistemology is mobilized by Cavarero in support of her ethicopolitical model.

Vocal timbre appears in Cavarero's ethics as a sonic material figure that exposes the subject's 'true' identity against their will. Significantly, it is evoked in her account of the biblical story of Jacob, in which he hatches a plan to deceive his dying, blind father Issac to give him his last blessing, actually meant for his older brother Esau. He goes to Isaac claiming to be Esau, and though his voice gives him away, his goatskins clothes and smell manage to deceive his father, who takes him for his

firstborn and gives him his blessings (Cavarero 2005, 23-4). Although Jacob's plan succeeds, Cavarero concentrates on the fact Isaac recognizes Jacob by his voice.

Cavarero's mobilization of the biblical story of Jacob is informed by and reproduces the same operational principles of biocentric systems of knowledge, where the semantic content of speakers is constructed as always already liable to deception, whereas the 'corporeal' matter of the voice is accorded positivistic value: *the body cannot lie*. As we shall see in the following Chapters, biometric voice recognition technologies and Cavarero's ethics share similar premises and advance the same onto-epistemic moves, separating the hybrid event of the voice into different ontologies, and according its material and discursive features different epistemic virtues: for Cavarero, while Jacob pretends to be his brother in words, "the voice plays no trick. The voice – always unique and recognizable as such – cannot be disguised" (ivi 24).

Timbre also figures in Cavarero's account of William Shakespear's play where Juliet recognizes Romeo in the dark by his voice; here "recognition is vocalic" (ivi 238), the "*essential* bond between voice and uniqueness" (ivi 235, my emphasis) is indexed by timbre. As Robin James notices, vocal timbre as a marker of 'uniqueness' in Cavarero's model also serves the purpose of moving beyond collective identity and its stereotypicality. In her ethicopolitical system, the subject is to be recognized as an individual 'per se': "the voice is superior to social identity as a basis for political membership or personhood because voice is a more nuanced abstraction that registers fine-grained differences that social identities abstract away … grounding personhood in individuals' nongeneralizable idiosyncrasies, voice supposedly liberates people from compulsory conformity to ill-fitting and blunt stereotypes" (James 2019, 69).

Her "shift from identity politics to vocal politics" is thus aimed to provide a framework that "fixes the problem of identity-based social exclusion" (ivi 70). However, with James, I contend that Cavarero's ethics grounded in vocal timbre reproduce the very politics it protests. When vocal timbre is mobilized in this sense, I argue with James, it becomes a 'sonic episteme' inscribed and enforcing neoliberal politics. Though rightfully motivated by the attempt to move beyond the trappings of identity politics, Cavarero's establishment of uniqueness as the basis of ethical encounters is a misguided reproduction of what political scientist Jodi Dean calls the neoliberal

'enclosures' of the political subject, privileging personal freedom and individual will over collective organization, alienating subjects from their communities (Dean 2016).

By positing vocal timbre as a corporeal sign of difference (understood as the negative downside of identity), theories like Cavarero's also imply a "monocausal" (Weheliye 2005, 68) relation of sameness between voice and *individual* identity. In doing so, they rest on the material-semiotics of indexicality which, as I have shown with Eidsheim in the Introduction, reify and essentialize speakers. These theories also participate in the erasure of the participation of a multiplicity of historically and tropically specific forces in the production of sonic signification under the guise of indexical monocausality. Voice, for such models, is understood as an instrument of political representation and only to the extent that it signals singularity, rather than collectivity, intersecting with neoliberal politics.

In establishing vocal uniqueness as the basis of ethics, we are called back to Lévinas' ethics, equally predicated upon the individuality of the Other's face, to which I have briefly referred in the previous Chapter. Cavarero significantly engages with Lévinasian ethics, which she criticizes for its adoption of a visual and logocentric frame, but ends up faithfully reproducing, substituting the visual-material semiotics of the face with the vocal onto-epistemology of timbre (Cavarero 2005, 27-8). By exploiting the dangerous interplay between timbre and face we can expose some further issues in the ethicopolitics of recognition grounded in the corporeal individual voice. The conflation of timbre with face is also another way in which visual paradigms are inscribed in the sonic regime of recognition.

THE AURAL FACE

Timbre has been likened to the face since its early conceptualizations in French Enlightenment. Theologist, philosopher and mathematician Marin Mersenne (to whom we owe some important interventions in early acoustic theories of timbre – Fales 2002) and German polymath Athanasius Kircher (who we shall credit with the design of an early acoustic surveillance apparatus – Parker & Stern 2019) have explicitly referred to a 'phonognomic' classification of timbre, after Giambattista Della Porta's influential 1586 treatise *De Humana Physiognomia*. Grounded in well-established conflations of voice

with soul and moral character in vogue since ancient Greek philosophy, Mersenne and Kircher attempted to classify timbre in the same vein as Della Porta's moral reding of facial features. In their *phonognomia*, people with "low voices" were deemed "fearful"; conversely, those with "high voices" were considered "impudent", while women's "soft, clear and uneven voice" was "generated by excessive motions of the heart" (Varwig 2021, 255).

The corporeal onto-epistemology of timbre is here invested with symbolic and moral values. Timbre is thus reinstated as an othering (gendering, racializing, etc.) device. Significantly, the symbolic overdetermination of timbre (which in the context of the case study of my project I mostly consider in its racializing properties) in a moralistic key has survived through colonial times (Olwage 2004), the Jim Crow era of slavery, both to uphold and enforce racialized social hierarchies (Stoever 2016) and even in misguided, though well-meaning, early voice biometric practices that attempted to work against the very racial categories that timbre categorizations end up reinforcing (Müller-Wille 2020; Wallmark 2022). This idea, as we see throughout this project, continues to inform Western onto-epistemologies of the voice and practices of listening (Edisheim 2019), human as well as technological.

Today, the dangerous conflation of vocal timbre with the face manages to survive uncritically. Semiotician Andrea Valle has weighed the affinities and differences between voice and face in his consideration of the possibility of a "physiognomics of the audible" (Valle 2019). Building on the multidimensional experience of embodied encounters to conclude that "the experiment has a more than satisfactory outcome, demonstrating the inextricable plexus of the two physiognomic devices, face and voice" (ivi 109). More critical of timbre's power to index and symbolize individual character, electroacoustic musician Dennis Smalley has equally drawn from timbre's conflation with the face in his very definition of timbre: "a general, sonic physiognomy through which we identify sounds as emanating from a source" (Smalley 1994, 37).

Going back to our main ethicopolitical concerns, musicologist and psychoacoustician Zachary Wallmark has recently built on the conflation of face and timbre in his consideration of the "ethics of timbre-centered listening" such as Lévinas' and Cavarero's that foreground "the aural face" as a central figure for ethical intersubjective relation (Wallmark 2022, 184). Wallmark works through the same

'enactivist' framework emphasizing embodiment in the study of cognition that informed Valle's conclusions. Similarly, his consideration that, cognitively, "we categorize timbre pre-attentively in as little as 100– 200 milliseconds", for Wallmark, "indicates that timbre may precondition certain affective and empathic responses prior to any input from our more deliberative appraisal systems" (ivi 187). For Wallmark, timbral categorization is a product of human biological evolutionary makeup that can be hardly worked around.

By foregrounding timbre as aural face, such theories cannot move beyond monocausal figures of individual identity. Furthermore, as we have seen, recognition always depends on the previous establishment of categories on which we rely to sort the sensible: the Self and the Other must be apperceived as such, and as separate in order for recognition to function. Likewise, the difference of the Other must be understood in terms of identity. This, for Wallmark, finds evidence in scientific fact. Its consequence on ethical models of the 'aural face' is that "we may have already sorted the other in the aural face-to-face … before we are even aware that this sorting has taken place … Consequently, the aural face of timbre occupies a singularly potent and problematic position in the generation of … the ethics of musical exchange and encounter" (ibidem).

I maintain that Wallmark's critique of "timbre-centered" ethical models falls on the same pitfalls as Lévinas' and Cavarero's, though in different ways. Whereas the philosophers foreground ethical encounters as embodied, but then he avoids connoting the materiality of encounter in any meaningful way, Wallmark is attuned to the social construction of difference, but then appeals to a scientific corporeal-cognitive schema that runs the danger of legitimizing social hierarchies. Listening, for Wallmark, is an empirical, scientifically measurable fact, rather than a learned technique that can be reproduced inscribed, or conversely worked around and resisted. In all these cases, a problematic perceptualization of the recognition of difference can give way to a naturalization of power relations.

Perceptualization, for musicologist Cornelia Fales, to who we owe one of the first contemporary considerations of timbre as a critical object, is a fundamental characteristic of traditional understandings of corporeal onto-epistemologies of the voice and of Western ordinary listening practices: "one of the ironies of

perceptualization", she writes in her groundbreaking 2002 article 'The Paradox of Timbre' "is that many of its functions are geared to convincing the listener that it doesn't exist, that signals from the acoustic world literally *are* the percepts they provoke" (Fales 2002, 64). Vocal difference (as negative identity) is thus reinstated as an essential ontological characteristic of the Other.

Perceptualization is particularly dangerous in the recognition of race due to the long-standing correlation of timbre with 'color'. Setting the frame for all future understandings of timbre as well as providing the first truly modern scientific method for its measurement, German psychoacoustician Henrich von Helmholtz's definition of timbre in mid-19th century characterized it in terms of *Klangfarbe*: tone-color. In her influential study of the construction of African-American vocal timbre, Nina Sun Eidsheim observes that, although "the origin of the idea that colors may be connected with music is not racial" (Eidsheim 2019, 5),

> while skin color functions as a permanent and indisputable racial signifier, voice is cast as an even stronger marker of race. Strict codification and enforcement of visual readings of the body arise directly from its encultured meaning. Listening practices around vocal timbre – a parameter equally malleable and unstable as skin color or, arguably, more so – have not even, at least to date, been subjected to thorough critical inquiry (ivi 2019, 173).

The perceptualization of the recognition of racial difference based on timbre is all the more powerful and hard to eradicate as it connects to deeply rooted onto-epistemologies of voice and material-discursive practices of listening. For Katherine McKittrick, "traits are the variables that underlie a biocentric system of knowledge" (McKittrick 2021, 110): by centering around the material-semiotics of corporeal difference signaled by timbre, these ethicopolitical models reveal their bioessentialist epistemes, which they reproduce with particularly discriminatory effects for gendered and racialized subjectivities. What is more, these theories are able to conceal the force through which recognition unfolds as discrimination, by posing as purely empirical, perceptual faculties.

Ethicopolitcal models grounded in timbre as the corporeal figure indexing identity cannot move beyond the problems we have located in other models of recognition. Not only they often adopt the same scopic regime they attempted to

overcome (sometimes even fully overlapping with it, merely substituting optical figures, such as the 'face' with aural ones, as 'timbre') but they also suffer from the most dangerous problems I have identified. Recognition is reinscribed in listening through such constructions of themselves as neutral, empirical practices as well as their objects as individual, essential, fixed and knowable.

The presentation of listening as purely empirical, thus depriving aural encounters and subjects of their situated nature; its consequent naturalization of power relations; the reliance on fixed categories of Self and Other as ontologically distinct categories; the monocausality of listening (its positing of individuality over multiplicity); the overdetermination of traits as markers of difference; the understanding of difference through the normative category of identity; the concealment of equally normative, implied 'invisible listening bodies'; the understanding of listening as an epistemologically positivist practice, are all characteristics of timbre-centered ethicopolitics of recognition. Now, I seek to look for models of listening able to move beyond recognition.

'SOUND ITSELF'

As a sonic concept, timbre prominently figures in aesthetic theories of listening. As a figure of the identity (or difference) of sound, timbre-centered theories of listening are liable to be put into conversation with theories of recognition, which share with theories of listening the grounding in aesthetic encounter. A brief overview of some crucial interventions in this field allows us to weigh the bearings of timbre in imagining alternative forms of listening decoupled from the discontents of recognition. This survey further substantiate my claim that, when mobilized as ethical and political figurations, listening, voice, or timbre do not carry inherent emancipatory nor oppressive bearings. Rather, positioned at the intersection of aesthetics, ethics, ontologies and epistemologies, these theories are historically and tropically situated, and can thus be mobilized to suit different agendas.

In her work on timbre, Isabella van Elferen has considered the history of musical aesthetics to survey the different, 'paradoxical' role timbre has assumed in different theories (van Elferen 2020). She concentrates on French *musique concrète* and early

electronic music composer Pierre Schaeffer's notions of *objet sonore*, *acousmatic sound* and its attendant practice of *reduced listening*. For Schaeffer, the new possibilities afforded by recording and playback sound technologies such as magnetic tapes, allowed the 'concrete', hands-on manipulation of sound, giving rise to a new musical aesthetics and compositional practice, freed from the centuries-old framework of Western musical aesthetical theory and practice.

The *objet sonore* ('sonic object') outlined by Schaeffer in his *À la recherche d'une musique concrète* (Schaeffer 1952) and later in *Traité des objets musicaux* (Schaeffer 1966), is the theoretical and practical invention symbolizing this revolution – a pliant object with a peculiar materiality, whose frequency, duration, intensity, and timbre could be altered by the artist's physical intervention. Most significantly for our purposes, in his *concrète* musical composition approach, Schaeffer concentrated on timbre as an indexical marker of the identity of sounds, stripping away elements considered most impactful on 'recognizability' (such as attack and decay). By doing so, Schaeffer sought to uproot sounds from their sources, liberate sonic identity at the same time as he was constructing new, electronically conceived timbral identities (van Elferen 2020, 58).

'Acousmatics' was Schaeffer's term of choice to describe the auditory regime engendered by *objet sonores*. To Schaeffer (and later to musician and theorist Michel Chion's popularization) we owe the recuperation of this term with a long but forgotten history, that would prove extremely influential in theories of sound and listening, central in modern musical aesthetics as in the interdisciplinary framework of sound studies. 'Acousmatics' was first used in the context of early Greek philosophy to describe a class of students of Pythagora: the *mathematikoi* ('those who learn') and the *akousmatikoi* ('those who listen'). Ancient and modern sources alike agree that these two schools differed in kind, respective to the type and extent of knowledge the disciples had access to, some of which was withdrawn from one of the groups. It is thus likely that the two were subjected to some kind of spatial separation (Kane 2016, 66). Though some accounts suggest the image of Pythagoras lecturing from inside his house, or in darkness, most evoke the figure of a veil separating the two classes of students.

Whereas the *mathematikoi* were allowed to witness the master's teachings alongside him from behind the veil, the *akousmatikoi*, deprived of Pythagoras' visual

presence, listened to his voice from the other end of the veil. The technology of the veil operated a "partition of the sensorium" to which corresponded different practices of listening as a form of knowing (ivi 5). Schaeffer's recuperation of this term, served the purpose

> to 'change the way we hear,' to draw attention away from the source of the sound (whether visually present or not) and onto its intrinsic audible properties. The source of the sound is severed from its audible effects, so that the latter can be studied separately, placed into morphological categories or systematically integrated into musical compositions. The separation of the senses is purposive, a way of discarding the sonic source in order to orient attention toward aesthetically appreciated sonic effects alone (ivi 6).

The technologically-mediated ("schizophonic" - Schafer 1969) 'partitions of the sensorium' of his contemporary electroacoustic sound recording and reproduction tools afforded Schaeffer new aesthetic potentials. For Schaeffer, the experience, at the same time archaic and modern, of listening to acousmatic sound demanded a whole new theory and practice of listening. 'Reduced listening' is his proposed term for the experience of listening to sound decoupled from source engendered by the acousmatic regime. Through reduced listening, for the French composer, we can approach 'pure' timbre decoupled from sonic identity and source. For van Elferen, acousmatic or reduced listening as described by Schaeffer is a paradoxical concept and practice, as it "seeks to exclude the material conditions inherent to the ontology of sound but at the same time claims to be based on 'one material cause': acousmatic listening, in this way, is somehow both a materialist phenomenology and an idealism that wishes to leave 'sound in-itself ' intact" (van Elferen 2020, 58).

It is relevant to quote her line of reasoning in full:

> While looking to move beyond indexical timbral identity by way of the *objet sonore*, [Schaeffer] simultaneously confirmed the existence of such an identity through the same causal listening that he aimed to replace by a new, non-causal and non-interpretative kind of listening. His reduced listening posits a decontextualized hearing which listens to 'sound' alone – meaning specifically timbre – without any reference to cause, affect or meaning (ibidem).

Timbre seems to always already involve "the imaginative projection of a sonic body" (Kane 2016, 8) regardless of which material source it is imagined to emerge from. It also, as we have seen in van Elferen's characterization of Schaeffer's theory, reasserts monocausality, where sound is imagined to stem from individuated sources with which it stands as an indexical sign of their essential character. In Schaeffer's theory and practice, the recording of a cricket sound, for example, is severed from the animal that originated it, but its source is causally remapped onto the *objet sonore* of the sound recording and its physical support. In doing so, Schaeffer decouples sound from its 'natural' origin, only to replaces it with its machinic source. Cornelia Fales, who first brought attention to the 'paradoxes' of timbre, writes that timbre's material-sematic onto-epistemology engenders forms of "source orientation":

> We say 'I hear a cricket', *not* 'I hear a *sound* that may indicate the presence of a cricket'. As though to *colonize* the acoustic world, we project even our reaction to a sound onto its imputed source; we say 'I hear a sad violin' when it is a sound we hear, and we who are sad. Our entire auditory world, it seems, is based on the substitution of the indexed for the indexical and the effect for the cause (Fales 2002, 63, my emphasis).

By centering his theory of listening on timbre as a figure of sound 'itself', Schaeffer invites us "to listen to material causes but un-identify them … to hear timbre-in-itself but unhear it as a sonic entity" (van Elferen 2020, 59). Transported into our present concerns and frame of reference, we can bring Schaeffer's 'idealism' into correlation with what we have termed the harmful perceptualization of recognition of many listening-based and 'timbre-centered' ethicopolitical theories listening, though in a paradoxical reversal of its objectives. In an effort to move beyond recognition, we are paradoxically lead to an "idealist striving for a timbral Thing-in-itself" (ibidem). Whereas for Cavarero the material semiotics of timbre inevitably marks its source, lending it to recognition, Schaeffer appeals to the corporeal onto-epistemology to mobilize timbre as a 'non-representational' figure that resists recognition.

However, although the two theories could not be more opposed in their objectives, both of them end up at the same time reifying and essentializing the objects of listening, as well as relying on quasi-transcendental conceptions of sound or voice

'itself'. For van Elferen as well as for Chion, Schaeffer was aware of the contradictory nature of his theories: the irreducible hybridity of timbre (its neither fully material nor immaterial ontology) led Schaeffer to advance an aesthetical practice grounded in paradoxically 'pure' perceptual appreciation (according to the phenomenological principle of the suspension of judgment, or *epoché*) of materialized, objectified sound (Chion 2011; van Elferen 2020). Significantly, basing his theory on the practical and aesthetical affordances of new technologies, Schaeffer's acousmatic listening ends up closely related to a machinic point of audition on sound and listening.

This aspect lends Schaeffer's ideas to multiple, contradictory uses and interpretations. Voice recognition technologies, as we shall see in the coming Chapters, by reifying the voice, alienates its subject from their body[15]. In voice biometrics, for example 'acoustic images' of vocal timbre can act as normative standards against which deviance is measured. At the same time, the technologically-mediated schizophonic condition opens up to a perceptual aural mode able to overcome the "timbre complex", its 'source-bonding' and indexicality, the obsessive attachment to individuated and self-identical sound sources typical of Western modes of listening to timbre (Smalley 1994). This aspect was central to Schaeffer's practice-based musical aesthetic theory: technology, in this respect, is considered by the composer in virtue of its capacity "to manipulate and distort recorded timbres" (van Elferen 2020, 55-6) to the point that through "technological affordance, the search for timbral index loses any bearing" (ivi 56).

Schaeffer's ideas on acousmatic sound and listening are foundational of any assessment of technologically mediated sound. However, if his theories emerged from musical aesthetics and compositional practice, when applied to the voice (human or non-human), they acquire ethicopolitical relevance. Considering vocal essentialism and the racialization of timbre, Nina Sun Eidsheim has considered timbre-centered Western listening practices and 'racially saturated fields of audition', precisely in

[15] In all truth, the objectification is ascribable to all sound and recording technologies (Sterne 2003) whose regime of audition is characterized in terms of a 'schizophonic' alienation of sound from its source engender, but which, in voice biometric technologies acquires a particularly problematic dimension.

Schaefferian terms: the "acousmatic question … [asks] in the act of listening to a human voice is *Who is this? Who is speaking?* Regardless of whether the vocalizer is visible or invisible to the listener, we are called into positing this most basic question – a question of an acousmatic nature" (Eidsheim 2019, 2). A question that, in the voice biometric practices I will consider in the following Part of this thesis becomes *Where are you from?* and, on whose, answer, depends the life of hundreds of thousands of asylum seekers.

Now, continuing to follow van Elferen on our quest for timbre-centered listening practices able to resist recognition, I consider timbre's purported *ineffability* or *incommensurability* to weigh its commonality and differences with Glissant's notion of opacity. van Elferen considers Jean-Luc Nancy's ethicopolitical philosophical treatise *Listening* (Nancy 2007) to explain that, for the philosopher, the 'purely' sonic event (particularly in the context of music) operates outside conventional systems of representation, disrupting fixed notions of time and identity (van Elferen 2020, 92; Nancy 2007, 36). Asking what is exactly that we hear when we are not concerned with interpretation, Nancy identifies in timbre the marker of 'pure', material, non-representational sound. For van Elferen, Nancy's position is similar to Schaeffer in their positing timbre as an idealistic 'sound itself'.

Significantly, certain intuitions of Nancy point to an understanding of timbre able to overcome some common drawbacks we have identified in other timbre-based ethicopolitical constructions. Unlike Cavarero, for example, Nancy understands listening to timbre as a means to listen *beyond* recognition (Nancy 2007, 40). Furthermore, in his consideration that "timbre is not a *single* datum. Its very characteristic is itself to be, more than a component … Timbre is above all the unity of a diversity that its unity does not reabsorb (Nancy 2007, 41 original emphasis), Nancy moves beyond monocasuality and demonstrates an understanding of timbre as emerging from the ontologically plural co-operation of multiple actants and practices of listening, thus decoupling timbre from its indexical power to mark individuated sound sources – an assumption from which are often derived essentialist conclusions.

Significantly, for Nancy, timbre does not "yield to measurement or notation as do the other musical values" (ibidem). In the present context of our consideration of the ethicopolitics of recognition, timbre's non-representationality, its resistance to

translation into data through positivistic practices of measuring puts it in close contact with Glissant's notion of opacity. As much as the individuated, fixed notion of 'languages' makes purportedly positivistic systems of knowledge based on transparency unable to account for the actual diversity and becoming of diasporic language practices, Nancy's understanding of 'timbre' resists coercive recognition and translation into pre-established understandings of vocal difference. Therefore, unlike other timbre-centered ethicopolitical theories of listening, Nancy's model of listening does not advance timbre as a figure of transparency but precisely the opposite, as an opaque figure that resists attempts to recognition.

However, though I find Nancy's a healthy intervention into a literature otherwise marked by the drawbacks we have generally identified with recognition models, I find his model still liable to several critiques. As carefully explained by van Elferen, Nancy's *Listening* figurates timbre as unattainable, always at a remove from the listening subject's interpretative grasp: "the fact of timbre is irresistible to him precisely in its impossible unification of tangible immediacy and ineffable elusiveness … that is to say he is both philosophically and mindlessly lured by the unattainable non-object that is present in all sonority … timbre appears to function for Nancy as a [Kantian] noumenon" (van Elferen 2020, 94) – that is to say, a figure of ultimate transcendentality. This understanding of timbre figurates in other authors considered by van Elferen, which, for the sake of brevity, I will only hint at here.

In his *Music and the Ineffable*, philosopher and musicologist Vladimir Jankélévitch has similarly written about the power of music to eschew traditional systems of representation and signification (Jankélévitch 2003). Like others (Toop 2001), Jankélévitch has appealed to music's (and by extension, sound's) boundaryless spatiality and temporal dislocation in terms of *ineffability*, a subject-dissolving agency able to rapture listeners in sublime experiences that foreclose meaning and thus, the indexical representational semiotics of timbre. As we have seen, for van Elferen, theories based on sonic ineffability and the sublime character of sound, such as Nancy's and Jankélévitch's, often fall trap to transcendental forms of idealism, by appealing to "noumenal and even metaphysical interpretations of musical immersion" (van Elferen 2020, 127).

The idealism of these theories of listening, as we have seen, also significantly lies in their foregrounding of sound 'itself'. Even when they connotate timbre in material terms, appealing to its corporeal ontology, theories of listening in the vein of Nancy and Jankelevitch systematically avoid to situate it in auditory cultures, but establish it as a metaphysical, quasi-transcendental aspect of sound. Controversial understandings of sound 'itself' still animate debates in contemporary studies of sound. The 'ontological turn' of sound studies, where the foregrounding of the material, affective and vibrational aspects of sound 'itself' by authors such as Christoph Cox, Steve Goodman and Greg Hainge has been charged with similar forms of idealism and transcendentalism (Cox 2011; 2018a; 2018b; Goodman 2012; Hainge; 2013). Although these authors do not engage with voice (let alone human), ontological theories of sound 'itself' have multiple bearings on our discussion on listening and recognition. I will thus briefly recapitulate the crucial points of this influential dispute.

In an effort to move beyond the intrinsic logocentrism of hardline theories of social construction (according to which, they argue maliciously, 'there is no such thing as a pre-discursive reality') these authors operate within an 'ontologically flat' and posthuman framework on sound and perception that eschews human cognitive schemas like logocentrism, ocular centrism and even 'cochlear' forms of sensing (Kim-Cohen 2009). In doing so, however, they assume notions of sound 'itself' that, I argue along with their critics like Brian Kane, Marie Thompson and Annie Goh, are historically and tropically situated. By adopting a universalist perspective often scientifically-informed perspective on sound, advocates of the ontological turn, their critics contend, risk reinstating dangerous forms of universalism and ethnocentrism (Kane 2015; Thompson 2017; Goh 2017). In other words, like the theories of recognition they attempt to overcome, this framework also naturalizes power relations by privileging empiricism.

My stance on the debate is however less parochial and tentatively more nuanced, grounded in a relativism of perspective and in the attention to the uses and ends for which specific onto-epistemologies of listening and the voice are mobilized. In this sense, my perspective takes up the challenge advanced by Goh to 'sound situated knowledges' and deconstruct forms of 'sonic positivism' in (human and algorithmic) theories and practices of recognition through listening, especially those, like Schaeffer,

Nancy, and the authors of the ontological turn, grounded in figures of sound 'itself'. However, my standpoint is also akin to Goodman's in his consideration of the 'weaponization' and counterinsurgent *uses,* of the vibrational, affective powers of the voice, which inform my line of thinking in Chapters 4 and 5 .

In fact, the most relevant insight we can take away from this brief survey of theories of listening grounded in the figure of timbre as sound 'itself' is its liability to being mobilized for the most different objectives and agendas, its 'paradoxical' material-semiotics tore between indexical signification and non-representational materiality. Is it still possible, then, to mobilize timbre as an aesthetic and ethicopolitical figure that resists recognition, while at the same time acknowledging its emergence from materially and culturally situated auditory cultures and practices of listening? Again, I identify in the figure of opacity a productive concept through which move beyond recognition without conceding to forms of transcendental universalism and, at the same time, problematizing the performative role of systems of knowledge in the *making* of sound.

SONIC OPACITY

As we have seen thus far, theories of listening often reproduce the problems associated with the models of recognition they seek to remedy. By refusing to situate listening subjects and practices within auditory cultures, they naturalize power relations by presenting listening as purely empirical. This characteristic of many listening-based ethical recognition models lends them to being compared with Glissant's description of translation as following a 'transparent' paradigm: listening in this vein also conceals its situated nature by the discursive removal of itself as a situated practice, as well as all the actants, agencies and materialities that participate in its unfolding and concur in the making of its objects of knowledge. Listening along these lines also conceals its performative, disciplinary power.

Like Glissant's characterization of transparent systems of knowledge, listening-as-recognition of difference can also conceal its ethnocentrism. Moreover, as the poet's portrayal of translation, listening also refuses to acknowledge its performative agency. By presupposing fixed subjects and objects of listening, these models of listening

stumble in the same pitfalls we have identified with recognition. In doing so, even as these theories advance the boundaryless spatiality of sound, and the hybrid ambiguity of timbre as remedies to visual models' universalizing tendencies, their inherent transcendentalism and metaphysical 'gaps', theories of listening as recognition assume the same dialectical posture of the paradigm they attempt to overcome.

In surveying theories of listening, I have evidenced how their authors mobilize timbre as a figure of sound 'itself' and thus a material object of 'unknowledge', as it were: a non-representational figure escaping traditional cognitive frameworks, characterized in terms of ineffability and incommensurability (Nancy, Jankélévitch) or affect and vibration (Cox, Goodman). To some extent then, timbre appears in their work as a figure of opacity. However, though authors like these identify in timbre some of the same characteristics that, with Glissant, we also have associated with the opacity of diasporic cultural practices (i.e. their opacity as a property emerging from multiple historical and material forces) they do not connect these two aspects as Glissant otherwise does.

For Nancy, "timbre is not a *single* datum … the unity of a diversity that its unity does not reabsorb" (Nancy 2007, 41) – yet he does not trace an explicit connection between multiplicity, or what Guattari would call *polyphony*, and opacity. Conversely, Glissant's conceptual move, I argue, allows us to connect opacity with *vocal* timbre together in a manner that avoids the idealistic pitfalls of recognition, and is able to suggest truly materialistic models of listening able to account for the multiplicity inherent to voice as well as its emergence from ontologically heterogenous assemblages, where different actants participate in the co-constitution of the voice. Adopting Glissant's understanding of opacity means understanding that timbre is effectuated by its worldly entanglement with forces, its encounters and intra-actions with ontologically heterogeneous actants.

A such understanding of vocal timbre is in line with the new materialist framework I adopt, and reveals the pioneering character of Glissant's work. In adopting this approach, I continue to engage with van Elferen's recent work, which constitutes a rare new materialist intervention into the study of timbre. van Elferen highlights how vocal timbre emerges from the cooperation of ontologically heterogenous actants, assuming an approach informed by assemblage theory. From a physiological

standpoint in fact, “the shape of a singer’s larynx, pharynx, head cavities, lip and tongue position determine which frequencies will be generated” (van Elferen 2020, 32). Similarly, Eidhsheim has written that vocal timbre

> is shaped by the overall physical environment of the body: the nutrition to which it has access (or of which it is deprived) and the fresh air it enjoys (or harmful particles it inhales). It is the physical body and vocal apparatus that are trained and entrained each time a voice voices, and that develop accordingly. Vocal tissue, mass, musculature and ligaments renew and are entrained in the same way as the rest of our bodies (Eidsheim 2019, 11).

Often, this idea is mobilized to point to the irreducible uniqueness and indexicality of vocal timbre, according to the logic that, “as no two human bodies are the same, each singing voice will carry a slightly different set of harmonics” (van Elferen 2020, 32). However, not only I have argued (*contra* Cavarero) against the ‘ontologies of uniqueness’, but I would also go as far as to contend (with Eidsheim) that “the voice is not unique”. This is not exclusively due to the fact that “it is not an isolated and distinct entity”, but also “because it is not a static organ” (Eidsheim 2019, 11). Voices, the bodies and identities that emit them, like Glissant’s diasporic languages, are always on the move, the objects of deliberate performance, or unintentionally rearranged, sometimes coercively forced to transform *by* and *within* encounter. Contrasting essentialist notions, this understanding of vocal timbre is able to account for transformation and becoming.

Considering trans folks’ voices, Eidsheim highlights gender as a continuum, and “the considerable areas of overlap between male and female voices … while voices also undergo physical transformation with hormonal treatment, regardless of physical alteration, it is daily vocal practice that makes a given register feel comfortable” (ivi 7). Similarly, Deleuze and Guattari have argued that, although “voices may be reterritorialized on the distribution of the two sexes”, by dominant systems of knowledge, “the continuous sound flow still passes between them as in a difference of potential” (Deleuze & Guattari 1987, 308). This understanding of vocal timbre foregrounds voice as a continuum of different intensities, already disrupts fixed corporeal schemas of ordinary listening practices.

Not only voice changes because bodies change, but timbre is also accorded a degree of "plasticity" (Bulut 2025) that humans negotiate between corporeal boundaries and performative invention. Attempts to fix and reify the voice as the essential corporeal index of individuated subjects will always fall short when faced with vocal timbre's constitutive multiplicity and becoming. In the words of semiotician Jacques Fontanille, "the body is thus a carrier of an identity in construction and becoming, and obeys to a principle of directing force" (Fontanille 2004 32). This way, the body ceases to assume the role of a biological boundary , while identity, understood as continuously transformed in the negotiation with corporeal matter, is recast as a difference that resists forms of essentialism. In this view, the body is assigned an active role in the co-constitution of vocal difference – however, it is but one of a multiplicity of forces that participates in the making of vocal difference.

Technological mediation participates in the constitution of vocal timbre, as the specific non-human ways technologies listen to, capture and reproduce the voice leaves sonic imprints on timbre (Ernst 2016, 66). Furthermore, the way technologies understand and process vocal timbre expose how, even as a technoscientific object of knowledge, it is hardly measurable. Even from the scientific standpoint of psychoacoustics, vocal timbre is considered hardly distinguishable from other sonic variables which impact and participate in its constitution, leading some, like Albert Bregman, to dismiss timbre as a 'wastebasket' category (Bregman 1990, 92–3). Pitch (ibidem), volume (Parker 2009, 67) and duration (Howard & Angus 2009, 233–42) influence human as well as machinic perception and measurement of timbre. Likewise, as voice is always already sounded in material space, the environmental media through which vocal emissions travel also co-constitute vocal timbre, directly acting upon voice's recognizability (Eidsheim 2015).

Considering musical timbre, van Elferen summarizes that "timbre's material ontology can best be described as a convergence of sound source physicality, frequency spectrum, live or virtual acoustics, production technology and musical contingencies" (van Elferen 2020, 92). Thus, regardless of the (perceived) origination of timbre in an individuated sound source (whether it be a human, a musical instrument, or any other sonorous body) exceeds individual indexicality: "timbres – plural – are not a given, but they emerge from their ecological contexts and engagements" (ivi 65). The

same can be said of vocal timbre, with considerable effects on its ordinary connotations as an indexical figuration of essential, unique vocal identity.

The ontological multiplicity of vocal production has been assessed by ethnomusicologist and sound studies scholar Katherine Meizel in her consideration of singing practices as "multivocality", where "the lived experience of vocal sounds (linguistic and extralinguistic), practices, techniques, and meanings that factor into the making of culture and identity, and in the negotiation of power" (Meizel 2020, 11) allows for plural performative possibilities. For Meizel, the multiplicity of singing voice styles can also be regarded as a product of neoliberal capitalist market *diktats*, which force singers to adapt to a multiplicity of performance styles. However, like Glissant's diasporic language practices, whose multiplicity is effectuated by the violent effect of colonialism, for Meizel "singing with 'many voices' may be seen as a practice *at once produced by and resistant to these neoliberal expectations*" (ivi 5, original emphasis). Conversely, the notion of the unicity and univocity of timbre is also a situated, Western modern and liberal notion (Couldry 2010).

Non-Western onto-epistemologies of the voice can imagine voice differently, complicating ethnocentric views on vocal timbre. Indologist Bruno Lo Turco, for example, observes how in traditional Indian Vedism it is the voice that expresses itself through speakers, not the other away around. Voice, from this perspective, is *called* by the community of speakers – a community that potentially includes all the sonorous universe (Lo Turco 2023). Similarly, for the Colombian indigenous tribes of *bogas* (rowers) considered by Ochoa Gautier, "the voice manifested or enabled the capacity to move between states of multiplicity or unity where a single person can envoice multiple beings" (Ochoa Gautier 2014, 12). Individual or multiple ontologies of the voice are constituted together by communities of speakers, according to different cosmologies and to advance different aims. Vocal ontologies do not in fact preexist the relations that produce it.

Non-Western onto-epistemologies of the voice as such complicate simplistic 'geographies of causality' of timbre, extending voice as a property shared across individuals, thus precluding understandings of timbre as unique. These multivocal understanding of timbre assume the 'internal multiplicity' of the voice as an ontological characteristic of *all* voices, like Glissant's characterization of diasporic identity and

language practices. The fact that this characteristic is accorded to *all* voices, however, does not mean to reassert a universalist standpoint. Voices are all differently produced by and within historically and tropically situated, ontologically heterogeneous forces, *including* the systems of knowledge that attempt to understand it (among which my present one) and the practices that attempt to capture it.

My main argument at this point is that that the ontological multiplicity of vocal timbre gives way to opacity, as opposed to recognizability, and that "sonic opacity" (Weheliye 2005, 69)[16] can be mobilized as an aesthetic and ethicopolitical figuration able to resist coerced attempts of systems and practices of knowledge like recognition, or translation, to capture it along their transparent epistemes. As it "cannot be reduced to one cause or one effect", vocal timbre is always already "the *unpredictable* outcome of an *indeterminable* jumble of factors" (van Elferen 2020, 6, my emphasis). Furthermore, voice's becomings also gesture towards the impossibility of knowing timbre in advance: as Eidsheim writes, "the broader phenomena of voice, vocal timbre, and timbre are not knowable entities but processes" (Eidsheim 2019, 10).

Unlike Cavarero's 'unique' timbre; either completely corresponding to Schaeffer's paradoxical *objet sonore*; perhaps closer to Nancy's ineffable timbre, but more fleshed out than the philosopher's transcendental noumenon; and neither Cox's 'sound itself'; but rather more like Glissant's characterization of the liveness and 'internal multiplicity' of diasporic language practices, my understanding of voice emerges from the worldly entanglement with ontologically multiple actants, making it highly contingent and eventual, unpredictable and indeterminable, thus foreclosing any objective ('transparent') attempt of recognition, translation or measurement.

This depiction of vocal timbre's sonic opacity is closely related to a new materialist framework grounded on the figure of the assemblage, anticipated by Glissant in his characterization of diasporic opacity as emergent from a multiplicity of historically and tropically situated material and social forces. In all these figurations, the opacity of objects of knowledge is exposed as an onto-epistemological 'emergent

[16] Although I credit Alexander Weheliye with the first use of the notion of 'sonic opacity', he does not develop it to a point that would require a deeper engagement with its emergence from his writing.

property' of human and non-human assemblages. Significantly, like in the Martinican poet, the 'worldly entanglements', namely the encounters, both forced and willful, unbalanced and just, that constitute objects of knowledge must not be stripped of their historical and tropical specificity.

Voice and vocal timbre can not only be construed as assemblages, but are also produced *within* assemblages. As a sonic percept, voice does not retain an autonomous ontology, but is rather produced by human and non-human listeners who actively participate in its constitution. The ethicopolitical bearings of this intuition are weighed by Eidsheim. As "it is the listener who detects timbre" (Eidsheim 2019, 6), it follows that listeners actively participate in the production of timbre with their expectations and interpretations. As we have seen, listeners recognizing timbre bring their own situated understandings (i.e. onto-epistemologies) of the voice in the act of listening, often resulting in the overdetermination certain timbral traits with racialized and gendered meanings. Never purely perceptual, this process leans on interpretation, and thus is always already entangled with historical and tropically practices of listening.

Listening to voice 'itself' always exceeds individual listening practices, but is immersed in situated social and material auditory cultures. By expressly terming auditory cultures 'acoustic assemblages' in her study on colonial practices of listening to Colombian indigenous vocal productions and language practices, Ochoa Gautier has assumed a new materialist framing able to foreground the extensive network of actants and practices producing, rather than merely 'recognizing' vocal difference. Vocal timbre, from this perspective

> is *generated* through sound/listening in what I am calling acoustic assemblages. By acoustic assemblages I mean the mutually constitutive and transformative relation … that is generated in the interrelationship between a listening entity that theorizes about the process of hearing producing notions of the listening entity or entities that hear, notions of the sonorous producing entities, and notions of the type of relationship between them (Ochoa Gautier 2014, 22-3).

Ochoa Gautier concentrates on colonial acoustic assemblages' regimentation and consequent production of voice according to natural-cultural binaries: as we shall

see in Part 2 of this thesis, an operating principle of the biometric algorithms that inscribe and reproduce these colonial onto-epistemologies.

A central assumption of my project, the understanding that listeners, human as well as non-human participate in the constitution of the voice has oriented my attention to the ways that voice and timbre are constituted *by* and *within* the intra-actions of ontologically heterogeneous actants. Like Barad's understanding of scientific *apparati* of measurement, 'machine listening' technologies participate in the production of their object of knowledge. This insight also impacts on our characterization of voice's sonic opacity. If timbre is produced in the moment of listening, it follows that "there is no *a priori* voice to be known prior to the one formulated in response" to the listening practices from which it emerges (Eidsheim 2019, 6), a new materialist understanding of vocal timbre also in line with Barad's dictum that '*relata* do not preexist relations'.

Vocal timbre is thus unknowable prior to its intra-action with the acoustic assemblages that produce it; a figure of opacity, it becomes an otherwise knowable and measurable object in the of knowledge only in the moment of its contact with and to the extent that the material-discursive practices of listening already presume a such fixed, individuated and essential notion of the voice. Listening to how acoustic assemblages assume and reproduce onto-epistemologies of the voice – in Eidsheim's words, "listening-to-listening" (ivi 23) – thus becomes instrumental in the ethicopolitical work needed to expose the "fatal couplings of power and difference" (Wilson Gilmore 2023, 110) otherwise concealed by the narrative of recognition, marked by a systemic naturalization of power, which, when operationalized by algorithms, is exacerbated by the technoscientific discourses of objectivity.

