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Defining language and managing its use: Language technology *as* language management

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A B S T R A C T

Language technologies such as voice user interfaces, large language models and machine translation tools are embedded in an ever-growing range of digital devices and services used by millions of people every day in contexts as diverse as schools, homes, hospitals, and offices. In this paper, I argue that the way these technologies are used by and used on language workers and other members of language communities can be understood as a type of *language management*. As social scientists of technology have long pointed out, all technologies are shaped by and expressive of ideologies. In the case of language technologies, some of these are ideologies about language(s) and their speakers. Rather than simply (or only) functioning as linguistic interfaces facilitating interaction between people, language technologies reinforce linguistic ideologies, and contribute to the ideological construction of particular languages and their communities, as well as more abstract notions of 'language' and its value and purpose. They are furthermore often directly deployed to manage language work(ers) through surveillance, and partial automation. Understanding the ways in which language technologies reproduce, mediate and shape linguistic behaviours and beliefs as part of "algorithmic language management" allows us to connect them to both the broader sociotechnical and political project of artificial intelligence, and the scholarship on language policy.

1. Introduction

Over the last decade, digital technologies which process and generate language such as voice user interfaces, large language models, and machine translation tools have become ubiquitous in contexts as diverse as schools, homes, hospitals, and offices. This paper focuses on the ways in which these *language technologies* (are used to) transform the nature, status and value of 'language work'—from translation to teaching, writing to customer service—and 'language(s)'—as a concept and social practice. I propose that these changes in linguistic practices and beliefs can be conceptualised under the umbrella of "algorithmic language management", drawing on Bernard Spolsky (2004, 2019). Understanding the design, development and deployment of language technologies as language policy processes allows us to critically interrogate their ideological and material impacts. A core aim of this paper is to explicitly connect this analysis of language technologies to wider histories and discourses of 'artificial intelligence' bridging gaps between different academic disciplines concerned with science, technology and language. The article is organised as follows: I first discuss and problematise the concept of 'artificial intelligence', which includes modern language technologies, defining it as a primarily social and political, rather than

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technical object. Against this background I discuss how different types of language technologies are used to 'manage' workers, speakers and languages, drawing on public discourses and marketing materials of popular language technologies. The objective of this paper is to draw together the historical, technical, political and social contexts of language technologies and introduce and illustrate a novel theoretical framework to support researchers primarily interested in language and communication in conducting critical investigations of language technologies.

2. The political project of 'artificial intelligence'

Before introducing the concept of "algorithmic language management", I will briefly highlight some of the prior work conceptualising artificial intelligence as a political project, focusing in particular on *what* the ideological project of AI does, who it serves, and how critiques of AI more broadly relate to language technologies specifically.

2.1. What does (the ideology of) AI do?

'Language technologies', as I discuss them here, can be loosely defined as technologies which automatically translate, transcribe, generate, and parse natural language. At time of writing in 2025, many of the most prominent language technologies are based on similar machine learning architectures, and sometimes collectively grouped as "artificial intelligence (AI)"[1] (alongside many other, disparate technologies). This category, while problematic (Suchman, 2023), is also useful insofar as it allows us to place language technologies within their larger historical, social, and political context. Specifically, language technologies can be understood as sharing social and technical infrastructures with other AI technologies, while producing similar harms and (supposed) benefits.

Language technologies are inextricably linked to (ongoing) attempts to build 'intelligent' machines to support and (partially) replace human decision making and information processing. While application domain and technical details may differ, all AI systems produce similar social effects based on shared underlying logics and histories. This is perhaps most concisely explained by Paola Ricaurte who identifies three shared "epistemic processes": "datafication, algorithmisation and automation" (2022:727) . Modelling social practices and processes such as language algorithmically, fundamentally alters how people engage with and through them. In the context of language technologies, datafication requires classification, quantification, and compilation of 'language data', usually understood to be unproblematically and comprehensively represented by text or speech (Erdocia et al., 2024; Bird, 2022; Baumgarten and Tieber, 2025). Compiling these data is inherently extractive and, in many cases, involves dispossessing language communities (Benjamin, 2021; Bird et al., 2024a; Mahelona et al., 2023; Birhane, 2020). As implemented today, language technologies increasingly mediate, and threaten to automate, communication between people, and "ways of being, knowing, feeling, doing and living" (Ricaurte, 2022:728).

Building on these foundational insights about AI broadly speaking, we can look at what specific tools are designed to do, how they are marketed, and how they are deployed.[2] Critiques of 'artificial intelligence' have highlighted widespread 'algorithmic bias' (O'Neil, 2017; Noble, 2018; Chun, 2021) and ways in which algorithmic systems lend a futuristic veneer of science, rationalism, and objectivity to deeply discriminatory systems (Fourcade and Healy, 2024; Chun, 2021; Benjamin, 2019). In this way automatic decision-making systems pose significant challenges to traditional systems of governance and accountability (Eubanks, 2018; Suchman, 2020; Golumbia, 2024). While much of the literature has focused on complex decision-making tools, it is both unsurprising and alarming that these biases are also found in language technologies (e.g., Koenecke et al., 2020; Wassink et al., 2022; Ungless et al., 2023; Gadiraju et al., 2023). By definition, machine learning systems can only make future predictions based on past data. In practice, these data are always partial, not just in the sense that all data necessarily are partial (Haraway, 1988)—but also in the sense that data about and by historically marginalised groups are under-represented (Guyan, 2022; Onuoha, 2016). In the context of language technologies this means that systems are not only biased towards majority groups among dominant languages, so-called "high-resource languages" (Bird, 2022), but that the global majority of languages and sociolinguistic practices (e.g., translanguaging) are ignored in the design and deployment of mainstream language technologies (Schneider, 2022). This not only means that many consumer products are less useable for marginalised language communities, but, more consequentially, also impacts downstream performance of decision-making tools in which language technologies are integrated (e.g., Field et al., 2023; Fabris et al., 2025). The inherently unsustainable nature of a technology that requires ever-larger amounts of resources (data, labour, energy, land and water among others) has furthermore (rightfully) been a focus of critics concerned about labour rights (Data Workers' and Inquiry, 2024; Merchant, 2023; Sadowski, 2025), environmental harms (Crawford, 2022; Saul et al., 2024; Olivo, 2024; Schütze, 2024), and monopolisation (Rikap, 2022; Whittaker, 2021).

