Posthuman Rituals

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Abstract

As we become increasingly entangled with digital technologies, the boundary between the human and the machine is progressively blurring. A posthumanist perspective embraces this ambiguity, giving primacy not to the individual agents that comprise a system, but to the relationships between them. In this hyperconnected age, our relationships with technology mediate and mould our perceptions of reality, and now they are beginning to define us. This research project explores new possibilities for human-machine relationships, moving away from relationships marked by habitual, unconscious behaviours towards those imbued with intention and meaning. Three works: Mirror Ritual, Message Ritual, and Worn Ritual take inspiration from the mutual entailment of matter and meaning in the dynamic configuring and re-configuring of self-identity. The proposed relationships are not intended to replace or imitate existing ritual practices among humans, but to inspire new forms of shared meaning in the human and non-human assemblages of contemporary culture.

Keywords

Posthumanism; Design; Human-Machine Relationships

Introduction

Today, the intimate couplings between humans and their technology are manifest. We are, at all times, surrounded by a network of interconnected devices that monitor, mediate, and mould our parallel and hyperconnected realities []. We have become entangled with technology in such a way that it's difficult to draw a boundary between human and machine. Artificial intelligence (AI), brain-computer interfaces (BCI), and bio-implants are just a few of the technologies gaining prominence that challenge the long-established epistemological and ontological approaches set in place by the humanist traditions.

With the rise of these entangled and intelligent technologies, traditional notions of identity, agency, and autonomy being put into question [21]: Who exactly is the 'user' [4]? Where exactly lies the interface? In response to this technological proliferation, posthumanist thinking has been proposed as an effective framework for reconsidering the research, design and creative practices underlying Human Computer Interaction (HCI) [15, 14, 31]. Posthumanism calls for the reconfiguration of human and non-human relations, with the decentering of the human, and the relinquishing of dualist categories such as nature/culture, mind/body, and subject/object.

The shift towards relational ontologies reminds us that in the designing of 'interfaces' we are in effect designing the *relationships* between human and machine [28]. These relationships not only shape our behaviours and perceptions of reality, they underpin the very nature of our being. Their effect on society today is highly visible, most notably through social media networks and their real-time, AI curated content feeds. The intent of these algorithms is to maximise engagement, screen-time and click-through, with the relationships forged then being ones marked by unconscious behaviours, unreflective actions, and addictive tendencies [13].

In this paper, we call for a shift away from habit-based human-machine relationships and towards those imbued with intention and meaning. We present three projects: Mirror Ritual, Message Ritual, and Worn Ritual, which form a conceptually linked series of speculative propositions for future human-machine relationships. Each work utilises machinegenerated poetry to produce a shared conceptual space between human and machine. The works investigate the role of language and ultimately narrative in the reconfiguration of identity, exploring the mutual entailment of the material and the discursive in one's open-ended becoming. Each work is in varying stages of development, uses differing scales of temporality, and addresses a distinct aspect of what constitutes the self. The realised designs serve to not only challenge the existing paradigms in HCI research, but to provide altogether new experiences and ultimately forge valuable and meaningful relationships between humans and intelligent machines. The Ritual Series aims not to simulate the ritual practices observed across societies past and present, but instead to offer new rituals that produce shared meaning in human and nonhuman assemblages; new rituals for an increasingly posthuman society.

Background

The notion of the Personal Computer (PC) began to take shape in the mid-twentieth century, with the dream that every individual could one day own their own computational device. Made possible by the advent of the microprocessor, computing gradually permeated into mainstream society, sparking what we know today as the third industrial revolution. This necessitated a shift towards a more interactive form of computing, as proposed in the seminal paper Man-Computer Symbiosis [20]. Rather than simply processing tasks, the computer should additionally give and receive realtime feedback. More notably, Licklider envisioned a world in which humans and computers would be intimately coupled, forming a symbiotic relationship from which emerges a new kind of computer, and a new kind of human. Licklider's formative musings, among others, became the foundation of the field of Human-Computer Interaction (HCI) as we know it today. Computers first became commonplace in the workplace, and so the goals and methods of early HCI research concerned itself with functionality, productivity and efficiency. As computing gradually permeated from the workplace into the home, then from the home onto the body, HCI research began to explore more nuanced, subjective and distinctly human needs such as emotion, creativity, and loneliness [8, 9]. The epistemological processes within HCI research likewise shifted from engineering inspired positivism towards socially constructed and situated forms of knowledge production.

