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Problematizing "Empowerment" in HCAI

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Abstract. Human-centered artificial intelligence (HCAI) seeks to assuage fears about ubiquitous machine agency by framing AI in relation to observable human benefits. Such benefits limn a nebulous future condition of AI-driven "empowerment." Yet the rhetorics of HCAI generally preempt consideration of the power structures that subtend imaginaries of AI ubiquity: imaginaries wherein empowerment is bestowed, top-down, through an assumed prior forfeiture of users' bottom-up agency to choose or refuse enrolment in AI futures. Answering calls to examine the language of AI research, we focus on "empowerment" and its use in, and relationship to, three visions of HCAI published between 2019 and 2022. We use close reading to begin answering one research question: "What is the conceptual structure of 'empowerment' across complementary visions of HCAI?" We contend that empowerment in HCAI represents little more than paternalistic *conditional* empowerment. Our work demonstrates the value of language-centric analysis in AI and presents a plea to explicitly account for the discourses – their histories, grammars, power distributions – that are used to rationalize the looming ubiquity of AI.

Keywords: Empowerment · HCAI · HCI · AI · language · discourse

1 Introduction

Human-Centered AI (HCAI) is an emergent domain located, in-part, at the intersection of human-computer interaction (HCI) and artificial intelligence (AI). HCAI is dedicated to "empowering and enabling" [8] people via AI systems that "amplify, rather than erode, human agency" [28]. Such dedication exists in direct contrast to ongoing problems of AI-hype [14, 30, 4], in which AI is popularly understood to prime futures of reduced human agency, deep-seated systematic injustice, and, more generally, the continued "darkening of the digital dream" [32].

Answering calls from HCI for language-centered analysis of work in AI [27, 29], this humanistic HCI [3] essay provides *initial* critical foundations for understanding the conceptual structure of "empowerment" in HCAI. Through close readings of three visions of HCAI published between 2019 and 2022 (e.g., [20, 19, 27–29]), we provide foundations for answering one key question:

– **RQ1**: What is the conceptual structure of "empowerment" across complementary visions of HCAI?

After briefly situating the discourse of "empowerment" in HCI, we argue that its deployment in HCAI is likely misleading – rhetorically appealing, but misleading. In the present discourse, empowerment in HCAI is paternalistic. To be empowered through HCAI requires submitting to sociotechnical advancements over which everyday users have little to no power; it requires a paradoxical objectification of individuals and communities such that they might be "empowered" post hoc through the preliminary and fundamental forfeiture of the agency to opt in or opt out of AI-driven "interpellation" [11]. Essentially, "empowerment" in and through HCAI is received rather than *achieved*; it is predicated on the (naively assumed) voluntary enrolment of users into futures of AI ubiquity. Subsequent to our analysis, we suggest the triad of consent, collaboration, and the co-creation of values [10] as an analytical lens that may allow us to move beyond the reductive and misleading language of "empowerment."

2 Background

Various institutions (e.g., banks, healthcare and insurance systems, platforms, etc.) deploy different forms of AI. Users rarely have the ability to opt out of AI-driven analysis when engaging with such institutions (e.g., applying for a loan). What does it mean to be empowered *by* AI in the absence of the agency to decide whether one will be interpellated [11] *through* AI? A succinct summary of empowerment provided by Agre [2, p.170] illuminates this question:

> We can articulate precisely the ethical appeal of the word "empowerment". Inasmuch as "empower" is a transitive verb, to "empower" someone is to perform some action upon them. The liberal ideal of individual self-determination would normally object to this kind of operation. People are supposed to be able to define themselves and to choose their own identities and desires and intentions. And this ideal is normally violated when people show up as the objects of transformative verbs. But it is the special claim of empowerment to escape this objection. The person upon whom this action is performed, having been "empowered", is, by definition, in a position to take actions of his or her own. [...] Empowerment thus presents itself not as some kind of programming, but precisely as the removal of any susceptibility to programming.