To better understand how these harms arise, we have to look both at the technology itself, analysing its design *and* the wider political context in which it is developed and deployed. Before turning to this wider context, I want to suggest that the concept of "affordance" is useful in understanding how the interplay of design and use within a specific context by specific

[1] For ease of reading, I will refer to technologies without quote marks and to terms with single quote marks. Direct quotes are marked with double quote marks. Whenever referring to AI tools, consider sceptical quote marks implied (Suchman, 2023).

[2] Deployment may be more telling than design—as cybernetician Stafford Beer famously put it: "The purpose of a system it what it does", see Sadowski, (2025: 28) for a longer discussion.

users accounts for its harms and benefits. Defined as "a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used" (Norman, 2013:11), "affordance" captures the "dynamic interplay between humans and technologies" (Davis, 2023:325). It is clear that the (imagined or expected) capabilities or characteristics of the intended user shape these affordances—and that, as Ahmed points out, what is self-evidently "useable to some is unusable to others" (Ahmed, 2019:59). To take a classic example: a door affords entry into a building—though only for those who can climb the steps up to the door, have a key for the lock, and are able to push it open. For everyone else, the door might disafford entry—it closes off a particular space. Crucially, these disaffordances may or may not be intentional—a physically strong person designing a door may not consider that its weight might act as a barrier to entry (Ahmed, 2019; Shew, 2023). In applying this concept to machine learning, Davis furthermore draws attention to the "mechanism" of affordances—considering whether objects "request, demand, encourage, discourage, refuse, [or] allow social action" (Davis, 2023:325). In addition to asking *who* particular actions are afforded to, this asks about what Bush called "valence": the ways in which objects can "push or pull behavior in definable ways" (Bush, 1993:197). The framework put forward by Davis introduces some further nuance, for example accounting for the fact that workplace surveillance tools can simultaneously "demand attention to metrics" (from management) and "discourage or refuse skilled and subjective decision making" (by workers) and "request service to corporate goals" (from everyone) (Davis, 2023:327). To reframe the "epistemic processes" discussed above: AI tools demand large datasets and significant resources (energy, land, water), which in turn encourages developers to exploit data workers, compile more data, and exhaust resources—due to the wider political economy they are embedded in.

2.2. Who does (the threat of) AI serve?

AI has always been bound up with the mediation and expression of power (geopolitical, class, epistemic) (Katz, 2020; Geoghegan, 2023; Pasquinelli, 2023). Historically, the most important funder for AI projects and related research areas (including theoretical linguistics) was the US military via the (Defense) Advanced Research Projects Agency, especially at the Massachusetts Institute of Technology and Stanford University (Katz, 2020; Heller and McElhinny, 2017; Golumbia, 2009; Paullada, 2021; Geoghegan, 2023).[3] As contemporary observers and historians have pointed out, the desire for centralisation, and the facilitation of large-scale bureaucracies lies at the heart of the development of modern computing (Weizenbaum, 1976; Hicks, 2018; Eubanks, 2018; Katz, 2020; Pasquinelli, 2023). Today, the dominant actors in this space are large multinational corporations and start-ups funded by venture capital (Jacobides et al., 2021)—and government contracts (Sadowski, 2025). Following Rikap (2022), we can understand this infrastructural power as the result of intellectual monopolies which are further re-entrenched as platforms collect rent (money, data) from these tools, knowledge and datasets (Sadowski, 2020). This approach is supported by a general trend towards financialisation which allows venture capitalists to invest based on speculative future profits (Tricot, 2021; Kampmann, 2024; Fourcade and Healy, 2024). Combined with today's neoliberal commitment to privatised public services, tech companies play increasingly important roles in developing and maintaining what is, in effect, public technical infrastructure: e.g., in public services (Eubanks, 2018), or facilitating modern warfare (Suchman, 2020; Widder et al., 2024; Katz, 2020).[4]

AI has also long been seen as a tool to mediate class power and exercise control over workers, especially through surveillance and (the threat of) automation. As Pasquinelli highlights in his history of artificial intelligence, the promise of automation was at the heart of some of the earliest computing technologies such as Charles Babbage's famous Difference Engine which was invented specifically to "mechanise the mental labour of clerks" (Pasquinelli, 2023:47). Both computing and AI have since driven waves of concerns about automation, increased surveillance and deskilling in fields ranging from logistics (Levy, 2022), to communication (Green, V., 1995), and most recently knowledge work (Woodcock, 2022; Blix and Glimmer, 2025). Tracing the history of such "automation fevers and anxieties" since the 1960s, Bassett and Roberts (2019) show that while they are not always compatible in terms of their underlying assumptions (e.g., the intrinsic value ascribed to human labour), they share a belief that technology (itself) will bring about imminent social change and rupture. This assumption can be exposed as a fallacy not just because these debates around automation and technological rupture are cyclical and have yet to come to fruition, but also because development and deployment of technologies are always and inevitably shaped by wider social and political contexts (Winner, 1980; Haraway, 1988). In the context of work, this matters for several reasons. An 'anticipatory', techno-deterministic frame forecloses the possibility of refusing, decommissioning and undoing technological interventions (Hoffmann, 2021; Hampton, 2021; Ricaurte, 2022), therefore pre-emptively limiting the ability of workers (and the wider public) to resist automation. In this way, this myth of inevitability is particularly useful to those who most stand to benefit from continued promises (or threats) of automation, from technology developers to employers and anti-labour political movements.

[3] While (D)ARPA funded research in areas ranging from signal processing to cybernetics and theoretical linguistics, arguably, much of this basic research was not intended to solve any immediate problems relevant to military operations. In the long run, many of these research areas have, of course, proven valuable for the development of modern military technologies (Suchman, 2020; Widder et al., 2024).