In the next Part of this thesis, I will follow artist and researcher Pedro Oliveira in his attempt to listen how a voice biometric recognition algorithm listens to the diasporic voice practices of asylum speakers. Listening-to-listening, to how timbre is produced by situated material-discursive practices is a fundamental ethicopolitical labor able to decouple listening (as recognition) from its purported objectivity, bring to light the inscription of power. However, because I believe that an exclusively 'deconstructive' approach to listening is by itself insufficient, I also consider sonic opacity as a form of resistance to algorithmic recognition, grounded in the onto-epistemological condition of its own objects of knowledge. Before we can move on, however, we must consider

the ethicopolitical models of claim-making engendered by algorithm's own non-human 'regimes of recognition' and opacity, which I consider in the next Chapter.

CONCLUSION

In this Chapter, I have assessed theories located at the intersection of aesthetics, ethics and politics, to weigh the potential of sonic figurations as means to move beyond the paradigm of recognition. Having concluded the previous Chapter with a consideration of the limitations of the 'scopic regime' of recognition, I have turned my attention to the sonic regime in search for models able to overcome it or resist it. However, as it turned out, most models grounded in listening, reproduce the same discontents I have identified in other models, most significantly the naturalization of power relation stemming from a construction of listening as purely empirical, like in vision-based models.

As a privileged metaphor for ethical intervention since the very origins of Western political thought, the human voice features prominently in listening-based models of recognition. In the attempt to advance materialist ethical propositions against the disembodied dialectics of other models of recognition, listening-based ethical paradigms often mobilize the figure of vocal timbre. 'Timbre-centered' recognition models, as we have seen, cannot however move beyond the drawbacks that limit other models. In postulating timbre as a form of 'aural face', these The corporeal onto-epistemology of timbre is advanced as allowing recognition, drawing on the supposed indexicality of timbre as a marker of vocal difference, overdetermining its traits and tying recognition with its principal meaning of discrimination.

Then, I sought to answer the questions: is it still possible to imagine a listening-based ethicopolitical model able to resist against coercive recognition practices? Must we renounce to timbre, or can we recuperate it as a figure around which to articulate ethical models? Interestingly enough, in the interventions, I consider, like Schaeffer's, Nancy's, as well as more recent ones, timbre is often mobilized precisely in the opposite sense of theories like Cavarero: as a figure of incommensurability and ineffability, as opposed to recognition. However, these theories have avoided

confrontation with the ethicopolitical implications of the practice of listening to sound 'itself'.

Sound 'itself', I have argued, is not a ahistorical notion, but rather a situated one. Although it emerges from specific positionalities and unfolds through localized material-discursive practices, by presenting itself as universal it allows to erase its situated character, which often disguise ethnocentric perspectives. Sound 'itself', moreover, is not only mobilized or 'weaponized' in advance of specific agendas, but is also inscribed in problematic practices, such as the biometric voice recognition practices I consider in the next Part of this thesis.

Opacity, has thus emerge as a figuration able to resist voice recognition and account for the difference and multiplicity that ordinary practices of recognition cannot accommodate. Like Glissant's characterization of diasporic listening practices, the means of resistance to dominant epistemologies, significantly, are found in voice's own ontology – an ontology which, however, contrarily to theories of sound 'itself' is always historically and tropically situated. *Sonic opacity* can account for the voice's multiplicity and *emergence* from ontologically heterogenous factors. With the help of a host of evidences, I have thus characterized the voice as marked by multiplicity, as numerous actants contribute to its production.

Physiological, environmental, technological and performative elements constitute the voice. Dominant understandings of timbre as the corporeal marker of individual essential identity is radically transformed by considering voice as ontologically multiple. Recognizing systems of knowledge predicated upon fixed, pre-established notions of voice and identity are thus at a loss *vis à vis* voice's constitutional heterogeneity. However, voice is not also an assemblage, but is also constituted *by* and *within* assemblages – 'acoustic assemblages' of human and non-human actants that reproduce and produce situated onto-epistemologies of the voice.

From the radical reconfiguration enabled by *sonic opacity*, voice and timbre can resist recognition. Sonic opacity allows the voice to preserve its difference and multiplicity. Through sonic opacity, we can also account for the situated factors that contribute, simultaneously, to produce the voice and, at the same time, render it unrecognizable. It is a form of resistance to the sonic regime of recognition grounded in the voice's own ontological and epistemological character. Bringing together aesthetics,

ethics, ontologies and epistemologies, it allows us the means of resistance which I will consider in Part 2 of this project. Before, however, I turn to algorithms' own regime of recognition and its attendant forms of ethicopolitical claim-making, which must confront algorithms' own opacity.

3: ALGORITHMIC RECOGNITION

INTRODUCTION

Algorithms are increasingly charged with the 'program' of recognizing individuals or specific features of their identity. The rising delegation of governmental functions, hence the growing decision-making power conferred to recognizing technologies, such as biometrics, makes it so that on the 'correct' unfolding of the program of recognition depends the access to basic services and rights, such as political asylum, whose specific case I consider in the next Part of this thesis. Recognition as an ethicopolitical model for the extension of such rights, and through which the boundaries of hospitality and belonging into a community are defined, is increasingly performed by algorithms. Algorithms however, set their own 'regimes of recognition', which define who and what can be recognized. They also determine who and what can be protested when recognition is necessarily exposed as flawed.

Algorithmic recognition has thus been foregrounded as a site of critical scrutiny and technical intervention by IT professionals, researchers, journalists, activists, and artists. Attention to technologically mediated recognition has been recently given in the context of the intersection of political theory (Hostis 2016; Acid Horizon 2023), critical algorithm studies (Chun 2021), critical race studies (Browne 2015) and gender studies (Beauchamp 2019), in conjunction with the rise of State and privately-sanctioned forms of technological surveillance, which often rely on recognition as its paradigm. However, the problem of recognition *qua* recognition (as an ethicopolitical model and episteme that algorithms inscribe and reproduce) has seldomly been considered when addressing the systemic harms of these technologies. In this Chapter, I thus foreground recognition as a system of knowledge inscribed by algorithms, and as an ethicopolitical form of claim-making, in conjunction with or in opposition to algorithmic recognition.

As I have argued with regards to the ethicopolitical model of recognition, those suffering the most due to its drawbacks are the very subjects that recognition claims to give visibility to, represent, and extend the rights associated with 'shared humanity'. Already marginalized subjectivities, like racialized (Browne 2015) or trans-identifying

folks (Beauchamp 2019) pay the higher costs of algorithmic recognition and misrecognition, exacerbating the harmful 'oppressive double binds' that capture subjects in its *or-else* logic: assimilate to be recognized, or cease to exist. By privileging the critical voices from the groups mostly harmed by algorithmic recognition and misrecognition, I bring together the voices of media scholars, programmers, activists and artists, to critically consider algorithmic recognition and its attendant forms of protest.

In light of my overview of recognition and of its discontents, in this Chapter I wish to appraise how much of its logic is inscribed in algorithms. Specifically, I seek to answer the questions: to what extent recognition along the lines I have described is inscribed and reproduced by algorithms? To what extent the 'failure' of algorithms to recognize difference can be traced back to the logic of recognition itself? Particularly in relation to the latter, I seek to ask "how", in the words of media scholar Wendy Chun, "did discrimination become recognition" (Chun 2021, 186)? Which forms of claim-making have been demanded, and what alternative ethicopolitical models have been proposed in response to the systemic failure of algorithms to recognize? How does algorithms' own 'mode of being' feeds back on forms of protest? Must algorithms be policed or resisted?

When performed by algorithms, I will argue, recognition connects back to its 'principal meanings' as a practice of *knowing, identification*, and *discrimination*. Recognition as a technoscientific practice is invested with the 'epistemic virtue' of 'mechanical objectivity': it is presented as a positivistic system of knowledge. The narrative around algorithms is thus able to further reinforce the positivistic investments on recognition, conceal the situated character of its enunciation, of its objects of knowledge, as well as of itself as a practice. In doing so, it perpetrates the perceptualization of recognition, which, as we have seen, often results in a naturalization of the unbalanced power relations it is predicated upon. This dynamic is reinforced by the discourse around algorithms, the materiality of whose infrastructures is invisibilized by their presentation as 'clouds', or concealed behind their opacity.

If algorithms' situatedness is thus systematically discursively erased, which problems do activists encounter when attempting to situate algorithmic recognition? At the same time positioning my reflections within this impasse, and advancing a radical

critique of both algorithmic recognition and of the hegemonic forms of claim-making advanced in its response, which I expose as grounded in the same paradigm they seek to protest, by adopting a performative, new materialist take on algorithmic and human agency, I end the Chapter by suggesting models of resistance. Before I can t

ALGORITHMIC RECOGNITION

Automated technologies are increasingly charged with the task of recognizing individuals, for the most different applications, most of which relate to the negotiation of the access to spaces and services. Algorithms can recognize individual or collective identity, by way of corporeal or behavioral traits. They can also be geared towards the recognition of traits in themselves, but always as carriers of information on identity. These operations are mostly carried out by *biometric* algorithms, a subset of recognition technologies which, from measuring the body, purportedly derives information on identity. I will engage with these set of recognition technologies later in this Section to better situate my analysis in the next Part of this project. Before I turn to biometric recognition technologies however, some general considerations on algorithmic recognition are in order.

First, it is relevant to consider that recognition, as a mode of knowing, when performed by algorithms, must be understood through algorithm's own non-human cognitive framework. The "distributed cognition of the posthuman" (Hayles 1999, 5) makes it so that algorithms do not know their objects as humans do. First and foremost, algorithmic recognition does not necessarily operate in what philosopher Maurizio Lazzarato, drawing from the work of Félix Guattari, in his *Signs and Machines: Capitalism and the Production of Subjectivity*, calls 'signifying semiologies'. The material processes of algorithms often operate, in fact, in 'asignifying semiotics', which not only defines the character of machinic cognition, but through which algorithms "'speak,' 'express themselves,' and 'communicate' with man, other machines, and 'real' phenomena" (Lazzarato 2014, 87).

Significantly, for Lazzarato, being (or not) recognized by algorithms, entails different modes of subjectivation. In this sense, algorithmic recognition, like all other practices of recognition, participates in the production of subjectivity. For Lazzarato,

whose concerns mostly lie in the modes of subjectivation engender by capitalist weaponization of machines produce forms of "machinic enslavement", which functions

> by mobilizing functional and operational, non-representational and asignifying, rather than linguistic and representational, semiotics. In machinic enslavement, the individual is no longer instituted as an 'individuated subject,' 'economic subject' (human capital, entrepreneur of the self), or 'citizen' (ivi 25).

Machinic enslavement, which Lazzarato opposes to "social subjection", which, "by assigning us an individual subjectivity, an identity, sex, profession, nationality … produces and distributes places and roles within and for the social division of labor. Through language it creates a signifying and representational web from which no one escapes"(ivi 12). Whereas in the latter, the subject is apprehended and produced as an individual equipped with an identity, in the former, the subject is made into what Gilles Deleuze has called a "dividual" (Delueze 1992). From the non-human cognitive standpoint of algorithms, in fact, objects of recognition are apprehended as *data*. The dividual, for Lazzarato, "does not stand opposite machines or make use of an external object; the dividual is contiguous with machines" (Lazzarato 2014, 26), as it is a product of their asignifying semiotics. Although Lazzarato is mostly preoccupated with capitalist forms of subject production, and in this regard intersect only tangentially with my current concerns, some valuable insight might be taken away from his reflections that prepare the ground for my line of argumentation.

First, tying algorithmic recognition to subject production reminds us that any form of recognition is performative and disciplinary, in that it entails forms of subject- and identity-making. Secondly, the notion that when algorithms recognize, they do not do it in the same way as humans is perhaps self-evident, but a helpful reminder that we must 'step in to the cogs', so to speak, of the machine's own forms of cognition, if we want to understand not only how algorithms perform recognition, but also how subjects are produced in accordance to the non-human characteristics of their technical-material operations. What is more, by understanding algorithmic recognition from the standpoint of machines, we will be more equipped to evaluate which forms of claim-making are better suited to this condition.

Before I can turn to the ethics and politics demanded by algorithmic recognition and its discontents, I am interested in tying recognition to its 'principal meaning' of discrimination. In her study overview of the history of algorithmic recognition, Wendy Chun has traced its emergence to 'pattern discrimination': "before there was pattern recognition", the media scholar writes, "there was pattern *discrimination*. 'Discrimination' the ability to divide, separate, and distinguish – paved the way historically and theoretically for 'recognition'" (Chun 2021, 205-6). Pattern discrimination, Chun shows, developed out of studies of animal vision (ivi 206). From this perspective, we can say that, as much as human models of recognition, algorithmic recognition presents itself as a disembodied, diagrammatic body schema while it occludes its constructive (i.e. performative) agency, naturalizing power by virtue of its perceptualization of recognition.

Yet, as Chun shows, it is this very process that allow us to reframe algorithmic recognition as discrimination. In her words: "recognition = discrimination++" (Chun 2021, 186). Inheriting the notion of recognition as the ability of the human sensorium to 'discriminate' differences across a (prominently visual) landscape, cybernetics incorporated this essentially perceptual and cognitivist frame in the development of early automated recognition machines (ivi 210). Discrimination as perception of patterns of individuated and 'invariant' forms precedes but still informs current algorithmic forms of recognition.

By recasting recognition as purely empirical, recognition conceals its performative character and disguises discrimination as a form of detection. In this sense, although it is true that algorithms apprehend their objects of knowledge as 'asignifying' data, their effects are material and can work to reify and enforce fixed identity categories. For Lazzarato, in fact, machinic enslavement and social subjection are "complementary, interdependent" (Lazzarato 2014, 34) in their neoliberal capitalism use, increasingly delegated to and automatized by algorithms. In this sense, although captured as dividuals, human objects of algorithmic recognition can be 'reterritorialized' into individual identities, necessary for the functioning of neoliberal capitalism and nation states' governmentality.

This is possible through algorithmic recognition's practices of *correlation* and its reliance on pre-established categories (which makes up the *precognition* feature of all

forms of recognition). It also ties in with recognition's principal meaning of *discrimination*. Wendy Chun reminds us that correlation is not simply a technical method for pattern recognition, but a conceptual tool historically entangled with eugenics. Its underlying logic of *homophily* (of association of sameness by affinity) has shaped both its development and its contemporary applications in biometric systems, predictive policing, and the architectures of *big data* (Chun 2021, 50). What correlation enables is the substitution of one data with another, allowing variables to act as proxies.

This process has historical in the weaponization of statistic practices for eugenic theories, where it was put to use to "'classify' raced and gendered groups according to intelligence, among other personality traits" (ivi 47) These methods persist in algorithmic recognition, such as in the biometric recognition technologies I consider in the next Section and in the next Part of this thesis. Crucially, correlation does not need to name categories like race or gender in order to molbilizes them, as it operates through indirect associations, for example by linking crime rates to neighbourhoods, thus reproducing structural inequalities without ever being made explicit (ivi 19). In this sense, correlation is not only constative but performative: its situated forms of cognition and semiosis have material effects.

Furthermore, algorithmic recognition, "requires precognition: it involves evaluating various criteria 'in terms of properties which we have already learned to discriminate' or learning novel discriminations based on prior knowledge" (ivi 210-11). As we have seen, this aspect forms the basis of both human and algorithmic forms of recognition. With Oliver, we can emphasize the convergence of human and algorithmic forms recognition by their shared constitutive reliance of pre-established blueprints acting as normative standards: "the notion of recognition becomes more problematic in models where what is recognized is always only something familiar to the subject": it is also in this sense that algorithmic recognition reproduces the harmful dialectic of human models of recognition (Oliver 2001, 9).

The conjunction of the correlative and precognitive logics inherent to all models of recognition, as we have seen, fulfils a circular logic. For Katherine McKittrick, who has investigated the survival of racial sciences in contemporary technologies, "our present system of knowledge, a biocentric system of knowledge upheld by capitalist financing, is a self-referential system that profits from recursive normalization

(McKittrick 2021, 43). The inscription of normative categories into algorithms is also able to reinstate identity categories as organizing principles. This aspect has been considered by Thao Phan and Scott Wark in their assessment of 'personalisation' in social media, where users are invited to choose between a spectrum of identity categories. Focusing particularly on race, they argue that a such category of identity "might be occluded by such platforms, but it doesn't disappear. It is reprocessed in and through personalising techniques" (Phan & Wark 2021, 4).

Through correlation and precognition, recognition *produces* the very categories it assumes, even when they are redacted from their material-technical strata. The inscription of racial categories, is all the more evident in biometric recognition technologies, which reproduce the operating principle of racist structures of oppression and 'body schemas', by way of overdetermining corporeal traits as markers of identity. In biometrics race acts as an object of algorithmic recognition even when it is discursively erased from the narrative surrounding these technologies. Due consideration to biometric recognition technologies not only allows me to set the stage for my analysis of the case study I will engage with in the next Part of this thesis, but also flesh out further general aspects and operating principles of algorithmic recognition.

BIOMETRICS

Biometrics comprise automated and assisted techniques of body measurement geared towards recognition (understood in biometric discourse as *identification* and *verification*), mostly for purposes of controlling access to spaces and services. They are applied in banking, healthcare and insurance, airport security, and most significantly for our purposes, border control. As all histories and critical theories of biometrics note, biometrics derive from and were developed in conjunction with carceral practices of 'anthtropometry', as well with colonial governmentality (Magnet 2011). Their history is also closely intertwined with that of statistics and the social sciences, which in the 19th century were responsible for a widespread rush to produce large archives of population data, particularly for the biopolitical administration of colonies, while in the settler context, biometric practices were legitimized by the rise of migration phenomena (Ajana 2013, 27; Pugliese, 2005; Lyon, 2001; Porter, 1986).

Although the history of biometrics exposes the persistence of its problematic past in the present, a proper overview unfortunately exceeds the limit of my project. For our purposes, I am rather more interested in examining their logic and discourse. As to what concerns the former, Shoshana Magnet has characterized biometric operative logic as predicated upon forms of "corporeal fetishism" (Magnet 2011, 4), by drawing on the work of Donna Haraway. Corporeal fetishism is an onto-epistemological posture wherein "a fixed thing substitutes for the doings of power-differentiated lively beings" (Haraway 2018, 135). This "particular 'mistake'" (ibidem) or rather willful "denial" (ivi 137) entail a synecdochic, or substitutive logic of representation wherein a material-semiotic object of knowledge like a corporeal trait comes to stand for the whole of the subject's embodied identity.

Fetishism, in this respect, implies a "reification that transmutes": it translates "material, contingent, human and nonhuman liveliness into maps of life itself and then mistakes the map and its reified entities for the bumptious, nonliteral world" (ivi 135). Corporeal fetishes, for Haraway, "obscure the constitutive tropic nature of themselves and of worlds" (ivi 136) to present themselves as "outside the economy of troping" (ivi 134). In other words, the corporeal fetishist logic of biometric recognition technologies invests bodily traits with epistemologically positive value and constructs them as measurable and reliable markers of identity; then, by presenting the identity they are supposed to index as inscribed in the self-evident "empiricity of flesh" (Pugliese 2005, 94), biometrics are able to pose as objective and uninterested in identity categories like race.

In other words, corporeal fetishism is Haraway's term for the bioessentialist logic of biometrics in relation to its material-semiotic objects of knowledge. Biometrics' epistemic investment and overdetermination of "traits", for Kathrine McKittrick contends "traits … underlie a biocentric system of knowledge" (McKittrick 2021, 110): through traits, the identity categories they supposedly stand for are reinforced. However, biometrics' (re)production and reification identity categories results also from the precognitive logic inherent to all forms of recognition. Biometric technologies' reliance on pre-established categories, which they necessarily reproduce and enforce, is inscribed at the deeper levels of their material-technical operations. A brief look at their guiding principles and operative logics will allow us to expose the extent to which

recognition is inscribed in biometrics, and help us orient ourselves in the coming work of analysis.

In biometric technologies geared toward subject *verification*, a subject *enrolling* into a system is asked to present the body trait that is the object of measurement (like a fingerprint, an iris, or voice) to the technology's sensing apparatus, which scans it; the resulting *template*, a digital representation of the body, is stored and labeled (with *metadata* consisting of subject) in a *data-set* to be consulted at a later stage. When a subject *reenrolls* into the biometric system, the new scan is compared with the stored template, and a list of probabilistically sorted result is produced. Biometric verification attempts to answer the question 'Are you who you claim to be?', expressible in the formula 1:1 (van der Ploeg 1999, 39). On the other hand, biometric *identification* procedures are articulated around the question 'Who are you?', expressed as a 1:n function. The biometric query also represent the *script* of the algorithm, which in the case of the algorithm I consider in the next Part, is rephrased as 'Where are you from?'

Biometric identification does not seek to establish a perfect match between two identical bodily representations: the comparison between stored templates and the bodily representation captured at the time of re-enrolment allows for degrees of variation. Most significantly for our purposes, identification, in this sense, does not necessarily seek to establish individual identity (i.e. uniqueness), but can mobilize bodily traits as signs of identity features, for example 'gender' or 'citizenship'. Although verification and identification are usually presented as different practices in biometric discourse, they are not mutually exclusive – rather, as media scholar Irma van der Ploeg demonstrates, biometrics always involves a combination of both (ibidem).

Both practices, moreover, depend on the production and creation of labeled data against which all new subjects are measured. Remo Gramigna and Cristina Voto have considered this working principle of biometrics in their semiotic analysis of face recognition algorithms. Drawing on Umberto Eco's work on recognition and adopting a Peircean semiotic framework, they relate the production of templates as a form of *typification*, where 'cognitive types' act as normative blueprints against which deviations of 'token' events are compared. To better understand the semiotic relation between these two sign types, I will report their line of thinking in full:

> The type–token distinction is the cognitive process that leads to the construction of a model where the type is the class of which all signs are exemplars, and the tokens of a type are the occurrences, namely, the singular replicas that can be categorized in a given class. A type, as for instance a particular anatomical eye shape that can be read and interpreted as belonging to a specific ethnic group, must be actualized in a token, that is, in a singular face in order to be recognized. This face will be a sign of a type and, therefore, of the group to which the type refers (Gramigna & Voto 2021, 349)

What is relevant to note for our purposes, is that "recognition and typification", that is, the production of types, "are two phenomena that are, in some respect, interwoven" (ibidem). To a certain extent, recognition always already implies processes of interpretation, which mostly fall back on existing cognitive categories. The situated character of the 'enmeshment' of recognition with typification is acknowledged by Gramigna and Voto:

> The constructions of types and their recognition by the observer are two processes that shed light on the sociocultural element in which both the phenomena of perception and recognition are enmeshed. From this perspective, typification is the process by means of which one selects certain aspects from a given token, and due to such selection, one is able to attribute the particulars of a face to the general category of humans as a group through an abstract interpretation. Indeed, typification is a classifying scheme that arises from the concrete practice of ordinary life, made up of interactions and problems to be solved in order to recognize someone. Such typifying schemes produce a structure on the basis of common knowledge that is not homogenous but contextually, and therefore culturally, distributed (ibidem).

It is through types and processes that typification that identity categories are inscribed in biometrics, which find in templates their operationable representations. The inscription of categories through template production and labeling is a normative practice whose effects are considered in relation to race by critical race studies and media studies scholar Simone Browne, whose notion of "white prototypicality" emphasizes the disciplinary function of whiteness as an 'infrastructural', concealed type against which all token deviations are measured. Discursively removed and made invisible in biometric narratives, this "structured violence is productive of and produced

by a certain white normativity, meaning that whiteness is made normative and, in so being, raceless", Browne writes (Browne 2015, 110).

Such strategies of reinscription of race into biometric algorithms are all the more dangerous to the extent that the discourse on algorithms, characterized by the epistemic virtue of objectivity, leans on their presentation as 'colorblind' to racism (Bonilla-Silva 2013). In this view, technologies are considered 'indifferent' to race insofar as they are not trained to recognize it. However, as we have seen, racism is recast precisely by its occlusion: in this scenario, biocentric technoscientific practices of recognition, at the same time adopt and allow race to be reproduced and persist as an organizing social category (Saini 2020).

Through typification, race is inscribed at the same time that it is occluded in the "infrastructure" (Pugliese 2025, 56; McKittrick 2021, 131) of biometrics. Subjects must measure against pre-established 'types' acting as norms; at the same time, their discursive erasure in technoscientific narratives secures their enforcement. The normative categories inscribed in biometrics do not only make up their 'bias', but also reveal the extent to which recognition depends on precognition. By relying on pre-established categories, biometric algorithms can only recognize what they already know. As Sylvia Wynter (by way of McKittrick) contends, recognition schemas operate through a logic of "'adaptive truth-for' … a process typical to what we already know: a biocentric system is mathematically confirmed" (ivi 114).

From this line of thinking, it follows that the failures of algorithms to recognize is at the same time, as Shoshana Magnet suggests, is both "endemic" – that is, specific to the case of each system's material-technical setup and operations – as well as "epidemic" – namely, *systemic*, infrastructural (Magnet 2011, 7). I argue that the systemic character of biometric failures lies in the paradigm of recognition they inscribe and reproduce. Being limited to second-hand knowledge, algorithms cannot ever encounter difference in itself, but are constrained by what they already know: they can only confirm identity. Recognition (algorithmic or human) is always, to some extent, misrecognition. Now, I thus seek to answer the questions: how has the endemic and epidemic problem of algorithmic misrecognition been addressed by researchers and activists?

As we shall see, as in the other cases I have surveyed in the previous Chapters, algorithms' systemic misrecognition or failure to recognize marginalized subjectivities has often been addressed through a paradigm of recognition that is thus unable to move beyond the model that it protests. Furthermore, as I will argue, the foregrounding of *data* and *datasets* in these forms of claim-making can only participate in the fine-tuning of algorithmic recognition, without addressing it as a systemic injustice. For example, in biometrics, a such model would intervene on the extension of datasets and the 'correct' labeling of biometric templates. However, this idea and practice can only extend the capture performed by the automation of recognition. What forms of *activism* can thus be advanced in opposition to algorithmic recognition? And where does this leave, then, the systemically unrecognized subject?

FROM JUSTICE TO RESISTANCE

In the present Section, I briefly survey proposals from scholars, programmers, activists and artists who have focused on the discriminatory effects of algorithmic recognition and misrecognition that I group under the provisional banner of *algorithmic recognition justice*, by combining the name of programmer, researcher and activist's Joy Buolamwini's foundation Algorithmic Justice League, which I consider below, and the notion of recognition justice I have addressed in the previous Sections. I will concentrate my aim as much as possible on interventions focused on algorithmic *recognition* and, where possible, I will consider ethicopolitical formulations addressed to the specific case of *biometric* recognition, directly in relation to *voice* as its object, and articulated through the interdisciplinary intersection of art and activism, in order to better situate my later analysis of Pedro Oliveira's work of algorithmic resistance in the next Chapter.

By grouping together many instances under the collective name of 'algorithmic recognition justice' I am aware of the risk of reducing practices advanced from different positionalities and through differing processes and formats – however, I maintain, these theories practices share some relevant commonalities that justify this generalization. Thus, in order to address what I identify as the 'discontents' of this mode of claim-

making and its framework, I first consider the common understanding of *data* as the object around which algorithmic justice recognition practices are articulated.

With the rise of 'big data' (Kitchin 2014) and platform power (van Dijck et al. 2019), forms of discrimination and 'violence' operated by algorithms (Ọnụọha 2017) have been considered as effectuated by the *data* that algorithms extract and analyze, organized in *datasets* upon which they rely and which they operationalize. The datafication of all aspects of society (Couldry & Meijas 2019) have been considered from a variety of perspectives. With particular interest for our present concerns, data has been considered for its role in the datafication of the body operated by biometric technologies (Ajana 2013), in conjunction with the governmental administration (and formation) of 'digital citizens' (Ruppert 2019).

The extraction of data from the body (particularly those of already marginalized subjectivities such as migrants and racialized subjectivities), its application in border control and surveillance (Ajana 2013; Ozkul 2023) has been considered in connection with colonialism and colonial structures of oppression, whose practices (and at times whose very data and data-sets) contemporary technologies such as biometric algorithms reproduce and reoperationalize, giving way to forms of 'data colonialism' (Couldry & Meijas 2019). Shared across this perspective is thus an understanding of data as dependent on processes of production, curation and interpretation, as a non-autonomous, non-neutral material and sociotechnical construct travelling across infrastructures and assemblages as a 'mutable mobile' (Leonelli 2020) that can be mobilized for different ethicopolitical agendas.

To the same extent, data-sets as archives where data is collected, stored, cataloged and curated, have been the object of increasing critical attention in scholarly research. Critical algorithm studies has been recently proposed as a new interdisciplinary discursive field aimed at the critical consideration of data-sets as sites of power (Thylstrup 2022). Data-sets, from the philosophical framework of the archive theories on which this discipline relies, are never neutral objects or practices, but devices of law and order, whose power manifests in conjunction (or disjunction) with the sources of their authority (Derrida 1998). Critical data studies combines this view with Foucault's understanding of archives as structuring the conditions of possibility of

discourse (Foucault 1994). From this perspective, which data and how it is stored in data-sets determines who or what can be recognized by algorithms.

Grounded in these frameworks, bottom-up initiatives have thus increasingly focused on data and data-sets as sites of power to be tackled through forms of 'data justice' (Dencik et al. 2022) and 'digital reparative practices' (Thylstrup et al. 2024), but which I tie back to our specific concern of algorithmic *recognition* justice. In their examination of grassroots forms of data activism, scholars Davide Beraldo and Stefania Milan distinguish between *data-oriented* and *data-enabled* activism. Of our interest for our present concerns is the former mode of "data-oriented activism", which the authors describe as

> activism that identifies data-related processes as the main *stake* of action, emerges as a grassroots response towards critical aspect of datafication. It adopts a variety of action repertoires, including advocacy, literacy promotion, software development, campaigning. Examples include the activities promoted by digital rights organizations, security trainers, and algorithmic transparency initiatives (Beraldo & Milan 2019, 6, my emphasis).

With regards to the specific case of the harmful effects of algorithmic recognition, forms of claim-making in the vein as those described by Beraldo and Milan adopt reformist approaches are, in my view, only able to provide short-term solutions for the broader, 'epidemic' problem of algorithmic violence. Although I find these practices helpful, even fundamental in the joint work toward algorithmic justice from a multidimensional perspective, I understand data-oriented forms of algorithmic justice to be limited and ineffective in tackling the systemic harmful effects of algorithmic recognition. Reasons for this, I argue, can be found in how their very foregrounding of data as a site of power orients and shapes these approaches *vis à vis* the (to the risk of repeating myself) specificity of algorithmic recognition.

By adopting an approach to data and data-sets grounded in their understanding as central to the performance of recognition, these approaches, I argue, miss the point. As a matter of fact, as we will see in the case of BAMF I consider in the next Chapter, the 'correct' labeling of data, as well as their presence or absence in data-sets, all impact on the success or failure of the performance of algorithmic recognition. However, by questioning the disciplinary role of data and data-sets as the issue to be 'repaired',

data-oriented approaches to algorithmic recognition only manage to reinstate and fine-tune the concealed normative standards of comparison on which algorithms rely to perform recognition, without questioning the very principle upon which they operate. This understanding also limits these approaches by necessarily appealing to external sources of agency to repair the issues that they can only point to, without being able to directly intervene.

This becomes apparent in initiatives aimed at the issue of 'missing data' and 'datasets' (Ọnụọha 2016), to which I will now turn to better substantiate my claims. A classic example of a data-oriented intervention that understands the extension of data-set as a site for reparation is artist, researcher and coder Mimi Ọnụọha's artistic series *The Library of Missing Datasets* (2015-2021). Composed of a series of file cabinets, this art installation project is paradigmatic of Ọnụọha's ethos of algorithmic reform. In her own writing, *The Library* addresses

> missing data sets [as] the blank spots that exist in spaces that are otherwise data-saturated. Wherever large amounts of data are collected, there are often empty spaces where no data live. The word 'missing' is inherently normative. It implies both a lack and an ought: something does not exist, but it should. That which should be somewhere is not in its expected place; an established system is disrupted by distinct absence. That which we ignore reveals more than what we give our attention to. It's in these things that we find cultural and colloquial hints of what is deemed important. Spots that we've left blank reveal our hidden social biases and indifferences (ibidem).

Analytical, artistic and activist interventions such as Ọnụọha's aim to shed light on constitutive absences in data-sets. As is apparent by the artist's own words, the exposure of absence is understood as an objective in itself, as it allows to bring to attention what and who is deemed relevant in the construction of algorithms and our increasingly algorithmically-mediated societies. Ọnụọha also points to this void as possible site of accountability and reparation, as it implicitly gestures towards the issue of missing data as impacting on the outputs of algorithmic recognition[17]. I argue that, as

[17] Sensitively, whereas the artist has made the files available for the public to consult in the two iterations of their project (Ọnụọha 2016; 2018), a third version occludes the content,

the issue of missing data "explicitly includes a political demand, because the group making the demand for information is trying to charge another group or institution with the responsibility for the absence of this data" (de Almeida et al. 2024, 195), it also necessarily depends on the external conferment of recognition, which we have identified as a key problematic of ethicopolitical models based on recognition.

Though I value and admire Ọnụọha's work, and understand it as a valuable critical intervention, I interpret the approach to the problem of recognition from the perspective of missing data, such as that exemplified by Ọnụọha as overly relying on representation as an end in themself. I believe that such models do not provide a solution able to account for the double binds of recognition, but contents themselves with reform. By attempting to repair for missing data and data-sets, these approaches end up fine-tuning algorithms for better capture. By reframing the problem of the inherent normativity and disciplinarity of data as one of visibility and representation (by the logic that the more diverse and 'correctly' labeled a data-set is, the better algorithms can perform algorithms recognition), they wind up reproducing an inherently oppressive system, which they participate in calibrating. My next example will hopefully further substantiate my argument.

Combining an approach based on the expansion of datasets and one grounded in the reform of source-codes, self-styled 'poet of code', researcher, programmer, artist, activist and founder of the Algorithmic Justice League (AJL n.d.) Joy Buolamwini's work and story have inspired the Netflix hit documentary *Coded Bias* (Kantayya2021). Buolamwini, whose research has extensively investigated face recognition algorithms' failures to detect black faces, has traced back this issue to "a lack of diversity in the [data] training set [that] leads to an inability to easily characterize faces that do not fit the normal face derived from the training set" (Buolamwini 2016).

Tackling at the same time the issues of missing data-sets and that of coded bias, she argues that "limited views create limited systems", leading her to invite to "code with a more expansive gaze" (ivi). For Ramon Amaro, who analyzes this

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"[complicating] calls for inclusivity and openness by asserting a contextual protocol of security" (Ọnụọha 2021, fig. 1), pointing to how the "uncritical act of opening all things to all people is in and of itself an act of aggression and oppression" (Thylstrup 2022, 658).

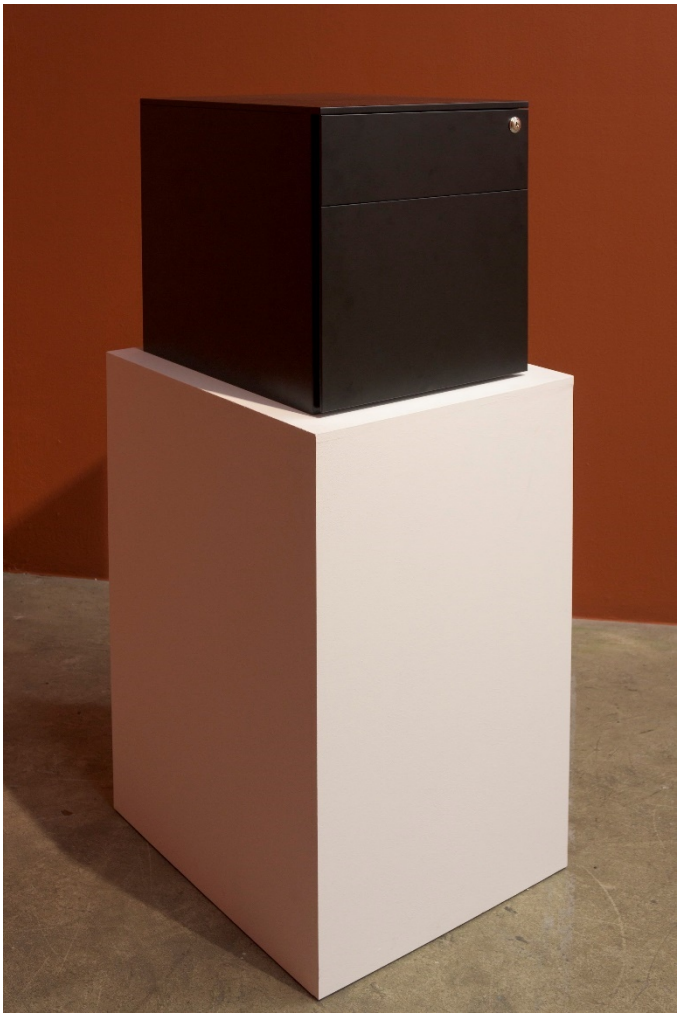

Fig. 1: Mimi Ọnụọha, *The Library of Missing Datasets 3.0* (2021)

Mixed media installation

paradigmatic case of approaches based on algorithmic recognition justice, "Buolamwini speaks directly to the problem of erasure, more specifically the erasure of being, yet the act folds seamlessly into a desire for representation" (Amaro 2023, 48). Taking issue with the inscription of a dialectical model of recognition into algorithms and the reformist justice claims that emerge from it, Amaro again draws from Fanonian framework to address his criticism.

For him, ethicopolitical claims such as Buolamwini's, based on a politics of visibility and representation (inherent to the scopic regime of recognition justice for how I have charactetized it) foreclose the possibility of transformative justice precisely because they assume the same model of recognition they claim to reform. Though he concedes that "while the achievement of Buolamwini's aims might widen the scope of machine perception, not to mention the participation of excluded bodies in techno-social ecologies, the proposed solution reinforces the presupposition that coherence and detectability are necessary components of techno-human relations" (ibidem).

Furthermore, in claims driven by the 'desire for representation',

> the racialized become visible as individual beings only inasmuch as their possibility for existence aligns with preexisting concepts of racial hierarchy … Although the immediacy of computation's lack of diversity-in terms of institutional value and algorithmic function cannot be understated, a call to make Black technical objects compatible with computer vision algorithms risks the further reduction of the lived potentiality of Black individuals and collectives (ivi 47-8).

In Amaro's work we can hear the echo of Fanon's adage that "not only must the black man be black; he must be black in relation to the white man" (Fanon 2008, 90).

Ethicopolitical demands grounded in visibility and representation, for Amaro, fall inevitably in the oppressive double bind of recognition. The erasure of the systematically unrecognized, from the perspective of such reformist approaches to algorithmic justice, must be fought through strategies of representation. If this approach can indeed engender a recalibration of algorithm's sensitivity to identity, it cannot move beyond its inherent understanding of difference as its downside, reinstating the normative, disciplinary role of the data they seek to repair or include. As this model requires pre-established (though implicit) fixed categories for the

organization of difference (such as race, gender, and so on) the subject of recognition must submit to its logic, which they can only expand, though not overcome.

This ethicopolitical model, though aimed at extending the scope of recognition, cannot move beyond the setting of new normative standards. If, with Louise Amoore, we understand that "it could never be sufficient to demand that facial recognition algorithms that fail to recognize black faces be trained on a greater variability of images" (Amoore 2020, 73), Amaro concludes that "any discourse on the biopolitical impact of data should therefore extend beyond the general sites of data aggregation" (ivi 21). The same is also true for algorithms geared towards recognizing voice. In fact, for Eidsheim, who recently turn her attention to voice and accent recognition technologies such as our own case of BAMF, although "the work of opening voice-driven technology to a much broader range of accents is clearly needed, it is not the solution" (Eidsheim 2019, 144).

Against data-oriented models of recognition justice that attempt to intervene on data to calibrate algorithms for better performance, tuning them to faces or voices that are 'just right', Eidsheim proposes an idea of 'just recognition' where "to be recognized in relationship to oneself and to the multiplicity of histories and communities that we constantly adopt, reject, and form within multiple relationships. To be recognized justly is to retain protections and human rights. Listeners who recognize justly afford each voice its multiplicity" (Eidsheim 2023, 144). Although Eidsheim radically reframes recognition and gears it towards precisely what traditional Hegelian models negate (i.e. self-determination, multiplicity, relation, and rights), she still resorts to the paradigm of recognition as a conceptual figuration for the articulation of an ethicopolitical model.

If recognition is not the point, then where, again, does this leave the systematically unrecognized? "How can Black technical objects generate new possibilities outside of phenotypical calculation, prototypical correlation, and the generalization of category?" (Amaro 2019, 53) The model mentioned by Eidsheim might accommodate difference without capturing it in the normative, essentialist, colonial, oppressive double binds of recognition. However, besides gesturing towards it, Eidsheim does not do much to outline what a such practice would entail. Aligning with Chun, Amoore, Amaro and Eidsheim in identifying the limitations of data-oriented

approaches to algorithmic recognition justice, I now seek to identify models through which not only protest recognition but actively *resist* it.

As sociologists Tiziano Bonini and Emiliano Treré contend in fact, "algorithms can be sources of discrimination and oppression … however, we want to show another side of the issue – namely, that algorithms, as well as producing oppression, can also be appropriated by users to resist the power of technology companies", or in our case, the paradigm of recognition on which they are based. "They can be both: algorithms of oppression and algorithms of resistance" (Bonini & Treré 2024, 14). The move from a paradigm of *recognition justice* to one of *resistance* is, to my view, similar to Nancy Fraser's suggestion of *redistribution* as an alternative model to Honneth and Taylor's theory of recognition struggle I have considered in Chapter 1. Resistance, in fact, is able to redistribute agency towards users as active subjects, as opposed to objects, of algorithmic processes.