Thus one passes through a state of objectification so as to be imbued with agency – to be *empowered*. For example, one passes through the objectified state of being a "user" in order to be "empowered" through coupling with a smartphone, an app, a platform, etc.; the same can be said of the banking, insurance, and healthcare systems mentioned above. Yet Agre [2] traces the roots of empowerment as a political discourse to the mid twentieth century, in which individuals and communities organized through grass-roots efforts to amplify their collective political voice. Such empowerment – the ethically appealing empowerment grounded in increased political participation – is *achieved* rather than bestowed.

Genuine, bottom-up empowerment signifies a reclamation of agency *in spite of* the power distributions instantiated by sociotechnical systems.

Despite Agre's work [2], there remains a prominent view in computing that "empowerment" can be bestowed to people from the top-down.[3] Contrary to such a top-down view, and aligning with Agre [2], Seberger et al [23] used the work of Schneider et al [21] to introduce the concept of "conditional empowerment." Individuals or communities who are conditionally empowered [23] receive *apparently* heightened levels of agency in relation to technology; however, such heightened agency – the *power to* [21, 23] – is always already bounded by networks of actants (e.g., software, devices, institutions, etc.) that exert *power over* [21, 23] individuals or communities. Conditionally empowered individuals and communities are empowered to do only that which they are *allowed* to do by those networks of actants possessing *power over* them. Such a form of empowerment is received rather than achieved [2]. For example, one might be able to choose which bank from which to seek a loan, but one cannot generally choose between banking systems that have or have not embraced AI-driven decision-making. The banking system's *power over* subsumes one's *power to*. Thus technologically-allowed empowerment often reduces to mere enrolment in [7], and normalization of [25], imbalanced power structures. Such reduction motivates the research question presented in Section 1.

3 Method

Close reading (CR) is an interpretive mode of textual analysis. It generates an interpretation of a text (i.e., a corpus) through examination of the relationship among: (i) a text; (ii) a reader; (iii) an external world that encompasses both. CR has been used in HCI with some frequency over the past twenty years. Cockton [9] employed the method to analyze how the central tenets of designing for usability have evolved over time. Knouf [17] used CR to identify political and social discourses that are absent from corporate visions of computational futures. Most recently, Burtscher and Spiel [6] engaged in CR of gender sensitivity in HCI literature. Close reading is not intended to produce generalizable results in the way that a systematic survey of literature would [6]. The openness [13] of HCAI agendas (i.e., the extent to which HCAI scholars envision fundamentally creative/designerly futures that are, in the present tense, little more than fictions) warrants such non-generalizable and interpretive work.

4 Analysis

Here we tie a thread between three recent and complementary examples of work in HCAI focusing on different aspects: explianability [19]; interaction [20]; and the the production of *a* unified HCAI agenda [27–29]. We chose these works

[3] This has much to do with the historical dichotomy and related imbalance of power between "programmers" and "users" (see: [16]).

because they are remarkable in and of themselves, but illustrate problems of scope and scale facing the unification of disparate research into an agenda.

4.1 Capacities and a Two-Way Street

Here we focus on the subtext of empowerment as presented by Riedl [19]. Such subtext, rooted in problems familiar to those working in the area of explainability, manifests in effective communication between AI agents and human users. He provides the following definition: "[HCAI] is a perspective [...] that intelligent systems must be designed with awareness that they are part of a larger system consisting of human stakeholders, such as users, operators, clients, and other people in close proximity."

Here one reads tacit acknowledgement that HCAI seeks to remedy the exclusion of users (i.e., everyday people) from the historical design and deployment of AI technologies. Thus, HCAI appears as a form of AI-apologism: a post hoc attempt to compensate for the exclusion of users during AI's golden decade. Riedl roughly envisions a two-way street that might remedy such exclusion of the human user from historical AI developments. The realization of HCAI requires scrutable flows of information in two directions: (i) from AI to human; and (ii) from human to AI [19]. Humans, including non-experts, need to be able to understand what an AI agent is doing and why; reciprocally, AI agents need to be able to parse human behavior in meaningful ways. Each set of agents needs to possess the capacity to communicate meaningfully via a theory of mind regarding the other. Riedl [19] frames this bi-directional loop in terms of "critical capacities": each direction of information flow constitutes one capacity.