[4] The apparent contradiction between Silicon Valley's commitment to free markets and its dependence on the state has long been noted, most famously perhaps by Richard Barbrook and Andy Cameron in their prescient landmark essay on the 'Californian Ideology' (Barbrook and Cameron, 1996) and more recently by David Golumbia (2024). For more on the history of California and Silicon Valley, see Harris (2024).

2.3. Alternative political projects of AI

According to critical scholars like Ricaurte (2022) or Tacheva and Ramasubramanian (2023), the logics underlying AI tools shape their valence intrinsically towards extraction and centralisation. Tacheva and Ramasubramanian suggest that "the entire lifecycle of AI algorithms, as well as the associated material, knowledge, data, logistical, labor, and political, cultural, economic, and ideological infrastructures behind them" can be understood to "[function] *as* empire" (Tacheva and Ramasubramanian, 2023:2, emphasis added). Some of the processes discussed here and critiqued by Ricaurte are undeniably intrinsic to currently popular methods in machine learning, such as the creation and compilation of large datasets, and the use of a specific type of computer hardware. Similarly, modelling social processes inevitably flattens and reduces human experiences, values and behaviours to easily processable data points to be clustered and analysed (Fourcade and Healy, 2024; Shannon, 2024). *How* these processes happen and to what end the model is used is, of course, contingent on the wider social and political context. The most trenchant critiques of AI also critiques of capitalism and white supremacy writ large (e.g., Benjamin, 2019; Blix and Glimmer, 2025; Sadowski, 2025). AI tools have been found to serve power exceptionally well, allowing for unprecedented surveillance and analysis of people's behaviours and values, and providing cover for encoded oppression (Benjamin, 2019; Eubanks, 2018; Golumbia, 2024). This does not necessarily mean that language technologies cannot be (or are not) used to genuinely and meaningfully empower marginalised communities by enabling intercultural communication and conviviality (Bird et al., 2024c). However, the current political and sociotechnical configuration in which technology development is dominated by a small number of large companies with significant political power, does foreclose this on a large scale.

3. Language technologies *as* (language) management

While full-scale "automation fevers and anxieties" (Bassett and Roberts, 2019) may be misleading at best and actively harmful to labour movements at worst, widespread implementation of computing technologies has altered, devalued and deskilled human work processes (Pasquinelli, 2023; Woodcock, 2022; Levy, 2022; Sakamoto et al., 2024). The case I want to make here is that language technologies are used to both manage language *workers* (e.g., assessing performance, tracking behaviour), *and* more specifically manage *language* by affording particular kinds of practices and beliefs (to specific types of actors, using specific mechanisms). The former phenomenon can be understood within the larger framework of 'algorithmic management' (Lee et al., 2015; Jarrahi et al., 2021; Gent, 2024) while the latter is what I call 'algorithmic language management'. If workers are forced (or strongly incentivised) to adopt language technologies as part of their linguistic work (e.g., translation, teaching, writing, communicating with customers), they alter the work process and outputs in ways which could degrade their experience and devalue their work. In this way, language technologies can manage workers (and their work) in both the immediate term (e.g., by facilitating real-time 'insights' into performance) and the long-term (by shaping what their work looks like). As we will see below, these often often operate in tandem, especially in the context of digitally-mediated and algorithmically-monitored language work such as call centre work.

Algorithmic Language Management explicitly builds on Spolsky's conception of language policy as constituted by language practices, language beliefs and language management. He defines these interrelated components simply as "the habitual pattern of selecting among the varieties" (language practice), "the beliefs about language and language use" (language beliefs or ideologies), and "any specific efforts to modify or influence that practice" (language management) (Spolsky, 2004:5). Traditional domains of this notion of language policy include national and supra-national institutions and organisations, workplaces and educational institutions as well as families, neighbourhoods and religious groups (Spolsky, 2004, 2021). In recent years, scholars have begun to explore digital media as a site of language policy(making) (Kelly-Holmes, 2013, 2015, 2019). In prior work, we have argued that this framework can also be productively applied to language technologies, with technology design (in particular: training dataset design) being a type of 'language management' as it modifies and constrains the types of interactions users can have with a system (Markl and McNulty, 2022).

Further extending this thinking, I argue that language technologies are not just downstream of language management, but are perhaps more usefully understood *as* language management. I draw this distinction because I think it is analytically useful to analyse language technologies as the materialisation of broader ideologies. As Sadowski puts it succinctly, "technologies articulate broader dynamics—political, economic, social, cultural, moral—and give them material form in the world" (2025:6). These dynamics include language ideologies, which, as Irvine and Gal note, "locate linguistic phenomena as part of, and evidence for, what [language users] believe to be systematic behavioral, aesthetic, affective, and moral contrasts among the social groups indexed" (2000:37). In other words, it's politics (and power) all the way down. Language technologies reflect and reproduce the political, social, cultural and economic conditions, and, indeed, language policies they are developed within. What kinds of uses they afford, to whom they afford these uses, and in what ways they afford them fundamentally depends on the ambient language behaviours and beliefs. Language ideologies about which varieties or ways of using language are "good", "appropriate", "normal", etc. might be implicitly or self-consciously held by designers and treated as such when designing for particular affordances (Markl and McNulty, 2022). They are implicit in the available training data (Gururangan et al., 2022) and established ways of formulating language technology tasks (e.g., as fundamentally monolingual) (Schneider, 2022). Actual and expected language behaviours by both users and designers also shape language technology affordances—specifically changing what is afforded (e.g., convenience, surveillance), *who* particular

uses are afforded to (e.g., speakers of standard varieties, managers) and *how* different affordances affect user behaviour (e.g., demanding a standard variety) and affect (e.g, making users feel marginalised) (Mengesha et al., 2021; Wenzel et al., 2023).