Resistance can also reoperationalize algorithms for different purposes than what they were programmed for. Although it can be formulated across different material and discursive fields, *algorithmic resistance* does not usually content itself with critiquing algorithmic injustices and articulate demands, but can find in algorithms themselves the means of resistance. Forms of algorithmic resistance are also almost always articulated from the ground up: in refusing to appeal to state and companies' 'good sense', they appropriate algorithms as the means of production of their own subjectivities in neoliberal capitalism. In doing so, they are able to overcome a problem of recognition that was already identified by Fanon: the recourse to oppressors as the source of agency and right.

As Bonini and Treré note,

> [different] types of resistance depend on the ability of the subjects of the act of resistance, the targets of the act, or an external observer to recognize this act of resistance as such. As a result, there may be acts of resistance that are recognized as such only by those who make them, or exclusively by those who receive them (the target). Others are acknowledged only by an external observer or by all three actors mentioned here. The combination of these subjects (actors of resistance, target of the act of resistance, and an external observer) gives rise to the complex tapestry of resistance (ibidem 35).

In the two coming Chapters of this project, I thus consider these perspectives in my analysis of artist and researcher Pedro Oliveira's practice of resistance to and *through* a voice biometric recognition algorithm, without conceding to 'god tricks' which conceal the positionalities of all actants involved. Rather, I locate myself as an observer of Oliveira's performance of acts of resistance, which I assess and report in its singularity across a rather different scenario of activism, marked by the paradigms and forms of claim-making I have criticized in this Section. My analysis will thus consider Oliveira's analytical and practical engagement with the algorithm, the theories and frameworks that inform it, its explicit and implicit targets, and the specific modalities and methodologies through which Oliviera performs it.

As Bonini and Treré observe, however, "[the] power that these platforms exercise is mostly invisible to ordinary users and is based on algorithms whose functioning is, to say the least, *opaque*" (ivi 34, my emphasis). The practice of algorithmic resistance must thus confront itself with algorithms' own opacity. If algorithmic opacity does indeed raise methodological and ethicopolitical questions related to the practice of opposition to algorithmic recognition, at the same time, as I will attempt to demonstrate in the next Section, we can find in opacity the means of resistance. Algorithmic opacity will emerge, in the same way as Glissant's, as a figuration through which to account for the multiplicity and performativity of algorithms without falling back on the drawbacks of models based on recognition.

In considering algorithmic opacity, I mostly rely on political geographer Louise Amoore's groundbreaking work on the ethical and political challenges advanced by algorithms, which she considers through a new materialist framework. Through her work, and other productive concepts such as that of 'regimes of recognition' it will be possible to confront algorithms on their own terms, and thus avoid to relapse on idealistic forms of ethicopolitical claim-making. Rather, it will be possible to suggest materialist forms of resistance grounded in algorithms' own mode of being and knowing. An engagement with her pioneering work will also allow us to recast algorithmic opacity from an epistemological hindrance limiting the possibility of ethicopolitical accountability to opacity as algorithms' onto-epistemological constitution.

ALGORITHMIC OPACITY

For Louise Amoore, recognition is a theory and a practice in which ontology, epistemology and ethics intersect, which algorithms inscribe and reproduce according to the their own specific conditions. It follows that any ethicopolitical articulation of demands that seeks to protest or resist to the injustices caused by algorithmic recognition must therefore measure up against algorithms' own mode of being and knowing. Through a framework informed by new materialisms and feminist technosciences, she considers algorithms' *regimes of recognition* as emerging from the "distributed, heterogeneous work processes of technoscience" (Haraway 2018, 141) and, at the same time, contributing to produce new forms of posthuman ethical relations. Understanding the situated intra-actions among human algorithms, as well as algorithm's material-technical operations from their non-human perspective is thus instrumental in the work of *auditing* algorithms.

Thus, for Amoore, algorithms do not only inscribe recognition, but actively reshape it. This insight, informed by the immanent, posthuman, performative framework she adopts, has great consequences for our understanding of both the practice of algorithmic recognition and of its objects. It is especially productive in the context of our consideration of biometric recognition algorithms, where what is (claimed to be) recognized (but is actually reshaped) is the human. For Amoore "there can be no legible human outside the algorithm and underwriting its conduct" (Amoore 2020, 6). If what Amoore is gesturing towards here is the fact that the situated onto-epistemology of the human is inscribed in algorithms by humans, at the same time, when performed by algorithms, recognition reshapes our understandings of recognizable humanity. Algorithmic recognition must also be understood through algorithms' own non human modes of being and knowing.

"Algorithms", she writes, "do not merely recognize people and things in the sense of identifying – faces, threats, vehicles, animals, languages – they actively generate recognizability as such, so that they decide what or who is recognizable as a target of interest" (ivi 68-69). Thus, if on one side recognition is inscribed by humans in algorithms, the latter reshape it according to their own cognitive frames. For the author,

recognition emerges from human-algorithmic forms of relation, which must be considered with respect to the specific work processes and along the technical-material coordinates that its negotiation entails: "the selection of training data; the detection of edges; the decisions on hidden layers; the assigning of probability weightings; and the setting of threshold values: these are the multiple moments when humans and algorithms generate a regime of recognition" (ivi 71).

Regimes of recognition, in other words, are constituted together by algorithms and humans through negotiations, adjustments and adaptations of their respective materialities and epistemologies, modes of being and knowing. This idea has also relevant implications on ethics. Human and algorithms' co-constitutive participation in the making of "new regimes of verification, new forms of identifying a wrong or of truth telling in the world" (ivi 6) makes it so that to arrange the workings of algorithms is equivalent "to decide the register of what kinds of political claims can be made in the world, who or what can appear on the horizon, who or what can count ethicopolitically" (ivi 69). Algorithmic regimes of recognition can be audited, protested or resisted, but must always be measured against algorithm's own specific ontological and epistemological coordinates.

Amoore thus considers the dominant forms of claim-making against algorithmic wrongs to find some inherent flaws in their approach. She draws on the groundbreaking work of Mike Ananny and Kate Crawford, for whom conventional ethicopolitical responses to algorithmic injustice and their attendant analytical approaches are predicated upon idealistic stances that severely limit their outcomes. The view that characterize algorithms as 'black boxes' subjected to strategies of "secrecy" and "obfuscation" (Pasquale 2015, 6), from the standpoint of most researchers and activists, is an epistemological limit to the work of algorithmic audition, which in turns hinders the ethicopolitical claims that can be brought against them. *Algorithmic opacity* thus seem to create an impasse, to the extent that, as we have seen with Amoore, to protest algorithmic wrongs we must investigate and understand algorithms' technical-material operations.

Demands for increased *transparency* have thus been advanced in response to this scenario. However, transparency, for Ananny, Crawford – and, significantly, for Amoore as well – is an "ideal" (Ananny & Crawford 2017). Indeed, algorithms are

subjected to processes of *punctualization* (Law 1987; Callon 1987) and strategies of secrecy are enforced by state and corporate actors to protect them from scrutiny. Yet, the idea of 'opening up' algorithms, for these authors, is ill-suited for the distributed, ontologically heterogenous nature of algorithms. For Amoore as well, these articulations of ethico-political claims are examples of an "encoded ethics" that identifies the "locus of a truthful account in the apparent 'source' of the algorithm, in its origins, whether in the source code or in the algorithm designer as an author … imagines a secret source or origin to which all potential future harms could be traced" (Amoore 2020, 18).

'Encoded ethics' is a form of "paranoid reading" (Kosofsky-Sedgwick 2003) predicated on the dialectics of exposure and concealment characterized by Ananny and Crawford as transparent, and criticized as idealistic. Though I value these approaches and find them instrumental in the joint effort towards "algorithmic justice" (AJL n.d.), I consider them one possible (rather than the exclusive) ethical and analytical route – one, however, marked by an idealism that significantly limits their efficacy. To this understanding, along with these authors, I oppose an understanding of algorithms as *assemblages*. Algorithms' social, technical and material networks are distributed in space; moreover, their regimes of recognition, as we have seen, are the result of multiple moments of adjustment and negotiation. It follows that to 'open up' the black box, one is confronted with a complexity that exceed human cognitive and ethical frameworks and severely complicates simplistic forms accountability[18].

As it has already been observed in 1992 by Madeleine Akrich in a pioneering text in which we can hear Amoore's words resonate, "new technologies may not only lead to new arrangements of people and things. They may, in addition, generate and 'naturalize' new forms and orders of causality" (Akrich 1992, 207). New technologies like algorithms, for Akrich, "produce a specific geography of responsibilities, or more generally, of causes. To be sure this geography is open to question and may be resisted" (ibidem) – but it is also able to reshape and reorient human epistemological and ethical

[18] It will be useful to remember here Bennett's considerations about the accountability of assemblages, and the method she proposes of locating 'heavily trafficked passage points' (cf. Introduction).

models in its likeness. The spatially, temporally and ontologically distributed assemblage of components laid out by algorithms exposes the request to 'open up' algorithms in the pursuit of locating accountability along a paradigm of transparency in its 'idealism'.

What is more, "if we even could open it", as Ramon Amaro has stated, what an algorithm would reveal is "just math" (Amaro quoted in Amoore 2020, 9). His characterization of algorithms as made up of 'just math' is of course provocative, though efficient in exposing a common misconception in understanding algorithmic agency as mainly effected by, and thus ethically attributable to, their 'source-codes' as the 'master text' organizing algorithmic agency. Of course, source-codes are indeed invested with the power to organize algorithmic behavior. With regards to their discriminatory agency, Louise Amoore understands algorithmic source-codes as "calculative spaces where prejudice and racial injustices can lodge and intensify" (Amoore 2020, 69), making them 'heavily trafficked passage' points that demand our full attention.

However, due to the situated and distributed character of technoscientific work processes, biases not only can, but *will necessarily be encoded* into algorithmic scripts: the partiality of perspectives, as feminist technosciences teach us, is a condition whose concealment must be protested, but whose necessity cannot be remedied (ibidem). An approach that assumes the "coded bias" (Buolamwini 2019) inscribed into individuated objects like source-codes as the primary, if not exclusive, cause for algorithmic wrongs suffers from this epistemic misconception. "[There] are clear limits to identifying the source of the algorithm", observes Amoore, "not least that each apparent 'one' contains multiple elements from multiple sources, with much of this aggregation concealed even from the designer" (Amoore 2020, 18-19). In other words, echoing Bruno Latour's observations on the recursive nature of assemblages, Amoore observes how 'source-codes' too are assemblages resulting from ontologically heterogenous compositions and distributed forms of authorship.

She contends that, particularly in the case of machine-learning algorithms "the effects of the algorithm are generative and emergent so that the source-code is never complete. Put differently, the source is continually edited and rewritten through the algorithm's engagement with the world" (ivi 87). The opacity of algorithms that makes

them illegible and resistant to scrutiny, for Amoore, does not result exclusively from the unbalanced distribution of competences and strategies of secrecy and obfuscation, but constitute algorithm's own non-human mode of being (ivi 65). These considerations motivate Amoore to advance an immanent ethic-onto-epistemology of algorithms grounded in *opacity* as the 'emergent property' of algorithms' multiplicity and performativity.

Exposing the idea of a centralized, fixed and individuated inner 'source' from which all algorithmic agency springs as a misconception, Amoore substitutes it with an understanding of algorithms as distributed and heterogeneous, co-constituted by and within encounters, and whose performative agency is potentially transformative. This ethic-onto-epistemology substitutes a fixed, centralized entity with a processual perspective grounded in embodied (and thus also always already situated) forms of relation. Amoore's emphasis on the encounters between humans and algorithms, their co-implication and entanglement (ivi 20) as constitutive of algorithmic multiplicity and becoming, recasts their onto-epistemology as marked by an inherent *opacity*. In this idea we hear the echo of Glissant, where the "internal multiplicity" (Glissant 1997, 119) of diasporic identity and language practices is effectuated by their "worldwide entanglement" (ivi 118).

Conversely, if, according to Amoore, the 'transparency ideal' reterritorializes algorithms on the monocausal fiction of a centralized essence, equally, for Glissant, 'transparency' reduces the complexity of diasporic language practices to the reified construct of 'languages'. Hence, for both Amoore and Glissant, opacity, rather than a problem to be solved through practices of transparency, is constitutive of both human and algorithmic modes of being and knowing, and results from their intra-active entanglement with the world. This understanding, where ontology and epistemology are inextricable, as I have argued, has ethicopolitical repercussions. It is also able to orient analytical methodologies, insofar as the work of audition as a practice of situating must depart from, rather than be hindered by, opacity.

Building on Amoore, I understand all the characteristics that make algorithms opaque – their distributed nature and complex 'geography of causality', their processual character, their partiality and entanglement – as constitutive of algorithmic ontology, rather than epistemological limitations hindering the work of auditing of algorithms in

the pursuit of accountability. Methods of analysis and ethicopolitical articulation must thus be rearranged to take up the challenges posed by algorithmic opacity, not much as a hindrance to analysis, but an ontological condition around which forms of algorithmic resistance must be modeled. The ethics Amoore derives from these considerations "does not belong to an episteme of accountability, transparency, and legibility, but on the contrary begins with the opacity, partiality, and illegibility *of all forms of giving an account, human and algorithmic*" (Amoore 2020, 8, my emphasis). Once again, we have identified in opacity as a figuration able to resist recognition.

The ethicopolitical, analytical and aesthetic model that it results must thus "extend the opacity of the human subject, envisaging a plurality of venues for ethical responsibility in which *all selves* – human and algorithmic – proceed from their illegibility. The apparent opacity and illegibility of the algorithm", in fact, "should not pose an entirely new problem for human ethics, for the difficulty of locating clear-sighted action *was already present*" (ibidem, my emphasis). One question, however, remains: what to do with the algorithm's opacity? Is it truly impossible to examine algorithmic workings in detail, inspecting its material processes and technical operations? Or, to put it differently, do Amoore's reflections engender a defeatist ethical and analytical posture, the renunciation to any form of inquiry? Alternatively, how would a such work look and *sound* like?

In the two Chapters that make up the next Part of this thesis, I follow artist and researcher Pedro Oliveira's analytical and artistic work to tentatively answer to these questions. His consideration of a biometric voice recognition algorithm for the determination of undocumented asylum seekers' origin in use at the German state migration offices brings together all my reflections up until this point. Significantly, Oliveira is able to infer extremely relevant insight on the algorithm's workings despite its opacity. As we shall see, he does so by *describing* the assemblage laid out by the algorithm, which exposes its contingency on a plurality of actants, agencies and materialities. By so doing, he exposes how, contrarily to the discourse of objectivity that construct the algorithm's recognition as purely empirical, it is instead situated and partial.

Considering the contradictory statements, 'complex mistakes, denials and disavowals' of German state as discursive enforcements of opacity and, at the same

time, as indicated by Haraway, clues of the algorithm's inscription of forms of 'corporeal fetishism'. In doing this, Oliviera follows Amoore's suggestion (again via Haraway) to "follow threads in the dark" (Haraway 2016, 3-4): rather than demanding transparency, and renouncing the work of analysis, he is able to put the pieces of this contradictory puzzle together to break through the algorithm's opaque regime of recognition, and locate some 'heavily trafficked passage points' that mostly contribute to recasting algorithmic recognition as a form of discrimination. Furthermore, Oliviera's work also appear to be informed by Amoore's proposal to envisage a 'plurality of venues' through which to articulate the work of resistance to algorithmic recognition.

Thus, in the final Chapter, his work will take the form of a practical engagement with the algorithm. As I will argue, his practice of resistance *through* the algorithm, *deinscribes* recognition to *reinscribe* opacity. Transformed from an technology of voice recognition into an instrument of voice production, Oliviera performs *sonic opacity* by mobilizing the aesthetic potential of sound art, grounded in the understanding of the collective experience of listening as a laboratory in which alternative ethicopolitical model of listening able to resist recognition can be negotiated together with live audiences. In all these forms of engagement, rather than falling back on the limits of the models I have considered, Oliviera performs acts of algorithmic resistance through opacity.

CONCLUSION

In this Chapter, I have considered the inscription of recognition into algorithms. Even when recognition constitutes the *program* of an algorithm, it ties with its 'principal meanings' as a practice of *knowing*, *identification* and *discrimination*. In algorithms, recognition is not merely a technical function but an ethicopolitical model through which algorithms decide who and what matters – and who and what does not. Despite technoscientific narratives take efforts in presenting recognition as neutral, objective and purely empirical, recognition is situtated and contingent upon a variety of factors. Furthermore, the failure of algorithms to recognize disproportionately affects already marginalized communities. My inquiry sought to understand to what extent algorithms

inscribe the model of recognition, and how critical theory and activist practices have tried, sometimes failing, to move beyond these harmful paradigms.

I started by noting that algorithmic recognition must be understood from the non-human cognitive framework of machines. Drawing on Lazzarato and Deleuze, I discussed how algorithms apprehend humans as 'dividuals', rather than as subjects equipped with individual or collective identity. However, algorithms can participate in the reterritorialization of subjects over identity categories in multiple ways, such as in the case of biometrics I have considered thereafter. Through the work of Wendy Chun, I then emphasized that algorithmic recognition has always been tied to *discrimination*, tracing its genealogy to pattern discrimination. Recognition thus operationalizes discrimination under the guise of empiricism and mechanical objectivity, naturalizing power relations while hiding their performative construction. I stressed that recognition's reliance on *correlation*, a technique historically complicit with eugenics, further reifies fixed categories of race and gender without ever needing to name them explicitly.

In the following Section, drawing from a vast array of authors including Magnet, van der Ploeg and Pugliese, I have considered the ontological and epistemological notions inscribed into biometric recognition. By building on Haraway, I have demonstrated how biometrics operate under a paradigm of *corporeal fetishism* that invests the body and its representations with positivist epistemological value, reifying them as direct, self-evident indexes of identity. Then, I turned to the role of recognition's *precognitive* model to consider how biometrics encode and reproduce normative identity categories. By drawing on the semiotic work of Gramigna and Voto, I have argued that biometric systems do not merely record neutral data: they create *types*: normative blueprints that subjects are measured against. I argued that biometric infrastructures are racialized, embedding *white prototypicality* into their templates while claiming to be 'colorblind'. Importantly, I underscored that the systemic failure of biometrics to recognize marginalized subjects is not a bug, but a feature: it is at the same time *endemic* to specific systems, and *epidemic* to the very paradigm of recognition they implement.

I then critically surveyed responses to algorithmic misrecognition that I grouped under the tentative banner of *algorithmic recognition justice*. While acknowledging the

value of data activism and efforts like Buolamwini's Algorithmic Justice League, I argued that these initiatives often stay trapped within the same recognition-based paradigm they aim to critique. By demanding inclusion into *datasets* or correcting data labeling practices, they end up reinforcing the normative standards of recognition rather than dismantling them. Building from the critical work of Amaro, Chun, and Eidsheim, I insisted that merely repairing datasets cannot address the deeper systemic violence of algorithmic recognition. Instead, I proposed to shift from reformist calls for justice towards practices of resistance.

Drawing from Bonini and Treré, I have then outlined how practices of *algorithmic resistance* can reclaim agency not by seeking recognition, but by refusing it. To do so, practices of algorithmic can appropriate and disrupt the algorithms that they oppose. I then suggested opacity, often framed as a problem in holding algorithms accountable, can be mobilized as a strategy of resistance. Rather than trying to render algorithms fully knowable, resistance can embrace their multiplicity and indeterminacy, thus fracturing the logic of capture at the heart of algorithmic recognition. This framing sets the stage for my coming analysis of Pedro Oliveira's analytical, artistic and activist interventions against a voice biometric recognition algorithm, which I position as exemplary of a practice of algorithmic resistance grounded in the opacity of humans, algorithms, and their objects of knowledge.

In the conclusive Section, I have fleshed out how opacity relates to algorithms, evaluating its drawbacks and benefits. To do so, I engaged with the work of Louise Amoore, whose new materialist and posthuman framework I identify as apt for a discussion of algorithm's modes of being and knowing beyond idealistic models. For Amoore, algorithms' *regimes of recognition* reshape our understanding and practices of recognition. Regimes of recognition, for Amoore, are the result of human-algorithms encounters, where their respective modes of being and knowing are negotiated; they are also contingent on a multiplicity of actants, agencies and materialities. As a result, they decide together who and what can be recognized. Most importantly for our purposes, all these factors contribute to orient our forms of ethicopolitical claim-making.

I then argued that algorithmic regimes of recognition must thus be confronted on their own terms, rather than through idealistic demands for *transparency*. Following

Amoore, I criticized dominant frameworks that imagine algorithms as black boxes whose *opacity* is a problem to solve. Instead, opacity must be understood as constitutive of algorithmic ontology and epistemology, rather than a hindrance for analytical and ethical work. I traced how attempts to locate responsibility exclusively in imagined objects like *source-codes* misses the point: the distributed nature that makes algorithms *assemblages* far exceeds this frame of thought.

Building on Amoore, whose understanding of opacity echoes Glissant's, I proposed that ethicopolitical practices must depart from, and creatively engage with opacity, rather than demand its overcoming. Rather than retreat into defeatism, I suggested that opacity opens new venues for forms of algorithmic resistance that reimagine ethics, responsibility, and analysis beyond recognition. Setting the stage for the next Part of this thesis, I anticipated how Pedro Oliveira's artistic practice enacts these ideas in practical and resistant engagements with a voice biometric system, revealing how a practice based on opacity as a form of resistance to and *through* algorithm looks and especially *sounds* like.

PART 2: CASE STUDY

4: BAMF'S REGIME OF RECOGNITION

INTRODUCTION

In this Chapter, I examine a voice recognition algorithm through the work of analysis of Brazilian-born, Berlin-based artist and researcher Pedro Oliviera. Through Oliveira's work we will expose how recognition's 'principal meanings' of *identification* and *discrimination* are performed by an algorithm with concrete consequences. Oliveira concentrates on a technology widely reported as discriminatory to bring to light the ways in which this particular algorithm *produces* the (vocal) difference it claims to merely recognize – a difference which, as we have seen, the paradigm of recognition cannot truly accommodate, but can only recast as the negative downside of the identity against which it coercively compares it. Significantly, the algorithm's *inscription* of a partial (that is, situated – hence necessarily biased) perspective on its objects of knowledge (voice, body, identity), comes to light in the *failure* of the algorithm to fulfill its *program* of recognition. With Oliveira, I will argue that this failure is not only "endemic" to this specific algorithm, but is rather "epidemic" (Magnet 2011) of (biometric) recognition practices in general: recognition can only fulfills its promise by referring to what it already knows.

Oliviera tackles this objective from an interdisciplinary perspective, though his analysis is firmly based on a media-archeological framework that foregrounds the material-technical operations of the algorithm as illustrative of the historically and tropically specific epistemes on which they rest. Understanding his own practice as inscribed in a *decolonial* horizon (Oliveira 2022), he applies *genealogical* methodologies to his assessment of the algorithm to bring to light the *coloniality* of the epistemes and structures of power *inscribed* in and *reproduced by* biometrics in general, and the technology he considers in particular. Furthermore, by adopting a methodology grounded in *script analysis*, Oliveira allows us to peer into the algorithm's *regime of recognition* in search for the actants and processes most responsible for its failures.

In the first part of this Chapter we will follow Oliveira in his own attempt to 'follow threads in the dark'. Suggested by Amoore (by way of Haraway), this

methodology for the audition of algorithms is unhindered by algorithmic opacity as a limit to audition and therefore accountability – rather, by refusing to articulate his work on the premise of transparency, Oliveira assumes *opacity* as algorithm's own mode of being and knowing (its onto-epistemology). Adopting a new materialist and ANT frame of reference grounded in the notion of *assemblage*, Oliviera is guided in his work by the awareness of the impossibility of easily locating (or *ascribing*, in script analysis' terms) sites of accountability. Yet, by piecing together publicly available documents and statements, and with an ear attuned to the algorithm's *performative* dimension (what the algorithm does rather than what it is or conceals), he is able to infer some crucial details of the algorithm's inner workings, which lead him on the path to individuate an 'heavily trafficked passage point' suggesting him possible avenues for *resistance*.

By inspecting the algorithm through the privileged *point of audition* of Oliveira, I seek not much to 'dub' his voice, but rather to *diffractively* listen *through* it to draw attention to the specific analytical and ethicopolitical methodology he performs, which stands in clear opposition to ordinary forms of auditing and claim-making. Deliberately avoiding a confrontation with *data* or *scripts* as the privileged *loci* of accountability and possible grounds of intervention Oliveira's method (implicitly, though self-consciously) positions itself as a possible alternative to what we have termed 'algorithmic recognition justice': rather than attempting to 'fix' the algorithm, participating in the fine-tuning of its regime of recognition, Oliviera understands recognition *itself* (biometric and otherwise) as the problem. In other words, recognition, for Oliveira, cannot be fixed or enhanced through a model based on the very same logic it protests, but must rather be *resisted*.

Significantly, however, he does not limit himself to a critique of recognition (however radical), but employs practical forms of engagement that exceed the discursive limits of deconstruction. Performing a tactic of resistance *through* the algorithm, Oliveira will turn a machine-listening biometric recognition algorithm into a musical production instrument. His practice of *algorithmic resistance,* which I will relate in the following Chapter, will thus be grounded in the encounter between the opacity of the algorithm with the opacity of its own object of recognition: the voice. *Reinscribing* the algorithm, Oliveira is able to turn its program of recognition against itself, to sound out the opacity of all voices, human *and* algorithmic. The resulting

output of this work is *DESMONTE*, a live sound art piece which, in a final Section, I will attempt to tune into sonic opacity.

CRISES, WORRIES AND VIRTUES OF BAMF

In February 2017, an unusual incident at Vienna Schwechat Airport pulled the thread on what would unravel as one of Germany's most disturbing domestic security scandals. A man was apprehended while trying to retrieve a firearm he had earlier stashed in an airport restroom. Back at the station, Austrian police ran a fingerprint check – what they found was startling: the same prints were tied to two distinct identities. One of them belonged to a 'David Benjamin', a Syrian Christian refugee who had been granted asylum by the *Bundesamt für Migration und Flüchtlinge* (the German Federal Office for Migration and Refugees, hereafter BAMF) after four separate interviews in the Bavarian town of Erding. 'David' had lived for over a year in a refugee residence, where he documented life inside the camp using a handheld digital camera (Chase 2017). But there was no David Benjamin. Every day, the man who claimed to be him would slip away from the refugee shelter and travel hundreds of kilometers to return to his true life as Franco Albrecht, a lieutenant in the *Bundeswehr*, the German army. During these commutes, he certainly had the time to remove his fake beard.

Albrecht, whose affiliations with neo-Nazi groups were later revealed, was leading a double life. His plan was to carry out *false flag* terrorist attacks under the guise of his Syrian alter ego, framing Middle Eastern refugees for violent crimes. His goal was to stir anti-migrant sentiment and expose the excessive lenience of Germany's asylum system. He hoped to trigger a mass uprising against Angela Merkel's liberal government and the perceived "disintegration of the German nation" (Oltermann 2022) brought about by immigration, along the lines of 'Great Replacement' conspiracy theories. Franco Albrecht (who the German press would anonymize as 'Franco A.') was convicted of terrorism in 2022. His case rocked the German establishment. It was not just a tale of extremist ideology – it also laid bare the vulnerabilities in Germany's asylum procedures. Perhaps most damning of all was that his deceit worked: Albrecht succeeded in passing himself off as a Syrian asylum seeker (Biselli 2018).

As if to validate the assumptions of Albrecht's 'performance', the BAMF decided to implement a system which, in their mind, would solve once and for all the problem of the determination of origin of undocumented asylum seekers and prevent application fraud[19]. In 2017, BAMF introduced a proprietary technology alternately referred to as 'dialect recognition software' (*Dialekterkennungssoftware*), 'accent recognition software' (*Akzenterkennung*), and 'voice biometrics' (Stimmbiometrie) (Oliveira forthcoming, 2). This system was part of BAMF's overall *Digitalisierungsagenda,* a digitalization project aimed at streamlining and automating the management of asylum requests and procedures, introduced in 2015 in response to mass emigrations from Syria as the civil war intensified (Oliveira & Miyazaki 2022). In 2017, the year of the system's implementation, the IT management office of BAMF would win the 'European CIO of the year' award of the European Union (BAMF 2022 27). To understand this phenomenon we must contextualize it within larger societal and economic trends.

The adoption of voice biometric systems at BAMF results from the convergence of multiple social, material and economic forces. Most importantly, the media 'spectacle' around 'illegal' migration fluxes through the narrative of 'crisis' (De Genova 2013; 2019) lead to moral panic and the consequent legitimization of governmental "states of exception" and the temporary suspension of ordinary jurisdiction (Agamben 2005). This narrative of crisis facilitates profit-making for private and state-funded actors such as G4S and Frontex, as well as for a host of ancillary technology firms servicing the border surveillance sector (Rodier 2012). Furthermore, the recent commercial boom surrounding AI-driven voice technologies –particularly their

[19] BAMF's dialect/accent biometric recognition software comes into operation when, after previous interviews, the asylum seeker is unable to provide valid identity documents that can prove their citizenship. For the most different reasons, ranging from confiscation by smugglers, to documents not being issued in their home country, in 2017, over 60% of asylum seekers could not present valid ID papers at the time of lodging their application (European Parliament 2017). Conservatively, combining first and follow-up applications, this puts the number of people processed in the year of the software's implementation around 130,000. If even a much smaller percentage of these cases was processed by BAMF's voice recognition software, we would still be talking about thousands, if not more realistically tens of thousands of applications.

integration into consumer devices – has reinforced state interest in applying these tools to biometric identification (Turow 2021).

As Mirca Madianou relates, the rush towards biometrics follows a 'technosolutionist agenda':

> closely linked to the logic of capitalism and the involvement of technology companies in the aid sector … Given the complexity of humanitarian challenges, the desire to find solutions is not surprising. Problems emerge when solutions are put before the understanding of the actual problems. Technological hype, often stirred by technology companies keen to promote their latest innovation, takes precedence over the meticulous assessment of situations which may not be suited to digital interventions. The desire to find solutions may be one of the factors driving experimentation with technology in the context of emergencies (Madianou 2019, 7).

The belief in the 'mechanical objectivity' of biometric technologies, though exacerbated by the dynamics of late capitalism, as well as their employment as solutions to societal 'emergencies' are, however, hardly fresh news. Since their inception in the 19th century, biometrics have absolved securitarian and governmental functions (Porter 1986) in conjunction with colonial practices (Pugliese 2005) and particularly as an instrument of biopolitical control over migration (Ajana 2013; Lyon 2001). BAMF's 'voice biometric' algorithm does not only stand in technical continuity with former technologies and practices, which it *remediates* (Bolter & Grusin 1999) and reoperationalizes, but also performs the same functions of earlier biometric practices used in colonial contexts. Furthermore, the underlying operative logic of biometrics comes into focus when we consider the narration adopted by BAMF to justify the implementation of a biometric technology as a solution.

As then-BAMF director Frank-Jürgen Weise stated in an 2017 interview with Jefferson Chase for the German newspaper Deutsche Welle at the ceremony for the unveiling the new technology, "to state the matter clearly, with [the biometric algorithm], we would not have had Franco A. … We would have recognized that this sort of French isn't spoken in Damascus" (Chase 2017). In other words, BAMF's voice recognition biometric algorithm has been introduced not only to streamline asylum procedures, but also as a solution to 'human error' in application interviews. This aspect brings to the fore the multiple epistemic investments on the objectivity of

technology. Articulated within the negotiation between the 'epistemological worries' of asylum fraud and the 'epistemic virtues' of the machine (Daston & Galison), the adoption of programs like BAMF's *Digitalisierungsagenda* depends on the material-discursive labors of legitimization and maintenance of the *epistemic communities* organized around it.

Weise's statement brings to light multiple epistemic investments surrounding BAMF's voice recognition biometric technology – not only in relation its 'mechanical objectivity' but also with respect to its objects of knowledge. While the culturally 'made' (Ochoa Gautier 2014) semantic 'form' of asylum seekers' declarations is already determined by the possibility of simulation, the 'substance' of the voice, its corporeal ontology, is invested with epistemological positivity: it is believed to index a deeper truth of the subjects' identity. Biometrics, as we have seen, inscribe and operationalize *acoustic separations* according to the logic of *corporeal fetishism*, assigning different ontological and epistemological values to its objects of recognition. With regards to voice and its features, we have seen this split at work in Aristotle as well as in the *colonial acoustic assemblages* related by Ochoa Gautier.

This logic equally invests the *subjects* of biometric recognition: a divide is enforced between the gendered and racialized bodies and the practices of knowing which they are target: "a split" which, for Pugliese (citing Spivak), "pits subaltern being against elite knowing'" (Pugliese 2005, 66). Continuing to build on the productive interplay between Pugliese's studies of biometrics and Spivak's work on subaltern voices, I have proposed *onto-epistemic violence* as a term able to encapsulate the harmful alienating effects of biometric recognition's coerced severance between the body and identity of its subjects, and even within different sides of its objects, as in this case where language and 'voice itself' are assigned different ontological and epistemological values. Already marginalized subjectivities like asylum seekers, in this way, are not only alienated from their own bodies and their story, but also from the way they articulate their accounts, as their practices of languaging and voicing are understood by biometrics as entirely separate phenomena with different values.

As we shall see, it is precisely due to the partial notions of language and voice, of body and identity inscribed in the biometric algorithm, whose material-technical operations performs as onto-epistemological splits, that the fulfillment of the

algorithm's program of recognition is foreclosed from the onset, and can only result in misrecognition. Sure enough in fact, cases of misrecognition did not take long to come to light. Less than a year after the implementation of the algorithm, German journalist Anna Biselli reports the case of 'Hajar' (a pseudonym) an undocumented thirty-one-year-old Kurdish man whose primary language, Sorani was not included in the algorithm's data-set at the time of his application, resulting in the misrecognition of his language. The algorithm's false positive outputs, distributed probabilistically, were: Turkish (with 63% probability) and Hebrew (22%), languages that Hajar did not speak at all. The mismatch between the test results and Hajar's declaration of origin identified him as lying, and thus severely increased the likelihood of his deportation[20].

Since according to German laws and EU regulations asylum can be granted on the basis of the candidate's provenance from an 'origin country' deemed unsafe to return to and their status as 'persecuted', the impossibility of asylum seeker to present a valid ID elicits BAMF to seek for different methods to ascertain provenance. In the interviews conducted until that point, the asylum seeker is asked different questions about their home country. However, their account, if not supported by official personal documents is invalid to the ends of 'recognition': it is considered false until proven

[20] Considering the case of Hajar and of the many other undocumented asylum seekers processed by BAMF's algorithm, we must always keep in mind that political asylum is a fundamental right recognized by the Geneva Convention of 1951 and a constitutional right of Germany (a signee of the Convention) protected by the Article 16a of the Basic Law (Grundgesetz). Entitlement to asylum is regulated by state laws in negotiation with European directives, and is mostly directed at the "marginalized" and "persecuted" by state or "quasi-state" actors for their: "race"; nationality; religion; political opinion; or "membership of a particular social group" including communities of people identified by "sexual orientation". On top of this, "countries of origin" must be considered "unsafe" for the applicant to return to (BAMF n.d.). As is well known, the determination of 'safety' of a 'country of origin' is as much abritary as it often becomes the site of political, economic and narrative strategies on the part of governments, which uses it as leverage for the negotiation of political interests with other state actors (as is apparent, for example, in the relation between Italy and Lybia), as well as a discursive weapon through which partial narrations of migratory 'crises' can be presented to the public.

otherwise. The introduction of a voice recognition biometric algorithm transforms the nature of the material-discursive practice of recognition. When human listening becomes 'machine listening', recognition is reconfigured to adapt to the non-human ways of knowing and to the specific characteristics of the algorithm's material-technical operations.

Cases like Hajar's raise important questions on the algorithm and the ways it performs recognition. First of all, one is led to ask what exactly is the object of the algorithm's recognition. BAMF alternately calls its system 'accent' or 'dialect recognition', or 'voice biometrics': what is the algorithm actually supposed to recognize, then? And what is the role of the voice and the body (implied in the prefix *bio* of *biometrics*) in this recognition? To what extent recognition depends on the extension of the algorithm's data-set, on the presence, absence or 'correct' labeling of voice or language data? In time, we will be able to answer all these questions – however, before we can delve deeper into the algorithm's *regime of recognition* to address these central problems, we must follow Oliveira in his *description* of BAMF's *assemblage*, which begins from the embodied *setting* where the interviews take place.

DESCRIBING BAMF'S ASSEMBLAGE

Franco Albrecht's imposture, his deceitful misuse of face-to-face asylum interview procedures revealed what BAMF understood as a problem to be fixed by implementing and delegating the labor of recognition to a voice biometric system. Conversely, Hajar's truthful account of his identity is recognized as fraudulent by BAMF, and the working of the machine as revelatory of a fraudulent statement. Whereas BAMF considers the results of Hajar's biometric application as proof of the algorithm's correct working, however, analysts like Biselli expose it as failure. *Crises* and *failures* such as these can reveal something important of the workings of a technology. They lead us on the path to exposure, and can thus be an important site where to commence a work of analysis as a necessary step towards the path to algorithmic justice or resistance.

In *A Summary of a Convenient Vocabulary for the Semiotics of Human and Nonhuman Assemblies*, where Madeleine Akrich and Bruno Latour lay the groundwork for the practice of *script analysis*, they write that the *description* of a complex,

ontologically hybrid and topographically distributed network is possible "only if some extraordinary event – a *crisis* – modifies the direction of the translation" (Akrich & Latour 1992, 260) – that is to say, when an object of analysis, for example a technology, fails to work, behaves contrarily to its *script* or is used differently from what is expected. "The deliberate experimental breaching" or a "breakdown situation … is a failure that reveals the inner working of the setup" (ibidem). Crises and failures bring attention to the workings of the technology and can drive analysts to "open up" a technical object to "count what's inside" (Latour 1992, 184), to 'reveal' its 'inner' workings[21].

Description as characterized by Akrich and Latour is thus a practice concerned with the exposure of the actants 'blackboxed' (Latour 1999) or 'punctualized' (Law 1992) by a technical object, acknowledging their respective agencies and materialities, and the role in the carrying out of the technology's scripts and programs. Understood along these lines, description follows the logic of a visual semiotics predicated upon opposing conceptual pairs: exposure-concealment, opening-closure, *transparency-opacity*. Paraphrasing queer literary critic Eve Kosofsky Sedgwick's work on the literary epistemology of 'coming out of the closet', description defines an 'epistemology of the black box' (cf. Kosofsky Sedgwick 2008). Description in this key can thus easily conflate representation and visibility with justice: to *bring to light* the workings of an algorithm, in this respect, is to oppose the systemic invisibilization of its components, their agencies and materialities, typical of algorithmic narratives.

Aligning with this view, I understand this work as productive in the shared effort of exposing the extent to which an algorithm geared to recognition depends on the contingent cooperation of heterogeneous elements, and thus in debunking narratives of objectivity. For the reasons I cited in Chapter 3, however, I believe that a such practice of analysis, and its attendant ethicopolitical model, centered around representation

[21] These and other "breakdown situations" also reveal the architectural and optical metaphors with which we commonly describe technologies. Recuperating an argument made famous by Martin Heidegger, for Akrich and Latour, ruptures in technological functions reveal, or rather "unconceal" technical objects' actual materialities, ideal expectations, and practical workings, which analysts seek to track through the practice of de-scription (Akrich & Latour 1992, 260; Latour 1992,183). Crises encourage analysts, users and technicians

and the articulation of demand for justice, to be limited and incapable of bringing about long-term transformative change. In this sense, as we shall see later, Oliveira employs description as a necessary step toward alternative practices grounded in practical modes of engagement, capable of suggesting models of resistance to algorithmic resistance.

The work of description of an algorithm, however, as we saw with Amoore, is halted by its constitutional opacity and therefore its resistance to any simplistic practice of auditing centered around transparency and exposure, such as description. The work of description as a search for accountabilty is further complicated by the heterogenous network and 'complex geography of causality' laid out by algorithms. It is precisely in this sense that many scholars have mobilized the notion of assemblage in relation to algorithms (Lury & Wakeford 2013; Beer & Burrows 2013; Kitchin & Dodge 2014; Ananny 2016) as well as biometrics, where the cooperation of state entities, private companies, the non-governmental humanitarian sector, and the sprawling materiality of each specific biometric technologies, as Madianou argues, can also be characterized as an assemblage (Madianou 2019).

Furthermore, as we have seen, the notion of assemblage also lends itself to characterize the 'emergent properties' and products of heterogenous networks, as in "racializing assemblages" (Weheliye 2014), in which race is constituted and maintained as a biocentric ontological category for the organization of hierarchies by extensive systems of cultural, social, political and economic forces; and 'acoustic assemblages', where epistemic communities and technoscientific systems of knowledge production, each according to their own notions and interests, participate in the production of culturally and scientifically workable acoustic notions, such as 'voice' or 'timbre'. Combining all these notions into our specific case study leads me to characterize BAMF along these terms: as an algorithmic, biometric, racializing, acoustic assemblage, I call this, for the sake of brevity, the *BAMF assemblage*.

If describing an assemblage is a vertiginous effort, it is all the more convenient that Oliveira's description of the BAMF assemblage begins at the embodied level of its immediate *circumscriptions,* the material "arena of the setting" (Akrich & Latour 1992, 261) where the biometric screening takes place, which Oliveira is available to reconstruct through publicly accessible material from BAMF's website. An analysis of

this setting, though only accessory to the overall work of exposing the violence at play in the process of biometric recognition applied to asylum applications, is able to bring to light some revelatory details on how, at BAMF, human and non-human actants collaborate to facilitate the algorithm's program of recognition by mobilizing specific vocal features.

SONIC WEAPONIZATIONS

We are in a non-descript room (fig. 2). Two male individuals stand in front of each other from the two sides of a table. From publicly available documents, we learn BAMF calls this setting the "Kiosk" (BAMF 2017, 15). On the table, a small monitor is held by a mechanical arm. What looks like a tablet computer is attached to the monitor by means of a cable, facing the opposite side of the monitor. The tablet displays a color picture on which is portrayed a stylized, childlike sketch of a house, with two trees on the side, a full sun on the top, and four undiscernible elements in the foreground, possibly representing a fence or a stick figure family. The trees and the sun are the only colored elements in the otherwise black on white outline image. On the tablet side of the table a man who we understand to be the asylum applicant leans forward to speak into a microphone.