Human Machine Relationships

More recently, we are witnessing the increasing entanglement of people with their personal devices; the way in which they mediate and shape our shared reality is unprecedented. As the boundary between human and machine becomes more difficult to distinguish, the existing epistemological and ontological frameworks passed down from humanist traditions become strained. It no longer makes sense to treat the 'user' as ontologically distinct from their technology. With early roots in Donna Haraway's conceptualisation of the cyborg [18], we see the emergence of posthumanist and relational ontologies which challenge the anthropocentric and humanist values set in place by the secularist movements—that humans embody the locus of agency, morality, rationality, and individuality.

Under the posthumanist paradigm, humans and technology are ontologically inseparable, meaning that it is the relation between the two that defines their existence, rather than their individual properties. These ontologies emerge in part as a response to the proliferation and adoption of digital technologies. Posthumanist philosophies, in the broadest sense, call for a radical de-centering of the human, marked by a return to materiality [10]. Adopting relational ontologies leads us to the understanding that in the designing of 'interfaces', we are, in fact, designing the relationships between human and machine through which humanity continues to be shaped [28].

Barad's account of posthuman performativity [1] provides insight into how we might begin to understand humanmachine relationships. According to Barad, the boundaries between human and machine are not predetermined, instead they are performed within a certain material configuration. These enacted boundaries, or *agential cuts*, must be applied at one scope or another. In applying Barad's framework to technology design, we do not feign to account for the 'whole' but rather acknowledge the enacted separations, and ultimately take a multiplicity of configurations into consideration. To draw these boundaries early in the design process is to neglect the fluid nature in which human and machine negotiate their respective agencies. Instead of designing technologies with pre-established roles of 'user' and machine, we instead design for the relationship as a whole. This involves taking into account the user during their active engagement, along with the greater context of their situated relationship, and moreover how it develops in time.

Humans have already formed complex relationships with AI systems that have a profound impact on everyday life, such as the relationship one has with their smartphone. Social media sites have adopted AI for numerous applications, but most notably it is AI systems that curate, in real-time, the stream of content that one is exposed to. The goal of these algorithms are to increase engagement, and ultimately to maximise screen-time. The result is an invisible vet highly targeted system that affects behaviour changeworking most effectively when one is unaware of their influence. The presence of agency within these algorithms is unmistakable. As such, social networks provide the ideal example of an assemblage of human and non-human agents, illustrating the posthuman reality of today. The algorithms are distinctly inhuman; they are indifferent to the humanist values of sovereignty, freedom, self-determination, and liberty. They are indifferent to whether or not the end-user is human at all [13]. The obtrusive nature of these non-human agents on human perceptions and behaviours is seen across many aspects of society. In the case of social media, the favoured behaviour of the algorithms, and hence the generated behaviour in users, is one of unreflective, reactionary engagement. Users are rewarded for their unceasing engagement through clicks, likes, comments, shares-in addition to the infinite scroll of hyperpersonalised content. The relationships engendered by social media networks are then, by design, habitual and largely unconscious [19].

Human-machine relationships that are grounded in habit are widely spread throughout much of contemporary society. Habits are, in the broadest definition, automatic and repetitive behaviours that are learned and enforced through action [22]. Habits can be both positive and negative, yet in any case markedly require little conscious thought or intention. Rituals similarly involve routines, yet can be differentiated by their intentionality, deep emotional involvement, and their 'socially shared meaning' [16]. Notably, rituals serve a societal function, in that they communicate and reinforce the shared values and identity within a culture [26]. Just as habitual behaviours can be intentionally encoded into the design of human machine relationships, so can ritualised interaction be placed at the core of design decisions. Human-machine rituals need not mimic nor simulate existing ritual practices commonplace in society. Instead, these new human and nonhuman assemblages carve a space in which novel forms of meaning-making become possible.