As with other aspects of dominant culture, individual people are able to resist engagement with consumer products (e.g., voice user interfaces on smartphones) and thereby avoid algorithmic discrimination and exposure to language ideologies inherent in design. There are, however, wider impacts which cannot be mitigated through individual (rather than collective) refusal (Baumer and Khovanskaya, 2025; Baumer et al., 2024). Firstly, language technology advertising transmits language ideologies to a much broader audience than just those who choose to engage with language technologies. The discourses these marketing materials put forward are especially important for a 'product' as inherently vague as 'artificial intelligence' (Suchman, 2023), as they allow developers to define what language technologies are and what they can or should do (cf. Sadowski and Bendor, 2018, on corporate narratives of "smart cities"). Foundational to these discursive constructions are implicit or explicit beliefs about language(s) (Baumgarten and Tieber, 2025). Secondly, there are also limits to the ability of individuals to refuse engagement with language technologies. Speech recognition and speech synthesis systems in particular can be vital accessibility tools for people who are unable to engage with (touch) screens or keyboards. In a world where participation in social, professional and civic life is mediated by largely visual digital technologies, non-use of voice user interfaces has higher costs for many already marginalised people. Furthermore, implementation in workplaces as discussed below includes public sector services such as healthcare, social care and education. Anticipatory policymaking around new (or upcoming) 'artificial intelligence' technologies (Bareis and Katzenbach, 2021), reveals the underlying 'myth of inevitability' whereby the threat/promise of artificial intelligence always looms. In this wider context, how language technologies are described, discussed, defined, and sold has real material and ideological consequences.

In the following sections, I will first illustrate language technologies designed to facilitate management of linguistic and affective practices. These systems are explicitly designed and marketed to encourage managers to monitor and assess workers—be it in a call centre or an office. They both reproduce wider language ideologies (e.g., standard language ideology), and enable (and encourage) their users (businesses or managers) to enforce "custom" language ideologies (e.g., particular scripts or tone). In this way they are both part of the wider "algorithmic management" ecosystem and, specifically, algorithmic language management tools. I will then take a broader look at how the physical and discursive construction (or, design and marketing) of commercial language technologies transmits language ideologies and, furthermore, constrains language practices. To illustrate this, I will discuss a ubiquitous but insidious frame in commercial language technology which tightly links languages and their speakers to particular national project and economic markets which resonates particularly strongly with broader cyberlibertarian ideologies (Golumbia, 2024). Linguistic diversity is positioned as a *barrier* to both people and, more importantly as we will see, capital. In contrast to the valence of AI discussed in Section 2 (centralisation, disempowerment), these narratives explicitly position language technologies as facilitating decentralisation and empowerment (Golumbia, 2024; Markl et al., 2024).

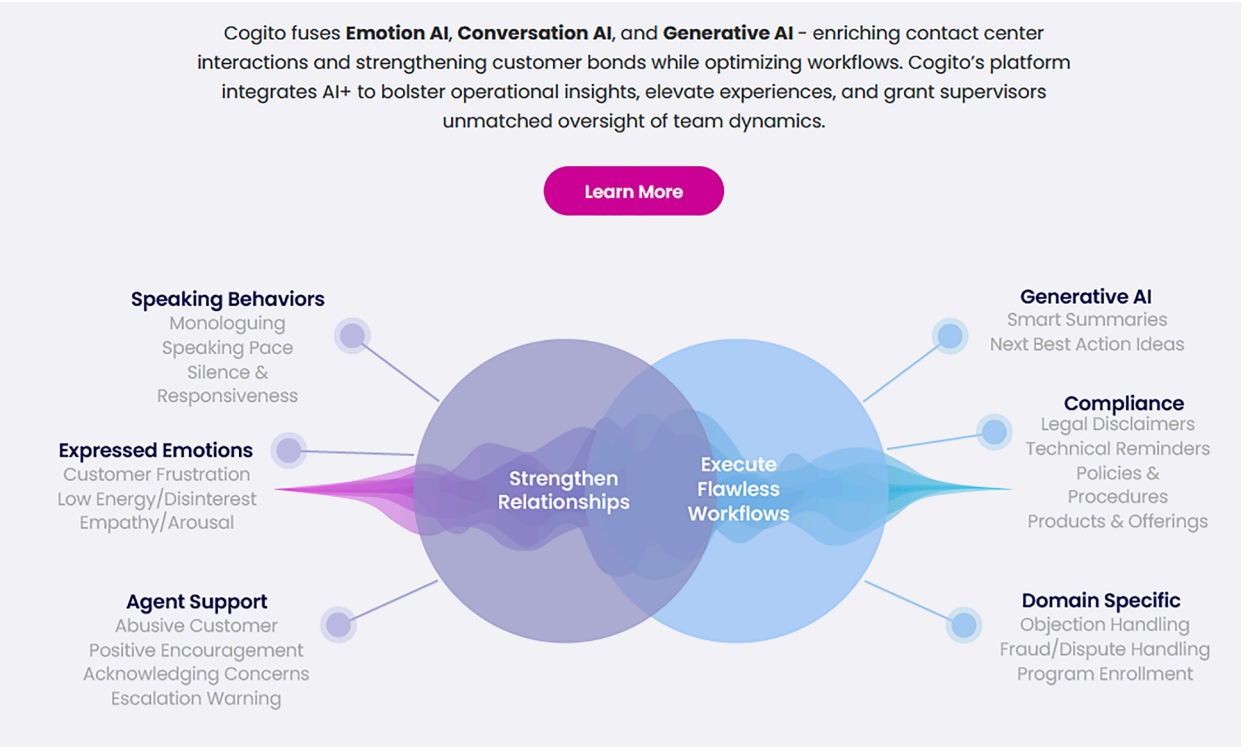

Fig. 1. Screenshot taken from the front page of Cogito's website highlighting its main features. Source: archived webpage, https://web.archive.org/web/20250615121620/https://cogitocorp.com//.