On the other end of the table, a BAMF clerk observes the monitor. Since the point of view is from the side of the applicant, we cannot see what the BAMF official sees in the monitor, but a balloon shows us a soundwave, signaling that the official is supervising in the recording of the 'interview', or conducting some type of real-time analysis of the recording. We learn that the biometric interview protocol demands the asylum applicant to describe the image they are presented over two minutes. Almost in real time, the biometric algorithm will compare asylum seekers' voices with the labeled data present in its data-sets and output results as a list of distributed probabilities (e.g., as we have seen in the case of Hajar, '63% Turkish', '22% Hebrew') which then will be assessed by a BAMF clerk.

This diagrammatic depiction corresponds to that reported by Pedro Oliveira and Shintaro Miyazaki in their co-authored article 'Maschinelle Intelligenz?! Stimmbiometrie als hörend-bestimmende Medien-Techno-Logie', except for one significant detail.

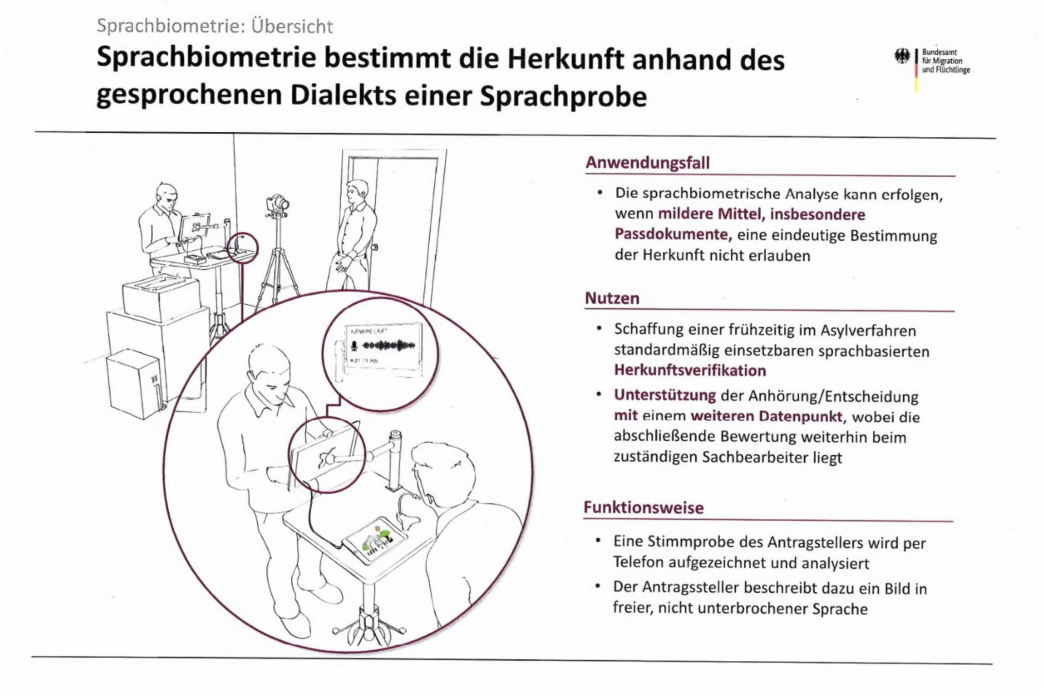

Fig. 2: The ‘Kiosk’ as depicted in a publicly available document from BAMF’s website

According to Oliveira and Miyazaki, who source this information from interviews with asylum seekers who have been subjected to the procedure the device applicants are asked to speak into an interface does not much resemble the microphone of the image, but rather a headset or a device designed to resemble the receiver of a landline telephone (Oliveira 2019a). Along with Oliveira as well as media studies scholar Daniel Leix Palumbo, who has also dedicated his research to BAMF's assemblage, the details of this setting are not to be considered as neutral but rather as precise design solutions that the actants (human and non-human) of BAMF assemblage negotiate among each other in accordance with their shared program of recognition.

In particular, these authors concentrate on the landline phone as a design solution that must not be exclusively assessed in terms of an interface whose *script* (its intended use) transcends competences and is globally familiar. We can first assess the 'Kiosk' phone in terms of its punctualization of the complex, distributed geography that collocates algorithmic acoustic assemblages "everyware" (Greenfield 2006), using a term coined by media scholar Adam Greenfield. In this sense, the phone provides a 'simplification' (Law 1987) of the vertiginous distribution of assemblages into an individuated technical object, thus reducing the risk of uneven distribution of competences, but most importantly provide a familiar, *affectively charged* interface with which asylum applicants are demanded to intra-act. However, what happens when the telephone encounters asylum seekers' own complex geographies?

Writing about the telephone's early diffusion and impact, media sociologist Davide Borrelli notes that "[unlike] other space-time-transcending or deterritorializing media technologies such as cinema, radio, and television, telephone communication messages are inherently sensitive to the living bodies of those who transmit them" (Borrelli, 2000, 12). In the telephone thus coexist two seemingly contradictory aspects of technologically-mediated communication. On one hand, the telephone, an instrument which for the first time in human history allowed real-time transnational oral communication, as Borrelli notes drawing on Gilles Deleuze and Félix Guattari, is a deterritorializing technology whose distributed, yet imperceptible geography can be said to prefigurate contemporary algorithms. On the other hand, the telephone retains the 'presence effect' of the voice it mediates.

The embodied proxemics of telephone communication, by connecting a localized material object to the sphere of intimacy and eroticism (such as the mouth and the ear) through the means of touch, encourage a sense of (mediated) "sonic intimacy" (Pettman 2017). The presence in BAMF's setting of multiple signifiers of intimacy, familiarity and domesticity points to a willful strategic exploitation of this affective sphere on the part of BAMF which, with Leix Palumbo calls a form of "sonic weaponization" of affectivity (Leix Palumbo 2024). As noted by Leix Palumbo and Oliveira alike in a text work commissioned by German multimedia festival Transmediale, telephonic communication is a mean for migrants, asylum seekers, and people sharing diasporic subjectivities to maintain bonds over great distances (Oliveira 2019a; Leix Palumbo 2019, 304); it offers migrants for tools of survival to organize across long, dangerous journeys (Leurs & Ponzanesi 2018) while it becomes the object of increasing, transnational surveillance (Weitzel 2018).

At the same time, the complex affective geographies and "politics of belonging" (Waltham-Smith 2017) of asylum seekers problematize any simplistic understanding of the affective investment into the idea of home, already foreclosed by the experience of persecution. For the asylum seeker, the telephone can thus evoke at best complex, contradictory affective states: the (gendered) sphere of domesticity might not evoke the sense of safety that BAMF connects to the familiar, while the 'sonic intimacy' the phone provides could accentuate, rather than offer relief to, the feeling of uprooting; the sense belonging to an imagined 'home' – whether figurated in the domestic environment, in the geopolitical space of the nation, or in the transnational community – is likewise a rather complex and subjective issue. These diasporic "structures of feeling" (Williams 1978; Sharma & Tygstrup 2015) are reduced by BAMF to a rather optimistic version with which the applicant might not identify, and *inscribed* at the level of the design of the interview and of its material *apparati*, of which the telephone is not the only element pointing to a mobilization of the affective sphere.

As the image provided by BAMF shows and as reported by Oliveira, the pictures applicants are asked to describe over the phone depict idyllic domestic scenes, such as childlike houses or a family dining together (Oliveira 2019a). More significantly, "this pattern", argues Leix Palumbo, "is also exemplified when looking at the name of the speech *corpora* on which the accent recognition software relies" (Leix Palumbo 2024,

314). Aptly named "*CALL FRIEND* and *CALL HOME*, and consisting of captured conversations occurring between Arab speakers in moments where intimate reconnections are established on the basis of the voice … by involving participants resident in North America to call friends and families overseas" (ibidem), the weaponization of affects eludes the embodied setting of BAMF's interview room to extend to 'deeper' material-technical levels of the algorithm's regime of recognition[22].

I thus follow Oliviera and Leix Palumbo in arguing that these design choices are intentionally employed by BAMF to coerce asylum seekers into precise affective states. As we shall see, however, appalling for their naivety and cynicism nonetheless, these choices are to be understood as tailored to algorithmic, rather than human, sensitivity. As Oliveira and Leix Palumbo propose, in fact, BAMF's strategic mobilization of affect is to be read in conjunction with the specific coordinates of the algorithm's regime of recognition. As they demonstrate, BAMF draws on sociolinguistic theories according to which vocal markers of geographical origin like 'accent' and 'dialect' (i.e. the purported objects of the algorithm's recognition), computationally measurable by analysis of the phonetic, suprasegmental and paralinguistic dimensions of speech (the most telling signifiers of accent and dialect – Schuller & Batliner 2013) are more 'naturally' exposed in familiar settings in which "the speaker is more emotionally involved" (Meyerhoff et al. 2014, 134; Oliveira 2019; Leix Palumbo 2024). This logic has five multiple corollary implications.

[22] We could argue these 'speech corpora', harvested "by involving participants resident in North America to call friends and families overseas" (Leix Palumbo 2024, 314) also performs a strategic weaponization of affect, though we are lead to believe their creation was supervised under stricter ethical and scientific protocols in a more controlled experimental environment than BAMF's setting. However, for reasons that will become clearer in a later Section and to which I will give proper consideration in the next Chapter, I follow Oliviera's artistic research work in refraining from considering data-sets as exceptionally significant – or even exclusive – sites of algorithmic accountability as do most conventional analyses and ethicopolitical articulations. Rather, I aim to concentrate on the different technical operations required by feature extraction as actants involved in the emergence of 'recognition' as a moment of discrimination, motivating BAMF's exploitation of affect along the lines I have described.

On one hand, it constructs dialect and accent as signifiers of 'origin' and the proper objects of the algorithmic program of recognition. I will give this aspect proper consideration in the next Section. Secondly, it constructs accent and dialect as markers liable to be concealment, and thus must be exposed. Consequently, it understands accent and dialect as measurable, and thus computable according to the requirements of algorithmic biometric recognition by way of aural markers. It also presupposes affect as acting upon vocal forms of expression in a manner able to betray the presence of said markers of 'origin', in order to allow for recognition. Finally, it understands BAMF's mobilization of affect as the result of deliberate strategies characterizable as 'weaponization'. Let us unpack this heady line of argumentation.

As evidenced by the use of the telephone and other interview material to evoke 'structures of feeling' connected to the affective spheres of intimacy, familiarity and domesticity (a pattern which, as we have seen with Leix Palumbo, is also echoed at deeper levels of the algorithmic infrastructure) BAMF's mobilization of affect can be read along the lines of a willful sonic weaponization'. By doing so, Leix Palumbo builds on Steve Goodman's 'vibrational ontology' and affective theory of sound, which has proven extremely productive in the context of the study on the use of sound as a 'non-lethal' weapon in the context of warfare and counter-warfare. Sound 'itself' is understood by Goodman for its ability to inflect mood and trigger psychological responses, alert, foster a sense of community and belonging or evoke intimacy (Goodman 2012). Here, sound 'itself' as a 'material', vibrational actant is instrumentalized – that is, *weaponized* – for its capacity to affect bodies. For reasons I have explained across previous Chapters, I remain critical of the 'idealism' and the contradictions deriving from the apprehension of sound 'in itself', as a 'pure', 'material' ontic construct, that plague this perspective.

However, I follow Leix Palumbo in borrowing from this scholarship to argue for BAMF's mobilization of affect as a strategic weaponization. At BAMF, however, this operation follows different tactic. Here, sound is not much mobilized as an 'external' actant directed at asylum seekers' bodies, as most theories of the weaponization of sound consider (ibidem; Volcler 2013). Rather, at BAMF mobilizes actants in a multimodal regime (visually, through the picture the applicant is asked to describe; haptically and aurally, through the phone), whose socio-technical imaginaries,

representational strategies, material qualities and attendant proxemics are instrumentalized to produce heightened affective states which, in turn, are imagined to expose desired sonic features necessary for the algorithm's program of recognition – as Oliveira in fact reminds is, on the "other side of the line is not a person but a piece of software" (Oliveira 2019a).

Thus, sound fits into this scheme not much as an externally-directed medium capable of altering mood, but is rather forced into exposure from 'within' the subject, by way of different media. From this perspective, the telephone, though a sonic medium, is not weaponized due to its capacity to *produce* sound-as-affect as much as to *prescribe* it. Heightened affective states are coerced in the applicant by BAMF according to a logic for which affect produces involuntary responses that impact on voice's 'revelatory' dimension. The affected voice is invested with greater epistemic value and thus imagined as facilitating recognition: here, we see again the 'corporeal fetishist' logic of biometrics at play, whose idea that the 'body cannot lie' overdetermines corporeal markers as sites of veridiction.

In a sociolinguistic frame, this narrative posits that affects shape expressive forms such as the phonetic, suprasegmental and paralinguistic aspects of speech (i.e. the purported markers of accent and dialect) in a manner preventing the possibility of simulation. Writing about the corporeal semiotics of simulation, Patrizia Magli has commented that "[it] is common opinion that the smallest unintentional gestures are those which reveal our character, more than any formal attitude. Personality must be sought for in those expressive signs which escape direct control … gestures produced 'involuntarily' are generally deemed the most revelatory" (Magli 1980, 108-9). Affect is thus weaponized against asylum seekers to produce vocal involuntary responses, and thus more reliable truth-claims than those of the which they are the willful authors: their testimony, as we have seen, always already deemed 'false until proven true'.

Affect 'per se' is not the object of the algorithm's program of recognition. Affect is rather weaponized as a disposition that favors the exposure of what in the voice is constructed as revelatory, which constitutes the 'real' object of recognition. What is it then, that the algorithm seeks to recognize? In the next Section, we will follow Oliveira's investigation through BAMF's "complex mistakes, denials, and disavowals" (Haraway 2018, 144), which enforce a regime of opacity surrounding the algorithm and keeps it

bay from scrutiny. Still, following Haraway and Amoore's suggested method of 'following threads in the dark' will allow us to make some relevant discovery about the algorithm's regime of recognition. In particular, Oliveira will disclose how BAMF's discursive apparatus and the narrative it constructs around its proprietary algorithm is the result of 'epistemological worries'.

MISTAKES, DENIALS AND DISAVOWALS OF BAMF

The German state is particularly evasive – when not outright contradictory – when selectively disclosing information about their algorithm. Tactics of *obfuscation*, outright contradictions and 'complex mistakes' constitute a methodological limit that Oliviera is aware of but not hindered by. In his forthcoming article 'Politicizing Acoustic Features: Undoing the Colonial Fiction of Voice-as-Citizenship in the German Asylum Seeking System', Oliviera clarifies his approach in regards to this problem. A part of his work focuses in fact

> on what the BAMF says, in writing, that their software is doing; this is achieved by close-reading documents released through 'freedom of information' (*Informationsfreiheitsgesetz*) requests, press releases, training manuals circulated internally, and test result files. My approach seeks to try to make sense, as much as possible, of the technical aspects they disclose by reading these documents together with both historical and current discourses in machine listening and computational linguistics on voice and dialect recognition methods, and machine learning (Oliveira forthcoming, 3).

Trying to put together the unfitting pieces of this confusing puzzle, Oliveira focuses on the terms employed by BAMF to narrate its algorithm to the public, particularly concentrating on what BAMF declares to be its objects and techniques of recognition.

Whereas the consent form #D1728 provided to asylum seekers states that "a biometric analysis of the voice does not take place" (*Eine stimmbiometrische Analyse von Ihnen erfolgt dabei nicht*)" (Oliveira & Miyazaki 2022, 116), Oliveira, in his article co-authored with Miyazaki, is able to demonstrate that BAMF is willfully contradicting itself.

"Training documents show that subsequent to the test two different reports are to be generated: the first, named '*Sprachbiometrie Report*' [Language biometry report], which is automatically generated, presents the distribution of probabilities of spoken dialects" … The second", the authors continue, "is named '*Stimmbiometrie_Auswertung*' (BAMF 2018). The fact that form #D1728 explicitly differentiates "language biometry" from 'voice biometry' implies that the BAMF regards these two tasks as different and, more importantly, that only one – *Sprachbiometrie* – will be used in the course of the examination" (ibidem).

Are these contradictions the result of a genuine misunderstanding of the workings of the algorithm or a deliberate strategy of misdirection? What techniques does BAMF algorithm perform in pursuit of its program of recognition, then? Expressed at the discursive level of the public narrative around the algorithm, BAMF's statements willfully *obfuscate* (Pasquale 2015, 6) understanding and provide serious limitations to practices of algorithmic auditing. Significantly, however, as Haraway has suggested, such 'complex mistakes, denials, and disavowals' must not to stop the analyst from questioning technoscientific narrative, but must be read as proofs of epistemological worries surfacing at its discursive levels. This is also evidenced when we focus our attention on the objects of the algorithm's recognition.

When questioned by state representatives about whether the software accounted for the way a speaker's primary language (*L1*) changes over time, BAMF responded that "language acquisition was 'irrelevant' due to the software's focus on 'phonetics'" (BAMF 2018b, quoted in Oliveira & Miyazaki 2022, 114). As we have seen, linguistic change (even in regards to a speaker's own 'native' language, accent, or dialect) *defines* diasporic subjectivities such as asylum seekers, as through their journeys they must continuously adapt and negotiate their practices of languaging in transformative ways. Furthermore, as I have shown, 'accent' and 'dialect' are hardly viable and distinguishable scientific categories, even by contemporary sociolinguistics standards, as Mark Liberman, a computational linguist and director of the Linguistic Data Consortium at the University of Pennsylvania (from which BAMF has acquired most of its datasets) emphasizes when interviewed by AlgorithmWatch (Lulamae n.d.).

For Oliveira and Miyazaki BAMF's "insistence on invoking scientific criteria, such as 'phonetics'" – and, I add, the notions of 'accent' and 'dialect' – must be read as

"[aiming] to validate the workings of the software" (ibidem). Following Oliveira and Miyazaki I argue that the mobilization of these actants ('accent', 'dialect', 'phonetics) and practices ('speech biometrics', 'voice biometrics') is an attempt to position the algorithm as objectively following strict, scientific methods, by appealing to these notions and practices' epistemic virtues and to their respective epistemic communities as sources of authority. In doing so, BAMF's assemblage also establishes itself as an epistemic community, collectively engaged in the maintenance and enforcement of a regime of opacity around its algorithm.

However, in the following Sections, I will argue that these inconsistencies reveal more than they attempt to conceal. Actants such as 'accent', 'dialect' and 'phonemes' are mobilized by BAMF to draw from the different epistemic virtues associated with these objects of knowledge. In doing so, BAMF reveals that its presentation of the algorithm to the public is motivated by epistemological worries. At the same time that BAMF mobilizes these actants in its attempt to legitimize its algorithm as objective, "what it does, instead, is highlight the limits of identification methods and how they stand at odds with the lived reality of asylum cases" (Oliveira & Miyazaki 2022, 115). 'Accent' and 'dialect' are demonstrate as slippery objects of knowledge, even within linguistics' own criteria.

Moreover, as we have seen in Chapter 2, diasporic language practices, 'accent' and 'dialect' are the products of the convergence of colonial categorial impulses and linguistics pseudo-scientific framework, which served as a legitimizing meta-discourse to coloniality, its forced assimilation and 'glottophagy' of indigenous practices of voicing and languaging. Accent and dialect cannot in fact decoupled from its roles as vocal markers of linguistic difference. Compared against the actual embodied experience of diasporic subjectivities like asylum seekers, 'accent' and 'dialect' are significatively limited concepts that cast BAMF's algorithm program of recognition as predicated upon skewed notions from the onset. The heteroglossia and becoming of diasporic language practices cast them as uncomputable along the lines of BAMF's essentializing program of recognition. It is significant, in this sense that, when confronted with this evidence, BAMF suddenly changes its narrative, switching to 'phonemes' as the 'real' objects of recognition.

However, questions about whether the actual workings of the algorithm remains. What type of biometric technique does it employ, if any? What are its actual objects of recognition? And how can we find out? Now, I am keen to follow Haraway in her identification of the 'complex mistakes, denials, and disavowals' such as those presented in BAMF's narrative as clues of the algorithm's assumption of biometrics' 'corporeal fetishist' onto-epistemology of the voice and its attendant audile techniques. In this Section, I have evidenced how a regime of epistemic opacity is maintained discursively by BAMF's deceptive statements. Now, we must follow Oliveira in his attempt to offer a technical audition of the algorithm unhindered by opacity, finally able to delve deep into its material-technical operations to expose how it constitutes its regime of recognition.

SPECTRAL REGIMES OF RECOGNITION

After following Oliveira through BAMF's misleading, contradictory statements regarding the algorithm's workings, we are left with more questions than when we started. The algorithm's own constitutional opacity, coupled with (human) obfuscation tactics seem to constitute hardly surmountable obstacles for the practice of auditing. As we have seen, BAMF's public statements and reports point to different material-discursive practices and objects of recognition. However, BAMF documents still give Oliveira enough clues to infer some important insights. How is Oliveira able to deduce, then, the 'real' objects and practices mobilized by BAMF's algorithm in pursuit of recognition? The details of his procedure are demand to be quoted at length:

Phonotactic models of speech and dialect recognition need a transcription because the model seeks to match phonemes to text samples, and in so doing, it identifies the nuances of different phonemes being spoken by different pronunciations … In a training document guiding case workers into the process and file management of the dialect test, none of the files generated by the software for the evaluation mention evidence of a transcription, be it human or machine generated; what follows the test is only an audio file, described and classified by the training document as a 'vernacular speech sample' (*landessprachliche Sprechprobe*), as well as the test results given by the analysis. … Whereas the BAMF claims its software relies exclusively on phonetics … terminologies found in training documents and test records – e.g. 'segmentation

score', 'gender score', and 'log likelihood ratio' – suggest the use of a spectral, context-dependent classification model (Oliveira forthcoming, 4).

Oliveira's findings ultimately shed light on the actual workings of the algorithm, which allow him to identify some crucial actants in the definition of the algorithmic program of recognition. His analysis, relying on a deep knowledge of acoustics and listening technologies, informed by media-archeological audile techniques, and embracing the multiple forms of agency afforded by the methodology of description, demonstrates the possibility of exposing ('unblackboxing' or 'depunctualizing') the workings of algorithms regardless of its opacity.

Pointing his focus on the traces left by the algorithm's operations is testament to Amoore's suggested methodology grounded in opacity, rather than looking for accountability through idealistic notions of transparency. Adopting a deductive, investigative approach based on the comparison of BAMF's statements with few accessible internal documents, he is able to reconstruct, from a decisive clue the object and techniques of recognition adopted the algorithm. The absence of a transcript and the presence of terms like 'log likelihood ratio', connected to 'spectral', rather than 'phonotactic' techniques of voice recognition (contrarily to BAMF statements) allows Oliveira to finally locate a key actant in the definition of the algorithm's program of recognition, and, in the process, reframe its real object.

As Oliveira stresses, most voice recognition algorithms employ sound processing techniques based on Mel-Frequency Cepstral Coefficients (MFCC) – especially those designed for Arabic-speaking languages like BAMF (Ali et al. 2015; Hanani et al 2017; quoted in Oliveira forthcoming, 5). By comparing these two evidences, Oliveira identifies in MFCC-based sound analysis the technique of recognition employed by BAMF's algorithm. Though the details of his analysis can be challenging to follow for the nonexpert, since the implications of his findings are extremely relevant, I again will have to quote the most salient parts of his argument in full:

MFCC models … employ *acoustic* feature extraction, or in other words, they perform analysis of specific physical/mathematical components of sound such as pitch, duration, envelope, how frequency bands in a speech sample are distributed over time, among other

physical features of sound waves. MFCC in particular tracks the rate of this distribution, its occurrence and/or change on a millisecond, hybrid 'cepstral' scale – or in the spectrum of a spectrum … Spectral analysis from extracted features such as [cepstral coefficients] and in particular the application of MFCC-based models, bases itself on analyzing the frequency peaks as sound travels through a given space – resonant chambers, membranes, pipes, and so on. When it comes to speech signals, however, that space usually means the vocal tract of the speaker … where the vocal tract is understood to be a resonant filter in which the specific harmonic peaks are mapped to the 'resonance structure of the vocal tract' as well as the 'falloff of the speech spectrum due to the glottal pulse' (Oppenheim & Schafer 2004, 97). (ibidem)

Oliveira finds evidence of this in BAMF's official documents. "Indeed", he continues, "in the white paper 'Essential Guide to Voice Biometrics' (2015), BAMF's contractor Nuance Communications explicitly mentions traits such as 'size and shape of the speaker's vocal tract, mouth, teeth and other physical characteristics', as well as 'behavioral characteristics such as accent, speaking rhythm and more' (Nuance Communications 2015, 2)" (ibidem). For their purported capacity to infer anatomical traits from 'coefficients' measured at the cepstral scale, MFCC-based techniques of acoustic analysis are able to isolate and determine the material 'infrastructure' of the human vocal production apparatus.

In a nutshell, the most relevant takeaway for our present concern of this complex passage is that this particular brand of machine listening algorithm does not require linguistic referents for its spectral sound analysis, as otherwise stated by BAMF – on the contrary, its actual object is the corporeal space of the vocal phonatory assemblage, shaping the emergence of the voice. *Timbre*, as the acoustic concept commonly associated with the bodily conditions of vocal production is exposed as the 'actual' (but unnamed) material-semiotic object of algorithmic recognition, capturing the corporeal bodily infrastructure, while 'cepstral coefficients' act as timbre's measurable units.

This, apparently minor, detail is in fact able to completely reframe our understanding of how BAMF's biometric algorithm performs voice recognition, until now precluded by the algorithm's opacity and BAMF's contradictory statements, and finally shed some light on what is actually occurring at the level of the material processes and technical operations of the algorithm: *spectral*, or acoustic, rather than *phonotactic*

forms of analysis are employed in the pursuit of 'recognition. Its object of recognition is also recast by this evidence: *timbre*, rather than 'accent' or 'dialect' is the object of the algorithm's program – or better, as we shall see in a moment, timbre is "mapped" onto 'accent' or 'dialect', themselves constructed as "standing for" the geopolitical category of 'citizenship' (Oliveira forthcoming, 3).

These findings have extraordinary repercussions on our understanding of the functioning of the algorithm, and consequently on the determination of a possible locus of accountability. Continuing to follow Oliveira in our quest to understand 'how discrimination becomes recognition' in BAMF algorithm, analysis of we are about to enter the algorithm's regime of recognition. Here it will be possible to stress the extent to which the algorithm's recognition is dependent on situated understandings of its objects and the materiality of its practices. In other words, underlying the contingency of recognition will help us disengage algorithmic recognition from the epistemic virtue of mechanical objectivity.

Later, this work will also allow us to recast recognition as *performative*, that is, participating in the *construction* of the object it claims to merely recognize. A media-technical analysis of MFCC-based spectral sound analysis processes will help us in this process. First, we must tune our ears to the algorithm's own non-human point of audition and "listen media-archeologically" (Napolitano 2022, 81) – that is, listen how algorithm listens to (or, as we shall see, *for*) the voice. In this task we will be once again lead by Oliveira's reports.

Let us then turn to MFCC-based spectral sound analysis as a form of *feature extraction*. In the words of Louise Amoore, feature extraction is a set of algorithmic practices whose objectives are to "identify clusters within the data (to read), derive attributes from those clusters to make them recognizable into the future (to resolve), and compare the output of the algorithms with the target output of the analyst (to reason)" (Amoore 2020, 43). In the specific case of BAMF's "acoustic feature extraction" practices, they "perform analysis of *specific* physical/mathematical components of sound such as pitch, duration, envelope, how frequency bands in a speech sample are distributed over time" (Oliveira forthmcoming, 5, my emphasis).

We can thus assess *feature extraction* as the algorithmic execution of the process of selection of aspects deemed *relevant* for the advancement of the program of

recognition. To the extent that feature extraction practices are dependent on processes of selection, though themselves 'asignifying', in establishing certain attributes as *relevant* at the same time as it excludes others, it relies on human, as well as machinic, forms of *interpretation*. As Oliveira puts it, "that [feature extraction processes] strongly rely on deriving recognizable attributes implies that these methods of attribute-finding are, in themselves, methods of attribution" (Oliveira & Miyazaki 2022, 110) – or, with Amoore, they determine "what or who can be recognized" (Amoore 2020, 10).

It is through an analysis of feature extraction techniques that we are able to determine to what extent recognition relies on pre-established notions of voice, exposing how much recognition depends on *precognition*. Feature extraction, continues Oliveira, "inhabits not only the technical and mathematical space of parsing, filtering, and stratifying frequency data but also that of subjectivity, cognition, and – most importantly – interpretation" (ibidem). This moment of selection, where 'cepstral coefficients' are extracted from the 'thick event' of the voice is thus intrinsically entangled with the exclusion of other attributes deemed less relevant. It is in doing so that feature extraction, as Oliviera highlights, is a method of (ontological, epistemic) attribution, rather than attribute-finding.

Separating the vocal continuum into different ontologies (i.e. 'features') and attributing different epistemic values to each, then extracting the data it interprets as relevant, from this perspective, feature extraction at the same time depends on and operationalizes the vocal *caesurae* on which BAMF grounded its program of algorithmic recognition from the outset. These *caesurae*, starting with the accordance of positive epistemic value to the asemantic 'expression' of vocal materiality as opposed to the semantic 'content' of applicants' declarations, I suggest, must be read in conjunction with the non-human coordinates of its regime of recognition, which privilege spectral, rather than phonotactic features. This recursive logic is also emphasized by Oliveira.

As the researcher emphasizes, the "lexicon of features" and "perceived markers" (both at the level of the voice data from enrolling asylum seekers, and at that of the dataset against which they are compared) mobilized by the algorithm is dependent on "engineering decisions [informing] which of these perceived markers are claimed to represent speech" (Oliveira forthcoming, 8). In saying so, Oliveria aims to expose how feature extraction depends on contingent interpretations and choices (and

consequent exclusions) that emerge from *a priori* negotiations between human and algorithmic forms of being and knowing. This allows us to decouple algorithmic recognition from objectivity, and expose the extent to which technoscientific practices presented as purely empirical are reliant on situated contingency and precognition.

These choices are the result of the intra-actions of designers, developers, programmers and algorithms: "the selection of training data; the detection of edges; the decisions on hidden layers; the assigning of probability weightings; and the setting of threshold values: these are the multiple moments when humans and algorithms generate a *regime of recognition*" (Amoore 2020, 71, my emphasis). As Oliveira puts it, "the very process of feature extraction and mathematical transformation is an effect of choices being made elsewhere: from selecting speakers to compose a database to annotating said database, and to designing a specific set of iterative functions that would provide the specific coefficients with which a measurement and approximation of probabilities could take place" (Oliveira forthcoming, 5).

How "matter comes to matter" (Barad 2003) in the "distributed, heterogeneous work processes of technoscience" (Haraway 2018, 41) is contingent on the negotiations between humans and machines on what is *relevant* and *useful* – and conversely, what is deemed irrelevant and inoperable, and thus ignored. As Oliveira argues, drawing on Sarah Ahmed's research on utilitarian and instrumental reason, the use of extracted features is "in itself a product of the *intention* to use them in certain ways rather than others" (Ahmed 2019 quoted in Oliveira & Miyazaki 2022, 111). In other words, recognition necessitates precognition, the algorithm cannot recognize anything else than what it is designed to recognize.

FORENSIC FANTASIES AND SPECTROGRAPHIC CORRELATIONS

After the sonic event is captured, feature extraction techniques select relevant information according to pre-established notions. Subsequently, to carry out recognition, *spectral* models of sound analysis such as BAMF's translate extracted features into data. Spectral, or acoustic forms of sound analysis must be understood

from the perspective of the "distributed cognition of the posthuman" (Hayles 1999, 5 – in other words, from the algorithm's point of audition. For media theorist Wolfgang Ernst, a machine listening apparatus such as BAMF's "unsemantically 'listens' to the acoustic event: whereas the human ear always already couples the physiological sensual data with cognitive cultural knowledge, thus filtering the listening act" (Ernst 2012, 61).

As Oliveira relates in fact, "technically speaking, the German software is allegedly moving *beyond* the necessity of an *a priori* linguistic correlation" (Oliveira forthcoming, 6) If, for Ernst, this implies a restructuring of our human interpretative lens to embrace a non-human, machinic standpoint, we must also "take into account that any measuring configuration is itself marked by the historic index of its own epoch" (Ernst 2012, 61). In other words although algorithms' non-human 'distributed cognition' and material-technical practices radically differ from human's, traces of human situated onto-epistemologies, assumptions and beliefs will necessarily be inscribed into the technology.

Relevant to our analysis at this point is the consideration that spectral forms of analysis unfold in a such way so that the algorithm "only ever encounters data in specific vectorized shapes [...] mapped to a geometrically coordinate volume" (Mackenzie 2017, 51 quoted in Oliveira forthcoming, 8). That is, listening as recognition only ever occurs in abstracted, topographical – therefore optic, rather than acoustic – *vectorial* "feature spaces" (Oliveira & Miyazaki 2022, 111). This aspect is relevant for multiple reasons: it exposes the material-discursive practices required to carry out algorithmic recognition, bringing to light the processes that allow voice features to be mapped onto 'citizenship'; it evidences the persistence of an optic paradigm and its role in casting recognition as precognition; finally, it puts BAMF's voice recognition biometric algorithm in continuity with colonial practices and technologies.

Firstly, we must understand vectorial 'mapping' as instrumental to the carrying out of the comparison of the extracted data from asylum applicants' voices, against the (equally captured, extracted, an cataloged – that is, equally subjected to the choices and humans and algorithm make together) voices in the dataset on which BAMF's algorithm relies. As we have seen, 'recognition' at BAMF is enacted as the pursuit of a match, measured probabilistically, between *enrolling* subjects (i.e. 'token', according to

Eco's semiotics of recognition, and Gramigna and Voto's application in the context of face recognition algorithms) against the *template* data (stored in datasets) acting as normative standards ('types'). The fact that recognition unravels in vectorial space brings to light the extent to which algorithmic recognition is in fact a form of comparison with pre-established norms.

The translation of sound data into 'acoustic images' such as spectrographs, and their consequent vectorialization into scalable topographic coordinates, is not problematic in itself. However, the employment of this technique exposes the intersection of military, carceral and racist histories of voice biometric practices from which BAMF's algorithm descends and which it actualizes. As Domenico Napolitano evidences in his media-archeological history of the 'artificial voice', "the spatialization of sound into visual forms and physical traces is fundamental, … to both sound recording and voice synthesis. This process corresponds to sound's ability to reveal the presence of what is hidden or invisible" (Napolitano 2022, 118).

The production of spectrographic 'acoustic images' of speech, that is, "the visual translation of a word's sound based on quantitative parameters that can be analyzed by a computer … enables a machine to *recognize* a spoken word regardless of differences in speakers, vocal timbres, or speech speeds … the same method used by modern audioprinting algorithms like Shazam" (ivi 54, my emphasis)[23].

From a technical standpoint, spectrographic methods of voice recognition are employed to technically enable the *mapping* of enrolling speaker sound data onto previously categorized biometric voice data from the datasets on which the algorithm relies. "When measurements are matched with a database constructed with similar MFCCs extracted from speakers grouped by ethnicity or language", Oliveira writes, "it follows that the occurrence of specific harmonic peaks in the vocal tract can be plotted to specific articulations of language – or in other words, that the timbral architecture of

[23] However, whereas spectrographic techniques of recognition like 'audioprinting' algorithms might be suitable for 1:1 identification procedures of musical data (such as Shazam's), they are hardly justifiable in the context of voice recognition practices where the possibility of a univocal match is already foreclosed by the fact that not the uniqueness of vocal identity is pursued, but rather specific vocal features as markers of the subject's ostensible 'belonging' to a certain (geopolitical) community.

a speech signal can be mapped onto specific accents or dialects" (Oliveira forthcoming, 5).

Spectrographic techniques are in fact employed to allow the algorithm to compare different sound spectra. Spectrographic representations of asylum seekers' voices are measured against the representations of other (priorly recorded and labeled) voices, that act as the impossible normative standards against which they must compare. Spectrography in other words, does not only facilitate the processes of measurement and comparison but also allow different notions, with separate ontological and epistemological values to be 'mapped' onto each other.

In BAMF's biometric algorithm, this occurs by way of spectrographic analysis allowing the matching of traits: a material-semiotic chain of equivalence is established between cepstral coefficients and 'dialects' or 'accents' as markers of citizenship. To recapitulate: cepstral coefficients (the 'physical/mathematical' unit of the algorithm's regime of recognition) are extracted and measured, then compared against spectrographic representations of voice data present in the dataset, whose coefficients are *correlated* in advance with 'dialect' or 'accents', in turn imagined to be signifiers of citizenship.

It is in the 'vectorial feature space' that, in fact, *correlation* can unfold. Correlation, as Wendy Chun argues, is a set of statistical techniques based on homophily developed by and in conjunction with eugenic theories, and which still define contemporary biometric and predictive policing algorithms, as well as 'big data' infrastructures (Chun 2021, 50). It is through correlation that different data can be made to 'stand for' each other. In doing so, correlation establishes onto-epistemological connections between different concepts and objects. It participates in the reification and hierarchization of identity categories according to the 'types' to which they are measured. As evidenced by Chun, the eugenic statistic theories that believed correlation to allow to '"classify' raced and gendered groups according to intelligence, among other personality traits (ivi 47), find their way in contemporary recognition algorithms.

Significantly, correlation is also the process through which reified categories of identity like gender and race categories can be mapped onto ostensibly related data *without being mentioned* as relevant factors, for example in correlation practices

connecting crime rates incidence with particular neighborhoods (ivi 19). Furthermore, correlation is a *self-fulfilling promise* to the extent that it can only reassert the categories that it associates: in this sense, it reproduces the logic of recognition according to which it can be recognized what is already known.

If spectrographic analysis is not by itself problematic, its use in conjunction with recognition by way of correlation exposes problematic precedents. The military, carceral and racist lineage of the intersection of these techniques becomes clear when we turn our attention to *voiceprints*. As Xiaochang Li and Mara Mills reveal in their groundbreaking research into the history of voice recognition technologies, these techniques were developed to suit military interests in the WWII, and it is in conjunction with these field that "visual representations of sound … used in forensic settings for speaker recognition (with rather unreliable results) became one of the first examples of a sound archive operationalized for scientific purposes" (Li & Mills 2019, 123).

Oliveira connects the production of 'acoustic images' effectuated by the translation of cepstral coefficients into vectorial coordinates to earlier spectrographic methods of biometric voice recognition such as 'voiceprints' (Oliveira & Miyazaki 2022, 108). Voiceprints, 'spectrographic' representations of the voice, although generally credited to Bell Laboratories' engineer Lawrence Kersta, were developed as a result of Kersta's remediation of prior sound analysis techniques pioneered in the military context (ivi, 139). These vocal spectrographs were imagined to reveal physical traits ostensibly unique to individual speakers, such as "a person's throat, oral cavity, and nasal passage", as well as "make accent, gender, and affect visible … also identify the unique characteristics of a person" (ibidem).

Although Li and Mills do not mention race as a category voiceprints were thought to reveal, the racist biocentric framework, and its relation to carceral logics is easily exposed when we consider historical uses of voiceprints. In 1966, Li and Mills report, Kersta was appointed by the FBI as a 'voiceprint expert' to testify in a trial against Edward Lee King, a black teenager accused of arson following the Watts riots, when African-Americans rebelled against police brutality. Using voiceprint recognition to answer 'acousmatic questions', Kersta identified compared King's voiceprints with those sourced from a CBS documentary where the unidentified arsonist appears. Kersta's testimony led to King's conviction. Although the decision was later overturned

amid critiques from scientific community, who understood that "speech was as much behavioral as anatomical – it depended upon performance" (ivi,140), as we can see in BAMF's case, 'forensic fantasies' of speaker vocal recognition persist in contemporary biometric algorithms.

Voiceprints can hardly assume the role of positivistic representations of human vocal identity, yet they are established by spectrographic-based biometric voice recognition practices as the standard 'types' against which degrees of deviation are measured: they expose how biometric recognition is dependent on precognition. From this perspective, BAMF's machine-learning, MFCC-dependent biometric voice recognition algorithm can only be regarded as updating, in a newly refined package attached with revamped epistemic virtues, military-carceral-racial practices whose discriminatory effects had been already proven almost a century ago (Li & Mills 2019).

As Oliviera adds, "what is evidenced by the software" are also "the conditions for the emergence of coefficients *standing for* timbre-as-dialect and dialect-as-citizenship" (Oliveira forthcoming, 6). Through spectrographic correlation material-semiotic objects of knowledge come into a relation of equivalence. What is the role of timbre, the unnamed factor in this chain of homophily, and how does it *emerge*? In the following Section, I continue to engage with Oliveira's work and expand on it by putting it in contact with Donna Haraway's new materialist framework centered on *emergence* and the *performativity* of technoscientific practices of recognition, allowing us to provide tentative answers to these central questions. Before we turn to this, however, a last look at voiceprints can lead us on the right path to unpack our line of argumentation.

COLONIAL FICTIONS AND THE CORPOREALIZATION OF TIMBRE

Providing visual representation of the voice, voiceprints allow for topographical 'mappings'. In doing so, they become technoscientific objects of knowledge and practice through which correlation can occur. Although they solve the role of mediators, connecting different material-semiotic objects of knowledge, they are believed to

positivistically represent the voice in all its complexity. This is equally true for early forensic voiceprints as well as for their remediation in the spectrographic analysis techniques in use at BAMF, whose algorithm's real-time, digital, vectorial regime of recognition can do without the objecthood of voiceprints (i.e. the voiceprint as a physical print) but stands in epistemic and technical continuity with such historically discriminatory practices. To understand the role of timbre in BAMF's biometric program of recognition, we can look at the role of spectrographic representations as mediators of correlation.