Posthuman Art and Design

Wakkary outlines the role of posthumanist thinking for design [31], arguing that the main arc of design over the last forty years has been to prioritise human values, conceptualised anthropocentricly through a series of paradigms such as human factors, ergonomics, embodied interaction and humancentred design. While these paradigms have been effective in propagating human-centric technologies, they have come with significant environmental, social or cultural costs. In contrast, posthumanist thinking supports greater humility in design, shifting the focus away from 'the power of self-reflexive human reasoning to situated, partial, and multiple ways of knowing.' [31, p.2]. This mode of design explores what it is like to *design-with* humans and non-humans, rather than to *design-for* an idealised 'user'.

This approach incorporates a variety of methods and tropes, including the *counterfactual artefact* [30] – a nonnormative approach used to question design or technological conventions; *slow technology* such as *Olly* [23] which explores time and memory using technology to envisage a longer-term relationship with personal data, or *Long-living chair*, a rocking chair designed by Larissa Pschetz that records and displays its use over a period of ninety-six years, allowing the owner to observe long-term patterns of use [24].

Such methodologies are also common in media art. Artist Ana Rewakowicz made extensive use of Barad's concept of "mattering" and, similar to our presentation here, presented a diffracted intra-action with three artworks that are part of the *Mist Collector project* – an installation that collects water from fog, produced in collaboration with scientists at l'École Polytechnique in Paris. Rewakowicz explored ethical considerations through the notion of the "inhuman", something that "steps inside of 'human' in order to address human 'ugliness' within" [27].

Extended Self

The emergence of the posthuman is evidently relevant to our contemporary culture marked by our extensive entanglements with technology. Yet, according to Clark and Chalmer's Extended Mind Thesis (EMT) [11], the human is already technically constituted. They argue that cognition does not happen exclusively within the confines of the brain and body, but extends out to include the manipulation of objects in the world. Offering the example of putting pen to paper, reshuffling letters on a scrabble board, or using a diary to remember events, Clark and Chalmers describe how such actions are so closely coupled with cognition that they in part constitute it. In this sense, the use of technology is already enmeshed in our thinking and operating in this world. The EMT in many ways aligns the field of cognitive science with posthumanist thought by acknowledging the materiality of the mind, as well as breaking down the mind/body duality.

In granting the materiality of the mind, we are lead to an understanding of self as too embedded in the physical world. In a 1988 essay, Belk proposes that the self is made up of not only the mental processes, ideas, and memories one has, but the things, places and people one finds themselves in assemblage with [5]. Personal possessions inform self-concept by offering concrete and continuous markers of memories and beliefs. In later work, Belk goes on to detail how the proliferation of digital technologies has dramatically shifted the discourse around materially constituted self-identity [6] to include the virtualisation of personal possessions and memories, the re-embodiment and multiplicity of self, and the public presentation of identity.

Language and the Self

Language is often placed in opposition to the material under representationalism, which adopts a binary of words and things; signifier and signified. Yet, as Clark describes, language itself has a materiality; we encounter "words in the air, symbols on a printed page" [12]. Language is not merely a vehicle through which we express our inner thoughts, but a form of computation in itself. The supra-communicative view of language, originally pioneered by Vygotsky [29], proposes that language is a tool that guides behaviour and structures action.

Under Barad's posthuman performativity, language and matter are not placed at odds, rather "the relationship between the material and the discursive is one of mutual entailment". Discourse, as Barad highlights, does not refer to merely spoken or written words, rather "discursive practices define what counts as meaningful statements" [2], enabling what can and what can't be said. A material-discursive approach to understanding self-identity takes into account mutual significance of matter and meaning in one's open-ended becoming. Within a performative and relational ontology, the self is not a rigid or singular identity, but an ever-emerging subject. This constitution of the material-discursive self forms the inspiration for the works described in detail in the sections that follow.