In this reading, "empowerment" is bi-directional and proportional to the level of communicative efficacy exerted in either direction. In this vision of HCAI, AI agents and human users mutually empower each other through a kind of communicative bootstrapping. Such a reading may hint at the empowerment of AI systems through and by means of their adoption as a primary goal of HCAI, despite its rhetorical framing in the language of human-centeredness. But human empowerment in this context is predicated on an overlooked forfeiture of agency: an assumption that all users will have exerted agency to explicitly enroll in the use of AI systems.

4.2 Control in the Two-Way Street

Schmidt [20] frames HCAI as follows: "the central question is how to create [AI tools] for amplifying the human mind without compromising human values." Agency, it is worth noting, is a fundamental liberal human value [2] and necessarily includes the agency to choose whether to be interpellated through AI. Still, Schmidt [20] focuses on the interactivity of HCAI systems.

Implicitly assuming the vantage of users who have voluntarily enrolled in the use of AI systems, Schmidt [20] provides a list of eight properties that should be possessed by successful HCAI systems. Where Riedl's work [19] adopted a position familiar to those working in explainable AI, Schmidt's approach is more

clearly grounded in HCI. We focus on two of Schmidt's properties here: (i) that "individuals can interact in real-time with the algorithms, models, and data and manipulate and control all relevant parameters;" and (ii) that "it is visible who has control of the artificial intelligence, in particular who has the power over data, models, and algorithms." Absent voluntary enrolment (i.e., the exertion of a form of agency that constitutes a pillar of liberal human values [2]), focus on such properties begs the question: it assumes that AI is empowering, *per se*, despite its inherently top-down deployment.

Schmidt deploys what is essentially a functionalist framework to posit that the *feeling of control* is important at higher levels of abstraction: for an air-traveler, it matters more where the plane is going to land than the exact path it takes to reach that point [20]. In continuation of this metaphor, control over the outcomes of AI use matters more than the precise means by which such outcomes are reached [20]. Such a functionalist approach allows for the possibility that end-users interacting with AI agents may avoid the overburdening effects of end-user controls by focusing solely on the bigger picture; HCAI users may be functionally empowered by and through ignorance of how an AI agent does what it does. That is, they may be "empowered" through indifference or adherence to the top-down proclamation that AI is empowering simply by virtue of being AI. As with Riedl's vision [19], the agency to decide whether or not to enroll in AI futures is overlooked entirely. Implicitly, users of HCAI systems are "empowered" because they benefit from a top-down, paternalistic sense of "what is best" produced by powerful expert programmers and designers in the field of AI. Such top-down empowerment resurrects outdated assumptions about the nature of empowerment (cf. [2]) and resembles conditional empowerment [23] more than a genuine increase of capacity *in spite of* sociotechnical power structures.

4.3 From Capacity and Control to Empowerment

Shneiderman also provides a two-part organizational framework for understanding HCAI: processes and products. In discussing *processes*, Shneiderman describes the application of traditional HCI methods in the development of HCAI technologies. Such methods include user testing, observation, and engagement with stakeholders, to name a few [29]. Given their foundations in empiricism, such methods comprise the passage of the individual user into an objectival onto-grammatical realm so as to receive some form of "empowerment;" through empirical methods, users are represented by data, and data are always already little more than objectival representations of phenomena (see: [1, 15]). On the other hand, Shneiderman [29] describes the *products* of HCAI as grounded in the production and maintenance of human control over AI technologies – the perpetuation and improvement of the user's agency in and through the technologies they use. Shneiderman writes that HCAI products should "empower and enhance human performance" [29, p.9].