We can understand voiceprints as Harawayan 'maps'. Haraway has criticized the narrative of objectivity surrounding technoscientific representation of matter in terms of 'fetishism of the map' – particularly in relation to genomes as veritable maps of life. At the time of her writing (1997), the Human Genome Project, which sought to map and sequence the entirety of human DNA was receiving unprecedented scientific and mainstream attention. In this context, she criticized the "reification that transmutes material, contingent, human and nonhuman liveliness into maps of life itself and then mistakes the map and its reified entities for the bumptious, nonliteral world" (Haraway 2018, 35). In other words, although the genome is believed to be a truthful representation of 'life', it is the result of situated "embodiments of multifaceted historical practices among specific humans and nonhumans" (ibidem).

The map, Haraway argues, is not the territory. Although voiceprints are not the objects of 'fetishizations' on the par of the human genome, in their fixing in time and space the 'material, contingent liveliness' and becoming of human voice *continua* into graphic representations, they also act like a map. Most importantly for our purposes, they are the objects of the 'complex mistakes, denials and disavowals' about which Haraway wrote precisely in relation to the ostensible power of maps to truthfully represent life. If genomic maps are the object of epistemological investments by the scientific community, for Haraway, the genes that compose them are also subjected to forms of 'fetishism'. Building on this idea, I wish to trace a parallel between Haraway's objects and our own according to which genome is to gene as voiceprint is to timbre.

Timbre is also the object of epistemological investments. It can be read in line with what Haraway terms "corporeal fetishism" (Haraway 2018, 142) which, as we have seen, is a guiding principle in biometrics. Although it goes unnamed in BAMF's

documents, timbre is assumed as the corporeal referent enabling the algorithm to correlate between all other material-semiotic objects of knowledge. In this sense, timbre's corporeal onto-epistemology is necessary to the algorithm's *biometric* regime of recognition, which operates by investing material-semiotic objects with positive epistemic value. Timbre, a slippery object of knowledge emerging from ontologically multiple assemblages making it constitutionally opaques is charged with the indexical power to correlate voice with identity – as Haraway argues, the corporeal fetishism at the heart of the logic of biometrics "mistakes *heterogenous* relationality for a fixed, seemingly objective thing" (ibidem).

This overdetermination of corporeal traits as positivistic indexes of identity, as Oliveira stresses, is also central to racist and colonial epistemes and practices. Corporeal "traits", in fact, "are the variables that underlie a biocentric system of knowledge" (McKittrick 2021, 110). By appealing to Sylvia Wynter, Oliveira puts in connection this central principle of biocentric systems of knowledge (such as coloniality and racism, and biometrics as its technoscientific operationalization) with the self-fulfilling character of recognition. In this sense, to 'recognize' origin with timbre as a corporeal marker

> [to be constructed] in the terms of [...] *predetermined elements*, in order to '*verify*' the 'truth' of the others' glances, the 'truth' of their order of consciousness, and to do so in order to confirm both the purely biological identity of being human in its bourgeois conception, as well as its normative definition in 'white' terms. In effect, [to be made] into a fact of negation, which alone enables the experience of being 'white'. (Wynter 2001, 42, quoted in Oliviera forthcoming, 7, my emphases).

By doing so, to continue through the words of Wynter scholar Katherine McKittrick, "the algorithm expresses, almost perfectly, the brutality of racism precisely because it is an accounting system that produces what Sylvia Wynter calls 'adaptive truth-for' terms that are specific to our present order of consciousness ... It is a process typical to what we already know: a biocentric system is mathematically confirmed" (McKittrick 2021, 114).

To recapitulate, timbre fulfills the demand of biometric recognition for corporeal objects to invest with positivistic epistemic value. Around this material-semiotic object,

a chain of associations is established and verified: the correlation of timbre-as-citizenship, for Oliveira, is a "colonial fiction" (Oliveira, forthcoming). Being able to recognize what its regime is geared towards, the algorithm reproduces only what it already knows. As Oliveira puts it, the algorithm "listens *for"* timbre (ivi, 5): recognition is already determined by its coordinates. This aspect also brings to light biometric recognition as production: it produces what it claims only to recognize. In fact, algorithms cannot be said to merely reproduce human ways of knowing and their objects.

Rather, it contributes to their *production*, with very 'real' consequences that foreground the performative dimension of algorithms, which I will relate as a form of *corporealization*, continuing to lean on Haraway's work. Haraway defines corporealization as the "interactions of humans and nonhumans in the distributed, heterogeneous work processes of technoscience [that] result in specific material-semiotic bodies or natural-technical objects of knowledge and practice – such as cells, molecules, genes" (Haraway 2018, 141-2) – and, I argue, timbre. As Haraway follows up, what is important to note at this point of our analysis is that "the bodies are perfectly 'real,' and nothing about corporealization is 'merely' fiction" (ibidem).

In other words, if biometrics' corporeal fetishism (the onto-epistemology of biocentric systems of knowledge) is revealed by Oliveira as a 'colonial fiction', its algorithmic operationalization is entirely 'real'. "Corporealization", continues Haraway

> is tropic and historically specific at every layer of its tissues. Cells, organisms, and genes are not 'discovered' in a vulgar realist sense, but they are not made up … The world takes shape in specific ways and cannot take shape just any way; corporealization is deeply contingent, physical, semiotic, tropic, historical, located. Corporealization involves institutions, narratives, legal structures, power-differentiated human labor, technical practice, analytic apparatus, and much more. The processes 'inside' bodies – such as the cascades of action that constitute an organism or that constitute the play of genes and other entities that go to make up a cell

and, I add, the emergence of timbre from the lively event of voicing "are interactions, not frozen things" (Haraway 2018, 142).

If biometrics' inherent biocentrism places greater epistemic value in objects of knowledge such as timbre (whose corporeal ontology is also the effect of a construction), while its 'corporeal fetishism' fixates it as an individuated material-semiotic objects positively standing for 'voice in itself', corporealization then defines how timbre emerges from the practical application of this onto-epistemology in in the 'distributed heterogeneous work processes of technoscience'. The intra-actions between humans and non-human instruments of measurement are, as Haraway notes, always already occur in embodied social contexts; to the same extent, 'objects' of knowledge are the equally situated products emerging from within these intra-actions. In the words of Barad, "*relata*", that is, material-semiotic objects of technoscientific knowledge – "do not preexist relations" (Barad 2007,140).

Significantly however, it is not only 'objects' that, for Haraway, are corporealized by and within technoscientific intra-actions, but *subjects* as well: in her words, "the work processes also make humans into particular kinds of subjects called scientists" (Haraway 2018, 142). From this perspective, we have seen how BAMF establishes itself as an epistemic community in the effort to enforce and maintain opacity around its algorithm, gatekeeping access to knowledge by mobilizing different actants as signifiers of competence. However, for our current purposes, I am more interested in assessing the production of the subjects of biometric recognition as the result of a corporealization. Most importantly in fact, the subjects 'asylum seekers' are also co-constituted in their intra-action with the algorithm along with their bodies and voices. This aspect is crucial for Oliveira, who emphasizes how the body of asylum seekers is constituted in the process of biometric recognition.

For Oliveira and Miyazaki, "voice biometry is implicated in a chain of representations ascribed with increasing *ontological power*" (Oliveira & Miyazaki 103, my emphasis) – that is, the power to corporealize objects and subjects. Foregrounding the performative agency of the biometric algorithm to constitute the body of the subjects of recognition, Oliviera and Miyazaki write: "if biometry not only constitutes the body as readable but is also constituted by readings of the body, it follows that biometric technologies produce a body extrinsic to that which is read. This body is constructed (and racialized) precisely at the moment of measurement … and reified through its connection to other machinic and non-machinic measurements, matches

with databases, and insertion into social narratives, all of which, in turn, iteratively affirm and update said narratives and databases for future readings" (Oliveira & Miyazaki 2022, 115).

BAMF's biometric algorithm not only reproduces situated human and non-human onto-epistemologies, but actively contribute to their production. Furthermore, by defining "biometric technologies as encompassing not only how the body is measured and evaluated but also what these measurements *do to a body, what kind of body they produce, as well as where this production becomes legible*" (ibidem, my emphasis), the authors evidence how biometrically-corporealized bodies are always already co-determined by algorithms' specific coordinates of intelligibility, or recognizability.

In cases of biometric technologies applied in border control and securitization, like BAMF, where algorithms are charged with extraordinary decision-making powers upon marginalized people's lives, the corporealization of racialized bodies must be addressed in conjunction with the conditions of recognizability engendered by the technology. In other words the situated encounters between humans and biometric algorithms construct the latter's conditions of legibility, biometric algorithms simultaneously construct legibility (or illegibility) as a property of its objects and subjects. From this perspective, as reminded by Joseph Pugliese, not being recognized by BAMF's algorithm "is equivalent to lacking a legal ontology, to being a non-being" (Pugliese 2005, 14) .

This process is dramatically evidenced in the use of biometrics for automated border control, where upon the legibility or illegibility of bodies depend the lives of already marginalized people. "Today, in its application at national borders", writes in fact Heather Murray, "biometric technology separates domestic from foreign, and produces an idealized, homogenized … citizen. It is confounded by, even as it *produces*, the biometric noncitizen who migrates across borders, the refugee without origins, the foreign presence against whom the modern state claims to protect its citizens, and in general, the nonmember of Western national communities" (Murray 2007, 355, my emphasis). Algorithmic recognition, albeit an always already unfulfilled promise, end up producing the very objects and subjects they claim (but fail) to recognize.

Biometric technologies are endowed with the power to bestow recognizability as a property of their subjects' bodies and features, so that some are constructed as legible, and therefore allowed asylum while others are produced as deviant, non-conforming to its regime of recognition, and therefore *unrecognizable*. in the words of Amoore, "there can be no legible human outside the algorithm and underwriting its conduct" (Amoore 2020, 6). Ultimately, while Oliveira's analysis has demonstrated how the failures of the biometric algorithm to recognize asylum seekers like Hajar depend on the algorithm's own situated regime of recognition. When algorithms inscribe the logic of recognition, its dependence on preestablished notions, it derives that who and what stands outside its coordinates is deemed unrecognizable.

By acting as a self-fulfilling, though always already dishonored promise, recognition is also exposed in its performative agency to produce subjects and objects of recognizability. These become inscribed with the onto-epistemology that algorithms: certain bodies conform to biometric regimes of recognition, and thus become measurable and legible – others, illegible, become deportable. Voices are listened *for*, rather than listened *to*: specific vocal features are ascribed different epistemological values depending on how their ontology is constructed, but all are overdetermined in their ostensible capacity to provide information, always already invested with the intention to be operationalized by the algorithm in certain ways, and of what it considers relevant and what can remain unrecognized.

As I have argued throughout my project, recognition along these lines can be protested by arguing for the "incommensurability" (Oliveira forthcoming, 4) of voice, timbre, and the identity they are supposed to index. For Oliviera, it is thus not only a question of situating the algorithm's regime of recognition to expose its contingency and dependency on a multiplicity of actants: the objects and subjects it seeks to recognize are also reshaped in the encounter with the algorithm. What is more, each of the algorithm's objects of knowledge emerges from a multiplicity of actants, its constitutionally heterogeneous ontology making it opaque to the essentialist coordinates of the regime of recognition.

'Dialect', 'voice', timbre or citizenship are all in "direct relationship (and not external) to the body being measured, to the technical apparatus of this measurement, and the ethical, economic, and geopolitical that configure that relationship. In other

words: neither of these elements alone can stand for the person being subjected to the measurement" (ivi 6). It is the multicausal origin and becoming of the voice that makes it resistant to measurement – a point all the more evident when related to the specific case of asylum seekers' voices, whose journeys and 'worldly entanglements' forced them into contact with a multiplicity that greatly exceeds the coordinates of the algorithm.

As Oliveira puts it, summing up the thesis central to both of our projects, algorithmic recognition "precisely because it seeks to stabilize an emergent event – timbre is a material manifestation *with* the body (and not *of* it) – it already forecloses the possibility of measurement" (ibidem). The emergence of the algorithm's objects of knowledge from a multiplicity of encounters (of which the one with the algorithm is but one, marked by particularly unbalanced power relations) makes them constitutionally *opaque*.

By necessarily relying on fixed notions, parameters and representations, BAMF's biometric program of algorithmic recognition pits the voice against impossible normative points of reference. If, with Eidsheim, I have argued that there is no voice to be known *a priori* to the relations that it emerges from, biometric algorithms cannot ever encounter the voice on its own terms. It is for this reason (rather than due to the calibration of their coordinates, or the extension of their datasets) that algorithmic recognition is doomed from the onset. Significantly for our purposes, this insight is able to reshape the forms of ethicopolitical claim-making. Algorithm's regime of recognition, as Amoore has stated, not only prescribe "what or who can be recognized", but also "what can be protested , and which claims can be brought" (Amoore 2020, 10).

In fact, as Amoore goes on to argue, "one cannot sustain a search for codes of ethics that instill the good, the lawful, or the normal into the algorithm. Contemporary algorithms are not so much transgressing settled societal norms as establishing new patterns of good and bad, new thresholds of normality and abnormality against which actions are calibrated" (ivi 6). In our search for possible *loci* of accountability, in fact, I side with Oliveira and Amoore in refusing to consider the betterment of the algorithm through interventions at the level of data or the recalibration of its regime of recognition, as viable ethicopolical models. Rather, as I have argued throughout this project, in announcing its objectivity, the promise of recognition is always already disappointed.

CONCLUSION

In this Chapter, I have followed Oliveira's description of BAMF's algorithmic assemblage. Oliveira's pursuit of accountability was complicated by the opacity of the algorithm, enforced by the proprietors of the technologies, but which, with Amoore, we have also understood as the algorithm's own onto-epistemological condition that can hardly be superseded by the methodology of description as a form of 'unblackboxing'. Furthermore, this procedure was ulteriorly complicated by algorithms' complex 'geography of causality', grounded in the idea, shared by STS and new materialisms, that every actant in an assemblage is itself an assemblage of ontologically multiple components, each with their own materiality, agency and scripts, thus refusing any simplistic form of accountability.

Oliveira had thus to embrace the task of 'following threads in the dark', working around the 'complex mistakes' and contradictory statements of BAMF, to locate (or *ascribe*) the 'heavily trafficked passage points' that mostly impact on the algorithm's failure to 'correctly' recognizing asylum seekers' voices. This method has lead Oliveira to individuate specific actants and processes involved in the execution of algorithmic recognition. Through this course of action, Oliveira was also able to recast the 'real' object of the algorithm's recognition: though BAMF claims its point of reference to be 'dialect', it is actually 'timbre', an ontologically and epistemologically problematic concept, which the algorithm attempts to measure, believing it to be a reliable vocal index of difference.

The constructivist framework of the theories and methods adopted by Oliviera frames technologies as entangled in mutually co-constitutive relations with material, social reality. Algorithms are not only inscribed with situated notions of the objects they seek to recognize, but recognition itself must be understood as a historically and tropically specific practice. In this Chapter I have attempted to demonstrate, with Oliveira, how BAMF's algorithm is inscribed with notion and processes it directly inherits from colonialist 'biocentric' systems of knowledge and practices, connotated by forms of 'corporeal fetishism'.

This ‘colonial fiction’ is particularly evidenced in the algorithm’s adoption of timbre as an object of knowledge, a vocal ‘trait’ historically mobilized as a corporeal sign of vocal difference, with racist and bioessentialist implications. Timbre is assumed by the algorithm precisely for its presumed corporeality, a bodily trait (or ‘biomarker’) that biometrics invest with positivist epistemic value as an index of vocal difference. Furthermore, the technical-material processes that the algorithm puts into practice also reveal problematic lineages, as they intersect with earlier uses in military, colonial, eugenic and racist histories.

At the same time, the framework Oliveira and I share accords algorithms with the agency to *produce* its objects and subjects, with material consequences. The ‘unrecognizable’ asylum seeker is produced as a juridical, onto-epistemological subject by the algorithm. This understanding even extends to the algorithm’s own object of knowledge: vocal difference is produced by the algorithm based on its assumptions; equally, vocal timbre is not merely ‘recognized’ by the algorithm, but corporealized into being, with material effects. Voice biometric algorithms thus produce and reproduce harmful onto-epistemologies of the voice and the material-discursive practices of listening inscribed into them.

According performative agency to algorithms also foregrounds ethical responsibility, substantiating Barad’s understanding of the inseparability of ethics, ontologies and epistemologies. With regards to our concerns, the idea that biometric failures to recognize identity and difference through the body are ‘endemic’ (that is, case-specific) as well as ‘epidemic’ (i.e. systemic) has demanded us to move beyond the work of description as the basis for ethicopolitical claim-making to a broader critique of recognition. In Oliveira’s work, this has taken the form of situating the colonial, biocentric systems of knowledge that BAMF’s algorithm inherit and reproduce.

As Oliveira is well aware of, though arguing for opacity is crucial in the shared effort to decouple algorithmic recognition as well as its objects of knowledge from narratives of objectivity, essentialism, and indexicality, it is also a project limited in scope, relegated to the discursive limits of critique. It is from the understanding of algorithms as imbued with the power to construct their objects, as well as of recognition itself (in the case of BAMF unfolding through listening) as performative, that new, grounded in practical forms of engagement with the algorithm open up. The

opacity of the voice can also be weaponized against the algorithm, to recast listening as an embodied laboratory where different understandings of the voice able to resist recognition can be experimented.

It is in this sense that Oliveira recognizes that his work must move beyond the paradigms of *algorithmic recognition justice*, to embrace pragmatic forms of *algorithmic resistance*. If in this Chapter we have followed Oliveira in his *description* of BAMF's assemblage, which allowed us to plunge deep into its regime of recognition, in the next Chapter we will see how Oliveira mobilizes the agential potentialities of sound art to *reinscribe* the algorithm with opacity, finally bridging ethics, ontology, epistemology and aesthetics into one practical example of resistance to recognition.

5: *DESMONTE*: SONIC OPACITY AS ALGORITHMIC RESISTANCE

INTRODUCTION

Oliveira's engagement with BAMF's biometric voice recognition algorithm, as we have seen in the previous Chapterm 5, has taken the form of a *description*. Situating its workings and non-human material discursive practices of listening in the pursuit of its program of recognition. The assumptions and expectations inscribed into it (which we have assessed in terms of an onto-epistemology of the voice that biometric technologies inherit from colonial practices and systems of knowledge) were revealed as situated and affecting the outcomes of its program of recognition. Recognition itself, which, as we have I had the chance to argue in the Chapters from the previous Part of my project, is also a situated and performative practice – regardless of its human or algorithmic ontology, of its unfolding through visual or aural regimes.

Recognition was thus exposed as unable to ever fulfill its promise. Biometric failures to recognize were considered as not only endemic (that is, specific to the algorithm in case) but also epidemic: systemic and preemptively effectuated by the uncritical inscription of recognition. In my critique of recognition, I have argued that this model cannot be protested from within its own paradigm. This understanding forecloses the possibility of fine-tuning the algorithm for more precise recognition. Recognition cannot either be exclusively critiqued – rather, it must be resisted. Opacity has thus emerged as a concept around which forms of resistance can be articulated, grounded in human and algorithmic's own modes of being and knowing.

Significantly, as we have seen, opacity also marks the voice as the object of algorithmic recognition. From this notion it can thus depart a practice of resistance *through* algorithms grounded in *sonic opacity.* No matter in fact how radical a critique of recognition, I side with Oliveira in arguing that the work of deconstruction, left to itself, cannot repair for injustice. Imagination and practical forms of engagement must thus be put at work to envision new, alternative, more just worlds. In this Chapter I therefore consider Oliveira's sound art piece *DESMONTE* (Oliviera 2021) to assess how the artist

and researcher sonically performs opacity as an act of algorithmic resistance, able to recast listening as a performative aesthetic and ethicopolitical act beyond paradigms of recognition.

DESMONTE, in the words of Oliveira, is

> a live performance for modular synthesizer and recorded voice. Constructed with and through the voice of death metal singer Fernanda Lira (Crypta). Originally commissioned by Festival Novas Frequências (Brazil) and Taking Things Apart (Germany) with dramaturgy by Giuliana Corsi … A sonic exploration on the afterlives of colonialism and the violence of borders, seeking to uproot voice from body and body from origin. A study on the limits and failures of (machine) listening, the composition appropriates and misuses spectral techniques similar to those of the so-called 'dialect recognition software,' a proprietary technology in use for cases of undocumented asylum seekers in Germany (Oliviera, personal communication)

One of the many instances in Oliveira's long-term, ongoing engagement with BAMF's voice biometric recognition algorithm, *DESMONTE*, as the passage reported above taken from the artist's website mentions, repurposes the same spectral techniques utilized by BAMF to extract relevant features, and turns them against the algorithm. It is significant in this sense that the word *desmonte* in the artist's native Brazilian Portuguese means 'to disassemble', 'to undo'. If in the previous Chapter Oliveira engaged precisely in this practice, taking the form of a discursive *description*, with the aim of locating possible sites of accountability in the algorithm's regime of recognition, now this form of engagement is performed by the artist practically, through a material *deinscription* and *reinscription* of the algorithm.

In this sense, the work done up until this point is useful for Oliveira not only in order to identify key actants contributing to recognition, but also to explore the latent possibilities and forms of agency they enable. By proceeding from the *deinscription* to the *reinscription* of these actants and processes, the artist is able to turn the algorithm as a tool of machine listening defined by the program of recognition into a musical production instrument grounded in opacity. In the present Chapter, however, I will not only assess the technical processes employed by Oliviera to reinscribe the algorithm, again borrowing from the lexicon and methodology of script analysis.

I will also situate Oliveira's work in the context of the overall discourse and practice of algorithmic resistance through artistic research practice and sound art, trying to convey the plurality of perspectives of a lively field in which Oliveira's intervention stands out for its methodological, aesthetic and ethic characteristics. Situating Oliveira's work in this field will also further substantiate the reasons why Oliviera centers his practice on the *resistance* to recognition as opposed to 'algorithmic recognition justice' and other data-centered forms of claim-making. Rather, by concentrating my attention on *DESMONTE* as particularly exemplary of Oliveira's overall work of algorithmic resistance, I will foreground the aesthetic forms this practice entails.

The recent years have seen a rise in projects tackling the harmful effects of algorithms from a perspective positioned at the crossroads between activism and artistic research. When aimed at machine listening technologies, these practices have thus intersected with sound art practices. In this Chapter I aim to situate Oliveira's work within each of these disciplines separately as well as in their intersection. Understood through the frame of artistic research, I do not only consider sound art as informed by theory, but as a way of doing theory in itself: in the words ok Katherine McKittrick, an "alternate way of thought, one where the mind and senses coexist, where the mind 'feels' and the senses become theoreticians" (McKittrick 2011, 166).

Significantly, *DESMONTE* eschews traditional forms of representation and exhibition to tap into the power of live performance to invite collective, embodied regimes of listening where alternative models can be negotiated with the audience in material, social space. To continue with McKittrick, we can understand the power of collectively listening to sonic performance as potentially transformative: "music", she writes, "is not only an invention that subverts and undoes commonsense workings of racism; music, music-making, and music-listening, together, demonstrate the subversive politics of shared stories, communal activities, and collaborative possibilities wherein 'one must participate in knowing'" (ivi, 163).

To conclude, through my privileged positionality as a curator who had the chance to curate public presentations of *DESMONTE* in two separate occasions, I will relate my experience of listening to the work. Employing a situated perspective on the event of listening to *DESMONTE*, I will draw on the metaphoricity of timbre to try to

convey my subjective experience of collective listening. Rather than being hindered by sonic opacity, I seek to savor it and linger on it, mobilize its potential as an aesthetical and ethicopolitcal notion allowing me to question and resist the paradigms of recognition inscribed in my own practice of listening. Attempting to resist the models of listening I have criticized in the previous Chapter, I will tune into *DESMONTE*'s sonic opacity to allow for the multiplicity and becoming of vocal timbre to emerge.

SOUND ART AND ARTISTIC RESEARCH

DESMONTE, as a piece of sound art, consciously inscribes itself into a historically and tropically situated genealogy of artistic practices. In these pages, I intentionally avoid to define 'sound art', a contested term (Groth & Schulze 2020) whose inherent ambiguity I understand as its strongest point, rather than a problem to be solved. For now, I invite my readers to let assume a provisional understanding sound art as defined by the intersection of the "discursive spaces" (Krauss 1982) of modern and contemporary art (along with its many subset genres and the media it employs), music, acoustics, media archeology and activism. Of course, an exhaustive survey of the history, theory and practice of sound art far exceeds the scope of this project, so I refer the reader to existent literature (Kahn 2001; LaBelle 2006; Voegelin 2010; Kane 2013; Cox 2018).

For our current purposes, let us consider in particular the intersection of sound art and technology, which has afforded the former with the tools for aesthetical exploration since its inception (Groth & Schulze 2020). For long, the expansion from non-traditional musical instruments toward sound and recording technologies as tools for sound production has been explored by sound artists to tap into technologies' non-human aesthetics, disrupting long-established Western humanist musical traditions – as we have seen in Chapter 3 with the example of Pierre Schaeffer, a central name in this history. At least since Schaeffer, as Napolitano shows, the theoretical and methodological framework of media studies have increasingly informed sound art and artists, who began to consider technologies as not only the means of doing art but as thematic and practical objects of research in their own right (Napolitano 2022, 112-13).

Technologies, from this perspective, are not only seen as means to aesthetic ends, but as inscribed with situated understandings of sound and practices of listening that have been historically and contextually mobilized for different aims and to suit different ethical and political agendas. The mobilization of the aesthetical power of technology to convey political messages has marked sound art from its very origins: for example, we can consider the exploitation of machinic sonic aesthetics from two opposed ends of the ideological spectrum in Italian and Russian Futurist artists, where for the former's Luigi Russolo (considered by most one of the fathers of sound art) and for the latter's Arseny Avraamov technologies and their aesthetic must serve in the broader advancement of Fascist and Communist ideologies, respectively. Today, artists continue to adopt a self-reflective perspective on their roles in the ethicopolitical inscription and reinscription of sonic media and technologies at large.

With the general rise of awareness of the harmful effects of 'platform power' (van Dijck et al. 2019), 'algorithmic violence' (Ọnụọha 2017), 'data colonialism' (Couldry & Meijas 2019) and 'surveillance capitalism' (Zuboff 2019), artists from all fields have turned their attention to those very new technologies that ever more often afford them with the everyday tools and raw materials that they work with, inside and beyond the studio. Following in the footsteps of earlier 'net art', beginning in the late 2000s and extending up until the mid-2010s, 'post-internet' multimedia artists have worked within a post-human and media-archeological theoretical and methodological framework to foreground the new aesthetics and politics engendered and inscribed in contemporary technologies, with particular emphasis on the radical shift from 1990s techno-utopian view of cyberspace as enabling democratic forms of representation, to the rise of platform power and its capitalist transformation of the material and economic infrastructures of the web (Steyerl 2013; Cornell & Halter 2015; Gronlund 2016).

Sound artists and experimental musicians have also focused on the ethics, politics, materialities and imaginaries of the current mediascape. A growing number of sound artists and experimental musicians have embraced forms of 'data activism' (Milan 2017) or 'algorithmic activism' (Bonini & Treré 2024), at times framing their work in the overall objective of 'decolonizing data' (Filimowicz 2023). As digital musical instruments and non-musical instruments increasingly constitute the everyday toolbox of artists, some have turned their attention to digital toolboxes as inscribed with

situated ethical and political meaning to be exposed or, as we shall see, reinscribed (D'Errico 2022). Furthermore, as streaming platforms like Spotify are monopolizing access and distribution to music, feedbacking on all levels of the musical industry, artists are increasingly engaging in forms of protest (Bonini & Magaudda 2023; Pelly 2025).

Sonic aspects of the current mediascape's sociotechnical imaginary have also been investigated by artists from artists from all fields. In this respect, the voice (human and non-human), a central tool in the repertoire of the performative lineage of modern and contemporary art since the early 20th century, has regained centrality as an object of research and a performative instrument in the work of artists working at the intersection of many disciplines (Di Matteo 2024), including of course, sound artists as well (Lane 2008). As music critics like Simon Reynolds, Adam Harper and Kim Mackintosh have noted, the voice has been a central site for experimentation in popular as well as in experimental music for the last decade, especially in the sense of a turn toward post-human and technologically mediated sound, enabled by the popularization of auto-tune (Harper 2014; Reynolds 2018; Mackintosh 2021).

If experimental and popular musicians have exploited the post-human bearings of the voice, my experience as a curator has lead me to notice how contemporary art often remains anchored to humanist, biocentric systems of knowledge, even when voice is used precisely to mine traditional Western 'phallogocentric' metaphysics (in the key of Cavarero's 'ontology of uniqueness' that I have had the chance to address in Chapter 2). In her survey of *Contemporary Art and Digital Culture*, Melissa Gronlund mobilizes voice precisely in this sense. The art historian and theorist notices how, within a digital mediascape perceived as disembodied, the voice has been increasingly explored by contemporary artists as a figure of embodiment, belonging, and political representation against the (perceived) disembodiment engendered by the contemporary digital mediascape (Gronlund 2016).

Voice, in other words, is still often understood by artist through the lens of timbre-centered, biocentric, humanist recognition politics I have described throughout this project. However, Gronlund's considerations on the role of the voice in the intersection of contemporary art and digital culture remain relevant for our purposes, as she frames the current scenario of vocal politics around the problem of dispossession,

a central aspect of the harmful effects of voice biometrics. In her understanding, the voice as a figure of embodiment, "[demonstrates] again how the body becomes so important as a bulwark against the many sources of precarity symbolised by digitality, such as finance capitalism, surveillance, non-territoriality, and mass migration, as well as the site these conflicts are pictured upon" (ivi, 14).

Many artists have challenged the humanist premises of this notion of the voice and its ensuing politics. Since the time of Gronlund's writing, more and more artists have in fact explored voice within a post-human frame of reference, emphasizing the role of technological mediation in the construction of the voice and of vocal imaginaries through the collaboration with technologies (Neumark 2017). Significantly, performative and technologically-mediated approaches to the voice have also been advanced by non-Western, indigenous, and diasporic artists, and the effort to decolonize sound technologies have also taken the shape of the creation of new vocal instruments (Clayton 2012; Torres Nuñez del Prado 2022; Shabara 2023). Collective forms of listening, technologically mediated and not, have also been a staple in recent art research practices, often following feminist and decolonizing agendas (Farinati & Firth 2017).

Oliveira's work *DESMONTE* is situated precisely at the crossroads of these two latter experiences. It emerges from a decolonial perspective aware of sound art as historically marked by the systemic exclusion of non-white artists, both at a material and at a discursive level, for example in the refusal of canonical histories of sound art in acknowledging the role of indigenous artists. The artist intervenes in this field conscious of the 'whiteness' of much sound art, not only as a practice of art production but also in its attendant practices of listening, which, as we have seen in relation to the debate on the 'ontological turn' of sound studies, often implies white 'invisible listening bodies' (Thompson 2017; Cox 2018). In this sense, Oliveira's work must be understood as grounded in decolonizing approaches directed not only to the algorithm, but to sound art and its practices of listening as well.

Finally, situating the artistic research practice of Oliviera would not be complete without a general consideration of the state of sound art and artistic research in terms of their institutionalization. Sound artists and experimental musicians, though in many ways marginal in the still oculocentric field of contemporary art, have seen a surge of

institutional representation in the recent years. Ever an oscillating trend throughout contemporary visual art history, the much broader field and bigger market of visual art seems to rediscover sound and sound artists every decade or so (Groth & Schulze 2020). Expanding the field of action and providing representation to artists and practices historically marginalized by the market-oriented field of contemporary visual art, sound artists from gendered, racialized and (dis)abled positionalities have contributed immensely to the expansion of art's potentialities, both in terms of its advancement as an autonomous aesthetic discipline, as well as in its capacity to bring about transformative change in the broader social, material world[24].

Finally, research-based artistic work has affirmed itself as a progressively common methodology intersecting art and theory (Dumbois et al. 2012). Artistic research (AR) fosters mutual exchanges between art and theory, not only understanding art as theory-informed, or as a mere outlet of research, but as itself a way of doing theory through different means, expanding the boundaries of traditional analytical work (Bal 2022) Concurrently, the last twenty years have seen a rise in the institutionalization of artistic research as a proper field of inquiry and academic discipline, with its own graduate and doctorate programs, dedicated journals, and so on (Holert 2011; Butt 2017; Kaila et al. 2017; de Assis & D'Errico 2019). Artists have thus increasingly taken up the role of researchers, adopting traditional scientific research methodologies, while pushing their boundaries.

It is within this scenario and in its liminal spaces that Oliveira's voice-centered sound art research and algorithmic resistance practice intervenes. It is also through my engagement with these artists and practices that, in my work as a curator specializing in time-based (video, performance, and sound) art, I have encountered Oliveira's work and had the opportunity to engage with it in depth. Driven by my years-long interest in the aesthetics, politics and technologies of the voice, as well as its conceptualizations and

[24] This much needed improvement is however not devoid of pitfalls, as the institutional and museum politics of representation still reproduce capitalist, colonial and patriarchal structures of oppression, are plagued by economic deregulation and the exploitation of labor. To explore this theme, though in the context in the context of the politics of trans visibility, I refer to a recent conversation on the advantages and drawbacks of increasing institutional representation of marginalized artists (Gossett et al. 2022).

uses in critical theory, my interest in Oliveira's work has been motivated by its singularity within this landscape, both in terms of his methodology as well as for the modalities of his ethicopolitical articulations, starkly differing from most propositions. Now, I aim to situate Oliveira's artistic practice in more specific conversations with other contemporary sound-based artistic research project exploring the politics of voice recognition algorithms.

COUNTER-FORENSICS

In situating the work of Oliviera within the more specific intersection of sound art, artistic research and contemporary forms of media activism, the confrontation with some central figures and practices is inevitable. The work of multidisciplinary collective Forensic Architecture (FA) member Lawrence Abu Hamdan has been groundbreaking and instrumental in bringing attention to the harmful effects of voice biometric recognition technologies. Oliveira's own work is very much indebted with Hamdan's work in particular, and with Forensic Architecture's in general, for their intersection of aesthetics, ethics and activism with a focus on technology. The most vocal advocates of the self-titled 'forensic' (Keenan & Weizman 2012) or 'investigative aesthetics' (Fuller & Weizman 2021) in contemporary artistic research, Forensic Architecture's work is focused on the production of legally-viable evidence to be used in legal courts for claims against humanitarian rights violations.

FA's understanding of evidence and evidence production as inextricably aesthetic has lead them to intervene in the field of contemporary art, in which they quickly found broader audiences and markets, influencing a general turn towards the practice and the aesthetics they advocate. The dependence of evidence-production on intrinsically aesthetic forms of visualization (such as data visualization, cartography, and simulation) has demanded them to question and articulate their relation with technology, grounded in a multidimensional understanding of its harmful effects as well as of its potentialities. On one side, FA aims to expose human rights violations increasingly performed by automated technologies such as drones; on the other side, FA operates within a "counter-forensic" methodological framework were media (even

military and surveillance technologies) are turned against themselves to expose their violence, or repurposed as means to resist it (Weizman 2017, 133).

FA supports its claims through a vast academic and scientific production, also aimed at theoretically grounding their practice. Within this literature, I identify in FA founder Eyal Weizman's notion of 'threshold of detectability' an extremely productive concept for our present concerns. Advanced in the context of Weizman' examination of the sensitivity of aerial photography, both analogic and digital, though according to their respective materialities and agencies, thresholds of detectability describes the calibration of the sensory apparatus of a technology, the hinge that separates what can or cannot be detected. Significantly, machinic thresholds are understood by Weizman as not only able to expose the materiality of technologically-mediated representation, but also of the objects which they seek to detect: thresholds make some matters matter, and ignore others. It follows that they can be exploited in accordance with different agendas, driven by the necessity to appear or pass undetected (Weizman 2017, 20).

As a member of FA, Jordanian artist and forensic acoustician Lawrence Abu Hamdan has been at the forefront of sound-based investigations. Hamdan's contribution to the intersection of activism and artistic research focused on the politics of listening are incalculable and no respectable overview of the field, no matter how brief, can avoid a confrontation with his work. The outputs of his 'sonic investigations' have not only been exhibited in the most important world art institutions, but have also been presented as evidence in asylum and immigration courts, and supported by non-governmental organizations such as Amnesty International. While he continues his solo artistic research work, in 2023 he has founded Earshot studio, a "not-for-profit organization producing audio investigations for human rights and environmental advocacy" (Earshot n.d.).

Particularly, in two of his early works, *The Freedom of Speech Itself* (2012) and *Conflicted Phonemes* (2012), Hamdan has also explored the use of similar voice biometric recognition algorithms in use in migration offices as Oliveira's case study of the German BAMF, albeit in the United Kingdom and in the Netherlands, respectively. The resulting artworks from this projects take the forms of a poster realized in collaboration with designer Janna Ulrich in which the process of asylum application is

connected with the experiences of famine of Somali asylum seekers (in *Conflicted Phonemes*); and an installation comprising an audio documentary and a foam sculpture of three dimensional spectrographic representations of two different people saying the word 'you'[25].

Like Oliveira, Hamdan is set to expose how biometric voice recognition technologies are predicated upon flawed and pseudo-scientific notions of voice and dialect. However, the works also differ for some key differences that orientate my interest towards Oliveira's. Firstly, they differ in artistic output: whereas Hamdan's works on the voice biometric technology takes a sonic form only in the audio documentary, which relies on traditional narration and articulation, in Oliveira's work, and particularly in *DESMONTE*, the artist directly engages with the algorithm as a sonic medium. As opposed to Hamdan's, in *DESMONTE*, the ethicopolitical and overall philosophical framework informing Oliveira's work join together and unfold in *sonic* form, through specific aesthetic choices grounded in the remobilization of both voice and of the algorithm to tap into their latent agentive potentials.

Oliveira, as opposed to Hamdan, is not only content in exposing the technology as operating under flawed notions with harmful effects, but utilizes art to propose alternative modes of listening and understanding voice able to resist biometric algorithms. In *DESMONTE* Oliviera repurposes the technology to turn its object of recognition against the algorithm that attempts to capture it, materializing opacity as a sonic, technologically-enabled form of resistance. Though in Hamdan's advocation for the "right to silence" (Hamdan 2016) we can hear the echo of Glissant's (via Oliviera) 'right to opacity', the ethicopolitical articulation of the two artists significantly differ.

Futrthemore, Oliviera's media-archeological perspective on his object of research, exhibited in his academic production as well as in his repurposing of the algorithm, differs from Hamdan's more 'superficial' treatment of the technology, which remains in the background, only evoked in paratextual material, almost kept at a distance. Hamdan's interest, on the other hand, principally lie in the exposure of technologies' "politics of listening" (ibidem). Finally, whereas Hamdan's text production

[25] To explore Hamdan's work more in depth, I refer to the works of Emily Apter (Apter 2016), Naomi Waltham-Smith (Waltham-Smith 2021) and Annalisa Pellino (Pellino 2022).

is mostly relegated to the field of contemporary art, Oliveira's academic research allows us to better substantiate his claims as well as enabling to exactly retrace the steps he took in the description, and subsequent reinscription of BAMF's algorithm.

Significantly, in the abstracts of these two works on his website, Hamdan relies on a methodology frequently utilized by FA to describe his works in 'cartographic' terms: the foam sculptures representing soundwaves of *The Freedom of Speech Itself* employ a "cartographic technique of contours", (Hamdan 2012a), while the posters of *Conflicted Phonemes* are conceived as "maps" (Hamdan 2012b). Cartographical and 'counter-cartographical' projects have in fact been utilized by other artists-researchers to render different aspects of voice and speech recognition algorithms. This approach can be explained through theories of assemblages, increasingly informing artists' approaches to the work of describing complex and ontologically heterogenous networks.

COUNTER-CARTOGRAPHIES

As art critic and curator Lorenza Pignatti notes, cartographic methodologies have become increasingly employed by artists-researchers as reparative tactics to resist technoscientific narratives invested in the strategic concealment of the materiality of their infrastructures, like those suggested by the figure of the 'cloud', or of the 'black box'. This approach seeks to give visual or, as we shall see, sonic representation to the actants, materialities and agencies in the "new arrangements of people and things" and complex 'geographies of causality' laid out by algorithms. To the extent that methodologies of visualization are mobilized to contrast this systemic invisibilization, or silencing, of the material infrastructures of algorithms, we can characterize these bottom-up agentic initiatives of 'algorithmic resistance' as "counter-cartographies" (Cohen & Duggan 2021).

A very influential precedent to this practice is Kate Crawford and Vladan Joler's *Anatomy of an AI* (2018). As Andersen, Renza and Fielder write, *Anatomy of an AI* "illustrates and describes the use of human labor and natural resources as a new form of 'extractivism', highlighting how the social, environmental, economic and political costs of these new technologies still remain largely unknown" (Andersen et al., 2021,).

Providing a visual representation in diagrammatic, map-like form of the material actants involved in the algorithmic assemblage of 'smart home assistant' or 'smart speaker' device Amazon Echo, the authors, relate Crawford and Joler's work to precisely a such exercise in "counter-mapping" (ibidem).

Closer to our present concerns is designer and researcher Amina Abbas Nazari's *Acoustic Ecology of an AI System* (Abbas Nazari 2024). Taking the form of an interactive website, *Acoustic Ecology* proposes a "sonification" (Worrall 2019) of the deeply material assemblage laid out by Amazon Echo's speech recognition algorithm. By way of a digital, synthetic reconstruction of the spatial acoustics of each location in Crawford and Joler's map, Abbas Nazari has situated their own voice in the algorithmic assemblage, thus "[contextualizing] the voice within a broader ecological and embodied system that underpins a conversational AI system, evidencing that a voice never acts in isolation, but is always co-created in its sounding with other voices, bodies, environments and matter" (Abbas Nazari 2024). In Abbas Nazari's work, the algorithmic assemblage is thus also exposed as an 'acoustic assemblage' in which the voice is co-constituted (Ochoa Gautier 2014)[26].