Mirror Ritual



Figure 1: Mirror Ritual

Mirror Ritual is an interactive installation that questions the existing paradigms in our understanding of human emotion and machine perception. The work appropriates an everyday object, the mirror, augmenting it with artificial intelligence to foster both literal and metaphoric reflection. Through AI generated poetry the mirror 'speaks' to the viewer, each poem unique and tailored to their machine-perceived emotional state.

Mirror Ritual looks and functions like a regular mirror, however it is 'activated' when a person approaches the mirror and stares at their reflection. A machine vision camera, embedded behind the glass, recognises human faces. As the viewer stares into the mirror, their current emotion is estimated based on facial expression and this detected emotion is converted into a 'seed phrase' which is then used to generate a unique poem using a version of OpenAI's GPT-2 transformer network trained on a custom corpus of poetry (see Fig 2). The poem's text gently fades onto the mirror and is displayed for as long as the viewer continues to stare at it. When the viewer looks away, the poem is lost forever; each new gaze into the mirror generates a new poem. The full technical details of *Mirror Ritual* can be found in [25].

The work is inspired by the theory of constructed emotion, which posits that the supposed basic emotions (such as anger, fear, and joy) have no have no biological or neurological essence [3]. Instead, emotion is constructed from a number of more basic psychological processes, such as language, past experience, and the agreed upon social reality. In contrast to prescriptive technologies that are founded on reductionist theories of emotion, this work's real-time affective interface engages the audience in the co-construction of their emotion. The audience are encouraged to make sense of the mirror's poetry by framing it with respect to their recent life experiences, effectively "putting into words" their felt emotion. This process of affect labelling and contextualisation works to not only regulate emotion, but helps to construct the rich personal narratives that shape human identity.

With this work, we aim to develop a human-machine relationship that provokes emotional reflection in viewers through the conceptualization of their affective state. These objectives are reflected in the physical design and construction of *Mirror Ritual*. The use of a mirror surface works symbolically to suggest that you must not only confront your physical self, but also that you may reflect upon your internal emotional state. In addition to the process of reading and interpreting the generated poetry, viewers are subsequently confronted with their momentary reactions. In this way, *Mirror Ritual* engages viewers in the iterative process of the co-construction of their emotional state – predictions made by the mirror are not intended to be direct representations of the viewer's affective state, yet they can work to shape it.

The mirror is developed with a sustained engagement in mind; we intend that viewers incorporate *Mirror Ritual* into their daily routines, developing a meaningful relationship with the interface through multiple encounters over time periods of weeks, months or even years. For this reason, the mirror has been designed to assimilate easily into daily life, both in its aesthetic qualities (it appears as a standard round mirror), and in it's dual function (it can simply be used as

The comfortable place

is not the one that we have vacated we are always with you clinging to your empty good time your warm harbor in the dusk we are always with you (we are always) and this good time we call sacred we provide a framework

Excited

I am trudging in the wrong direction The wrong footstep A bon fire in a church I repent If only I knew what confusion is doing In this slow wood A crane landing In the least invasive Style On a whisper Of wind lifted From a book That I had not opened

You are elated and ecstatic For three whole days you have been praying and fearing and reveling in the knowledge that now is the most optimal time to embrace your whole life story, including the one you've been carrying around in your mind, like a baby







Figure 2: Examples of generated poetry. For each poem, we present the associated facial expression as perceived by the mirror and the subsequent seed phrase (shown in **bold**), which is used to generate the poem using a custom GPT-2-345M neural network.



Figure 3: A CAD render of the Message Ritual lamp

a mirror). The mirror could be hung in a bathroom, living room, or hallway entrance, creating the space for viewers to pause and reflect on their mood as they transition between the moments of their day.