Shneiderman engages with HCAI through a more broadly philosophical lens. He gives open consideration to the problems of language that surround and, indeed, define the field of HCAI [27]. He notes not only definitional problems

core to AI itself [27], but regularly relies on comparative epistemology (e.g., rationalism vs. empiricism) and discusses a "second Copernican revolution," in which the nebulous language of "the human" replaces a similarly nebulous bit of language, "Algorithms & AI," as the point around which the practices of HCAI revolve [27–29]. He does so by considering which set of agents should be seen as "central" to the process of AI design, development, and deployment.

Echoing the comparatively long history of humans-in-the-loop (HITL) arguments, Shneiderman effects an inversion in this conceptualization – another implicit form of apologism regarding the heretofore absence of users (i.e., humans) from the design of AI systems. He provides the slogan, "Humans in the group, computers in the loop" as a pithy representation of such inversion. Shneiderman's rhetorical move to "empowerment" through and by means of a specific focus on humans that may use AI systems as a motivation for HCAI does not exist in a discursive vacuum. Absent a vacuum, capacity, control, and empowerment do not align cleanly or clearly within HCAI – unless one takes as a given that users have no choice but to enroll in AI futures.

4.4 Summary of Analysis

The aspiration of AI-driven empowerment in and through HCAI emerges as a gestalt effect of the motivations described above: capacity achieved through understandable information flows (i.e., explainability); end-user *feelings* of control over high-level functionality; and an infrastructural inversion [5] of the central agents in AI work (i.e., human and AI agents). Yet nowhere in these visions is the user's agential consent to be interpellated through AI present. Thus empowerment in and through HCAI is bestowed top-down. Such empowerment is not the bottom-up empowerment we historically associate with the term's ethical appeal [2], but rather a paternalistic form of conditional empowerment [23] in which those who are "empowered" are merely enmeshed in a network of actants that always already possesses greater *power over* than users' *power to*.

In a sense, the empowerment-based rhetorical motivations of HCAI appear as tautological: HCAI empowers people because AI is empowering; future humans will be empowered by AI because AI is the future. Future research should seek to understand the role that affect plays in perceived control over AI; it should focus on understanding users as affective agents rather than primarily rational ones [25, 18]. If, as Schmidt [20] posits, control is a question of affective comfort and abstraction, and HCAI is to empower people through heightened control over AI [29], then HCAI agents require affect-centered design. Yet the ethical development of such a design position, in which HCAI may mitigate against speculative vulnerabilities [24] brought about by misleading promises of "empowerment," requires evidence that AI is *capable* of solving present-tense societal problems, rather than merely serving as a unproven future-oriented panacea [4, 14]. It may further require a substitution for the language of "empowerment," which we discuss in the following section.

5 Discussion & Implications

We argue that in the present discourse of HCAI, to be "empowered" requires an initial submission to the inevitability and hypothesized beneficiality of AI itself. The use of "empowerment" as a rhetoric within HCAI implicitly necessitates a prior forfeiture of agency so that other agency might be acquired. Without consent from users to enroll in AI futures – consent that we know to be absent through interaction with banks, medical institutions, insurance institutions, etc. – any such empowerment that may derive *from* the use of HCAI technologies is always already predicated on a fundamental breach of values (i.e., agency). Given the misuse of extant technologies and their propensity to unnerve users [31, 23, 25, 22], it is naive to assume that users would universally enroll into AI futures through consent-driven agency. Thus, empowerment that is bestowed upon users through the design and deployment of AI agents always already risks reducing to a form of conditional empowerment [23].