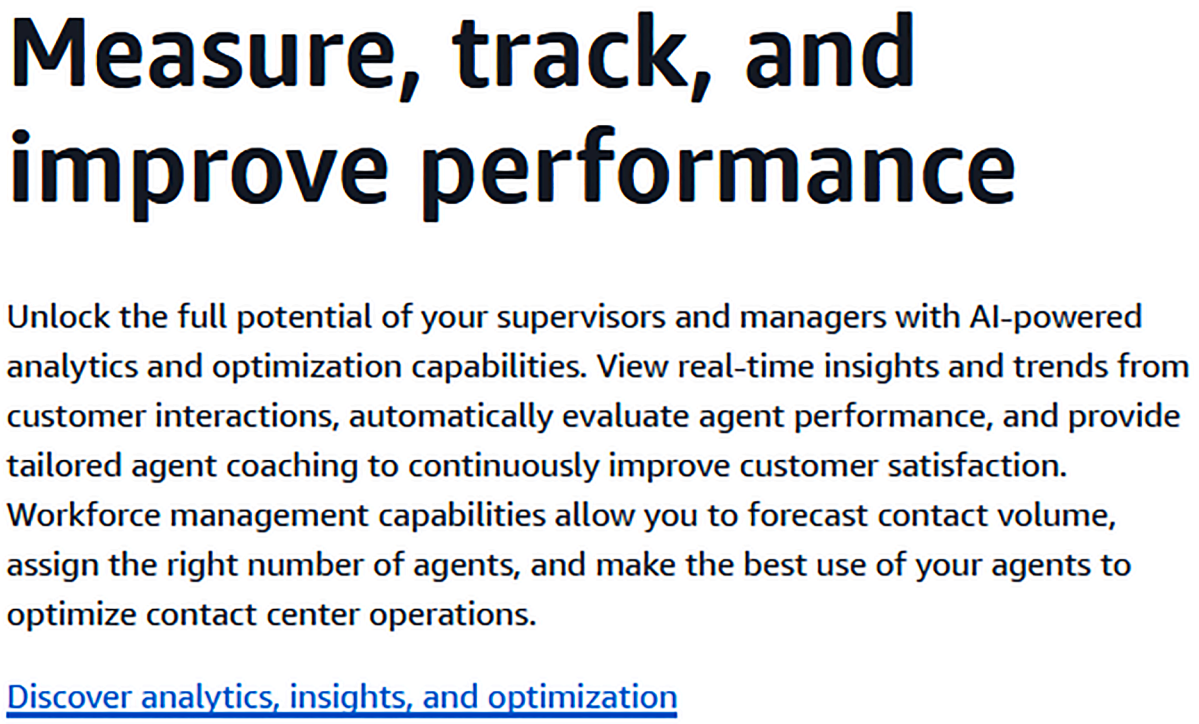

Fig. 2. Screenshot taken from the front page of AWS ContactLens' website highlighting some of its features. Source: https://aws.amazon.com/connect/.

3.1. Using language technologies to manage language use

Call centres have long been a favourite locus to study both 'language work' (Duchêne, 2008; Cowie, 2007) and workplace surveillance (Van den Broek, 2002; Woodcock, 2022). This is because of the concrete ways in which seemingly abstract notions like 'the commodification of linguistic practices' take place in call centres. As call centres are furthermore often outsourced to geographically and linguistically distant environments, policing of linguistic practices often also highlights broader, colonial linguistic hierarchies (Cowie, 2007). Call centres were also early adopters of computers to manage and assess workers' behaviours (Taylor and Bain, 1999), building on older management practices (Woodcock, 2022). Today, this management extends beyond automatic dialling and record-keeping, to large-scale, real-time monitoring of conversations between call centre workers and customers. In a comprehensive report on software used in call centres, Christl (2023) highlights that employees in call centres are monitored by systems which 'assess' their interactions with customers in real time, assigning scores for "empathy" and "friendliness" and searching keywords, in addition to more traditional metrics such as call volume and duration.

To understand how language technologies are used to manage workers and their language use, we can take a closer look at how such call centre software is marketed. While marketing discourses alone do not provide a comprehensive picture of how people actually engage with a product, they provide a useful insight into intended affordances and underlying language ideologies. For example, Cogito,[5] one of the software companies discussed by Christl (2023), claims to "Execute Flawless Workflows" using "Generative AI" ("Smart Summaries", "Next Best Action Ideas"), promoting "Compliance" ("Legal Disclaimers", "Technical Reminders") and "domain specific" support ("Objection Handling", "Fraud/Dispute Handling", "Program Enrolment") on their website (see Fig. 1). Notably, Cogito's second pitch is "Strengthen[ing] Relationships" by providing "Agent Support" ("positive encouragement", "acknowledging concerns", "escalation warning" and [dealing with] "abusive customer"), monitoring "Speaking Behaviours" ("monologuing", "speaking pace", "silence & responsiveness") and "Expressed Emotions" ("Customer Frustration", "Low Energy/Disinterest", "Empathy/Arousal"). Close monitoring and analysis of "over 200 voice signals" to "measure the customer experience in real-time" is positioned as central to the software. Similarly, Amazon Web Services' Amazon ContactLens product (see Fig. 2) claims[6] that "with generative AI,

[5] In 2024, Cogito was acquired by Verint Systems. The product discussed here appears to have been integrated into Verint's software suite (Mitchell, 2024). An archived version of the web page discussed here is accessible via the Internet Archive: https://web.archive.org/web/20250615121620/https://cogitocorp.com/.

[6] https://web.archive.org/web/20250214140607/https://aws.amazon.com/connect/contact-lens//

supervisors can automatically complete evaluations for 100% of agents' customer interactions and get aggregated agent performance to identify coaching opportunities". This includes dashboards to allow managers to see trends in customer and worker "sentiment".

Even setting aside the well-documented technical limitations and biases of "emotion recognition", sentiment analysis (Ungless et al., 2023; Roemmich et al., 2023) and the automatic speech recognition tools (Koenecke et al., 2020; Markl, 2022) on which these approaches are predicated, the all-encompassing and opaque nature of these software tools raises significant concerns. One of the central risks of artificial intelligence (or central promises, depending on your perspective) is the ability to abdicate responsibility for decision-making. As Jarrahi et al. (2021) highlight, in the context of algorithmic management, this means that power is shifted away from workers, who have little insight into an opaque system and therefore no recourse. Managers, on the other hand, have much more real-time information and oversight than would be possible without the algorithmic tools. Whether this translates to more or less power for managers is not always clear as their actions based on this information may be constrained (or even over-ruled) by the automatic decision making tools (Jarrahi et al., 2021).