A defining aspect of counter-cartographical projects is the reflexive awareness of the coupling of power and knowledge inherent in the work of mapping. As sound artist and researcher Leandro Pisano notes, "maps first of all function as devices of abstraction" (Pisano 2017, 71). By adopting a vertical perspective, maps' bird-eye view "deprives gaze of its own height", thus suppressing from the representation map-makers' own materialities and situatedness as actants within the represented environment (ibidem).[27] Sonic maps can be understood as precisely such attempts at

[26] Other research projects have also adapted Crawford and Joler's work to investigate algorithmic-acoustic assemblages from the ethnographic, participatory framework of STS. Though unfolding as a critical intervention in the academic field, artist-researcher Domenico Napolitano has also worked on voice algorithms' 'socio-technical networks' to ask "where is the voice of the machine?" (Napolitano 2022).

[27] Alternatively, with Haraway, we can characterize this move and its concurrent representational strategies as a "god trick", the discursive removal of the partiality of perspective that allows maps and other technoscientific representations to be presented as "nontropic,

dislodging visual maps' purportedly objective perspective on territories and things. "Sonic maps", for Pisano "can challenge the weightless verticality of this gaze, disrupting linear continuity by way of the perpendicular dimension of the sonic regime, its lack of visual limits, its corporeality that becomes voice, noise, acoustic space" (ivi, 72).

Sound maps activate "a process of materialization, of media embodiment" characterizable as "a transformation from the invisible to the audible, connected to the cartographic potential of sound" (ivi, 71-2). By sounding out the material acoustics of the assemblage while situating themselves within it, Abbas Nazari's work also reinscribes their own agency, offering a 'resistant' perspective on algorithms. Projects such as Abbas Nazari's allow us to situate Oliveira's work in the broader context of artistic research projects adopting counter-cartographic methodologies to give visual or sonic representation to the complex network of algorithms. Oliveira has similarly adopted counter-cartographical methods in works from its broader series on BAMF's voice biometric algorithm.

The wall drawing featured in the installation *CROSSOVER/CROSSTALK* (Oliveira 2023a; fig. 3), exhibited as part of the show 'v01ces – Die menschliche Stimme im Zeitalter der Künstlichen Intelligenz' at Galerie Nord of Kunstverein Tiergarten in Berlin in 2023, offers a visual, non-linear conceptual map of the algorithmic assemblage. This artwork expands on Oliveira's ongoing engagement with BAMF's algorithm to aim its focus on some previously overlooked actants. Offering a "speculative historical framework" to his investigations into the development of the 'Subharchord', a synthesizer developed in the 1960s DDR ("East" German Democratic Republic) on which the algorithm's later feature extraction technologies we have addressed in the previous Chapter are based.

The map, as Oliveira writes in the exhibition notes, willfully "[avoids] the traps of linear causality" in order to advance a representation of the complex agentic

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metaphor-free" (Haraway 2018, 135). We have seen this strategy of representation at play in our consideration of voiceprints.

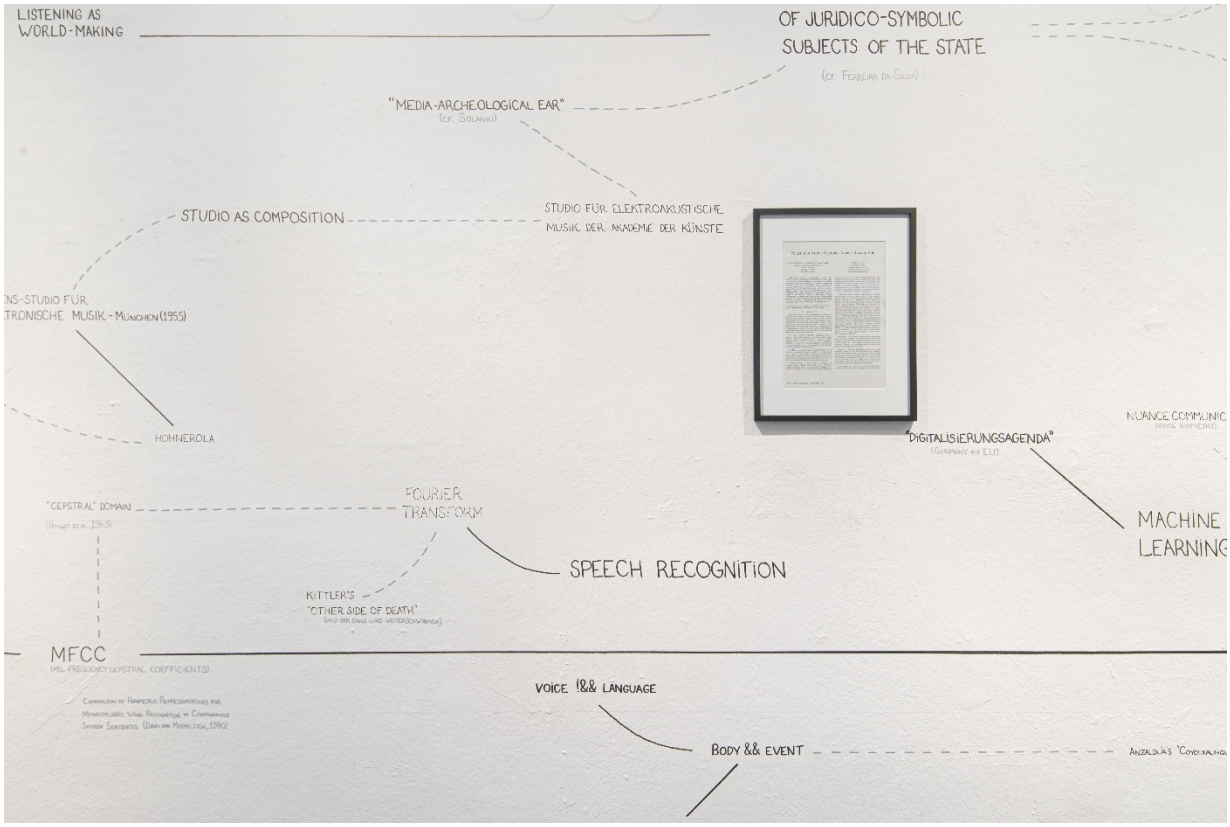

Fig. 3: Detail of Pedro Oliveira, *CROSSOVER/CROSSTALK* (2023)

Mixed media installation

topography of algorithmic assemblages (Oliveira 2023a)[28]. In doing so, it provides a spatialized visual representation to the actants involved in the algorithm's infrastructure, assuming the new materialist, posthuman, assemblage-based lens shared by thinkers as Bennett, DeLanda, Amoore, and Akrich, in its foregrounding of ontologically multiple agencies. This project is to be understood, I argue, through Oliveira's overall project of describing the material network and infrastructure of BAMF's algorithm in the pursuit of accountability.

Significantly, the wall drawing is accompanied by a sound piece, a 6'57" loop of the voice of Turkish singer Ece Canlı filtered through the Subharchord II, a prototype copy of which Oliveira displayed in a companion exhibition, 'Broken Machines & Wild Imaginings' at Akademie der Künste in Berlin on the same year. As an integral part to *CROSSOVER/CROSSTALK* (Oliveira does not intend the wall drawing and the sound piece as two different artworks) the piece provides an embodied experience where sound is not merely implied as a figure of thought, but can be encountered *in situ* by audiences. When installed alongside the synthesizer acting as the source of the sound, like in its twin version presented at Akademie der Künste, the works dialogue together to substantiate further the material dimension of the assemblage, presenting voice as emerging from, and co-constituted by technologies, and listening as a fundamentally ethicopolitical practice.

In the sound piece, the Subharchord II acts as a sonic filter on Canlı's voice, giving material sonic shape to the effects of filtering, thus exposing machine listening in its material, performative character: the project, in Oliveira's words, does not only ask us to "consider what filters filter, but the character they add to sound – materially as

[28] To give a less than exhaustive account, some of the actants that Oliveira identifies in BAMF's assemblage include physical (the 'Labor für akustisch-musikalische Grenzprobleme', 'Siemens-Studio für Elektronische Musik') as well as virtual spaces ('cepstral domain', 'Mel scale', 'spectrality'); human attributes ('voice', 'language', 'body'), individuals ('Franco A.'), organizations ('DDR', 'Frontex', 'Nuance Communications') and politics ('border thinking', 'colonialism', 'Digitalisierungsagenda') as well as non-human technical objects ('Subharchord I/II', 'Hohnerola', 'passport'); technoscientific ('biometry', 'machine learning', 'acoustic feature extraction') as well as human material-discursive practices ('listening as world-making', 'Fanon's program of complete disorder') (cf. fig. 3).

well as politically" (Oliveira 2023b). Originally a musical instrument, then weaponized by the DDR as a machine-listening device, Oliveira reactivates the aesthetic potential of the Subharchord II. This media-archeological approach to technology, grounded in its reinscription, also allows Oliviera to redistribute agency: the voice is no longer forcibly constituted by the machine, but artist, voice and technology cooperate together to foreground aesthetics as ethics.

This aspect will tie together perfectly in *DESMONTE* which, significantly, eschews visual strategies of representation to focus almost exclusively on the embodied experience of listening to the voice as a generative moment of relation, and thus intrinsically ethical. In the next Sections, I will address the modalities through which Oliviera sonically articulates his ethicopolitical stance, grounded in opacity, enabled by a technical reinscription of the algorithm. Before we move on, however, I would like to put Oliveira's work in conversation with some other projects to better situate and understand its singularity among the broader scenario of artistic research tackling the violence of voice recognition algorithms.

BEYOND 'MISSING DATA': TOWARDS SONIC OPACITY

In Chapter 3 on algorithmic recognition, I have addressed the problem of 'missing data' in datasets and mentioned the example of artist and researcher Mimi Ọnụọha's series *The Library of Missing Datasets* (2015-2021). In our more specific case of voice recognition algorithms, the problem of missing data and its attendant ethicopolitical approach grounded in inclusion and representation, is perfectly captured in artist and programmer Johann Diedrick's work *Dark Matter* (Diedrick 2021). Designed as an interactive website, in *Dark Matter* the user is invited to navigate across a 3D black space filled with spectrographic polygonal models. As they "take the seat as a machine learning researcher encountering speech data used to train AI systems similar to the ones that power voice interface systems like Alexa, Google Home, and Siri" (ibidem), the user encounters the voice left by the absence of "Black speech" (Pfeifer 2023).

The work, presented at Linz multimedia festival Ars Electronica's 'A Digital New Deal' exhibition in 2021, explicitly identifies in the missing speech data of people of

color the cause for their misrecognition. Projects as these, though instrumental in their pointed exposure of bias in specific datasets also gesture toward the systemic marginalization of racialized voices at many scales of the organization of technoscientific labor, from the voices from which data is extracted, to the production, curation, maintenance of the data-sets, and across tech companies' corporate organization. However, I have argued for the insufficiency of this ethicopolitical articulation of the problem of misrecognition, in my opinion unable to address the problematic logic of recognition and thus incapable of effectuating long-term transformative change.

A more hands-on approach to voice recognition technologies is taken up by British sound artist and musician Sam Kidel. His album *Silicon Ears*, published in 2018 by French imprint Latency, features two long tracks (Kidel 2018). Developed in the frame of the Eavesdropping event series curated by Melbourne/Naarm-based curatorial collective Liquid Architecture focused on themes of sound and surveillance, the track 'Voice Recognition DoS Attack' uses a generative audio patch able to disrupt the functionality of voice and speech recognition software like those used by 'smart home assistants' by triggering phonemes. The label describes the track this way:

> ['Voice Recognition DoS Attack'] exploits a weakness in voice recognition that cannot distinguish between individual voices. When you speak while the patch is playing, the cascading shards of human expression mask your speech and thus protect you from automated surveillance, questioning our vulnerability in the face of global data giants. In amongst these displaced sounds, Kidel fed additional musical elements into his patch to create the version of the project heard on this release (ibidem)

Projects such as Kidel's are rare attempts at reweaponizing sound and voice as means to resist the algorithms that attempt to capture it. Kidel's work is a contemporary, digital form of 'babble tape' : "digital [files] meant to be played in the background during conversations" where multiple "voice tracks run simultaneously" along with "various non-human mechanical noises, and a periodic supersonic burst (inaudible to adult listeners)" to disrupt machine-driven sonic surveillance: "babble tapes have been used … by attorneys concerned that eavesdropping may violate attorney-client privilege" (Brunton & Nissenbaum 2015, 21). Kidel's work can also be

understood as a form of 'auditory masking', "the presence of a sound that partially or completely masks another sound because of its intensity or the distribution of its frequencies" (Augoyard & Torgue 2006, 66).[29]

Kidel's work demonstrates the artist's demand to move beyond the mere exposure of a systemic problem and activate his competences to design a solution. Unlike 'Voice Recognition DoS Attack', Oliveira's *DESMONTE* cannot function as an interface allowing one to conceal themselves, pass unnoticed under the algorithm's 'threshold of detectability': its use in asylum applications makes the stakes too high for users to pursue such strategies of masking, recognition being a hardly avertable 'oppressive double bind'. However, like Kidel, Oliveira understands how voice can be mobilized to turn against the algorithms that systemically (attempt but fail to) recognize it – not to call for reparations, but to advance the constitutive opacity of the voice, which makes every recognition a misrecognition. Kidel's work allows us to move from Diedrick's politics grounded on visibility, representation, and ultimately recognition, to opacity as a form of algorithmic resistance.

OPACITY AS ALGORITHMIC RESISTANCE

In understanding how Oliveira performs opacity as algorithmic recognition, I resort back to the methodological lexicon of script analysis, which in a following Section will once again allow us to unpack the details of the artist's practical engagement with the algorithm. If in the precious Chapter, dedicated to Oliveira's description of BAMF's assemblage, I have characterized recognition as the *program* of the algorithm, in *DESMONTE* Oliveira works toward the *antiprogram* of opacity. In this work, the artist turns a listening device geared towards recognition into a musical instrument through which he is able to sonically convey the constitutional opacity of the voice, consequently exposing the situatedness and performativity of recognition. As opposed to other artistic research projects or ethicopolitical claims I have explored,

[29] Also developed in the context of Eavesdropping, sound artist, programmer, and Oliveira's colleague at the Sound Art department of the University of Berlin Jasmine Guffond,

Oliviera does not seek to fix the algorithm's program, but flips it over, turning it into its opposite.

In previous Chapters, through the philosophical and poetical work of Édouard Glissant, opacity has emerged as an aesthetic tactic and ethicopolitical claim. Opacity as a constitutional onto-epistemic character of both algorithms and the voice can be mobilized at any given moment to resist 'transparent' systems of knowledge, such as that which attempt to capture voice's multiplicity and becoming into a fixed, essential feature of identity. Other artists-researchers have attempted to advance similar politics of opacity *vis à vis* algorithmic recognition, especially biometric. However, a visual bias favoring consideration to optical recognition technologies, such as face recognition algorithms, haunts media scholarship as much as the field of artistic research[30].

Artists and researchers undertaking activist work have drawn by the figure of opacity as a figure for algorithmic resistance. Most notably, in conversation with media studies scholar Jacob Gaboury, the artist Zach Blas has built on the notions of transparency as epitomizing (biometric) recognition, and of opacity as an ensuing tactic of resistance. Discussing his influential work *Facial Weaponization Suite* (Blas 2011-14), where the artist has repurposed biometric face data to develop abstract masks able to disrupt algorithmic recognition, Blas has implicitly leaned on the same connection I have drawn between Glissant's, Amoore's and Crawford's notions of transparency and opacity to arrive at similar conclusions.

Because biometric technologies have globalized an insidious politics of identity as informatic capture, we must struggle for opacity; and while transparency, visibility, and

[30] As awareness of surveillance and of its trappings, especially for marginalized subjectivities, has risen among the general public, opacity has been mobilized as a frequent strategy of representation by artists working within studio-based practices and in more 'traditional' formats, not directly addressing the issue of algorithmic surveillance or recognition. In this regard, see for example the recent exhibition at Guggenheim di New York 'Going Dark: The Contemporary Figure at the Edge of Visibility' (Ashley, 2023) as well as art theorist Rizvana Bradley's book *Anteaesthetics: Black Aesthesis and the Critique of Form*, which relates opacity in an Afropessimist frame, as African-American artists' strategy for representing black bodies' 'ontological non-being' constituted by 'racially saturated fields of visibility' (Bradley 2023).

representation to the state should be used tactically, they are never the end goal for a transformative politics but are, ultimately, a trap (Blas & Glaboury 2016, 158).

In Blas' approach resonates Amoore's warning that "it could never be sufficient to demand that facial recognition algorithms that fail to recognize black faces be trained on a greater variability of images" (Amoore 2020, 73): biometric recognition always already implies and enforce discrimination and colonial forms of oppression that a politics grounded on representation and visibility cannot radically oppose. If Blas employs opacity as a figuration for algorithmic resistance along the same lines as I have described, it is important to note how this visual metaphor suits the 'scopic regime' of the biometric face recognition algorithms that he opposes. In the concluding Section, we will make experience how opacity can be performed sonically.

Oliveira has also addressed his artistic and research work by explicitly drawing on opacity, though in a brief passage. Opacity, for the artist, is a tactic and a 'right' to be advanced against colonial biocentric systems of knowledge and their *apparati*, such as BAMF's algorithm. However, even Oliveira does not draw a connection with its potentiality as a metaphor for the voice. In a text accompanying his artistic online residence sponsored by Schloss Solitude and the multimedia festival ZKM, which gave him an occasion to work on the audio essay *On the Apparently Meaningless Texture of Noise* (Oliveira 2019b), Oliveira has also appealed to Glissant's notions of transparency, and of the 'right to opacity' as a form of resistance, to connect colonial power and biometric recognition:

The idea that human traits are in any way measurable, classifiable, rankable, and taxonomizable is a violent, colonial construct. It emerges from the notion that a) certain populations and their ways of being are somehow 'closer to nature' than others, but also that b) the lives, bodies, objects, languages, and practices of these populations had to be collected, extracted, and 'made sense of' by European colonizers. This desire for 'understanding' the native denies agency, denies *the right to opacity* (as Glissant would say), and creates a narrative which is purely told by eyes, ears, and words of these so-called 'experts' who had to develop fictional grammar and vocabularies to be able to speak about things they could not (and still cannot) fathom. It is a denial of agency, of the very possibility of agency, and thus a removal from history (ibidem).

Opacity, in this sense, is an aesthetical and ethicopolitical strategy that can be cast by artists and researchers against the violence of coerced recognition. Other researchers have mobilized similar optic metaphors to imagine tactic of concealment and camouflage able to disrupt technologically-driven recognition.

Members of the Acid Horizon collective conceive their book *Anti-Oculus: A Philosophy of Escape* as a manual for 'counter-insurgent' practices against "ocularity" and "ocular apparatuses" (i.e. optical devices of surveillance) that capture subjects into their regimes of recognition, end up producing the identity categories they claim to merely detect (Acid Horizon 2023, 60). Counter-insurgent practices against the coerced recognition practices of ocular state and corporate *apparati*, for Acid Horizon, can be organized around the idea of "becoming imperceptible" (ibidem), an ethicopolitical model of resistance against that attempt to move away from dominant identity categories towards ever-more 'minoritarian' becomings (becoming-woman, becoming-animal, becoming-intense, becoming-molecular etc.) (ivi 52; Deleuze & Guattari 1987, 279).

Toby Beauchamp has written about the systematic misrecognition of transgender and gender nonconforming subjectivities by ocular systems of surveillance such as face recognition algorithms. Inverting the optical metaphor, Beauchamp addresses state apparati's construction of trans subjectivities' nondisclosure of identity in terms of "going stealth" (Beauchamp 2019, 34). From this point of view, failure to be recognized or to disclose 'truthful' (according to dominant subjectivity schemas and regimes of recognition) account of oneself is understood as transgressive *a priori*: failure of recognition devices to capture identity is delegated to its objects, preemptively charged with the accusation of fraud and excess. Transporting this framework into our own case, asylum seekers' failure to be recognized would be considered a double infringement: the semantic content of their declarations always already invested with the possibility of fraud in advance, while the blame for machinic misrecognition is shifted over to the applicant, understood as willfully transgressing the grids of intelligibility and regimes of recognition established by BAMF.

In a way more similar to Acid Horizon than Beauchamp, in their pamphlet media studies scholar Finn Brunton and information scientist Helen Nissenbaum have also

framed tactics of algorithmic resistance in similar terms. Eschewing opacity in favor of another visual metaphor for unintelligibility, they employ the term 'obfuscation' to describe bottom-up tactics advanced by users against algorithmic surveillance:

> Obfuscation, at its most abstract, is the *production of noise* modeled on an existing signal in order to make a collection of data more ambiguous, confusing, harder to exploit, more difficult to act on, and therefore less valuable. The word 'obfuscation' was chosen for this activity because it connotes obscurity, unintelligibility, and bewilderment and because it helps to distinguish this approach from methods that rely on disappearance or erasure. Obfuscation assumes that the signal can be spotted in some way and adds a plethora of related, similar, and pertinent signals – a crowd which an individual can mix, mingle, and, if only for a short time, hide (Brunton & Nissenbaum 2015, 46, my emphasis).

In this sense, the authors mobilize obfuscation in a different way than Pasquale (Pasquale 2015), who used the same term for addressing the tactics of misdirection that states and corporations put in place to prevent their technologies from scrutiny. Rather, for Brunton and Nissenbaum, obfuscation is a tactic of algorithmic resistance against surveillance and coerced recognition.

They dedicate their book *Obfuscation: A User's Guide for Privacy and Protest* (Brunton & Nissenbaum 2015) to provide a manual and a vocabulary to guide readers across different examples of obfuscation, fleshing out the different shapes this tactics has taken in the context of their respective objectives and targets. Significantly however, though they employ the sonic figure of 'noise' (a concept that information theory shares with musical aesthetics), their only example of a tactic of obfuscation achieved through aural means is precisely that of 'babble tapes' of which Kidel's work I have addressed in the previous Section is an example. As I have argued, similar tactics of 'auditory masking' are foreclosed to Oliveira, and most importantly to the asylum seekers, because of the greater stakes and the much more dramatic effects of not being recognized by BAMF's algorithm.

Brunton and Nissenbaum's notion of obfuscation mobilizes sonic concepts to convey the idea that noise conceals a 'clearer' signal addressed at those who can interpret it. This is due to the authors' framing of obfuscation as a tactic against surveillance and privacy, which understands the latter as something to be protected. By

contrast, in my framing of opacity, and through Oliveira's sonic performance of opacity, noise *is* the signal. Opacity, as we have seen, does not conceive its 'objects' (language, the voice, the identity they are supposed to index) as entities existing beyond the relations that produce them. In a frame informed by opacity, individuated 'legible' entities come into being in the moment a system of knowledge attempts to recognize them and understand them. In *DESMONTE*, opacity is turned against BAMF's algorithm program of recognition not to conceal the 'true' voice, or identity of asylum seekers, but rather to advance the point that its objects of recognition are constitutively illegible, and that any attempt to understand them can only produce the (colonial) notions and principles upon which the technology operates.

In a recent article stemming from her ongoing research on vocal essentialism and racialization, Nina Sun Eidsheim has engaged with the problem of "digital aural redlining", particularly in relation to accent recognition algorithm (Eidsheim 2023, 144). If Eidsheim still resorts to the paradigm of "just recognition", she also acknowledges that "the work of opening voice-driven technology to a much broader range of accents is clearly needed, it is not the solution" (ibidem). In contrast, she proposes forms of "accent activism" centered around practices of "aural redline jamming" (ibidem), taking cue from 'speech jammers', devices that record and reproduce a person's speech with a slight delay to 'jam' the speaker's ability to articulate thoughts. These techniques and technologies can be used to advance bottom-up forms of algorithmic resistance. In this context, she makes the example of the users of a vocal synthesis software based on accent stereotypes: by misusing its options, users are able to "sound nonlocatable accents, jamming the built-in organizing principle" (ivi 145).

Significantly, Eidsheim advances techniques and technologies of resistance based on the voice and grounded in a material, practical engagement with the harmful technology toward antiprograms ascribable to opacity. Though the examples she makes are not viable in our context (the former aiming to disrupt speakers' fluency, and the second latter not being a listening device), her considerations are still valuable for our current concerns. With Eidsheim, whose theoretical work on voice and listening has greatly informed my project, we get closer to Oliviera's own advancement of opacity as a form of algorithmic resistance. Before I get deeper into the technical details and modalities of the artist's practical engagement with the algorithm, I turn my attention to

the positioning of Oliveira's model of engagement in the broader discussion on decolonization and algorithmic activism.

DECOLONIZATION THROUGH ALGORITHMS

Bottom-up activist work against algorithmic recognition, has often taken the approach of data-centered forms of activism, which, as we have had the chance to see, can take the form of 'data-oriented' or 'data-enabled' practices. When algorithms and algorithmic platforms are understood as prosecuting and reproducing colonial structures of power, grounded in social hierarchization along racial lines, 'epistemicide' of indigenous ways of being and knowing (de Sousa Santos 2015) and the extraction and exploitation of land, labor and social bonds, we can speak of "data colonialism" (Couldry & Meijas 2019), giving rise to data-centered activist practices in the form of *decolonization*. Providing an overview of the responses to the continuation of colonialist exploitation through platform and algorithmic power, Nick Couldry and Ulises Meijas have shown how the "decolonial turn" in research and activism has often centered around data (Couldry & Meijas 2023).

Artist-researchers have also understood their practice along these lines. In the previous Chapter, following and expanding upon the work of Oliveria, I have attempted to demonstrate the continuation of colonial structures of oppression in BAMF's biometric voice recognition algorithm. Furthermore, as I have shown across the first Part of this project, recognition itself is in colonial and racist histories. Aware of this history, Oliveira has also framed his work in relation to the algorithm in decolonial terms. However, significantly, his work differs from others by virtue of his refusal to center his practice and ethicopolitical claims on data. For reasons I have had the chance to address, data-oriented and data-enabled approaches to activism, in fact, are not devoid of pitfalls.

The decolonial agenda *vis à vis* data is often articulated by demands for increased diversity, inclusion and representation in data-sets and in position revolving around their production, curation and maintenance. As I have argued, however, data-oriented approaches to algorithmic justice and decolonization, by adopting models based on representation and visibility, cannot move beyond recognition and rather

participate in tightening the grip of the 'oppressive double binds' to which the systemically unrecognized are subjected. By having to appeal to sites outside of the communities that are more targeted with misrecognition as sources of agency and power, as well as by addressing the problem of recognition via the fine-tuning of algorithms (without advancing a critique to their use and operative principles), data-oriented approaches end up participating in the same systems they identify as oppressive.

As pointed ethicopolitcal articulations directed to specific cases and technologies, I find these contributions instrumental in the overall fight for algorithmic justice, but I maintain they fall short of enabling long-term transformative change. As I have argued throughout this thesis, I follow Oliviera in aligning with Amoore's belief that "it could never be sufficient to demand that facial recognition algorithms that fail to recognize black faces be trained on a greater variability of images" (Amoore 2020, 73), or, with respect to voice recognition technologies, sharing the opinion of Eidsheim that "while the work of opening voice-driven technology to a much broader range of accents is clearly needed, it is not the solution" (Eidsheim 2023, 144). Grounding algorithmic resistance in decolonial frames can however enable the activist to move beyond these models.

In his refusal to orient his practice around data as a viable locus for ethicopolitical claim-making, Oliveira's work on BAMF's algorithm in general, and our present case-study of *DESMONTE* in particular, is not ascribable to either forms described by Beraldo and Milan. Oliveira's positioning of his role and task in the frame of decolonization, is intended to move beyond the discursive limits of critique to embrace activist, practical forms engagement. Decolonization, in this frame, is understood by Oliviera as directed not only towards algorithms themselves, but to the colonial notions of voice and practices of listening upon which they operate. This is highlighted by Oliveira in a passage I will quote in full:

> The task at hand, however, is not only to expose the way in which such biocentric notions are expressed in, with, and through machine listening, but also to extrapolate from it as a political tool. It is not an attempt to use these systems against themselves, but rather to unravel from the notion of an ethical encounter; one in which other possibilities (of being, of knowing)

might exist *before* questions around sedimented (colonial) notions of being and knowing become the forefront of the matter – and even more so *before* conclusions about being and knowing are extracted. To transform the spectral domain, the domain of timbral composition, as the domain for other (unknowable) expressions of being that refuse to be sedimented, or to be driven by a paradigm of indexicality *qua* identity; to turn it into the site for a decolonizing (political) articulation. (Olivera forthcoming, 9, original emphasis)

The work of decolonization is thus positioned by Oliveira as an undoing of colonial ways of knowing and being inscribed in and reproduced by BAMF's algorithm. Decolonization involves tapping into the latent sonic potential of the encounter between the algorithm and the voice, to advance '(unknowable) expressions of being that refuse to be sedimented' – in other words, to transform recognition into opacity. The artist and researcher is not content with merely exposing how colonial 'biocentric notions are expressed in, with, and through machine listening'. Rather, the work of decolonizing onto-epistemologies and practices necessitates a more proactive attitude, engendering an extension beyond the strict confines of analytical methodologies and academic disciplines.

DESMONTE emerges from these considerations as an active engagement with the algorithm. When positioning *DESMONTE* (as well as Oliveira's overall engagement with BAMF's algorithm, articulated through a variety of media and interventions) within the broader context of the intersection of art, research and activism, I am impressed by its different approach to the problem of the violence of algorithmic recognition, the ethicopolitical demands it formulates, and the modalities through which it articulates them. Reasons for *DESMONTE*'s singularity among the current scenario of the intersection between algorithmic activism and artistic research practice are also to be found in the material-technical methodology of engagement he employes. If not through the figure of 'data', then, his form of activism must be understood through other models of engagement.

Building on Beraldo and Milan's distinction between data-oriented and data-enabled activism, Tiziano Bonini and Emiliano Treré have proposed to sort algorithmic activism into the distinct practices of 'resistance *to'* and '*through* algorithms'. The former, the authors explain, identifies in algorithms the 'stakes' of resistance: "in this type we find many political activists, organizations, artists, and critical scholars who

openly resist the power of algorithms through collective actions, protests, art installations, and research that highlight the many risks that our society runs when it delegates its choices to AI systems" (Bonini & Treré 2024, 36). Making the same example of artist-researcher Mimi Ọnụọha to whom I have also referred, in practices of algorithmic resistance such as Ọnụọha's "algorithms represent the object against which artists, citizens, scholars, and activists' narratives and protests are oriented" (ibidem)

Resistance *through* algorithms, on the other hand, is understood by the authors as "a resistance to the power of platforms that is exercised through the algorithms themselves. Algorithms, in fact, can also be the tool through which citizens, workers, artists, critical scholars and activists exercise their protest actions (algorithms as *repertoire*)" (ivi 37). Through different media and across diverse regimes, Oliveira's work can be ascribed to both forms of algorithmic resistance, which he frames as decolonization. The work of resisting *to* algorithms, in this respect, is mostly performed by Oliveira discursively, through his critical engagement with the technology, reflecting the agenda and demands of decolonizing algorithms by exposing their discriminatory power in an anti-colonialist frame, mostly by drawing on the colonial history and ideas informing biometric technologies, their inscription into BAMF's algorithm and its consequent reproduction of colonial structures of oppression.

Meanwhile, by actively engaging with the technology, *DESMONTE* performs resistance *through* the algorithm. Actually, a case could be made that in *DESMONTE*, Oliveira performs both forms of algorithmic resistance, as it exposes its colonial violence while it casts it against itself, in a decolonial frame grounded in opacity. In this respect, although in the passage quoted above, the artist is reluctant to frame his work in terms of 'an attempt to use these systems against themselves', I argue that this position must be understood as based on the refusal to work with the colonial systems of knowledge that the algorithm operationalizes, rather than directed at the algorithm itself. To the extent that colonial power is understood by Oliviera as residing not only in the history of this technology or in its current application, but also in the very notions inscribed into it (i.e. the voice as a biomarker indexing identity) and practices it performs (i.e. recognition), *DESMONTE* can indeed be characterized as a decolonial act of resistance *through* the algorithm.

Oliviera's activist approach to decolonization as a form of resistance *through* algorithms assumes the decolonial principle epitomized in Audre Lorde's famous dictum*,* 'the master's tools will never dismantle the master's house'. However, it is significant that he identifies the 'master's tools' not so much in the algorithm itself, which it repurposes in *DESMONTE*, but in the colonial practices and notions which it operationalizes. Unfolding as a hands-on approach that understands technology as a tool to be worked with, rather than renounced, Oliveira's act of resistance through algorithms is thus grounded in the opposition to technological determinism, but rather as a redistribution of agency. He does so by *deinscribing* and *reinscribing* the algorithm. In the next Section, I will delve deeper into the material-technical details of this practice by leaning for the last time on the lexicon and methodology of script analysis.

REINSCRIBING BAMF'S ALGORITHM

Though *DESMONTE* is but one of Oliviera's artistic research work in his expansive, ongoing engagement with this discriminating technology still in use in Germany for border control, this live sound art piece is, to my knowledge, the only art piece in his oeuvre in which the artist 'directly' interacts with the algorithm on a 'material' level. In a privately circulating text, Oliveira, describes the process of making *DESMONTE* as a "lo-fi 'reverse engineering' of each step undertaken by the software" (Oliveira, private communication). I propose to come back to the methodology of script analysis to assess Oliveira's subversive repurposing of the algorithm. It is through such practical form of engagement that Oliveira performs resistance *through* the algorithm. We can understand this process in script analysis terms' as involving a *deinscription* and a subsequent *reinscription* geared toward a radical transformation of its *program*. A brief recapitulation is perhaps due.

As I have explained, *scripts* describe the expectations of use and interaction designers *inscribe* into a technical object. The script of BAMF's voice biometric algorithm thus *prescribes* users to speak into a microphone in their 'native dialects', to carry out its *program* of 'voice recognition'. It follows that the technology assumes voice to be a fixed, reliable and measurable index of an equally stable, essential identity that can be mapped onto the juridical-geopolitical category of citizenship. Oliveira's

description of the algorithm involved a 'laying out' of the actants and processes involved in the actualization of its program. This implied working around the impasse caused by the *blackboxing* of the algorithm, its constitutive opacity, further complicated by the misdirecting statements of BAMF. Although the work of *ascribing* causality is complicated by the ontologically heterogenous, processual, and geographically distributed character of algorithmid assemblages, *description* can be aimed at locating the 'heavily charged passage points' that most contribute to the carrying out of their programs.

Oliviera was thus able to locate in 'MFCCs' and their measurement through 'spectral analysis' the actant and process most invested with the agency to perform recognition. As I have shown following Oliveira, MFCCs consider fragments of sound at the infinitely small 'mel-cepstral' scale. From these units, the algorithm is able to infer the corporeal makeup of asylum seekers' vocal tract (what Oliveira calls the "timbral architecture of the voice" – Oliveira, private communication) which it then maps onto pre-established patterns of voice data cataloged as 'dialects', and to which are attached different geographical provenances. In this vectorial space of measurement and correlation, the algorithm is purportedly able to 'recognize' citizenship through vocal timbre.

Identifying this actant and practice as the most agentially-charged, and impactful in the execution of the algorithm's program of recognition, it is at this point that Oliveira puts aside critical analysis practice to practically engage with the algorithm. *Deinscription* is the first step taken by Oliviera in this sense. With Latour, we understand deinscription as "the ways actants (human or non-human) tend to extirpate themselves from the prescribed behavior " (Latour 1992, 257, n15): to produce the sound art piece *DESMONTE*, Oliveira must then first assume the possibility of *deinscribing* these actants and processes from executing their program of recognition. Only this way it will be possible for the algorithm to be *reinscribed* with different notions and expectations about the world, its program of recognition to be transformed into the *antiprogram* of opacity.

Unable to directly intervene on BAMF's algorithm (which in any case, I remind, is not to be understood as a singular object but rather as an assemblage), a closed-source software whose access is severely guarded and gatekept, Oliveira's approach to this

work is grounded in the bottom-up recreation of the algorithm through the digital and analogic tools available to him. Faced with the impossibility to materially 'extirpate' the components of BAMF's algorithm (a process which of course, in the digital vectorial space of an algorithm takes a different form than, say, removing an engine from a car) Oliveira's solution is to use similar software capable of performing the same MFCC-based spectral analysis techniques in use at BAMF. The possibility of a 'real' deinscription of these components aimed to provoke a change in the overall behavior of the algorithm is thus foreclosed by the impossibility for the artist to directly access the algorithm.

However, what deinscription cannot do is superseded by the possibilities of *reinscription*. The algorithm's inaccessibility, in fact, is understood by Oliviera as a creative opportunity, the necessity to 'recreate' the algorithm from scratch, lending itself to new, multiple aesthetical and ethicopolitical potentialities to be explored. If on one hand, this 'lo-fi' reverse-engineering process is rigorous in its retracing of the technical operations performed by the algorithm, on the other hand it allows the artist to reproduce the technology to exploit its latent, untapped expressive potential. Now with more agency over its components, Oliveira can *reinscribe* different *scripts* into the algorithm, which allow to transform its program of recognition in its opposite *antiprogram*: opacity.

As Domenico Napolitano highlights in his media-archeological history of the 'artificial voice', all voice synthesis technologies are remediations and reoperationalizations of preexistent machine listening technologies (Napolitano 2022). This entails that a listening algorithm such as BAMF's can at any point be turned into an instrument of voice *production*. MFCC-based spectral analysis are in fact *reinscribed* by Oliviera to turn what was previously a recognition technology into a musical instrument for the artist to play in live performance settings. The process is explained by the artist in the text he kindly shared with me, and which I will report again here:

> In *DESMONTE*, a modular synthesizer uses granular synthesis techniques to 'zoom in' on [Brazilian death metal singer Fernanda Lira's pre-recorded] fry scream to derive – rather than extract – different types of signals that take control of decisions done through the audio path, which in turn condition a palette of sounds – oscillators tuned to her voice's partials, real-time

resynthesis, and spectral rearrangements of her voice through filtering – to emerge (Oliveira, private communication).

In other words, the MFCCs that BAMF's algorithm listens for to infer vocal timbre are turned back into digitally processable 'micro-snippets' of vocal timbre. Then, the granular synthesizer, working at a similar microsonic spectral scale to MFCCs, resynthesizes the voice, allowing the artist to manipulate it in real time through an array of filters. Spectral *analysis* is given back its sonorous dimension as spectral *music* (Anderson 2000). Oliveira's work of *reinscription* thus takes the form of a radical repurposing of a discriminatory algorithm into a tool for musical creation, allowing us to imagine and experience different modes of listening and understanding the voice beyond recognition.

I propose to read Oliveira's operation in light of my attempt (running across the previous Chapters as a unifying thread) to reframe *recognition as production*. In this sense, the artist's reinscription of the algorithm aims, in a way, to expose the 'real' working of the algorithm, its actual performative power to *produce* the voice rather than objectively 'recognize' it. The work fleshes out Nina Sun Eidsheim's ethicopolitical and methodological proposition to 'listen to listening', moving beyond the discursive regime of analysis to return listening and vocal timbre to their embodied sonorous dimension. In *DESMONTE*, we are invited to quite literally listen to how BAMF's algorithm listens to the voice, thus *produce* the (colonial) notions about the body and the voice, identity and difference, inscribed into it.

However, what the listener of the work experiences, rather than a recognizable voice, is a sonic fog that eschews any possibility of recognition but rather dwells in timbre's constitutional ambiguity. As I have reported, what Oliveira aims at here is in fact, "to transform the spectral domain, the domain of timbral composition, as the domain for other (unknowable) expressions of being that refuse to be sedimented, or to be driven by a paradigm of indexicality *qua* identity; to turn it into the site for a decolonizing (political) articulation" (Olivera forthcoming, 9, original emphasis). Listening to *DESMONTE* in shared, real-time embodied space recasts listeners as subjects actively involved in the unfolding of listening as a moment where meanings

and affects are negotiated and produced within the intra-action between humans, technologies, and the resounding environment.

The space of listening becomes a creative laboratory for the experimentation of an alternative onto-epistemology of the voice and material-discursive practices of listening, able to resist to colonial paradigms through the algorithm itself. As we will see in the next, conclusive Section, through the specificity of its aesthetic unfolding, *DESMONTE* invites a practice of listening that moves beyond recognition to allow for the emergence of sonic opacity. These practices of listening, I argue, are able to accord vocal timbre its opacity, not only as illegibility, but rather its emergence from the encounter with a multiplicity of actants. 'Monocausal' models of cognition are eschewed in favor of multiplicity, while voice and timbre are no longer *presupposed* by the algorithm, but produced *through* it and, most importantly, in their relationship with listeners, without whom there would be no timbre, no voice at all.

Oliveira's reinscription of the algorithm is also able to reframe our understanding of human and algorithmic agency. Repurposing the technology as a creative production tool, the artist points to its latent potential as an unexplored territory where humans, together with technologies, can imagine more just futures. Tapping into the potentialities of sound art, Oliviera is able to articulate a radical ethicopolitical, decolonizing form of resistance grounded in opacity and enabled by the very technology that it opposes. Its singularity among the contemporary spectrum of artistic research projects and algorithmic practices of resistance has driven my curiosity toward engaging with it in multiple ways.

It is here that I, at least in part, dismiss my analytical stance that up until this point had me following Oliveira's work from a distance, and take up my role as a curator and, most importantly, of listener. In the following, conclusive Section, I will relate my own experience of listening to *DESMONTE* in embodied, social and material space, from my privileged positionality as actively involved in the presentation of the work. I will combine a situated participatory listening methodology with a language that must always confront itself with the lack of a vocabulary when it attempts to describe the experience of listening to timbral opacity. In doing so, I am faced with the necessity to turn my scholarly register into a poetic tone.

