On the world-making work of artificial language understanding

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INTRODUCTION

For decades, artificial intelligence researchers have developed technologies that operationalize a conspicuously thin view of language. The project of AI, in trying to simulate human mental processes, locates the capacity for language use in an individual's mind [9, 13]. However, as numerous scholars across such fields as philosophy [4, 13, 41], cognitive science [9, 17, 40], linguistics [6], psychology [14], anthropology [22, 30, 31] and sociology [29] have pointed out, language is a fundamentally embodied, social practice. For instance, in *Philosophical Investigations*, Wittgenstein [41] argues that any account of language must be ethnographic, and that constructs like meaning and understanding are in fact deeply embedded in the activities, cultures, political arrangements and material contexts in which language use takes place. Such contentions raise interesting questions for AI, especially given recent claims that large language models—modern instantiations of AI research—increasingly "understand language at a human level" (e.g., [1, 10]). In this paper, I examine such questions: What kinds of language use contexts are presumed by this fantasy of artificial understanding? And, if such contexts do not actually exist, what work is being done to carve them out of the world?

As a starting point to illustrate the connections between language use, context and work, I consider Reddy [28]'s analysis of the conduit metaphor. Via cataloguing and examining common English phrases like *you should put your thoughts into words* and *this sentence is filled with emotion*, Reddy examines a prevalent conceptualization of language that casts words and sentences as *conduits* for meaning, and speakers/listeners as mere encoders/decoders between linguistic forms and the meanings they contain. Under this model, so long as the words are properly transmitted, "success [in communicating] appears to be automatic" [28].

Reddy challenges this presumption of effortless interaction, which he links to technological developments like mass communication and intellectual projects like cybernetics, via a thought experiment. Imagine two people who live in different environments with different ecosystems and geological terrains. Person A, who is surrounded by trees, invents a wooden rake and sends out instructions for

how to build it. Person B, who is surrounded by rocks, follows the instructions to build an impractically heavy stone-based contraption of no obvious use. It is only with additional back-and-forth effort that A and B come to learn more about each other's environments and rectify their initial misunderstanding—achieving a shared "plateau of inference" [28] alongside actually functioning tools. The conduit metaphor perspective leaves no room for such interpretive work: it would be unable to anticipate such troubles, nor appreciate the processes by which they're resolved. Its thin view of language understanding presumes—like much of modern linguistics—a homogeneous linguistic landscape of idealized speakers/listeners [20], while invisibilizing the practical work of discourse.

THE PRODUCTION OF STANDARDIZED LANGUAGES

How do such homogeneous linguistic landscapes come about? As a historical example, consider France's project of linguistic standardization following the French Revolution, an event seen by many scholars as a "key catalyst of a new political nationalism" [25] that pursued a culturally—and linguistically—homogeneous nation-state [25, 36]. People in France, as in other large geographic areas, speak a wide range of languages and dialects. However, after the Revolution, so-called "regional languages" were increasingly regarded as "parochial vestiges of the *ancien régime*" in contrast to French, seen now as the "embodiment of civilization and progress" [25]. Such value judgements were tethered to other emerging formations like modern bureaucracies [37]. Bourdieu underlines the world implied in this pursuit of language standardization: "the normalized language is capable of functioning outside the constraints and without the assistance of the situation, and is suitable for transmitting and decoding by any sender and receiver, who may know nothing of one another" [11].

In *Language and Symbolic Power*, Bourdieu [11] casts national languages like French as 'normalized' *products*—to be *produced* and *reproduced* via human and political action. Bourdieu focuses on the education system as a key site of such production, where French is taught, regional languages are denigrated and stamped out, and competent French speakers are selected for, their social statuses elevated or further entrenched. This work extends far beyond schools and universities. For instance, French is exclusively used in government functions, highly valued on the labour market, and predominant in literature and the arts; these factors effectively "induce the holders of dominated linguistic competences to collaborate in the destruction of their instruments of expression" [11], with parents requiring their children to speak French at home as opposed to other languages/dialects. In these ways, the labours of many are recruited into a regime of symbolic domination [11, 12].

Bourdieu's account of French linguistic history feeds into his critical appraisal of structuralism, a prominent theory of language. Structural linguists divide language into *langue*—the abstracted structure underlying linguistic form—and *parole*—actual, practical use; scholarship in this tradition has often centred *langue* while treating *parole* as epiphenomenal [15, 22]. Bourdieu observes that as "a code which exists and subsists independently of its users" [11], *langue* exhibits the same properties

as official languages like post-Revolution French. In sectioning off and focusing on *langue*, structural linguists therefore presume a world in which there is already a standardized language. Such a theory thus disappears the actual work—and the steep costs—of standardization.