As the examples above show, language technologies are used to ensure not just compliance with company policies (what Cogito terms "executing flawless workflows") but also affective and linguistic practices ("strengthening relationships"). Workers and their managers can be automatically alerted to any issues in their language use, such as speech rate, use of (in) appropriate language, and affect (as determined by proxies such as lexical choice and aspects of the speech signal). While call centres and other customer service settings are probably the example *par excellence* for large-scale, real-time, automated monitoring and assessment of language work, many of these practices are slowly creeping into other white-collar workplaces, especially with the rise of remote work (Masoodi et al., 2021; Gourlay, 2025). Tools tracking worker activity via their digital devices have proliferated, and are increasingly integrated into standard enterprise productivity and communications software (e.g., Microsoft 365, Slack) (Mettler, 2023). A much more subtle, but still potentially very impactful tool for the management of linguistic practices are grammar 'checkers' such as Grammarly.[7] While spell checkers have been embedded in digital word processing for a long time, recent iterations of grammar checkers go beyond simple comparison to a dictionary by suggesting or predicting text. Grammarly, one of the leading providers in this space, offers several products for the workplace. According to their website they enable clients in marketing, customer service, sales, IT and HR to "set up a custom tone profile that embodies [their] unique voice", and integrate generative AI tools to automate parts of interactions. This too involves close monitoring of linguistic and affective practices, with automated "tone detection" (see Fig. 3). Here the role of language technology in *managing* language is particularly obvious, as companies are encouraged to formulate and algorithmically encode (and enforce) particular language policies. The underlying language ideologies are obvious too: "tone" is framed as something that can be objectively classified (rather than depending on both speaker and hearer and their relationship), quantified and optimised. Tools providing "writing assistance" of this kind go beyond traditional dictionaries by partially automating and rigidly standardising linguistic and affective labour inherent in writing and communication. How these tools are (used to) manage language practices by workers beyond customer service remains to be studied. For example, there is extensive evidence that teachers (and students) in the United Kingdom are evaluated based on their use of stigmatised linguistic forms (Cushing and Snell, 2022) as part of a wider regime of surveillance. It is yet unclear whether and how language technologies are used to further perpetuate this type of monitoring in primary, secondary and tertiary education. What is clear, is that language technologies are being aggressively marketed to students, instructors and educational institutions, with many institutions entering licensing agreements to provide access to LLM-based tools. The risks of uncritical adoption of these tools in (higher) education are numerous and well-documented (Guest et al., 2025), but empirical research is needed to observe adoption on the ground.

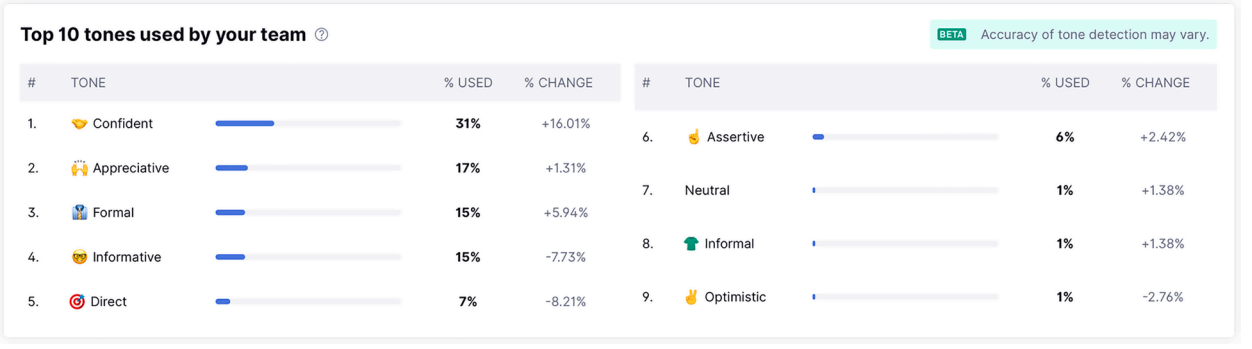

Fig. 3. Screenshot showcasing Grammarly's tool to track "tones" used by employees. Source: https://support.grammarly.com/hc/en-us/articles/360061408151-Analyze-my-team-s-writing-performance.

[7] https://web.archive.org/web/20250915210656/https://www.grammarly.com/business/customer-support, Fig. 3 is taken from: https://support.grammarly.com/hc/en-us/articles/360061408151-Analyze-my-team-s-writing-performance.