This is my attempt, always on the verge of failure, not to resort to ordinary listening practices, the indexicality of 'timbral complexes' and its attendant essentialism. I will try not to resist the impulse make sense to make sense of what resist sense, and embrace a mode of listening able to accord voice its opacity. To do so, I try to focus on the emergence of timbre from a multiplicity of actants, which resonate with and through *DESMONTE*. It is my hope that this attempt will give my reader the opportunity to imagine what a such listening practice entails, and on the other hand, how can opacity be performed through sound as a form of resistance to ordinary practices of listening, finally tying up aesthetics, ethics, ontologies and epistemologies around this concept.

LISTENING TO SONIC OPACITY: *DESMONTE*

I had the opportunity to curate presentations of Oliveira's work *DESMONTE* on two separate occasions: the first on October 8, 2022 at Fondazione Merz in Turin, as part of an event produced in collaboration with Torino independent project space Cripta747 and The Listeners, a network of local not-for-profit cultural associations focused on the fostering of artistic practices based on sound, including Almare, the organization for which I work as a curator. The second iteration took place on June 24 2023 at Stand Florio in Palermo, during my fellowship at Fondazione Studio Rizoma and in the context of their festival Between Land and Sea, which explores the intercultural and environmental politics of the Mediterranean basin, with a particular attention to themes of borders, migration, and hospitality. Both events have been sponsored by the University of Palermo and the Scienze della Cultura doctorate program, and made possible by the Fondo Unico per lo Spettacolo grant of the Italian Ministry of Culture (MiC).

These occasions allowed me to engage deeper with Oliveira's research and to begin a conversation with the artist that continues to this day, as well as to reflect on (and experience firsthand) the particular collective listening experience *DESMONTE* entails. My impressions of the event are based on my personal experience and recollections of the first event in Torino, aided by the availability of a recorded track of the live performance. To expand my encounter with the piece, I continue to lean on

literature from sound studies and musical aesthetics, coupled with Oliveira's own writings about the work in particular and his artistic research practice in general.

Invited by Cripta747 to curate an event furthering the themes I had explored during my artistic residence in their space (September – December 2021), which concentrated on the politics, aesthetics and technologies of the voice at large, with particular emphasis on the topic of recognition. Centering my exploration of these topics around Eidsheim's 'acousmatic question' ('Who is it?') as a catalyst to assess voice and listening *vis à vis* the theme of recognition, I have titled the event 'It's not me, it's you' as a tentative answer to the theorist's question in the attempt to decenter its implied automatic response ('it's me!'), thus accentuating the active role of listeners in the making of the voice.

As I have devised it, the event included two other artists who contributed with their respective works: in Amsterdam-based Moroccan artist Salim Bayri's performance *Hadra Collider* (2021, ongoing), the artist, concealed offstage, disrupts Google's speech-to-text algorithm in real-time by speaking and reacting to it, code-switching between English, Spanish and Arabic, in an absurdist spiral of feedback loops, like in a game of 'Chinese whispers'. The work, like Oliviera, can also be considered an example of algorithmic resistance, although mostly focused on language and translation, rather than voice. After Bayri's work, Irish artist Eimear Walshe's video *Jolene* (Walshe, 2020) remediates an earlier performance in which the artist, dressed in a Nashville-style country costume talks and sings about queer desire, drawing from their personal experiences of growing up in rural Ireland, tying it around their complex identification with the characters in the song 'Jolene' by country superstar Dolly Parton.

On this rainy October day, Turin audiences gathered in the basement space of Fondazione Merz for the event. After Bayri's performance and Walshe's video (ambiguous, thought-provoking works in their own right) have prepared the audience for *DESMONTE*, setting an atmosphere of ambiguity and suspension, Oliviera takes the stage (fig. 4). The artist sits at a table set in the center of the back end of the room, at the center of the two front speakers. A subwoofer sits on his left, while two other speakers are placed at the opposite corners of the room, in a double stereo setup the artist, together with the sound technician and I, have negotiated together.

Fig. 4: Pedro Oliveira performs *DESMONTE*
at Fondazione Merz, October 8 2021

Lights go off and the smoke machine starts blowing. A green light turns on from behind the table, diffusing in the mist, giving the room a distinct sci-fi vibe. The artist would later reveal to me that the implied reference for this set design is John Carpenter's 1980 Lovecraftian cosmic horror film *The Fog*, where the titular weather phenomenon acquires supernatural powers as a medium for the vengeful spirits of the leprous passengers of a sunken ship, on whose remains the characters' ancestors have established their town (Oliveira, personal communication). Like many other ghost stories, *The Fog* is a story of dispossession and historical erasure, tying directly with Oliviera's decolonial framework.

The audience is scattered on the floor, some sitting facing the stage, others lying down, ceiling gazing. A sound starts playing: a high frequency fills the space, without settling on anything remotely reminiscent of a melody, as if the musician was tuning a ghostly glass organ. The sound is modulated downwards toward a medium frequency, while the higher end of the spectrum is filled with a shrilling tone moving in *glissandi*. The crystalline sound folds on itself, leaving only the medium tone. A rattling gasp fades in. I know them to be granularized phonemes of the recorded voice on which *DESMONTE* is based, but the audience has no clue, since, together with the artist, I have made the decision not to reveal that all the sounds come from the same recorded voice.

Regardless of the information that necessarily orient my informed experience, I, as much as anybody else in the room are at a loss of words when describing these sounds: uprooted from its purported origin, the acousmatic regime enforces the metaphorical agency of timbre (van Elferen 2020). Images, tactile sensations, smells *we have already known* fill our imagination, our brains tricked into filling what we cannot know with the reassuring pull of familiarity. The danger of falling back to (p)recognition is always around the corner. 'Pitch-centered' (Fales 2002) listening practices can also take over in a Western listener like myself, when all other systems of reference forfeit. Trying to resist describing voice in these terms, I am left in my own partial positionality, and a limited vocabulary.

As the medium tone fades, the cackling voice intensifies. Ricocheting, it is modulated into what, coincidentally, musicology calls a 'phrase': a minimum unit of articulated sound, though nothing here resembles a melody. For the next few minutes,

these sounds alternate, the medium tone at times superseded with a lower mechanical buzz. After a brief moment of silence, a much lower drone settles on the bottom end, while the rattle, now metamorphosed into a pleasurable flutter, hovers above. This moment does not last long before the acute glasslike flicker descends back into a gasping, raucous presence. Following the opposite movement, the lower buzz increases in frequency. Are all these sounds really only one voice?

Then, modulated by the artist (the former through small sustained attacks, the latter in wavelike glides) both sounds join together into a medium-low range. At times, the spectral sounds from the lower spectrum assume the more ghostly, fluctuating consistency of the flutter from before. This sequence is repeated for a few minutes, before the more spectral sound takes over and stays with us for a while, and then fades out. A series of gurgles interrupts the silence, spaced out by their ghostly reverberations. They are repeated, but they stop soon enough before any hint of rhythm can create expectations in the listeners. It is also in and through these moments that us, as listeners, *make* (sense of) sound, investing it with our own expectations.

All of a sudden, a sonic attack is launched by the hoarse noise, sustained into a whirr. A few moments later, an abysmal buzz blasts in the room, settling into a drone, though not completely masking the other sound before turning into a series of compressed bass kicks. These are the first and only popular music tropes of the piece. They are typical of subgenres of electronic dance music such as dubstep and grime, all musical references of Oliveira's other musical alias, OLVRA. These musical referents also tie in with Oliveira's decolonial interest: they are both genres emerging from diasporic urban youth, especially of Caribbean and Antillean descent, like the thinkers that have most influenced Oliveira's theoretical work: Fanon, Glissant and Wynter.

The abysmally low frequencies make the whole room, and our bodies, vibrate. It is a form of "bass materialism", a vibrational musical aesthetic that Steve Goodman associates with diasporic Caribbean music traditions such as Jamaican dub and its culture of sound systems: "unlike the futurist, avant-gardist legacy or rockist legacy of (white) noise music and its contemporary disciples, with its fetishization of midrange frequencies", bass-centered sound system culture, Goodman writes, "[deploys] waves of bass, an immense magnet that radiates through the body of the crowd, constructing a vectorial force field – not just heard but felt across the collective affective sensorium"

(Goodman 2012, 28). We are invited, like dubstep pioneers Digital Mystikz, to 'meditate on bass weight'.

This vibrational, affective, non-representational mode of listening – though not devoid of problems – can be temporarily activated against our 'timbre complexes', our desires to necessarily make sense of sound, to recognize it through our 'transparent' systems of knowledge. I take the most of this basslike pleasure for a while, dwelling in vibrational delight that reminds me of my experiences in clubs, squats and other improvised 'temporary autonomous zones' (Bey 2003) where DJs and musicians weaponize the sonic lineage of the diaspora and the Afro-centric 'rhythmachine' of techno (Eshun 1998; Attimonelli 2018). Dancing to throbbing bass music disorient and reorient: ordinary points of reference fade away, vibration becomes a compass. I imagine that Oliviera purposefully resorts to this musical aesthetic to evoke this common experience.

All of a sudden, my prior knowledge interrupts my desire not to recognize. Knowing all the sounds stem from only one voice, I consider its source. Built around only one recorded sentence, commissioned by the artist to Fernanda Lira, vocalist for the Brazilian death metal band Crypta. The gurgling sound we have heard since the start is the most recognizable sonic sign of that original sound sample. It is a version of her speech transmogrified by the artist intra-acting with the algorithm he repurposed into a spectral, granular musical instrument. However, it is not only the instrument that allows for this effect: the voice itself, in its performativity, can achieve opacity by exploiting its *plasticity* (Bulut 2025): its latent, too often forgotten potentials that experimental music taps into.

As Oliviera explains, Lira employs a 'growling' or 'extreme fry' extended vocal technique (Oliveira, personal communication) that phonologists and speech pathologists call 'laryngealization'. This technique is central to the metal subgenre she performs in, and has a twofold effect on the psychoacoustic experience of listening. First, it renders the semantic dimension of speech incomprehensible (or at least significantly complicates attempts to understand it) (Bogue 2007, 107). Second, by acting on the arytenoid cartilages of the larynx and consequently on the vocal cords (organs involved in shaping vocal timbre), growling obscures the recognizable identity traits of the speaker's voice. By performing growl together, Lira, Oliveira and the musical

machine demonstrate the performative character of timbre, its constitutive plasticity and opacity.

Disrupting recognition also occurs also through growling's decrease of mean frequency, considered a crucial factor in the psychoacoustic recognition of gender in the voice (Koestenbaum 2006). The drop in frequencies caused by the growl is intensified by Oliveira's live manipulation. By extending the sample into drones sustained over time, Oliveira further alters the recognizability of the voice. This manipulation causes an additional amplification of the lower range in the sound's frequency spectrum, where human hearing exerts less control over its capacity to recognize (Moller, Pedersen 2004). The effect makes the entire resonant architecture of the space vibrate, including the bodies of the listeners.

The space of Fondazione Merz, although equipped for sound performance with sound-absorbing panels on the side walls, is unprepared for the hellish throb effected by the voice's gurgling and buzzing drones; the metallic ventilation system vibrates, releasing harmonics that join the drone in sounding out our own embodied presence of listeners in a material, socially connotated space. This plurality of vectors deterritorializes listening, creating multiple possibilities for attention, while the distinction Nancy makes between 'hearing' and 'listening' is shown in its simplistic binarism (Nancy 2007). Voice is not only constituted within multiplicity, but when performed this way, it is able to let out and expose all its components, revealing how voice and timbre are never pre-individuated entities, but always already emergent from an immanent 'multivocality' (Meizel 2020).

By directly engaging the body without resorting to discourse (the semantic components of language, the representations involved in the 'forensic fantasies' of voice recognition), low frequencies reveal the affective, non-representational, 'materialist' dimension of sound art (Cox 2011). However, this is not 'sound in itself', and we are not the 'invisible listening bodies' implied by the practices of listening that confuse ontology with transcendence. Our own situated listening practices, negotiated between the individual and the collective, filter our perception of sound, even the unarticulated, non-representational voices such we are hearing. We are constituted by the sound as we participate in its making.

Not before too long however, the low vibrational pleasure leaves the room for what are perhaps the most 'ordinary' sections of the piece – at least for the unorthodox aesthetics of experimental electronic music. We are introduced to a symphony of swirly beeps reminiscent of the late electroacoustic and *musique concrète* composer François Bayle or the 'ceramic' sounds (Fraser 2024) of Dennis Smalley's acousmatic music, both crucial figures in the development of the experimental musical lineage which Oliveira pays tribute to. However, in Oliveira's hands, these musical aesthetics renounce any form of idealism in favor of a true form of sonic materialism that, unlike Schaffer's or Cox's, demands us to consider the embodied performative construction of sound through listening.

As soon as I gather these thoughts, a drone section reminds me of a classical Hindustani *tampura* drone, but as if compressed by a lo-fi digital format. This section also positions *DESMONTE* in musical historical lineage. More closely aligned with the drone music that Hindustani artists have taught Western musicians (Sword 2021) than with the acousmatic practices of Bayle and Smalley, *DESMONTE* can be described as a piece of *drone music* both in its harmonic choices and in its overall structure. Its hums and buzzes, resonating once again through the architecture of the spaces where *DESMONTE* is performed, generating a proliferation of the upper harmonics that Enlightenment acousticians thought to be timbre (Fales 2005), explode timbre in a million different directions.

When this section ends, the gasping sound comes back, as do all the sounds we have heard thus far, sequentially. I exit my drone-induced trancelike state to listen attentively. Suddenly, an unexpected appearance: the raucous caw is modulated in what begins to sound like articulated speech. For the first time, listeners are provided with a moment of clarity, a distant point of reference to mitigate our "syntactical impulses" (Parsons 1994, 43). It does not last long before a thick sonic fog slowly fills the sonic space. We are back in the sonic "infra-world", the fog that Bonnet described as a metaphor for the opacity of listening (Bonnet 2017). A 'cloud of unknowing', like in Christian mysticism, metaphorically as well as quite literally: the space is filled with the mist of the smoke machine, expanding and retracting in banks, reminding me of the abject spirits of Carpenter's film reclaiming their right to hospitality on this land.

We are allowed to dwell in opacity for the last few minutes, as a medium frequency buzz fills the room. What we begin to recognize as a growling human voice contorts itself, folding into what sounds like units of speech. Granularized into a dust cloud, disarticulated by the artist's live manipulation, the voice begins to reform. The effect is uncanny: rather than feeling like a return to the familiar, articulation feels unnatural, as if the non-human buzzes, twirls and caws we have heard thus far sounded out the voice in its original state, the articulated ordinary voice turned into a sonic monster. The "nonsense of the body" that Deleuze writes about (Deleuze 1990). Noise is the signal. Opacity as the condition for all meaning.

Finally, the sample of Lira's voice appears in its unaltered form, though understanding is still foreclosed by the defamiliarizing effect of growling. I can only grasp the first few words: *To become undone...* The sentence leaves a soft reverberation in the room before fading out. Oliveira gets up, the audience applauds. It feels later than it is in this dark October night. We walk out and I get to chat with friends and audience members in the museum's courtyard. Most of them have no clue that all the sounds they heard throughout the performance came from these last words, while few others did. In any case, we all leave with a sense of uncertainty. I ask myself what I can take away from this experience. Decolonizing recognition through opacity: can *I* resist?

CONCLUSION

Tuning into *DESMONTE*'s sonic opacity leaves the listener in a liminal space between recognition and opacity, between "the materiality of the sonic object and its aesthetico-relational qualities" (Oliveira 2022, 71). Sound affects the human and non-human bodies in the room materially, vibrating together. We are immersed in sound, traversed by it, but we are not passive objects on the way of vibration. As listening subjects, we are made by sound at the same time as we make (sense of) it. *DESMONTE* exposes in sonic form the idea that 'there is no *a priori* voice to be known' before the situated act of listening, and thus charges us with the responsibility of what to make of it. *DESMONTE* invites us to occupy this time and space and intra-act with it, at the same time demanding a suspension and a questioning of our ordinary practices of listening, their implied assumptions.

While I try to renounce preordained systems of knowledge, I am grounded by knowledge – though, in my privileged positionality, not oppressed by it. I am called back to the voices of the asylum seekers, weighed down by the burden of an opacity that the algorithm could not possibly recognize. Oliveira's refusal to represent these voices in sonic or visual form echoes the refusal of the voice to announce identity, a central thesis of Oliveira and of my project. As of myself, a Western listener, I am confronted with my own notions of the voice and listening. The instrument in the room, which together with Lira's voice, the artist, the room, and us listeners, allowed for the opacity of the voice to emerge in collective relation, reminding me of our responsibility towards technologies and of the creative, performative possibilities that they allow us to imagine different, more just worlds.

DESMONTE asks us to dwell in uncertainty. However, at the same time, it resists the idea that "certain modes of listening can, even if for a fleeting moment, 'escape' an ontological or epistemic engagement with the materiality of sound" (Oliveira 2022, 71). The voice's materially affects us, but to perform a truly materialist practice of listening, we must not resort to transcendental escapism. The vibrational force of the voice sounds out the room, its material structure and our bodies, advancing the embodied act of listening as a collective and ontologically plural experience. A materialism that pulls us into two directions: towards non-representational, acousmatic forms of listening, uninterested with causality and sources; at the other end, ordinary practices of listening, concentrated on making sense of sound, filling the gaps left by opacity with familiar images, correlating voices with 'origins'.

This liminality is what, for Oliveira constitutes the singular listening experience afforded by sound art. In the cracks between these seemingly irreconcilable practices, a space for an unaligned understanding of the voice and listening opens up. A practice of listening grounded in sonic opacity, allows voice and timbre to emerge in their difference, disengaged from all normative notions of identity. Tuning into *DESMONTE*'s sonic opacity means account for the multiple vectors that produce the voice, a process that foregrounds the instrumental role of non-human actants but in which humans participate as active listener, thus evidencing our responsibility in the making of more just sonic worlds, where all voices are accorded the same rights. A practice of listening that eschews 'colonial fictions' and 'forensic fantasies', moves beyond 'monocausality'

in favor of an anti-essentialist, radically immanent materialism, a practice of sonic opacity as resistance.

GENERAL CONCLUSIONS

My thesis has considered recognition in many forms: as an ethicopolitical model of intersubjective relation; in the aesthetic mode of listening; and as performed by algorithms. Finally, all these aspects of recognition intertwined in the second Part of my thesis where the case study of the practice of Pedro Oliveira fleshed out a practice that seeks to resist to recognition I set out to understand how recognition determines which identities are rendered legible and which are excluded in advance. Drawing on critiques to recognition from multiple perspective, I have considered how the epistemes conditions that allow recognition to function as a system of knowledge production – one that claims be able to account for difference, but instead produces identity according to its normative coordinates, and leaves its subjects and objects in the position to adapt to it, *or else* cease to be recognized.

Rather than assuming recognition's purported objectivity, then, I situated its epistemes or 'principal meanings' across multiple regimes: as an ethicopolitical model for intersubjective relation, as a mode of listening, and as performed by algorithms. I analyzed how, in each case, recognition operates through pre-established schemas that foreclose the possibility of engaging with difference as such. It was in confronting these limitations that I began to formulate the concept of opacity not as a deficit, but as a resource: an onto-epistemological condition through which resistance to recognition might be enacted. Opacity, in this sense, does not evade recognition – it interrupts its terms and refuses its demand for legibility.

The second part of this thesis has engaged with the artistic and research-based practice of Pedro Oliveira, whose investigation of a biometric voice recognition algorithm used by the German migration office becomes a site where resistance to recognition takes a sonic and conceptual form. In Oliveira's work, opacity becomes not just a theoretical figure but a practical intervention: it reconfigures the voice as irreducible to identity, and the algorithm as a contested assemblage. His practice, I argue, offers a concrete articulation of resistance grounded not in transparency or inclusion, but in aesthetic, ethical, and analytical refusal.

In the first Chapter, I confronted recognition as an ethicopolitical model by situating its epistemes and exposing the discontents that emerge from their

application. In this Chapter, I have attempted to show how recognition, rather than accounting for the 'Other', regulates difference by rendering it legible only through normative grids of intelligibility based on essentializing notions of identity. I then argued that recognition operates not as an empirically objective acknowledgment of identity but as a performative and disciplinary system of knowledge production that construct the objects it claims to merely recognize.

Engaging with Hegel, Lacan and Althusser through the critiques of Fanon, Butler, and Oliver, I have exposed the epistemes and the *scopic* regime of recognition, its logic and performance. Then, in a gesture that sought to move beyond critique to find possible alternatives to recognition, identifying in Glissant's notion of opacity a conceptual figure that not only exposed recognition's transparency and its coloniality, but also manages to resist it by reframing the objects of recognition: identity and difference. Opacity, in this sense, did not only afford us a conceptual figure through which to think, but also suggested radical aesthetic, ethical and analytical gestures that might allow resistance to recognition by foregrounding the incommensurable and irreducible nature of difference.

Building upon these insights, I explored the sonic regime of recognition, often proposed as an alternative to recognition's scopic regime. However, I found that many listening-based models similarly reproduce recognition's discontents, especially when they posit timbre as a corporeal marker of identity. My research has then led me to ask whether timbre, often used as an index of vocal identity, could be reappropriated as a figure of resistance. Through a survey of historical and contemporary listening theories, I then explored the potential of timbre to be radically refigured through the lens of *sonic* opacity. When put into practice, opacity might not merely critique recognition, but resist it by revealing the voice as a constitutionally plural and relational phenomenon, shaped by multiple factors and processes.

In Chapter 3 I then extended my critique to algorithmic systems, examining how recognition is encoded within machine logics as normative, discriminatory and often violent. Through the work of Chun, Amaro, Magnet, van der Ploeg, and Pugliese, I demonstrated how biometric recognition operationalizes historically contingent categories, producing ontologies of the body rooted in corporeal fetishism and racialized categories. These systems, under the guise of neutrality, deploy recognition to

inscribe normative identity templates that marginalize those who fail to conform. Significantly, I then contended that algorithmic failures to recognize are not much derived by technical errors, but they are systemic, and caused by algorithms' inscription and operationalization of the epistemes of recognition in all its forms.

In this sense, misrecognition is not a bug but a feature of algorithmic recognition. I then critiqued liberal calls for algorithmic recognition justice that seek to reform recognition without questioning its foundational premises, proposing instead a turn toward algorithmic resistance grounded in opacity. Drawing on Amoore, I framed algorithmic opacity not as a problem to solve, but as an onto-epistemological condition of algorithms that demand us to imagine new alternative forms of ethical claim-making, analytical methodologies, and aesthetic engagement, which I sought to flesh out in the following Part of my thesis.

The conceptual framework I have laid out in the previous Chapters was then put to the test through a diffractive reading of Pedro Oliveira's investigation into BAMF's voice recognition biometric algorithm. Oliveira's method, which I have closely followed, embraced the opacity of the algorithm as both an epistemological limitation and technical constraint without being hindered by it. Rather than attempting to idealistically 'unblackbox' the algorithm to decode it, Oliveira's description of the algorithmic assemblage managed to break through its regime of recognition, thus allowing us to locate the causes of its failure to recognize in its establishment of timbre as a biometric marker assigned with the power to index, and thus disciplinarily regulate identity.

This recasting revealed the colonial and bioessentialist logics inscribed in and performed by the algorithm, particularly through its investment of the ontology of corporeality with the epistemological positivity. By attributing performative agency to the algorithm, Oliveira's analysis showed how biometric systems not only recognize but actively produce subjects and their traits. Biometric recognition, here, emerges not as a neutral function but as a (colonial, bioessentialist) practice of production, further evidenced by the historical record of the techniques the algorithm deploys. Following Oliveira, I argued that resisting these practices necessitates moving beyond critique towards an embodied, experimental engagement with the algorithm's own operative logics. The opacity of vocal timbre can thus be mobilized to resist recognition.

Finally, I turned to Oliveira's *DESMONTE*, a sound art piece that performs the very principles of resistance I have theorized. In *DESMONTE*, the listener is suspended between recognition and opacity, invited to dwell within sonic materiality without recourse to fixed meanings or identities. Through collective listening in embodied social and material space, *DESMONTE* performs sonic opacity and exposes the act of listening as imbued with the power to produce its objects and subjects, and thus charged with ethical and political responsibility. The refusal to represent asylum seekers' voices within the piece is itself an ethical stance: one that acknowledges the limits of representation and the violence of recognition.

DESMONTE's sonic opacity demands a listening practice that does not reproduce the epistemes of recognition, but, by being grounded in multiplicity, contingency, and relation, resists recognition. This practice, which I have attempted to perform through my privileged perspective as a participant listener, eschews the monocausal, essentialist logics that underpin dominant regimes of listening as recognition. It proposes instead a materialist ethics of sound: one that accounts for the agency of non-human actants, the affective dimensions of vibration, and the political stakes of how we listen. In doing so, it models a world where recognition is not demanded, but deferred, refused, or reimagined. A world where the unrecognizable is not a failure, but a force of resistance.

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BIBLIOGRAPHY

Abbas Nazari, Amina. 2024a. *Acoustic Ecology of an AI System*. Interactive website. https://attune.researchandwaves.net/acoustic-ecology-of-an-ai-system.html.

———. 2024b. "Speculative Voicing: A Sonic Speculative Design Methodology for Vocal Imaginaries in the AI Era." London Royal College of Art. https://researchonline.rca.ac.uk/5973/1/Amina%20Abbas-Nazari_PhD%20Thesis_2024.pdf.

Acid Horizon. 2023. *Anti-Oculus: A Philosophy of Escape*. Repeater.

Agamben, Giorgio. 2003. *The Open: Man and Animal*. Stanford University Press.

———. 2005. *State of Exception*. University of Chicago Press.

———. 2017. *What Is Philosophy?* Stanford University Press.

Ahmed, Sara. 2019. *What's the Use?: On the Uses of Use*. Duke University Press.

Ajana, B. 2013. *Governing through Biometrics: The Biopolitics of Identity*. Palgrave Macmillan.

AJL. n.d. "Algorithmic Justice League - Unmasking AI Harms and Biases." https://www.ajl.org/.

Akrich, Madeleine. 1992. "The De-Scription of Technical Objects." In *Shaping Technology / Building Society: Studies in Sociotechnical Change*, edited by Wiebe E. Bijker and John Law, 205–24. The MIT Press.

Akrich, Madeleine, and Bruno Latour. 1992. "A Summary of a Convenient Vocabulary for the Semiotics of Human and Nonhuman Assemblies." In *Shaping Technology / Building Society: Studies in Sociotechnical Change*, edited by Wiebe E. Bijker and John Law, 205–24. The MIT Press.

Ali, Ahmed, Najim Dehak, Patrick Cardinal, Sameer Khurana, Sree Harsha Yella, James Glass, Peter Bell, and Steve Renals. 2016. "Automatic Dialect Detection in Arabic Broadcast Speech," 2016. https://doi.org/10.48550/arXiv.1509.06928.

Althusser, Louis. 1984. *On Ideology*. Verso Books.

Amaro, Ramon. 2023. *The Black Technical Object: On Machine Learning and the Aspiration of Black Being*. Sternberg Press.

Amoore, Louise. 2020. *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*. Duke University Press.

Ananny, Mike. 2016. “Toward an Ethics of Algorithms: Convening, Observation, Probability, and Timeliness.” *Science, Technology, & Human Values* 41 (1): 93–117.

Ananny, Mike, and Kate Crawford. 2018. “Seeing without Knowing: Limitations of the Transparency Ideal and Its Application to Algorithmic Accountability.” *New Media & Society* 20 (3): 973–89. https://doi.org/10.1177/1461444816676645.

Anderson, Julian. 2000. “A Provisional History of Spectral Music.” *Contemporary Music Review*, 2000. https://doi.org/10.1080/07494460000640231.

Appiah, Kwame Anthony. 2019. *The Lies That Bind: Rethinking Identity: Creed, Country, Color, Class, Culture*. Liveright Publications.

Apter, Emily. 2016. “Shibboleth: Policing by Ear and Forensic Listening in Projects by Lawrence Abu Hamdan.” *October*, no. 156 (2016), 100–115. https://doi.org/10.1162/OCTO_a_00253.

Aristotle. 2021. *Politics*. East India Publishing Company.

Assis, Paulo De, and Lucia D’errico. 2019. *Artistic Research: Charting a Field in Expansion*. Rowman & Littlefield.

Attimonelli, Claudia. 2018. *Techno. Ritmi afrofuturisti*. Meltemi.

Augoyard, Jean-François, and Henri Torgue. 2006. *Sonic Experience: A Guide to Everyday Sounds*. McGill-Queen’s University Press.

Bakhtin, M. M. 1982. *The Dialogic Imagination: Four Essays*. University of Texas Press.

Bal, Mieke. 1996. *Double Exposures: The Practice of Cultural Analysis*. Routledge.

———, ed. 1999. *The Practice of Cultural Analysis*. Stanford University Press. https://www.sup.org/books/art-and-visual-culture/practice-cultural-analysis.

———. 2002. *Travelling Concepts in the Humanities: A Rough Guide*. University of Toronto Press.

———. 2008. “‘You Do What You Have to Do’. A Response to Josef Früchtl.” *Krisis | Journal for Contemporary Philosophy* 9 (1): 59–69.

———. 2009. “Working with Concepts.” *European Journal of English Studies*, 2009. https://doi.org/10.1080/13825570802708121.

Bal, Mieke, and W.J.T. Mitchell. 2022. *Image-Thinking: Artmaking As Cultural Analysis*. Edinburgh University Press.

BAMF. 2017. “Integriertes Identitätsmanagement - Plausibilisierung, Datenqualität Und Sicherheitsaspekte.” https://media.frag-den-staat.de/files/foi/110994/schulung_avs_kurz.pdf.

———. 2018. “eGovernment Preisverleihung: 1. Platz.” https://www.BAMF.de/SharedDocs/Meldungen/DE/2018/20180621-am-egovernment.html?nn=282388.

———. 2022. “Digitisation Agenda 2022: Digital Initiatives in the Federal Office for Migration and Refugees.” https://www.bamf.de/SharedDocs/Anlagen/EN/Digitalisierung/broschuere-digitalisierungsagenda-2022.pdf?__blob=publicationFile&v=5.

———. 2018b. “Einsatz von Spracherkennungssoftware Durch Das Bundesamt Für Migration Und Flüchtlinge.” https://kleineanfragen.de/bundestag/19/1663-einsatz-von-spracherkennungssoftware-durch-das-bundesamt-fuer-migration-und-fluechtlinge.

———. n.d. “Entitlement to Asylum.” BAMF - Bundesamt Für Migration Und Flüchtlinge. n.d. https://www.BAMF.de/EN/Themen/AsylFluechtlingsschutz/AblaufAsylverfahrens/Schutzformen/Asylberechtigung/asylberechtigung-node.html.

Barad, Karen. 2003. “Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter.” *Signs* 28 (3): 801–31. https://doi.org/10.1086/345321.

———. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke University Press.

Bauman, Richard, and Charles L. Briggs. 2003. *Voices of Modernity: Language Ideologies and the Politics of Inequality*. Cambridge University Press.

Bayri, Salim. 2021. *Hadra Collider*. Multimedia performance. https://salimbayri.com/projects/hadra-collider.

Beauchamp, Toby. 2019. *Going Stealth: Transgender Politics and U.S. Surveillance Practices*. Duke University Press.

Beer, David, and Roger Burrows. 2013. “Popular Culture, Digital Archives and the New Social Life of Data.” *Theory, Culture & Society* 30 (4): 47–71. https://doi.org/10.1177/0263276413476542.

Benjamin, Ruha. 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Polity.

Bennett, Jane. 2010. *Vibrant Matter: A Political Ecology of Things*. Duke University Press.

Beraldo, Davide, and Stefania Milan. 2019. “From Data Politics to the Contentious Politics of Data.” *Big Data & Society* 6 (2): 2053951719885967. https://doi.org/10.1177/2053951719885967.

Bey, Hakim. 2003. *T.A.Z.: The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism*. Autonomedia.

Bhabha, Homi K. 2004. *The Location of Culture*. Routledge.

Bijker, Wiebe E., and John Law, eds. 1992. *Shaping Technology/Building Society: Studies in Sociotechnical Change*. The MIT Press.

Biselli, Anna. 2018. “Eine Software Des BAMF Bringt Menschen in Gefahr.” VICE. 2018. https://www.vice.com/de/article/fluechtlinge-bamf-sprachanalyse-software-entscheidet-asyl/.

Blas, Zach. 2011. *Facial Weaponization Suite*. Multimedia performance. https://zachblas.info/works/facial-weaponization-suite/.

Blas, Zach, and Jacob Gaboury. 2016. “Biometrics and Opacity: A Conversation.” *Camera Obscura: Feminism, Culture, and Media Studies* 31 (2 (92)): 155–65. https://doi.org/10.1215/02705346-3592510.

Boletsi, Maria. 2013. *Barbarism and Its Discontents*. Stanford University Press.

Bolter, J. David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. The MIT Press.

Bonilla-Silva, Eduardo. 2013. *Racism Without Racists: Color-Blind Racism and the Persistence of Racial Inequality in America*. Rowman & Littlefield.

Bonini, Tiziano, and Paolo Magaudda. 2023. *Platformed! How Streaming, Algorithms and Artificial Intelligence Are Shaping Music Cultures*. Palgrave Macmillan.

Bonini, Tiziano, and Emiliano Treré. 2024. *Algorithms of Resistance: The Everyday Fight against Platform Power*. The MIT Press.

Bonnet, Franois J. 2017. *The Infra-World*. Urbanomic.

Borrelli, Davide. 2000. *Il filo dei discorsi. Teoria e storia sociale del telefono*. Luca Sossella Editore.

Bradley, Rizvana. 2023. *Anteaesthetics: Black Aesthesis and the Critique of Form*. Stanford University Press.

Braidotti, Rosi. 2001. *Metamorphoses: Towards a Materialist Theory of Becoming*. Polity.

Brathwaite, Kamau. 1984. *History of the Voice: The Development of Nation Language in Anglophone Caribbean Poetry*. New Beacon Books.

Bregman, Albert S. 1990. *Auditory Scene Analysis: The Perceptual Organization of Sound*. The MIT Press. https://doi.org/10.7551/mitpress/1486.001.0001.

Brett, Philip, Gary C. Thomas, and Elizabeth Wood, eds. 2006. *Queering the Pitch: The New Gay and Lesbian Musicology*. Routledge.

Britton, Celia. 1995. “Opacity and Transparence: Conceptions of History and Cultural Difference in the Work of Michel Butor and Édouard Glissant.” *French Studies* 49 (3): 308–20.

Brown, Shea, Jovana Davidovic, and Ali Hasan. 2021. “The Algorithm Audit: Scoring the Algorithms That Score Us.” *Big Data & Society* 8 (1): 2053951720983865. https://doi.org/10.1177/2053951720983865.

Browne, Simone. 2015. *Dark Matters: On the Surveillance of Blackness*. Duke University Press. https://doi.org/10.1215/9780822375302.

Brunton, Finn, and Helen Nissenbaum. 2015. *Obfuscation: A User’s Guide for Privacy and Protest*. Edition. The MIT Press.

Bucher, Taina. 2018. *If...Then: Algorithmic Power and Politics*. Oxford University Press.

Bühlmann, Vera, Felicity Colman, and Iris van der Tuin. 2017. “Introduction to New Materialist Genealogies: New Materialisms, Novel Mentalities, Quantum Literacy.” *The Minnesota Review* 2017 (88): 47–58. https://doi.org/10.1215/00265667-3787378.

Bulut, Zeynep. 2025. *Building a Voice: Sound, Surface, Skin*. Goldsmiths Press.

Buolamwini, Joy. 2019. “InCoding: In The Beginning Was The Coded Gaze.” *MIT Media Lab* (blog). 2019. https://medium.com/mit-media-lab/incoding-in-the-beginning-4e2a5c51a45d.

Buolamwini, Joy, and Timnit Gebru. 2018. “Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification.” In *Proceedings of the 1st Conference on Fairness, Accountability and Transparency*, 77–91. PMLR. https://proceedings.mlr.press/v81/buolamwini18a.html.

Butler, Judith. 1990. *Gender Trouble: Feminism and the Subversion of Identity*. Routledge.

———. 1993. “Endangered/Endangering: Schematic Racism and White Paranoia.” In *Reading Rodney King/Reading Urban Uprising*. Routledge.

———. 1996. “Imitation and Gender Insubordination.” In *Feminism and Sexuality*, edited by Stevi Jackson and Sue Scott, 162–65. Edinburgh University Press. https://www.degruyterbrill.com/document/doi/10.1515/9781474469517-018/html?srsltid=AfmBOorY3PVIs7ArnjCGyveDDcG30EYQR0G-l0IKzhPv1Hx2tKzvx3Nh.

———. 2011. *Bodies That Matter: On the Discursive Limits of Sex*. Routledge.

Butler, Judith P. 1997. *The Psychic Life of Power: Theories in Subjection*. Stanford University Press.

Butt, Danny. 2017. *Artistic Research in the Future Academy*. Intellect Ltd.

Callon, Michel. 1987. "Society in the Making: The Study of Technology as a Tool for Sociological Analysis." In *The Social Construction of Technological Systems, New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker and T.J. Pinch. The MIT Press.

Calvet, Louis-Jean. 1974. *Linguistique et colonialisme: Petit traite de glottophagie*. Payot.

Camaiti Hostert, Anna. 2008. *Passing: A Strategy to Dissolve Identities and Remap Differences*. Translated by Christine Marciasini. Fairleigh Dickinson University Press.

Canut, Cécile. 2022. "From Order-of-Language to Provincializing Language." In *The Routledge Handbook of Language and the Global South/s*. Routledge.

Capstick, Tony. 2020. *Language and Migration*. Routledge. https://doi.org/10.4324/9781351207713.

Cavarero, Adriana. 2005. *For More than One Voice: Toward A Philosophy of Vocal Expression*. Translated by Paul A. Kottman. Stanford University Press.

Chase, Jefferson. 2017. "Refugee Agency Unveils ID Technology." DW.com. 2017. https://www.dw.com/en/german-refugee-agency-unveils-new-asylum-identity-technology/a-39857345.

Chion, Michel. 2011. "Dissolution of the Notion of Timbre." *Differences* 22 (2–3): 235–39. https://doi.org/10.1215/10407391-1428906.

Chow, Rey. 2014. *Not Like a Native Speaker: On Languaging as a Postcolonial Experience*. Columbia University Press.

Chun, Wendy Hui Kyong. 2021. *Discriminating Data: Correlation, Neighborhoods, and the New Politics of Recognition*. The MIT Press.

Clayton, Jace. 2012. "Sufi Plug Ins." 2012. https://jaceclayton.com/Sufi-Plug-Ins.

Cohen, Phil, and Mike Duggan, eds. 2021. *New Directions in Radical Cartography: Why the Map Is Never the Territory*. Rowman & Littlefield.

Coole, Diana, and Samantha Frost, eds. 2010. *New Materialisms: Ontology, Agency, and Politics*. Duke University Press.

Cornell, Lauren, and Ed Halter, eds. 2015. *Mass Effect: Art and the Internet in the Twenty-First Century*. The MIT Press.

Cortez, Rio, Marwa Helal, Kristian Henson, Harmony Holiday, Nontsikelelo Mutiti, Hassan Rahim, Kevin Young, et al. 2023. *Going Dark: The Contemporary Figure at the Edge of Visibility*. Edited by Ashley James. Guggenheim Museum Publications.

Couldry, Nick. 2010. *Why Voice Matters: Culture And Politics After Neoliberalism*. SAGE Publications.

Couldry, Nick, and Ulises A. Mejias. 2019. "Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject." *Television & New Media* 20 (4): 336–49. https://doi.org/10.1177/1527476418796632.

Couldry, Nick, and Ulises Ali and Mejias. 2023. "The Decolonial Turn in Data and Technology Research: What Is at Stake and Where Is It Heading?" *Information, Communication & Society* 26 (4): 786–802. https://doi.org/10.1080/1369118X.2021.1986102.

Coulthard, Glen Sean. 2014. *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. University of Minnesota Press.

Cox, Christoph. 2011. "Beyond Representation and Signification: Toward a Sonic Materialism." *Journal of Visual Culture* 10 (2): 145–61. https://doi.org/10.1177/1470412911402880.

———. 2018a. *Sonic Flux: Sound, Art, and Metaphysics*. First Edition. University of Chicago Press.

———. 2018b. "Sonic Realism and Auditory Culture: A Reply to Marie Thompson and Annie Goh." *Parallax* 24 (2): 234–42. https://doi.org/10.1080/13534645.2018.1452448.

Currie, Mark. 2004. *Difference*. Routledge.

D'Agostino, Mari. 2021. *Noi che siamo passati dalla Libia. Giovani in viaggio fra alfabeti e multilinguismo*. Il Mulino.

Daston, Lorraine, and Peter Galison. 2010. *Objectivity*. Zone Books.

Dean, Jodi. 2016. "Enclosing the Subject." *Political Theory* 44 (3): 363–93.

DeLanda, Manuel. 2016. *Assemblage Theory*. Edinburgh University Press.

Deleuze, Gilles. 1990. *The Logic of Sense*. Edited by Constantin V. Boundas. Translated by Mark Lester and Charles Stivale. Columbia University Press.

———. 1992. "Postscript on the Societies of Control." *October* 59 (1992):3–7.

———. 1995. *Difference and Repetition*. Translated by Paul Patton. Columbia University Press.

Deleuze, Gilles, and Félix Guattari. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. University of Minnesota Press.

———. 1996. *What Is Philosophy?* Columbia University Press. https://www.amazon.it/What-Philosophy-Gilles-Deleuze/dp/0231079893.

Deleuze, Gilles, and Claire Parnet. 1987. *Dialogues*. Columbia University Press.

Dencik, Lina, Arne Hintz, Joanna Redden, and Emiliano Treré. 2022. *Data Justice*. SAGE Publications.