AI'S LINGUISTIC LANDSCAPES

AI's view of language inherits such processes and their effects. Intellectually, the field's present focus on modeling linguistic form [6] reflects long-standing structuralist orientations; in fact, some have read the apparent success of LLMs as a vindication of structuralism [34]. Alongside national projects of linguistic standardization, centuries of colonial expansion have resulted in the predominance of English worldwide [7, 8, 22]. This solidifies the impression of language as a more or less universal structure, with variations at the margins that technologies like LLMs can simply deal with after most of the linguistic competence has already been accounted for; the *langue-parole* split is paralleled in the technical distinction between "pre-training" and "fine-tuning." Such processes have also made available plenty of English speakers around the world, onto whom the data work required by mostly American AI companies can be cheaply offshored [19, 21, 26, 35].

Other aspects of AI development reveal other facets of AI's presumed linguistic landscape. For instance, in recent years, companies like OpenAI, Google and Meta have seemingly heeded equity-oriented calls for their products to cover languages beyond English [1, 3, 18]. But how they've achieved good performance across multiple languages, as reported for models like GPT-4, is again undergirded by this broad history of infrastructural efforts. In many sites of colonial conquest, administrators partitioned indigenous populations into units presumed to be more homogeneous and easier to govern, segmenting continuities between language variations to produce an idea of languages as bounded and countable [22, 27]. It is only with such efforts that claims that an LLM "achieves state-of-the-art performance on 24 languages" (e.g., [1]) even make grammatical sense.

The ongoing work done in the service of AI's project of symbolic domination is immense. It must be—language does not naturally occur as a "distinct and complete" structural system [9], whose essential characteristics can be bounded and regulated by nation-states or modeled by LLMs. AI's understanding of language leaves no room for the interpretive work of language use among people, or for the inevitable contextual differences between them that necessitates such work. As such, technologies like LLMs are paradigmatic examples of what Daston terms *thin rules*—"thin not because they [are] independent of context, but rather because their context had been carefully fixed" [16].

"Carefully" may be misleading, since modern AI has actually taken a brute-force approach: it's dependent on massive amounts of data, acquired by extracting the labour of countless language-users, computationally parsed in data centres that consume large amounts of natural resources, and fashioned into models that are made safe and desirable by workers who must process an overwhelming volume of often-traumatizing inputs under exploitative conditions [5, 21, 24, 26, 32]. By attending

to the linguistic world implied by AI's project, I suggest that the scale of data—and its attendant costs—is critical to AI's success. How else would the rough textures—resulting from the ways language is inextricably embedded in the particular, singular situations in which it's used—be smoothed out?

As Daston notes, "an immense amount of infrastructure, both human and material, goes into making the world safe for thin rules" [16]. If so, the environmental and human costs of AI are not externalities to be addressed separately of capitalizing on its supposed benefits, as suggested in discussions framed around weighing AI's "risks and benefits" (e.g., [10]). Indeed, others have highlighted the corrosive conditions that are in fact constitutive of AI: for instance, Whittaker [38] recasts AI "advances" as symptoms of Big Tech's political consolidation, while Tacheva and Ramasubramanian [32] analyze the interlocking systems of oppression underwriting AI development as a global "AI Empire."

CONCLUSION

Per Wittgenstein, "to imagine a language means to imagine a form of life" [41]. Winner takes up this idea to suggest that technologies—including ones that purport to understand language—likewise index forms of life: "As we 'make things work,' what kind of *world* are we making?" [39] In this paper, I've attended to the work of producing the linguistic landscapes required by AI's idea of language understanding. In doing so, I suggest that modern AI's steep costs are irreducibly central to its project. This perspective suggests other threads too. For instance, the human work of language use does not disappear under regimes of standardization and automation so much as it is distorted and relocated, often channeled into sustaining the impression of seamless universal communication or of artificial intelligence [19, 33, 35]. And, since the imposition of a world is never total, such projects produce both marginalization and resistance [2, 22].

Particularizing one world implies the possibility of others. As such, I end by pointing to scholarship premised on landscapes of linguistic heterogeneity—thus treating the work of traversing linguistic differences as the norm rather than the exception. Drawing on fieldwork with minoritized language groups, Bird [7, 8] conceptualizes the world's linguistic diversity as multipolar, rather than as emanating and deviating from a standardized core. Such a remapping brings into focus the interpretive work of language translation: "[navigating] metaphysical divides" beyond the "mere exercise of matching words or phrases" [7]. Asserting that "people use languages in different ways—[often] because of how their body and mind work," Henner and Robinson [23] draw on critical disability scholarship to propose a framework of crip linguistics, challenging ableist notions of proper language use while moving towards a more capacious understanding of language. Such a framework would centre *linguistic care work*—"[embracing] interdependence between languagers as a practice of collective access" while "[working] together to create [the] material conditions for language understanding to take place" [23].

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