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Hyperbolic Organizational Identity and Identity of Digital Artifacts: A Comparative Study of Healthcare Innovations

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Short Paper

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Abstract

As digital technologies move toward the core of an organization's offerings, the identity of many contemporary organizations is now born in association with the digital technology that characterizes them. Entrepreneurs largely rely on setting up high expectations to attract initial resources to materialize the idea for their digital innovation. However, such a tactic may be problematic when their eventual digital artifact contradicts their core organizational identity, leading to their legitimacy loss. In this ongoing study, we explore a novel phenomenon of hyperbolic organizational identity. Drawing on longitudinal archival sources, we conduct a comparative case study of IBM Watson and DeepMind, whose identities both became hyperbolic, yet experienced different outcomes in their healthcare innovations. From our findings to date, a preliminary dialectical process model is presented that depicts the interplay between organizational and technical identities of the digital artifact in leading to the formation and change in hyperbolic organizational identity.

Keywords: hype, digital innovation, organizational identity, entrepreneurship, case study

Introduction

On the night of April 25th, 2019, George Brian McGee was driving home in his 2019 Tesla Model S. Putting his trust in Tesla's advanced hardware and software capabilities, McGee decided to switch on the vehicle's Autopilot feature. McGee became briefly distracted after dropping his phone and was unaware as his Tesla drove past a stop sign and a flashing red light. A moment later, he crashed into a parked car, killing the passenger inside it (Boudette 2021). Tesla's website describes its cars as the 'future of driving', designed by the Autopilot AI team that over time develops and deploys improved functionality to offer a general solution for a fully autonomous vehicle. Despite its name, Autopilot does not make Tesla vehicles autonomous at all times, which would be classified as Level 5 self-driving. Autopilot, on the other hand, is only classified as Level 2 by the auto industry and has led to numerous similar accidents that resulted in fatal injuries and deaths over recent years.

"Fake it till you make it" is a principle widely encouraged and adopted by tech startup founders in Silicon Valley. By making early euphoric promises and setting up future expectations even with little substantiated proof, ventures are conferred legitimacy by the external audience and hence become better positioned to attract prospective investors and talents (Abrahamson and Fairchild 1999; Borup et al. 2006; Garud et al. 2014). However, as exemplified by Tesla's Autopilot incident and the recent legal actions against Theranos, a health technology company that underwent a downfall after failing to deliver on its promise, that is no longer the case. The pervasiveness of digital capabilities now shapes and poses far-reaching implications

for every aspect of the consumers' everyday experiences, thus moving toward the core of an organization's service offerings (Bailey et al. 2022; Yoo 2010). As such, for many contemporary organizations, their identities are now born in association with the digital technology that characterizes them.

Previous literature on organizational identity has primarily examined how the adoption of new digital technology leads to a change in an organization's identity (Gal et al. 2008; Tripsas 2009). However, what remains yet to be discussed is the relationship between an organization's identity and the design of its digital offerings, particularly when the organizational identity is characterized by a sense of hype, or hyperbole, as in the cases of Tesla and Theranos. A recent paper by Logue and Grimes (2022, p. 1056) defines hype as a "collective vision and promise of a possible future, around which attention, excitement, and expectations increase over time". In the context of digital innovation, an organizational identity may thus become hyperbolic, when it is conceived prior to the substantiation of the technical feasibility of the organization's digital artifacts as implemented within an actual service context, solely based on early signs of promise and future expectations. Organizational identity may become devaluated as the hasty diffusion of their immature solutions eventuate in a failure (Chai et al. 2021; Garud et al. 2014), or face a gradual decline in the public interest as the form of the technology does not live up to its initial hype and becomes taken for granted (Abrahamson and Fairchild 1999). In this study, we hence seek to examine the ways in which organizations are confronted with such tension by exploring the following question: *How does hyperbolic organizational identity shape, and become shaped by the identity of emergent digital artifacts?*

We examine this question by conducting a comparative case study of IBM and DeepMind. The identities of both organizations were shaped in association with their respective digital artifacts, i.e., Watson and AlphaGo, that garnered much hype. While both organizations ventured into the healthcare industry without being equipped with technologies that could cater to early expectations, they experienced very different outcomes. In so doing, we draw on Faulkner and Runde's (2013; 2019) notion of the identity of digital objects to complement our analysis. Based on our synthesis of the longitudinal data on IBM and DeepMind, we derive a preliminary dialectical process model that illustrates how organizational identity, and the identities of the organization's diverse digital artifacts mutually shape each other over time, which results in the formation and change in hyperbolic organization identity. Overall, our ongoing study is expected to contribute to an understanding of hype management and the intersection between organizational identity and digital innovation.