3.2. Using language technologies to manage language ideologies

Gal and Woolard identify "translation, the writing of grammars and dictionaries, the policing of correctness in national standards, the creation of linguistic and folklore collections or academies" as practices which (re)produce "bounded" and "naturalised" languages (Gal and Woolard, 1995:129). In other words, languages are (re)made as bounded objects through these discursive practices. Language technologies also perform this function by encoding specific linguistic features, and delineating the 'boundaries' of lexicon and variation based on the training dataset. Regardless of whether these boundaries align with observed usage or existing prescriptive standards, and regardless of the intention behind them, they function to police language use,or as Lawrence (2021) put it "discipline" language users, and codify a particular variety. This variety also needs to be classified and labelled as a mundane part of product description and marketing which spells out who a particular tool is intended for. However, categories and names encoded in technology are not neutral (Bowker and Star, 2000; Schneider, 2019). Most commonly, they reinforce existing connections between languages and nations locating speakers and their languages within geographical territories and national projects. Which speakers, languages, territories, and nations are "not covered" by language technologies furthermore functions to assign social, and as we will see, economic value to them. This is illustrated with a trivial and familiar example in Apple's voice user interface Siri, see Figs. 4 and 5. Users can select from about 40 language varieties, most of which originate in Europe.[8] Varieties are explicitly distinguished in terms of nation states, for examples as "English (United States)", "French (Belgium)", "German (Austria)". Languages not framed as pluricentric (e.g., Danish, Japanese, and, notably, Arabic) are not explicitly connected to a nation state or territory. These mappings are therefore inconsistent and selective, framing some languages as pluricentric and some varieties as tightly bound to specific national project. Regardless of the pragmatic and/or historical reasons for these conventions, they form a small part of a larger project of encoding language ideologies. This larger project becomes clearer once we consider which kinds of linguistic behaviour these tools afford. The selection of the language variety constrains the possible options for language generation: while input and output variety are 'matched' by default, it is possible to 'mismatch' them within a named language (e.g., US English command and Australian voice response) but it is not possible to 'mismatch' between different languages. However, affordances vary by territory. Since 2024, selecting "English (India)" enables users to "[use] English mixed with Bangla, Gujarati, Hindi, Kannada, Malayalam, Marathi, Punjabi, Tamil, or Telugu" and configure responses to be in English, Hindi or a mix of the two languages (Apple Support, 2024).

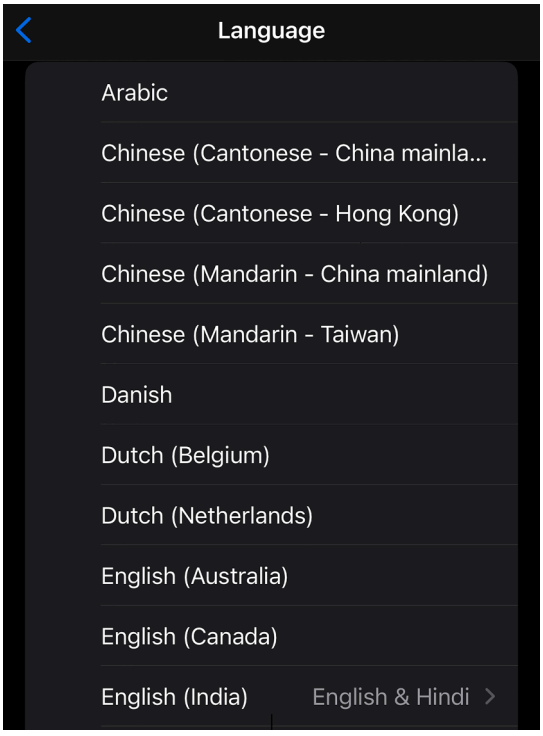

Fig. 4. Screenshot of language selection options for Siri on iOS 18. (Screenshot taken by author.)

[8] As of autumn 2025 – all analyses of this type of software and hardware are bound to provide only a snapshot at a particular point in time as products are updated continuously.

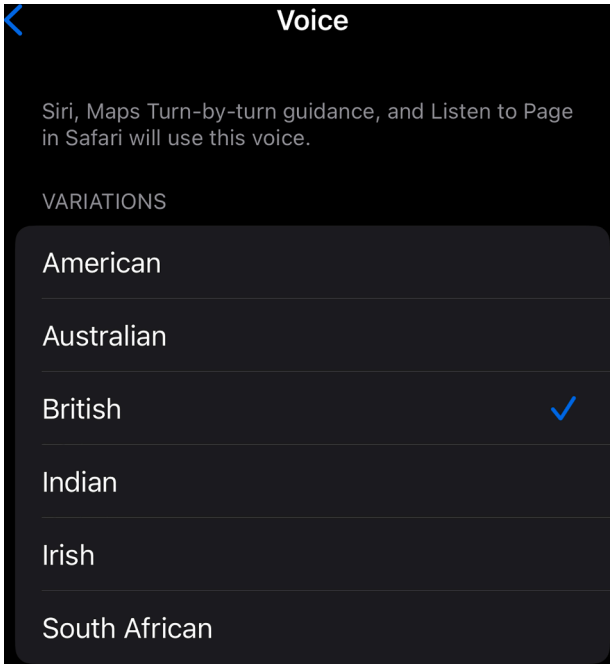

Fig. 5. Screenshot of English language voice selection options for Siri on iOS 18. (Screenshot taken by author.)

What is interesting about these different affordances is that they position some types of linguistic practices as 'default' (each language variety comes with a default voice) and some as impossible, while locating all of them in very specific territories. Even where design disrupts long-standing monolingual defaults in language technologies (Schneider, 2022; Kelly-Holmes, 2019), only very strictly defined types of multilingual interaction in specific territories (India in this case) are possible. Users are therefore discursively constructed as residing in a particular territory or nation state, speaking a particular language or set of languages which likely matches the official languages of that territory. Leblebici (2024) highlights that users theorise an even deeper link between language and place based on their interactions, reporting one user's challenge using Siri to access directions: "When I say I want to go to Radolfzell [a town in Germany], for example, it opens Uzungöl from Turkey. […] Because it listens in Turkish, it tries to map locations in Turkey" (Leblebici, 2024:14). Users who do not speak the 'national standard variety' associated in the design with the particular territory they find themselves in, may adopt alternative strategies such as using standard English (Leblebici, 2024; Mengesha et al., 2021). This accommodation has been shown to involve feelings of self-consciousness, especially for those who already experience linguistic discrimination by the dominant culture (Wenzel et al., 2023; Mengesha et al., 2021; Wu et al., 2020; Lawrence, 2021). Furthermore, as discussed above, engaging with voice recognition tools is not always a free choice in a context where they are increasingly imbricated in workplaces, public services and social life. In reifying connections between nations and languages, language technologies also reinforce the exclusion of marginalised speakers.