In Shneiderman's words, "we are at a decisive moment" in history [28]. HCI scholars and practitioners are playing important roles in this decisive moment. We are tasked with designing (and normalizing) interactions between humans and AI-driven systems. Such responsibility requires great care; such care must manifest, in-part, in heightened sensitivity to the ways in which our language resonates through historical discourse. Language connects novelty with history; it connects contemporary contexts to those which are historically analogous. We do justice to neither history nor AI and the futures AI contains by haphazardly deploying such powerful terms as "empowerment" as a motivation for research, development, and deployment. Such haphazard use of "empowerment" – use that may prime individuals to understand AI as liberatory in a fashion similar to engagement in the bottom-up political empowerment of the mid 20th century [2] – may potentiate future moral injury to users, researchers, and practitioners alike: a moral injury in which the optimism of deploying of AI, motivated by such language as "empowerment," may prove to be ill-placed.

But what might replace the misleading language of "empowerment" while remaining true to the motivations such rhetoric represents? Each of the complementary visions of HCAI that we analyzed describes flows between user and device (e.g., the critical capacity of explainability [19]; the fostering of feelings of control [20], etc.). Focus on such flows presents a possible alternative to the use of "empowerment" as a rhetoric to assuage fears about AI ubiquity. Rather than providing proclamations of HCAI's "empowering" qualities, we identify an obligation to enfold sociotechnical studies of empowerment's mechanics into HCAI work. Through a truncated close reading, we have surfaced the idea that "empowerment" is not a simple process; nor does "empowerment" have a sole referent. The bottom-up achievement of empowerment is simply not the same as the top-down receipt of conditional empowerment. How do we move beyond the apparently conditional empowerment [23] manifest in visions of HCAI, while retaining the human-centered care for users that "empowerment" (misleadingly) represents?

We contend that a framework of consent, collaboration, and the co-creation of value [10] should be central to HCAI – indeed, to all AI research, design, development, and deployment. Such a framework may provide the means by which we in HCI can understand the temporality, transience, and multi-institution interactions that characterize the *achievement*, rather than *receipt*, of empowerment through AI. Such a framework may allow us to move beyond the rhetorical appeal of "empowerment" toward a systematic understanding of the complex sociotechnical events and processes that may yield true empowerment: heightened agency achieved *in spite of* existing power structures.

6 Conclusion

Empowerment derived from enrolment into the imagined futures of AI is both rhetorically appealing and potentially misleading. The achievement of empowerment via HCAI assumes the forfeiture of users' agency (i.e., the individual's right to decide whether they want to be interpellated [11] by AI at all) in the name of acquiring other, nebulous and future-oriented abilities. We contend that "empowerment" in HCAI is not the ethically appealing empowerment characterized by grass-roots construction of heightened agency *in spite of* imbalanced power distributions [2], but rather a form of conditional empowerment [23] in which *being empowered* constitutes only what end users are allowed to do by more powerful assemblages of actants.

Based on our exploratory and preliminary deployment of CR, we conclude that the conceptual structure of "empowerment" in HCAI, then, is load-bearing [12] if and only if all users of HCAI or AI systems have first consented to be interpellated through the "alien" [19, p.33] computational phenomenology of AI [26]. Such a condition is not realistic in light of widespread discomfort and fear about the looming ubiquity of AI. Thus, it becomes necessary to delve more deeply into the meaning and historical discourse of "empowerment" before we may ethically leverage such a term to enroll users into AI futures. We suggest the triadic framework of consent, collaboration, and co-creation of values [10] as a means by which we might develop a sufficiently rich understanding of "empowerment" so as to use it as a motivation for HCAI. HCAI may yet empower individuals, but such a possibility is dependent on what we mean by "empowerment." Given what is at stake in the looming ubiquity of AI, it is simply not sufficient to risk mere conditional empowerment. Although our current historical mode of being – shaped by networking, the information revolution, and mobile technology – was sold to us for the price of "empowerment," we must be vigilant as AI approaches ubiquity. We must help users achieve a voice in who they – *we* – are becoming. Such a voice is not *given*, but can be encouraged through careful engagement and values-driven redistribution of power among institutions and individuals.

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