Literature Review

Organizational Identity and Expectations

Much conceptual and empirical work on organizational identity is based on the work of Albert and Whetten (1985), who describe it as comprising three pillars of what is core, distinctive and enduring about an organization. Traditionally, an organization's identity has often been portrayed as an endogenously defined phenomenon, whereby its members socially construct and project who they are as an organization (Gioia et al. 2013b; Gioia et al. 2000). In this perspective, a firm identifies and adapts to discrepancies between how they view themselves and their image, i.e., their construal of how the outsiders perceive them, such that the two are mutually constitutive in enacting organizational identity formation and change (Gioia et al. 2010; Gioia et al. 2000). Hence, organizational identity change involves a temporal process deliberated by the top management (Gioia et al. 2000).

Other perspectives suggest that the shaping of organizational identity is more subject to an institutional rather than an internal influence, highlighting the salient role of legitimacy conferral by outsiders (Hannan 2005; Tripsas 2009). This involves the dynamics of recurrent identity claiming and granting work between the organization and its stakeholders (Gioia et al. 2010). In other cases, organizations, in particular entrepreneurs, use projective tactics to set future expectations based on an artifact that has yet to be materialized to gain cognitive and pragmatic legitimacy (Borup et al. 2006; Garud et al. 2014). Once an "identity code" is attached to an organization by relevant audiences, it persists so long as the same default expectations are continued to be held (Hannan 2005). Conformity with external expectations by the organization is met with social approval, which then facilitates the mobilization of resources. However, such conformity may also prove to be a double-edged sword and cause inverse effects on the organization's identity. Where there is a gradual awareness that the organization is unable to fulfill its earlier promise, organizations and its offerings face a decline in interest (Abrahamson and Fairchild 1999). Further, visible

violations of external expectations may result in social disapproval and devaluation of the organization's identity (Chai et al. 2021; Hannan 2005). Over time, this may accrue to a legitimacy loss for the collective identity that assumes the same label, which then becomes associated with disappointments and unmet expectations (Borup et al. 2006; Garud et al. 2014). Following an innovation failure by a firm, stakeholders may redraw the boundaries on what is considered legitimate to deflect negative effects for the industry legitimacy in a nascent sector, while the firm may seek to reidentify itself within the industry (Chai et al. 2021). The consideration of such issues and implications are particularly pertinent to firms that are closely interlinked with emerging digital technologies, whose projected offerings have received little substantiation from their use in an actual service context.

Organizational Identity and Digital Technology

Digital technology is widely acknowledged as having a transformative role in how organizations view and define their core identity (Utesheva et al. 2016; Wessel et al. 2021). For example, Tripsas (2009) observes how a company's established identity as a digital photography company initially led to cognitive inertia that filtered out new opportunities emerging from an innovation, i.e., flash memory cards, and necessitated a shift in its identity when the firm eventually embraced it. Other studies have similarly studied the shaping of organizational identity following the emergence and implementation of new digital technologies such as 3D modelling tools (Gal et al. 2008) and digital media (Utesheva et al. 2016). While these studies highlight the mutual constitution of technology and identity, their insights tend to skew toward a unidirectional causal effect whereby the technology triggers a change in organizational identity. Specifically, insights on how organizational identity shapes, and is implicated in the design of digital artifacts are currently lacking. We seek to build on these contributions to examine the bidirectional interplay between organizational identity and digital technology. Another limitation of the scope of existing analyses is that they lend themselves more toward the discussion of a single artifact in relation to an organization's identity. The current wave of digital technologies can no longer be considered to be fixed entities within fixed relations, but rather intertwined in constantly evolving relations with heterogeneous actors and artifacts (Bailey et al. 2022). Given the malleable nature of digital technology (Yoo et al. 2010), an organization's identity may thus be enmeshed in multiple variants of the digital artifacts that collectively represent and shape it at a given point, even in tandem with those that may be perceived as competing with its core features, i.e., "identity-challenging" (Tripsas 2009). To account for such inherent social complexities involved in the design of an emerging digital offering, and to discuss and elevate their role in shaping the organization's identity on a symmetrical level as other social actors, we thus draw on the insights from the social positioning and identity of digital objects to complement our analysis.