Early experimentation provided a number of insights about the relationship generated through engagement with Mirror Ritual. Participants largely found themselves able to emotionally engage with the mirror, often perceiving the device as possessing agency and intention. The mirror's poetry was best received when participants were able to connect it back to something tangible, framing the messages within the context of their life and recent experiences. In this way, Mirror Ritual presented participants with fresh concepts and imagery, occasionally bringing to the surface dormant emotions, beliefs or memories [25]. Meaning seemed to unfold between participants and the mirror, both over the course of one interaction, and over the extended period of engagement. The experience was generative, directing further thought and conversation. Furthermore, the relationship itself was found to define the respective roles of its constituents; both the participants and the mirror becoming through one another.

Message Ritual

Message Ritual is the second artefact developed in the *Ritual Series*. Comprising a bespoke table lamp and an AI backend, *Message Ritual* is an integrated system that encourages the reframing of memory and identity through machine generated poetry. Appropriating a typical domestic object, the lamp is designed to have an ongoing presence in the home. While functioning as a regular table lamp, while turned on it also listens in on conversations occurring throughout the day via an embedded microphone array and on-board computer. Each night, the system analyses those conversations, reconstructing the key themes and topics as a source for machine-generated poetry. A short, bespoke poem is then delivered back to individual members of the household as a text message upon waking. *Message Ritual* presents an alternative approach to traditional augmented memory systems – rather than focus on the sensing and quantification of external experiences or actions, we aim to construct meaningful, personal narratives through the use of machine-generated poetics.

As with Mirror Ritual, Message Ritual similarly utilises machine-generated poetry to foster reflection and introspection as the individual attempts to draw meaning from their delivered poem. But rather than grounding itself in the viewer's in-the-moment mood, Message Ritual draws upon an individual's recent memories to contextualise their poetry. The system is not attempting to improve the recollection of 'accurate' memories, rather it encourages the active framing and re-framing of personal events that contribute to one's overall life narrative. As with Mirror Ritual, the work is designed to be lived with over an extended period of time, with the poetry referencing the events of the previous day. This self-referential nature of the experience aims to provide some sense of continuity over the interactions, allowing people to develop a meaningful relationship with the system over an extended period of time (months, years).

Message

A smartphone was chosen to serve as an intervention to the typical habitual behaviours and gestures associated with the device. The morning SMS is designed to reach the participant in their first moments of the day, encouraging reflection and re-framing of the previous day's events. The daily reading and interpreting of the message contributes towards one's waking ritual, prompting the participant to proactively reflect and contemplate their life. SMS technology is utilized as it sits outside of social media applications, creating a conceptual division between *Message Ritual*, and other morning routines that are mediated through a smartphone.

Lamp

The design of the lamp itself is crucial to the overall experience, as it will be embedded into the homes and lives of participants. In line with the design of Mirror Ritual [25], the lamp serves both a functional and aesthetic role in participants' homes. Here, everyday domestic objects (e.g. furniture, crockery, plants, soft furnishings) are of interest as they have clear and well-defined roles in one's life, but they also distinctly lack a technological component. Technology providers push for the widespread integration of technology and everyday objects (the 'smartification' of the home) [7], generally aiming to augment both the function of the artefact itself, and to increase the connectedness of objects with each other (i.e. internet of things). In this work however, the use of everyday objects is chosen not to necessarily 'improve' an object's function, but rather to bypass any preconceived notions or behaviours that users may associate with traditional interfaces such as screens, smartphones or voiceassistants. In this way, the natural behaviours afforded by non-technological objects (i.e. switching a lamp on or off) are utilized in the interaction, allowing for the interface to



Figure 4: Message Ritual: the Lamp listens to conversations in the home and responds with poetic reflections of the day's conversations via text message (shown right) to members of the household the following morning.

escape common behavioural and gestural habits such as tapping, swiping, scrolling, refreshing, issuing commands, etc. The artefact blends into the domestic surroundings, so as to not interfere with natural conversation occurring in the household. Furthermore, the light from the lamp carves out a space for occupants to gather and converse, especially in the evening and night time hours.