D'Errico, Mike. 2022. *Push: Software Design and the Cultural Politics of Music Production*. OUP USA.

Derrida, Jacques. 1998a. *Archive Fever: A Freudian Impression*. University of Chicago Press.

———. 1998b. *Monolingualism of the Other; Or, the Prosthesis of Origin*. Stanford University Press.

———. 1998c. *Of Grammatology*. Johns Hopkins University Press.

de Sousa Santos, Boaventura. 2015. *Epistemologies of the South: Justice Against Epistemicide*. Routledge. https://doi.org/10.4324/9781315634876.

Deutsch, Diana. 1998. *The Psychology of Music*. Academic Press.

Di Matteo, Piersandra. 2024. *A bocca chiusa. Effetti di ventriloquio e scena contemporanea*. Edizione standard. Luca Sossella Editore.

Diedrick, Johann. 2021. *Dark Matters*. Interactive website. https://darkmatters.ml/.

Dixon-Román, Ezekiel. 2016. "Algo-Ritmo: More-Than-Human Performative Acts and the Racializing Assemblages of Algorithmic Architectures." *Cultural Studies ↔ Critical Methodologies* 16 (5): 482–90. https://doi.org/10.1177/1532708616655769.

DMR: Dimension Market Research. 2024. "Voice and Speech Recognition Market to Reach USD 87.6 Bn by 2033." DMR: Dimension Market Research. 2024. https://dimensionmarketresearch.com/report/voice-and-speech-recognition-market/.

Dolan, Emily I. 2013. *The Orchestral Revolution: Haydn and the Technologies of Timbre*. Cambridge University Press.

Dolan, Emily I., Alexander Rehding, Emily I. Dolan, and Alexander Rehding. 2021. *The Oxford Handbook of Timbre*. Oxford Handbooks. Oxford University Press.

Dolar, Mladen. 2006. *A Voice and Nothing More*. The MIT Press.

Dolphijn, Rick, and Iris van der Tuin. 2012. *New Materialism: Interviews & Cartographies*. Open Humanities Press.

Donkel, Douglas L., ed. 2001. *The Theory of Difference: Readings in Contemporary Continental Thought*. State University of New York Press.

Drage, Eleanor, and Federica and Frabetti. 2024. "Copies without an Original: The Performativity of Biometric Bordering Technologies." *Communication and Critical/Cultural Studies* 21 (1): 79–97. https://doi.org/10.1080/14791420.2023.2292493.

Dyer, Richard. 1997. *White: Essays on Race and Culture*. Routledge.

Earshot. n.d. "Info." Earshot. n.d. https://earshot.ngo.

Eco, Umberto. 1986. *Semiotics and the Philosophy of Language*. Indiana University Press.

———. 2000. *Kant and the Platypus: Essays on Language and Cognition*. Mariner Books.

———. 2014. *From the Tree to the Labyrinth: Historical Studies on the Sign and Interpretation*. Harvard University Press.

Eidsheim, Nina Sun, and Katherine Meizel, eds. 2019. *The Oxford Handbook of Voice Studies*. Oxford University Press.

Eidsheim, Nina Sun. 2015. *Sensing Sound: Singing and Listening as Vibrational Practice*. Duke University Press.

———. 2019. *The Race of Sound: Listening, Timbre, and Vocality in African American Music*. Duke University Press.

———. 2023. "Rewriting Algorithms for Just Recognition: From Digital Aural Redlining to Accent Activism." In *Thinking with an Accent*, 134–50. University of California Press.

Erlmann, Veit. 2016. "The Invention of the Listener: An(Other) History," 2016. https://doi.org/10.7551/mitpress/9975.003.0022.

Ernst, Wolfgang. 2016. *Sonic Time Machines: Explicit Sound, Sirenic Voices, and Implicit Sonicity*. University of Amsterdam Press.

Eshun, Kodwo. 1998. *More Brilliant Than the Sun: Adventures in Sonic Fiction*. Interlink Publication Group.

European Parliament. 2017. "Asylum Applications in the EU." European Parliament. 2017. https://www.europarl.europa.eu/infographic/asylum-migration/index_en.html.

Fales, Cornelia. 2002. “The Paradox of Timbre.” *Ethnomusicology* 46 (1): 56–95. https://doi.org/10.2307/852808.

———. 2005. “Listening to Timbre during the French Enlightenment.” In *Proceedings of the 2005 Conference on Interdisciplinary Musicology*, edited by Caroline Traube and Serge Lacasse. Centre for Interdisciplinary Research in Music Media and Technology. https://www.academia.edu/107557265/Listening_to_Timbre_during_the_French_Enlightenment

Fanon, Frantz. 2008. *Black Skin, White Masks*. Grove Press.

Farinati, Lucia, and Claudia Firth. 2017. *The Force of Listening*. Errant Bodies Press.

Farrier, David. 2013. *Postcolonial Asylum: Seeking Sanctuary Before the Law*. Liverpool University Press.

Filimowicz, Michael. 2023. *Decolonizing Data: Algorithms and Society*. Routledge.

Fontanille, Jacques. 2004. *Figure del corpo: per una semiotica dell’impronta*. Meltemi.

Foucault, Michel. 1977. *Discipline and Punish: The Birth of the Prison*. First American Edition. Pantheon Books.

———. 1994. *The Order of Things: An Archaeology of Human Sciences*. Knopf Doubleday Publishing Group.

Fraser, Lee. 2024. *Ghost Semantics*. Cripta747. https://www.cripta747.it/ghost-semantics/.

Fraser, Nancy. 2000. “Rethinking Recognition.” *New Left Review* 3 (3): 107–18.

———. 2014. *Justice Interruptus: Critical Reflections on the “Postsocialist” Condition*. Routledge.

Fraser, Nancy, and Axel Honneth. 2003. *Redistribution or Recognition?: A Political-Philosophical Exchange*. Translated by Joel Golb, James Ingram, and Christiane Wilke. Verso.

Friedland, Gerald, Paris Smaragdis, Josh McDermott, and Bhiksha Raj. 2017. “Audition for Multimedia Computing.” In *Frontiers of Multimedia Research*, 17:31–50. Association for Computing Machinery. https://doi.org/10.1145/3122865.3122868.

Früchtl, Josef. 2008. “What Is Cultural Analysis? And What Is the Role of Philosophy?” *Krisis | Journal for Contemporary Philosophy* 9 (1): 53–58.

Fuller, Matthew, and Eyal Weizman. 2021. *Investigative Aesthetics: Conflicts and Commons in the Politics of Truth*. Verso.

Gaines, Kevin K. 1996. *Uplifting the Race: Black Leadership, Politics, and Culture in the Twentieth Century*. The University of North Carolina Press.

Gardner-Chloros, Penelope. 2009. *Code-Switching*. Cambridge University Press.

Garlan, Yvon. 1988. *Slavery in Ancient Greece*. Cornell University Press.

Geerts, Evelien, and Iris van der Tuin. 2016. "Diffraction & Reading Diffractively." Https://Newmaterialism.Eu/. 2016. https://newmaterialism.eu/almanac/d/diffraction.html.

Gehl, Robert W. 2016. "The Politics of Punctualization and Depunctualization in the Digital Advertising Alliance." *The Communication Review* 19 (1): 35–54. https://doi.org/10.1080/10714421.2016.1128187.

Genova, Nicholas De. 2017. *The Borders of "Europe": Autonomy of Migration, Tactics of Bordering*. Duke University Press.

Gillespie, Tarleton. 2014. "The Relevance of Algorithms." In *Media Technologies: Essays on Communication, Materiality, and Society*, edited by Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot, 0. The MIT Press. https://doi.org/10.7551/mitpress/9780262525374.003.0009.

Gilroy, Paul. 1993. *The Black Atlantic: Modernity and Double-Consciousness*. Harvard University Press.

Glissant, Édouard. 1976. "Free and Forced Poetics." *Alcheringa* 2 (2): 95–101.

———. 1997. *Poetics of Relation*. University of Michigan Press.

Goh, Annie. 2017. "Sounding Situated Knowledges: Echo in Archaeoacoustics." *Parallax* 23 (3): 283–304. https://doi.org/10.1080/13534645.2017.1339968.

Goodman, Steve. 2012. *Sonic Warfare: Sound, Affect, and the Ecology of Fear*. The MIT Press.

Gramigna, Remo, and Cristina Voto. 2021. "Notes on the Semiotics of Face Recognition." *Sign Systems Studies* 49 (3–4): 338–60. https://doi.org/10.12697/sss.2021.49.3-4.05.

Greenfield, Adam. 2006. *Everyware: The Dawning Age of Ubiquitous Computing*. New Riders.

Gronlund, Melissa. 2016. *Contemporary Art and Digital Culture*. Routledge.

Grosz, Elizabeth. 1995. *Space, Time and Perversion: Essays on the Politics of Bodies*. Routledge.

Groth, Sanne Krogh, and Holger Schulze. 2020. "Sound Art: The First 100 Years of an Aggressively Expanding Art Form." In *The Bloomsbury Handbook of Sound Art*. Bloomsbury Academic.

Guattari, Félix. 1995. *Chaosmosis: An Ethico-Aesthetic Paradigm*. Indiana University Press.

Hacking, Ian. 1990. *Representing and Intervening: Introductory Topics in the Philosophy of Natural Science*. Cambridge University Press. https://doi.org/10.1017/CBO9780511814563.

———. 2000. *The Social Construction of What?* Harvard University Press.

———. 2004. *Historical Ontology*. Harvard University Press.

Hainge, Greg. 2013. *Noise Matters: Towards an Ontology of Noise*. Bloomsbury Academic.

Halberstam, Judith, and Ira Livingston, eds. 1995. *Posthuman Bodies*. Indiana University Press.

Hall, Stuart. 2021. "Cultural Identity and Diaspora." In *Selected Writings on Race and Difference*, by Stuart Hall. Duke University Press.

Hamdan, Lawrence Abu. 2016. *[Inaudible] A Politics of Listening in 4 Acts*. Sternberg Press.

———. 2012b. *Conflicted Phonemes*. Mixed media installation. http://lawrenceabuhamdan.com/conflicted-phonemes.

———. 2012a. *The Freedom of Speech Itself*. Mixed media installation. http://lawrenceabuhamdan.com/the-freedom-of-speech-itself.

Hanani, Abualsoud, Aziz Qaroush, and Stephen Taylor. 2017. "Identifying Dialects with Textual and Acoustic Cues." In *Proceedings of the Fourth Workshop on NLP for Similar Languages, Varieties and Dialects (VarDial)*, edited by Preslav Nakov, Marcos Zampieri, Nikola Ljubešić, Jörg Tiedemann, Shevin Malmasi, and Ahmed Ali, 93–101. Association for Computational Linguistics. https://doi.org/10.18653/v1/W17-1211.

Haraway, Donna. 1988. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14 (3): 575–99. https://doi.org/10.2307/3178066.

———. 1999. "The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others." In *Cybersexualities*, edited by Jenny Wolmark, 314–66. Edinburgh University Press. https://www.degruyterbrill.com/document/doi/10.1515/9781474473668-022/html.

———. 2003. *The Companion Species Manifesto: Dogs, People, and Significant Otherness*. Edited by Matthew Begelke. Prickly Paradigm Press.

Haraway, Donna J. 1997. *Modest_Witness@Second_Millennium.FemaleMan_Meets_OncoMouse*. Routledge.

———. 2016. *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press.

Harding, Sandra, ed. 2003. *The Feminist Standpoint Theory Reader: Intellectual and Political Controversies*. Routledge.

Harper, Adam. 2014. “System Focus: The Evolution of the Voice in the Digital Landscape.” The FADER. 2014. https://www.thefader.com/2014/07/02/system-focus-the-evolution-of-the-voice-in-the-digital-landscape.

Hayles, N. Katherine. 1999. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. University of Chicago Press.

Hegel, G.W.F. 1917. *Philosophie Der Weltgeschiche*. Lasson Edition.

Heller-Roazen, Daniel. 2008. *Echolalias: On the Forgetting of Language*. Zone Books.

Hirji, Sukaina. 2021. “Oppressive Double Binds.” *Ethics* 131 (4): 643–69. https://doi.org/10.1086/713943.

Holert, Tom. 2011. “Artistic Research: Anatomy of an Ascent.” *Texte Zur Kunst* 82 (2011).

Honneth, Axel. 1995. *The Struggle for Recognition: The Moral Grammar of Social Conflicts*. Polity.

hooks, bell. 1991. *Yearning: Race, Gender, and Cultural Politics*. Turnaround.

———. 2014. *Black Looks: Race and Representation*. Routledge.

Hostis. 2016. “Introduction: Recognition and Its Discontents.” *Hostis 2: Beyond Recognition* 2 (2016). http://archive.org/details/Hostis2.

Howard, David, and Jamie Angus. 2009. *Acoustics and Psychoacoustics*. Focal Press.

Ingold, Tim. 2012. “Toward an Ecology of Materials.” *Annual Review of Anthropology* 41 (Volume 41, 2012): 427–42. https://doi.org/10.1146/annurev-anthro-081309-145920.

Irigaray, Luce. 1993. *An Ethics of Sexual Difference*. Cornell University Press.

Isin, Engin, and Evelyn Ruppert. 2020. *Being Digital Citizens*. Rowman & Littlefield.

James, Robin. 2019. *The Sonic Episteme: Acoustic Resonance, Neoliberalism, and Biopolitics*. Duke University Press.

Jankelevitch, Vladimir, and Carolyn Abbate. 2003. *Music and the Ineffable*. Princeton University Press.

Jay, Martin. 1993. “Scopic Regimes of Modernity.” In *Force Fields*. Routledge.

Jungs de Almeida, Alessandra, Lauren Klein, and Catherine D’Ignazio. 2024. “Missing Data.” *Author*, 2024. https://dspace.mit.edu/handle/1721.1/157381.

Kahn, Douglas. 2001. *Noise, Water, Meat: A History of Sound in the Arts*. The MIT Press.

Kaila, Jan, Anita Seppä, Hendrik Pieter Slager, and Henk Slager. 2017. *Futures of Artistic Research: At the Intersection of Utopia, Academia and Power*. Academy of Fine Arts, Uniarts Helsinki.

Kane, Brian. 2013. "Musicophobia, or Sound Art and the Demands of Art Theory." Nonsite.Org. 2013. https://nonsite.org/musicophobia-or-sound-art-and-the-demands-of-art-theory/.

———. 2015. "Sound Studies without Auditory Culture: A Critique of the Ontological Turn." *Sound Studies* 1 (1): 2–21. https://doi.org/10.1080/20551940.2015.1079063.

———. 2016. *Sound Unseen: Acousmatic Sound in Theory and Practice*. Oxford University Press.

Kang, Edward B. 2022. "Biometric Imaginaries: Formatting Voice, Body, Identity to Data." *Social Studies of Science* 52 (4): 581–602. https://doi.org/10.1177/03063127221079599.

Kantayya, Shalini, dir. 2020. *Coded Bias*. Documentary. 7th Empire Media, Chicken And Egg Pictures, Ford Foundation - Just Films.

Keenan, Thomas, and Eyal Weizman. 2012. *Mengele's Skull: The Advent of a Forensic Aesthetics*. Sternberg Press.

Kidel, Sam. 2019. *Silicon Ear*. Latency. https://samkidel.bandcamp.com/album/silicon-ear.

Kim-Cohen, Seth. 2009. *In the Blink of an Ear: Toward a Non-Cochlear Sonic Art*.. Continuum.

Kitchin, Rob. 2014. "Big Data, New Epistemologies and Paradigm Shifts." *Big Data & Society* 1 (1): 2053951714528481. https://doi.org/10.1177/2053951714528481.

———. 2017. "Thinking Critically about and Researching Algorithms." *Information, Communication & Society* 20 (1): 14–29. https://doi.org/10.1080/1369118X.2016.1154087.

Kitchin, Rob, and Martin Dodge. 2014. *Code/Space: Software and Everyday Life*. The MIT Press.

Kleist, Heinrich von. 2019. "On How We Gradually Make up Our Thoughts While We Are Talking." *Delos: A Journal of Translation and World Literature* 34 (2): 239–47.

Knorr-Cetina, Karin D. 1981. *The Manufacture of Knowledge: An Essay on the Constructivist and Contextual Nature of Science*. Pergamon Press.

Koestenbaum, Wayne. 2006. "Queering the Pitch." In *Queering the Pitch: The New Gay and Lesbian Musicology*, edited by Philip Brett, Elizabeth Wood, and Gary C. Thomas. Taylor & Francis.

Krauss, Rosalind. 1982. “Photography’s Discursive Spaces: Landscape/View.” *Art Journal* 42 (4): 311–19. https://doi.org/10.1080/00043249.1982.10792816.

Kristeva, Julia. 1986. “Women’s Time.” In *The Kristeva Reader*, edited by Toril Moi, 328 Pages. Blackwell.

LaBelle, Brandon. 2006. *Background Noise: Perspectives on Sound Art*. Bloomsbury Academic.

Labelle, Brandon. 2020. *Sonic Agency: Sound and Emergent Forms of Resistance*. Goldsmiths Press.

LaBelle, Brandon. 2021. *Acoustic Justice: Listening, Performativity, and the Work of Reorientation*. Bloomsbury Academic.

Lacan, Jacques. 2007. “The Mirror Stage as Formative of the Function of the I as Revealed in Psychoanalytic Experience.” In *Ecrits: The First Complete Edition in English*. W. W. Norton & co.

Lane, Cathy, ed. 2008. *Playing with Words: The Spoken Word in Artistic Practice*. RGAP.

Latour, Bruno. 1992. “Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts.” In *Shaping Technology / Building Society: Studies in Sociotechnical Change*, edited by Wiebe E. Bijker and John Law, 205–24. The MIT Press.

———. 1999. *Pandora’s Hope: Essays on the Reality of Science Studies*. Harvard University Press.

———. 2007. *Reassembling the Social: An Introduction to Actor-Network-Theory*. First Edition. Oxford University Press.

Law, John. 1987. “Technology, Closure and Heterogeneous Engineering: The Case of the Portuguese Expansion.” In *The Social Construction of Technological Systems, New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker and T.J. Pinch. The MIT Press.

Law, John, and John Hassard. 1999. *Actor Network Theory and After*. Wiley-Blackwell.

Law, John, and Annemarie Mol. 1995. “Notes on Materiality and Sociality.” *The Sociological Review* 43 (2): 274–94. https://doi.org/10.1111/j.1467-954X.1995.tb00604.x.

Lazzarato, Maurizio. 2014. *Signs and Machines: Capitalism and the Production of Subjectivity*. Semiotext(e).

Leix Palumbo, Daniel. 2024. “The Weaponization of Datafied Sound: The Case of Voice Biometrics in German Asylum Procedures.” In *Doing Digital Migration Studies: Theories and Practices of the Everyday*, edited by K. Leurs and S. Ponzanesi. University of Amsterdam Press.

Leonelli, Sabina. 2020. “Learning from Data Journeys.” In *Data Journeys in the Sciences*, edited by Sabina Leonelli and Niccolò Tempini, 1–24. Springer International Publishing. https://doi.org/10.1007/978-3-030-37177-7_1.

Leurs, Koen, and Sandra Ponzanesi. 2024. “Doing Digital Migration Studies: Introduction Koen Leurs and Sandra Ponzanesi.” In *Doing Digital Migration Studies*. Amsterdam University Press. https://doi.org/10.1515/9789048555758-003.

Leurs, Koen, and Sandra and Ponzanesi. 2018. “Connected Migrants: Encapsulation and Cosmopolitanization.” *Popular Communication* 16 (1): 4–20. https://doi.org/10.1080/15405702.2017.1418359.

Levinas, Emmanuel. 1995. *Ethics and Infinity: Conversations with Philippe Nemo*. Translated by Richard A. Cohen. First Edition. XanEdu Publishing, Inc.

Li, Xiaochang, and Mara Mills. 2019. “Vocal Features: From Voice Identification to Speech Recognition by Machine.” *Technology and Culture* 60 (2): S129–60.

Lonzi, Carla. 2023. *Sputiamo su Hegel. E altri scritti*. La Tartaruga.

Loughridge, Deirdre. 2021. “Timbre Before Timbre: Listening to the Effects of Organ Stops, Violin Mutes, and Piano Pedals ca. 1650–1800.” In *The Oxford Handbook of Timbre*, edited by Emily I. Dolan and Alexander Rehding, 0. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190637224.013.16.

Lulamae, Josephine. n.d. “The BAMF’s Controversial Dialect Recognition Software: New Languages and an EU Pilot Project.” AlgorithmWatch. n.d. https://algorithmwatch.org/en/bamf-dialect-recognition/.

Lury, Celia, and Nina Wakeford. 2013. *Inventive Methods: The Happening of the Social*. Routledge.

Lyon, David. 2001. *Surveillance Society: Monitoring Everyday Life*. Open University Press.

Lyon, David, ed. 2006. *Theorizing Surveillance*. Willan.

Lyon, Richard F. 2010. “Machine Hearing: An Emerging Field [Exploratory DSP].” *IEEE Signal Processing Magazine* 27 (5): 131–39. https://doi.org/10.1109/MSP.2010.937498.

Mackenzie, Adrian, and Theo Vurdubakis. 2011. “Codes and Codings in Crisis: Signification, Performativity and Excess.” *Theory, Culture & Society* 28 (6): 3–23. https://doi.org/10.1177/0263276411424761.

Mackintosh, Kit. 2021. *Neon Screams: How Drill, Trap and Bashment Made Music New Again*. Repeater.

Maclure, Jocelyn. 2003. “The Politics of Recognition at an Impasse? Identity Politics and Democratic Citizenship.” *Canadian Journal of Political Science / Revue Canadienne de Science Politique* 36 (1): 3–21.

Madianou, Mirca. 2019. “The Biometric Assemblage: Surveillance, Experimentation, Profit, and the Measuring of Refugee Bodies.” *Television & New Media* 20 (6): 581–99. https://doi.org/10.1177/1527476419857682.

Magli, Patrizia. 1980. *Corpo e linguaggio*. L’Espresso.

Magnet, Shoshana Amielle. 2011. *When Biometrics Fail: Gender, Race, and the Technology of Identity*. Duke University Press.

Malkin, Robert G. 2006. “Machine Listening for Context-Aware Computing.” Phd, Carnegie Mellon University.

McAdams, Stephen. 2019. “The Perceptual Representation of Timbre.” In *Timbre: Acoustics, Perception, and Cognition*, edited by Kai Siedenburg, Charalampos Saitis, Stephen McAdams, Arthur N. Popper, and Richard R. Fay, 23–57. Springer International Publishing. https://doi.org/10.1007/978-3-030-14832-4_2.

McKittrick, Katherine. 2021. *Dear Science and Other Stories*. Duke University Press.

McNay, Lois. 2008. *Against Recognition*. Polity.

———. 2014. *The Misguided Search for the Political*. Polity.

Meijas, Ulises, and Nick Couldry. 2019. “Datafication.” Info:eu-repo/semantics/article. Alexander von Humboldt Institute for Internet and Society gGmbH. 2019. https://doi.org/10.14763/2019.4.1428.

Meizel, Katherine. 2020. *Multivocality: Singing on the Borders of Identity*. OUP USA.

Meyerhoff, Miriam, Adachi Chie, Nanbakhsh Golnaz, and Anna Strycharz. 2014. “Sociolinguistic Fieldwork.” In *The Oxford Handbook of Linguistic Fieldwork*, edited by Nicholas Thieberger. Oxford University Press.

Mignolo, Walter D. 2011. *The Darker Side of Western Modernity: Global Futures, Decolonial Options*. Duke University Press.

Milan, Stefania. 2017. “Data Activism as the New Frontier of Media Activism.” In *Media Activism in the Digital Age*. Routledge.

Mol, Annemarie. 1999. “Ontological Politics. A Word and Some Questions.” *The Sociological Review* 47 (1_suppl): 74–89. https://doi.org/10.1111/j.1467-954X.1999.tb03483.x.

Moller, H., and C. S. Pedersen. 2004. “Hearing at Low and Infrasonic Frequencies.” *Noise and Health* 6 (23): 37.

Mowitt, John. 2015. *Sounds: The Ambient Humanities*. University of California Press.

Müller-Wille, Staffan. 2020. “Data, Meta Data and Pattern Data: How Franz Boas Mobilized Anthropometric Data, 1890 and Beyond.” In *Data Journeys in the Sciences*, edited by Sabina Leonelli and Niccolò Tempini, 265–83. Springer International Publishing. https://doi.org/10.1007/978-3-030-37177-7_14.

Muñoz, José Esteban. 1999. *Disidentifications: Queers of Color and the Performance of Politics*. University of Minnesota Press.

Murray, Heather. 2007. “Monstrous Play in Negative Spaces: Illegible Bodies and the Cultural Construction of Biometric Technology.” *The Communication Review* 10 (4): 347–65. https://doi.org/10.1080/10714420701715415.

Nancy, Jean-Luc. 2007. *Listening*. Translated by Charlotte Mandell. Fordham University Press.

Napolitano, Domenico. 2022. *La voce artificiale. Un’indagine media-archeologica sul computer parlante*. Editoriale Scientifica. https://doi.org/10.19245/25.05.bs.094.

Neumark, Norie. 2017. *Voicetracks: Attuning to Voice in Media and the Arts*. The MIT Press.

Noble, Safiya Umoja. 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. NYU Press.

Nuance Communications. 2015. “The Essential Guide to Voice Biometrics,” 2015. https://www.nuance.com/content/dam/nuance/en_us/collateral/enterprise/white-paper/wp-the-essential-guide-to-voice-biometrics-en-us.pdf?srsltid=AfmBOoofcUGfyJ86NT__8zRi3Pvqa-vz71MrywoRVFiSCoUFlbQSf2F2.

Ochoa Gautier, Ana Marìa. 2014. *Aurality: Listening and Knowledge in Nineteenth-Century Colombia*. Duke University Press.

Oliveira, Pedro J. S. Vieira de. 2022. “»offensichtlich Unbegründet«: A Work in Progress Meditation on Sonic Biometry, Migration and the Archive.” In *Postcolonial Repercussions on Sound Ontologies and Decolonised Listening*, 77–84. transcript Verlag. https://www.degruyterbrill.com/document/doi/10.1515/9783839462522-005/html.

———. 2023b. “Broken Machines & Wild Imaginings.” AI Anarchies. 2023b. https://aianarchies.net/broken-machines-and-wild-imaginings.

———. 2023a. *CROSSOVER/CROSSTALK*. Mixed media installation. https://oliveira.work/crossover-crosstalk-version/.

———. 2019a. “On the Endless Infrastructural Reach of a Phoneme.” Transmediale Archive. 2019a. https://archive.transmediale.de/content/on-the-endless-infrastructural-reach-of-a-phoneme.

———. forthcoming. “Politicizing Acoustic Features: Undoing the Colonial Fiction of Voice-as-Citizenship in the German Asylum Seeking System.” *Border Fictions* 11 (4). https://doi.org/10.1080/20507828.2024.2371237.

Oliveira, Pedro J. S. Vieira de, and Shintaro Miyazaki. 2022. “Maschinelle Intelligenz?!” In *Acoustic Intelligence: Hören und Gehorchen*, edited by Anna Schürmer, Maximilian Haberer, and Tomy Brautschek, 99–124. Düsseldorf University Press. https://doi.org/10.1515/9783110730791-007.

Oliveira, Pedro J. S. Vieira de, Pedro. 2021. *DESMONTE*. Composition and live performance for modular synthesizer and recorded voice. https://oliveira.work/desmonte/.

———. 2019b. *On the Apparently Meaningless Texture of Noise*. Interactive website. https://oliveira.work/meaningless-texture/.

Oliver, Kelly. 2001. *Witnessing: Beyond Recognition*. First Edition. University of Minnesota Press.

Oltermann, Philip. 2022. “German Soldier Found Guilty of Planning Terror Attacks Posing as a Refugee.” The Guardian. 2022. https://www.theguardian.com/world/2022/jul/15/german-soldier-planned-terror-attacks-posing-as-a-refugee-court-finds.

Olwage, Grant. 2004. “The Class and Colour of Tone: An Essay on the Social History of Vocal Timbre.” *Ethnomusicology Forum* 13 (2): 203–26.

Ọnụọha, Mimi. 2016. *The Library of Missing Datasets*. Mixed media installation. https://mimionuoha.com/the-library-of-missing-datasets.

———. 2017. “Algorithmic Violence.” MIMI ỌNỤỌHA. 2017. https://mimionuoha.com/algorithmic-violence.

———. 2018. *The Library of Missing Datasets 2.0*. Mixed media installation. https://mimionuoha.com/the-library-of-missing-datasets.

———. 2021. *The Library of Missing Datasets 3.0*. Mixed media installation. https://mimionuoha.com/the-library-of-missing-datasets.

Oppenheim, A.V., and R.W. Schafer. 2004. "From Frequency to Quefrency: A History of the Cepstrum." *IEEE Signal Processing Magazine* 21 (5): 95–106. https://doi.org/10.1109/MSP.2004.1328092.

Ozkul, Derya. 2023. "Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe," 2023. https://www.rsc.ox.ac.uk/publications/automating-immigration-and-asylum-the-uses-of-new-technologies-in-migration-and-asylum-governance-in-europe.

Parikka, Jussi. 2012. *What Is Media Archaeology?* Polity.

Parker, Barry. 2009. *Good Vibrations: The Physics of Music*. Johns Hopkins University Press.

Parker, James E K, and Sean and Dockray. 2023. "'All Possible Sounds': Speech, Music, and the Emergence of Machine Listening." *Sound Studies* 9 (2): 253–81. https://doi.org/10.1080/20551940.2023.2195057.

Parker, James E. K., and Joel Stern, eds. 2019. *Eavesdropping: A Reader*. City Gallery Wellington ; Melbourne Law School ; Liquid Architecture.

Parsons, Marnie. 1994. *Touch Monkeys: Nonsense Strategies for Reading Twentieth-Century Poetry*. University of Toronto Press.

Pasquale, Frank. 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Harvard University Press.

Peirce, Charles Sanders. 1906. "Prolegomena to an Apology for Pragmaticism." *The Monist* 16 (4): 492–546.

Pellino, Annalisa. 2022. "Iscrizioni vocali ed evidenze acustiche in Walled Unwalled (2018) di Lawrence Abu Hamdan." In Andrea Chiurato (ed.), *Transmedialità e crossmedialità. Nuove prospettive*. Mimesis. https://apeiron.iulm.it/handle/10808/54949.

Pelly, Liz. 2025. *Mood Machine: The Rise of Spotify and the Costs of the Perfect Playlist*. Hodder And Stoughton Ltd.

Pettman, Dominic. 2017a. *Creaturely Love: How Desire Makes Us More and Less Than Human*. University of Minnesota Press.

———. 2017b. *Sonic Intimacy: Voice, Species, Technics*. Stanford University Press.

Pfeifer, Michelle. 2023. “Your Voice Is (Not) Your Passport.” *Sounding Out!* (blog). 2023. https://soundstudiesblog.com/2023/06/12/your-voice-is-not-your-passport/.

Phan, Thao, and Scott Wark. 2021. “What Personalisation Can Do for You! Or: How to Do Racial Discrimination without ‘Race.’” *Culture Machine* 20 (2021). https://research.gold.ac.uk/id/eprint/34642/.

Pieraccini, Roberto. 2012. *The Voice in the Machine: Building Computers That Understand Speech*. The MIT Press.

Pisano, Leandro. 2017. *Nuove geografie del suono. Spazi e territori nell’epoca postdigitale*. Meltemi.

Porter, Theodore M. 1986. *The Rise of Statistical Thinking, 1820-1900*. Princeton University Press.

Pugliese, Joseph. 2005. *Biometrics: Bodies, Technologies, Biopolitics*. Routledge. https://www.routledge.com/Biometrics-Bodies-Technologies-Biopolitics/Pugliese/p/book/9780415811040.

Rancière, Jacques. 2004. *Disagreement: Politics And Philosophy*. Translated by Julie Rose. First Edition. University of Minnesota Press.

Rangan, Pooja, Akshya Saxena, Ragini Tharoor Srinivasan, and Pavitra Sundar. 2023. *Thinking with an Accent: Toward a New Object, Method, and Practice*. First Edition. University of California Press.

Ree, Jonathan. 2000. *I See a Voice: Deafness, Language and the Senses-A Philosophical History*. Henry Holt & Co.

Reitan Andersen, Kirsti, Victor Renza, and Christian Fieseler. 2021. “Mapping the Socially Engaged Arts in Europe.” *SSRN Electronic Journal*, 2021. https://doi.org/10.2139/ssrn.3861625.

Reynolds, Simon. 2018. “How Auto-Tune Revolutionized the Sound of Popular Music.” Pitchfork. 2018. https://pitchfork.com/features/article/how-auto-tune-revolutionized-the-sound-of-popular-music/.

Ricoeur, Paul. 2005. *The Course of Recognition*. Harvard University Press.

Riskin, Jessica. 2002. *Science in the Age of Sensibility: The Sentimental Empiricists of the French Enlightenment*. University of Chicago Press.

Rodier, Claire. 2012. *Xénophobie business*. La Decouverte.

Rosenfeld, Sophia. 2014. *Common Sense: A Political History*. Harvard University Press.

Ruppert, Evelyn. 2019. “Different Data Futures: An Experiment in Citizen Data.” *Statistical Journal of the IAOS* 35 (4): 633–41. https://doi.org/10.3233/SJI-190538.

Said, Edward W. 1979. *Orientalism: Edward W. Said*. Knopf Doubleday Publishing Group.

Saini, Angela. 2020. *Superior: The Return of Race Science*. Fourth Estate.

Sakai, Naoki. 2009. “Dislocation in Translation.” *TTR : Traduction, Terminologie, Rédaction* 22 (1): 167–87. https://doi.org/10.7202/044786ar.

Schaeffer, Pierre. 1952. *À La Recherche d’une Musique Concrète*. Éditions du Seuil.

———. 1966. *Traité Des Objets Musicaux*. Éditions du Seuil.

Schafer, R. Murray. 1969. *The New Soundscape: A Handbook for the Modern Music Teacher*. BMI Canada.

Schuller, Björn, and Anton Batliner. 2013. *Computational Paralinguistics: Emotion, Affect and Personality in Speech and Language Processing*. Wiley.

Sedgwick, Eve Kosofsky. 2003. “Paranoid Reading and Reparative Reading, or, You’re So Paranoid, You Probably Think This Essay Is About You.” In *Touching Feeling*, 123–52. Duke University Press. https://www.degruyterbrill.com/document/doi/10.1515/9780822384786-007/html?lang=en.

Shabara, Rully. 2023. “XHABARABOT.” Rullyshabara. 2023. https://www.rullyshabara.id/xhabarabot-voicemachines.

Siedenburg, Kai, and Stephen McAdams. 2017. “Four Distinctions for the Auditory ‘Wastebasket’ of Timbre1.” *Frontiers in Psychology* 8 (2017). https://doi.org/10.3389/fpsyg.2017.01747.

Simondon, Gilbert. 2020. *Individuation in Light of Notions of Form and Information*. University of Minnesota Press.

Smalley, Denis. 1994. “Defining Timbre – Refining Timbre.” *Contemporary Music Review* 10 (2): 35–48.

Spivak, Gayatri Chakravorty. 1987. *In Other Worlds: Essays in Cultural Politics*. Methuen.

———. 1994. “Can the Subaltern Speak?” In *Colonial Discourse and Post-Colonial Theory*. Routledge.

———. 2006. “Subaltern Studies: Deconstructing Historiography.” In *In Other Worlds*. Routledge.

Sterne, Jonathan. 2003. *The Audible Past: Cultural Origins of Sound Reproduction*. Duke University Press.

Steyerl, Hito, and Franco "'Bifo'" Berardi. 2013. *E-Flux Journal: The Wretched of the Screen*. Edited by Julieta Aranda, Brian Kuan Wood, and Anton Vidokle. Sternberg Press.

Stoever, Jennifer Lynn. 2016. *The Sonic Color Line: Race and the Cultural Politics of Listening*. NYU Press.

Sword, Harry. 2021. *Monolithic Undertow: In Search of Sonic Oblivion*. Hachette UK.

Táíwò, Olúfẹ́mi O. 2022. *Elite Capture: How the Powerful Took Over Identity Politics*. Pluto Press.

Tate, Greg. 2021. "Afropessimism and Its Discontents," 2021. https://www.thenation.com/article/society/afropessimism-wilderson-critical-race/.

Taylor, Charles, and Amy Gutmann. 1994. *Multiculturalism: Examining the Politics of Recognition*. Princeton University Press.

Thomaidis, Konstantinos, and Ben MacPherson, eds. 2015. *Voice Studies: Critical Approaches to Process, Performance and Experience*. Routledge.

Thompson, Marie. 2017. "Whiteness and the Ontological Turn in Sound Studies." *Parallax* 23 (3): 266–82. https://doi.org/10.1080/13534645.2017.1339967.

Thylstrup, Nanna Bonde. 2022. "The Ethics and Politics of Data Sets in the Age of Machine Learning: Deleting Traces and Encountering Remains." *Media, Culture & Society* 44 (4): 655–71. https://doi.org/10.1177/01634437211060226.

Thylstrup, Nanna Bonde, Daniela Agostinho, Katrine Dirckinck-Holmfeld, and Kristin Veel. 2024. "Infrapolitics, Archival Infrastructures and Digital Reparative Practices." In *Feminist Digital Humanities: Interventions in Praxis*. University of Illinois Press. https://tu-dresden.de/gsw/ressourcen/dateien/genderconceptgroup/veranstaltungen-der-gcg/20201203_Thylstrup-et-al.pdf.

Torres Núñez del Prado, Paola. 2022. "AIELSON: A Neural Spokenword Poetry Generator with a Distinct South American Voice." *Journal of Voice Studies* 7 (2022):11–33.

Tuhus-Dubrow, Rebecca, and Olúfẹ́mi O. Táíwò. 2022. "On the Uses and Abuses of Identity Politics." The Chronicle of Higher Education. 2022. https://www.chronicle.com/article/on-the-uses-and-abuses-of-identity-politics.

Turow, Joseph. 2023. *The Voice Catchers: How Marketers Listen In to Exploit Your Feelings, Your Privacy, and Your Wallet*. Yale University Press.

Valle, Andrea. 2019. "Fisiognomica udibile." In . ITA. https://iris.unito.it/handle/2318/1727345.

van Dijck, José, David Nieborg, and Thomas Poell. 2019. “Reframing Platform Power.” Info:eu-repo/semantics/article. Alexander von Humboldt Institute for Internet and Society gGmbH. 2019. https://doi.org/10.14763/2019.2.1414.

van der Ploeg, Irma. 1999. “Written on the Body: Biometrics and Identity.” *Computers and Society* 29 (1): 37–44. https://doi.org/10.1145/382042.382051.

van der Tuin, Iris, and Amy Pekal. 2023. “On Generative and Generational Interlinkages and Intersections: Interdisciplinarity in Humanities, Culture, and Art.” *Qualitative Inquiry* 29 (1): 45–54. https://doi.org/10.1177/10778004221097628.

van Elferen, Isabella. 2020. *Timbre. Paradox, Materialism, Vibrational Aesthetics*. Bloomsbury Academic.

van Pelt, Tamise. 2012. “The Master in the Mirror.” In *The Other Side of Desire*, 21–43. SUNY Press. https://www.degruyterbrill.com/document/doi/10.1515/9780791493052-006/html?lang=de.

Varwig, Bettina. 2021. “Early Modern Voices.” In *The Oxford Handbook of Timbre*, edited by Emily I. Dolan and Alexander Rehding, 0. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190637224.013.32.

Voegelin, Salomé. 2018. *The Political Possibility of Sound: Fragments of Listening*. Bloomsbury Academic.

———. 2010. *Listening to Noise and Silence: Towards A Philosophy Of Sound Art*. Continuum.

Volcler, Juliette. 2013. *Extremely Loud: Sound As a Weapon*. New Press.

Waits, Mira Rai. 2016. “The Indexical Trace: A Visual Interpretation of the History of Fingerprinting in Colonial India.” *Visual Culture in Britain* 17 (1): 18–46. https://doi.org/10.1080/14714787.2016.1147978.

Wallmark, Zachary. 2022. *Nothing but Noise: Timbre and Musical Meaning at the Edge*. Oxford University Press.

Walshe, Eimear. 2020. *Jolene*. Performance.

Waltham-Smith, Naomi. 2017. *Music and Belonging Between Revolution and Restoration*. OUP USA.

———. 2021. *Shattering Biopolitics: Militant Listening and the Sound of Life*. Fordham University Press.

Wang, Wenwu, ed. 2010. *Machine Audition: Principles, Algorithms and Systems*. Information Science Reference.

Weheliye, Alexander G. 2005. *Phonographies: Grooves in Sonic Afro-Modernity*. Duke University Press.

Weheliye, Alexander Ghedi. 2014. *Habeas Viscus: Racializing Assemblages, Biopolitics, and Black Feminist Theories of the Human*. Duke University Press.

Weizman, Eyal. 2017. *Forensic Architecture: Violence at the Threshold of Detectability*. Zone Books.

Wilderson III, Frank B. 2021. *Afropessimism*. Liveright.

Williams, Raymond. 1978. "Structures of Feeling." In *Marxism and Literature*, by Raymond Williams. Oxford University Press.

Wilson Gilmore, Ruth. 2023. "Fatal Couplings of Power and Difference: Notes on Racism and Geography." In *Abolition Geography: Essays Towards Liberation*. Verso Books.

Worrall, David. 2019. *Sonification Design: From Data to Intelligible Soundfields*. 2019. Springer-Nature New York Inc.

Wynter, Sylvia. 2001. "Towards the Sociogenic Principle: Fanon, Identity, the Puzzle of Conscious Experience, and What It Is Like to Be 'Black.'" In *National Identities and Socio-Political Changes in Latin America*. Routledge.

Zuboff, Shoshana. 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. Public Affairs.