Identity of Digital Objects

The idea that inanimate objects are conferred identities no less than human beings is premised on Lawson's (2012) view that everything comprising the social reality is constituted through a process of social positioning. The process involves a generalized acceptance of the component's allocated status, practical placement in the emergent system, and the harnessing of capacities to serve its systems functions. The social position then confers an entity occupying it a social identity, such that various ways of repositioning an object enable it to obtain a corresponding identity, e.g., pieces of paper positioned as cash (Lawson 2012). The technical identity possessed by a technological object within some community flows from its dual-nature conception of form and function (Faulkner and Runde 2013). The agentive functions of the technology are those that are imposed by members of some community in pursuit of their practical interests, and thus not an intrinsic property of the object concerned per se, so are necessarily community relative. As such, even identical objects can be given different functions and take on different identities across communities. The function assigned to the object should then be performable and sustainable by its form, or structure. This refers to the object's components and the interactions between them that give it the required capabilities (Faulkner and Runde 2013). With respect to digital objects that additionally have a nonphysical mode of being, their form comprises layers of both nonmaterial objects and bearers (e.g., bitstrings, algorithms) and material bearers (e.g., hard drives, mobile devices) (Faulkner and Runde 2019).

Research Methodology

We adopt a comparative case study methodology (Bechky and O'Mahony 2015). An inductive, microhistorical case design, in particular, allows us to understand the dynamics between organizational actions in relation to the larger institutional context in which they originate and in turn, change (Hargadon 2015). Using a comparative case study approach offers an advantage over studies of a single setting by enabling a better explanation of the mechanisms that contribute to the outcome variance by uncovering commonalities and differences across different settings (Bechky and O'Mahony 2015). We use a matched pair sampling strategy, in which cases are selected based on their shared attributes in common settings, where the same process and outcome can be anticipated to be observed but are not. The cases are selected to control for contextual variance, which helps identify behavioral variance that accounts for their divergent outcomes (Bechky and O'Mahony 2015). We select IBM (specifically IBM Watson Group) and DeepMind as the two settings for our comparative case study for the following reasons. First, both organizations were in the media spotlight and created much hype after the victory of their technologies (i.e., Watson and AlphaGo) over human champions in the game of Jeopardy! and Go, respectively. Both organizations subsequently selected the healthcare industry as the primary target for their 'real world' digital offerings. Such commonalities thus served as our contextual control for the cases. Second, they experienced divergent outcomes from their healthcare innovations. While IBM has experienced limited success and a loss of public excitement in the healthcare industry that eventually led to the divestment of their Watson Health business in 2022 (Ross 2022), DeepMind has managed to maintain this status as of date. This allows us to examine the variances between their processes. Finally, the high profile of the organizations and their media attention have generated a rich body of secondary data that enables an in-depth analysis.

Data Collection and Analysis

We began our data collection process by gathering extensive longitudinal data on IBM Watson and DeepMind through keyword searches of publicly available archival sources since the years 2011 (Watson's Jeopardy! challenge) and 2014 (Google's acquisition of DeepMind) respectively for each company. To facilitate our collection, we used a technology blog and news aggregator named Techmeme. As our research examines how the external audience's perception of the companies and their digital artifacts have changed over time, traditional media sources are useful in understanding the cognition and motivation that constitute the statements put forward by the authors (Hargadon 2015). The media sources were complemented by market research and industry analysis reports collected via LexisNexis. We also gained access to press releases and scientific publications from both the two companies as well as the healthcare organizations working with them and additionally gained access to their SEC filings over the years. These allowed us to gain insights into the perspective of the firm in relation to its innovations. Finally, we collected audio-video files and excerpts of interviews of executives and key personnel that are publicly available online. These interview sources enabled us to gain a more nuanced insider's view on how certain decisions were made in the designing of their artifacts. There are advantages of using a longitudinal data set from heterogeneous sources. First, it allows us to construct a nonbiased chronology of events pertaining to IBM Watson and DeepMind. Second, it allows for more rigorous analysis as our arguments are derived from a triangulation across these data.