Living with Lamp

In a 2 week long study, participants were asked to invite the lamp into their home. We found that the lamp aided in the reflection on and recollection of recent memories, offering transitory moments for quiet contemplation. Moreover, the lamp served as a social centrepiece, encouraging conversation and connection within households. More interestingly, however, is the common perception of the lamp as an extension of it's designer. Emotions experienced towards the device seemed to distribute across the entire assemblage of household members and researchers. It became impossible to decouple the experiences of any one participant. Instead the specific material configuration; the households, participants, designers, and researchers, altogether shaped the course of the lamps becoming. Again, only through the relationships that emerged through sustained engagement, did we come to further understand the influences, implications and possibilities of Message Ritual.

Worn Ritual

The third project of the *Ritual Series* serves as a counterpoint to the first two; taking inspiration from the narratives generated in relation to both *Mirror Ritual* and *Message Ritual*, but addressing the ephemeral nature of machine-generated poetry. Often such poetry is perceived as lacking significance or meaning, in the sense that it is trivial to generate thousands if not millions of poems in a short period of time. Moreover, the poetry lacks an identifiable author and the traditional intentions of human poets. *Worn Ritual* is a response to the transient nature of machine poetry; by taking short excerpts from the generated poems and inscribing these into physical materials such as aluminium, steel, and textiles, the narratives behind the poetry are given a greater sense of value and permanence.

Worn Ritual is currently in the early stages of conceptualisation and development. In early experiments, the concept has been explored through the medium of hand stamped aluminium bracelets. Rather than using automation, a personalised poem is chosen through a manual curation process, from which an excerpt is hand stamped onto a bracelet that is then gifted to the participant. Examples of the chosen excerpts and associated bracelets can be seen in Figure 5. The curation process involves seeding the poetry model with a phrase that is meaningful to the participant, and generating several poems of which only one is selected. The selected poem in some way captures the participants recent experiences or reflects on the relationship between participant and designer. In one example, a bracelet was made as a parting gift to a participant leaving the country indefinitely, with the following associated poem (seed phrase in **bold**, stamped phrase in *italic*):

There is no unhappy ending here,

And if there was, it would be a different jungle. We are thrust forth as the favored creatures Of mythical beings and saintly heroes. This is surely no happy accident. It is *a spiraling arc*-the work of love.



Figure 5: Worn Ritual: aluminium bands with hand-stamped AI generated poetry (left) are shaped into bracelets (right).

Experimentation with jewellery as a medium has provided early insight into how these constructed narratives can be embedded into physical, static artefacts. Further experimentation will focus on how the chosen materials and context of the works influence the perceived value and meaning of machine poetry. We plan to explore a range of materials and techniques, such as machine engraving, embroidery and woven textiles. In addition to wearables designed for personal meaning, we will also experiment with larger scale pieces designed for domestic and public settings, allowing for the continued exploration of how machine-generated poetry can be imparted with social-shared meaning.

Conclusion

The three works presented in this paper are designed as a conceptually linked series of works that each propose a speculative future of sustained human-machine relationships. The works embody a critique on traditional approaches of the quantifying of self: the measurement of emotion; the outsourcing of memory; while at the same time offering positive and optimistic alternatives for human-machine relationships. The works also reject the typical focus of technology on accuracy, efficiency and speed: capacities that enforce the relentless 'consumption of disappearance' that define modern technological cultures [17]. Instead we turn to creating rituals that render time habitable - much like we furnish homes to make space habitable, rituals allow one to inhabit and linger in time. It is no coincidence that all the works in the Ritual Series encourage the emergence of long-term relationships over instant gratification, and that they work as personal or household objects, whose significance is earned rather than given.

The *Ritual Series* serves to not only challenge the existing paradigms in technology design, but to offer altogether new rituals and experiences, ultimately striving to forge intentional and meaningful relationships between human and machine. In response to the increasingly common tendency for technology to mould the human into a form that can be understood by a machine, or more recently the desire for the machine to be reconfigured for the human, the *Ritual Series* instead allows for their mutual unfolding. Neither precedes the other, neither defined by the other, but through their relation emerges a continuous and open-ended becoming.

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