The flipside of tightly connecting languages and territories is that languages also act as borders. This trope, of course, predates language technologies. Rosa and Flores (2023) open with a vignette about an accent conversion app which would convert Indian English speech into American English speech—supposedly to address the "language barrier" between Indian call centre workers and customers in the United States.[9] In classic engineering fashion, language or linguistic difference, is framed as a problem to be solved. Marketing for machine translation provides a wealth of examples of this discourse. Google Translate, probably the most well-known machine translation application, uses the tag line "Connect with people, places, and cultures without language barriers"[11]. Microsoft Translator uses the message "Breaking the language barrier at home, at work, anywhere you need [Microsoft Translator]" and promises to "[g]lobalize your business and customer interactions by translating text and speech"[12]. Meta AI describe their machine translation research as "[d]riven by the goal of eradicating language barriers on a global scale" (Costa-jussà et al., 2022). In a blog post about their language technologies, AWS poses a rhetorical question: "What happens to your business when you're no longer bound by language?" (Tran and Wilkes, 2022). The notion of "language as a barrier to business" resonates with wider (cyberlibertarian and neoliberal) discourses promoting free and global trade, unencumbered by regulation, untethered to a specific territory, domain or nation (Golumbia,

[9] While this particular startup failed, accent conversion is a popular area of research [for a critique, see (Markl and Lai, 2023)].
[11] https://translate.google.com/about/
[12] https://www.microsoft.com/en-us/translator/

2024). The quest to "eradicate language barriers" is arguably not only paternalistic (as is the broader framing of 'no language left behind' adopted by Meta), but invokes a frame usually applied to serious diseases (e.g., "eradicating Malaria"). While this is not to say that Meta is drawing an equivalence between language barriers, or linguistic diversity, and disease, the language choice firmly frames language barriers as serious problem. The solution offered to this problem is, unsurprisingly, machine translation.

4. Going forward: promises, threats, foreclosures

Kelly-Holmes (2019) posits that, in the decades since its inception, the web has gradually shifted from a monolingual (English), to a multilingual (some high-resource languages), and, most recently, to a "hyperlingual" space. This hyperlingualism is characterised by the (unpaid) language work of large numbers of users (e.g., crowd-sourcing translations and other texts) directed at co-creating commercial (and/or open-source) digital products (Kelly-Holmes, 2019). The "logical [parallel] development of hyperlingualism" is what she terms "idiolingualism" (2019:33). While Kelly-Holmes focuses specifically on language learning technologies, the trend towards "tailored online language provision" she identifies also relates to language technologies more broadly (2019). The same logic that produces "personalised and individualising" offers targeted at individual users (e.g., language learning apps, automatic localisation and translation of websites based on user location), is at work in the ideologies discussed above. Language practices and preferences are assumed or predicted based on territory or nation, friction (linguistic or otherwise) is removed, language is detached from culture, history and (paradoxically) land and embodied practices. As a result, language might become an interactive game (Mitchell et al., 2021), a (closed or open) door to markets, or a dataset (Erdocia et al., 2024; Baumgarten and Tieber, 2025). This detachment (or alienation) of language practice (and language work) from people not only allows for the development of abstract and predictive models of language, but also paves the way for technologies which promise, or threaten, to remove workers from language work. Sometimes this threat is implicit, as in the common invocation of 'magic' in the context of language technologies[10], as exemplified in marketing by Google Translate: "Upload your files to magically translate them in place without losing their formatting". Other times, it is explicit, as in the pitch by AWS to business customers which emphasises that the accession of new linguistic markets is possible "without the need of a human translator" (Tran and Wilkes, 2022). Alternatively, machine translation is often pitched as a tool to make language workers more "productive", as seen in marketing by Microsoft translator: "Machine translation has been used as a first pass by several of our language service provider (LSP) partners, before using human translation; it can improve productivity by up to 50 percent". Ultimately, what is promised here is a future in which the frictions, inefficiencies and ambiguities in linguistic interaction and communication are removed. While the real impact of the widespread adoption of LLM-based machine translation on workers is still being documented, early research unsurprisingly suggests that it means reduced autonomy, increased precarity, and reduced job satisfaction (Sakamoto et al., 2024).

Despite the broader histories, logics and politics of 'artificial intelligence', language technologies can be designed, deployed and discussed otherwise. It is possible to resist the ways in which language technologies "push or pull" [18, 197] towards futures of automation, deskilling and surveillance at work, and alienation and individualisation at home. One strategy might be to centre language communities in design and deployment, and, crucially ensure community control over the entire technology lifecycle (Markl et al., 2024; Bird et al., 2024b). Bird et al. suggest, based on workshops with a wide range of local stakeholders including indigenous community leaders and representatives of Australian government agencies responsible for climate and emergency communications, that language technologies could be used help governments and scientific institutions to better engage with the communities they serve and facilitate intercultural conversations about climate change (2024c). Language technologies could be used to produce clear, non-technical messages in a shared language (e.g., English) which can then be translated by community members and to "collaboratively expand the space of shared concepts" (Bird et al., 2024c:118). While this too implicitly acknowledges a 'language barrier', it recognises multilingualism as an important strength of the community, and translation as a valued skill that requires cultural expertise and a practice that draws on, and further strengthens, relationships within and between communities. In the workplace, too, language technologies could be designed to genuinely support workers in ways which they find helpful (and can control). However, to enable such supportive uses, the broader social and political contexts in which these systems are designed and deployed need to be changed first. It is possible to imagine a world in which language technologies, for example, are deployed to facilitate the most routine of communications and language processing without implicitly or explicitly threatening workers' livelihoods, agency or sense of purpose. The way to build this world, however, is arguably not through developing technical infrastructure, but through developing and maintaining social and political infrastructures that protect our collective wellbeing.

In this article, I have tried to provide the historical, technical, political and social context of language technologies necessary to ground future theoretical and empirical research on the intersections of language technologies with society. I have also gathered relevant theoretical tools and frameworks. I propose that we can use the overarching framework of

[10] Not a new trope, either: Stahl (1995)

'algorithmic language management' to study how language technologies engage with and reconfigure their sociolinguistic contexts—affecting language practices and language beliefs. To study these effects we can consider affordances and valences of different technologies, trace their histories and examine policies and discourses surrounding them.

CRediT authorship contribution statement

Nina Markl: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

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