Data analysis was performed in tandem with its collection. The corpus of data allowed us to construct a historical narrative of IBM Watson and DeepMind which developed our initial understanding of the phenomenon (Bechky and O'Mahony 2015). We followed the analytical approach suggested by Gioia et al. (2013a). The 1st-order analysis involved an initial round of open coding by assigning in-vivo codes that capture the actual voices of the authors. We used the qualitative analysis software ATLAS.ti to facilitate our data organization and this procedure yielded an initial set of 354 codes. The 2nd-order analysis was geared toward identifying theoretical concepts, themes, and dimensions related to the empirical observations (Gioia et al. 2013a). By iteratively moving between the data and existing theories, we used concepts from the organizational identity literature as analytical filters to perform our second round of coding and cluster empirical observations. We subsequently compared similarities and differences in the concepts across the two cases to assess how they affect the processes and outcomes in each setting (Bechky and O'Mahony 2015). This enabled us to perform axial coding technique (Strauss and Corbin 1990) to collapse the open codes and delineate the commonalities and variances observed from the comparison using our conceptual lens. We complemented this phase with temporal bracketing strategy (Langley 1999) to analyze the mutual influences of organizational identity and digital artifacts in a sequential fashion. This allowed us to study how these patterns led to changes in the institutional context of IBM Watson and DeepMind and derive an

initial set of 6 second-order themes (Figure 1). We aggregated the second-order themes into a set of more parsimonious overarching dimensions. This produced three overarching dimensions: 1) hyperbolic identity formation, 2) identity translation, and 3) identity legitimation. We then created a dialectical model to theorize how hyperbolic organizational identity influences the identity of digital artifacts and vice versa, which leads to its formation and change.

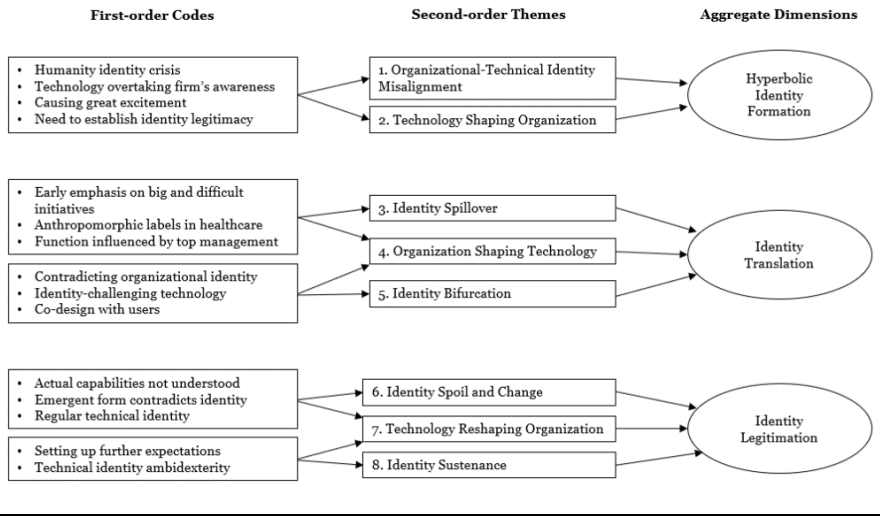

Figure 1. Data Structure Excerpt

Preliminary Findings

The preliminary findings from our ongoing study suggest a dialectical relationship between organizational identity and the technical identity of the digital artifacts in leading to the formation and change in hyperbolic organizational identity (Figure 2). *Identity translation* denotes the extent an organizational identity becomes reflected in the technical identity of the digital artifact. This involves a continuum where at one end, the organizational identity may be directly inscribed into its artifact to achieve alignment (Latour 1987), or the artifact may be designed instead to contradict or challenge it (Tripsas 2009). Conversely, identity legitimation indicates the impact of the artifact's identity on organizational identity, where the former can cause or facilitate the formulation, sustenance, and change to the latter. Furthermore, these relationships are enacted through a process of social positioning of the digital artifact.

Hyperbolic Organizational Identity Formation

In 2006, the research team at IBM pitched the idea of Watson to develop an automated question-answering (QA) computer system. IBM Research executives were on the lookout for a new grand challenge for the company that would meet a real-world need, after the victory of Deep Blue over Garry Kasparov in 1997, and the game of Jeopardy! was deemed an attractive target given the popularity of the show at the time. IBM designed DeepQA as a novel technical architecture for Watson's NLP capabilities. Watson's victory over Jeopardy! champions Ken Jennings and Brad Rutter in 2011 caused great public excitement. The artifact became synonymous with 'AI', even instilling fear of the trend toward the widespread displacement of the human workforce. IBM created a distinct identity of "cognitive computing", coined due to the challenges faced by companies in marketing products as AI back in 2011 (Clegg et al. 2007). The changes in Watson's description are noticeable in IBM's annual reports over the years. Initially described as a "computer system that applied advanced analytics" in 2011, the term cognitive was used to denote a solution that "includes – but is broader than – artificial intelligence, machine learning and natural language processing" by 2015. In 2014, IBM launched a separate IBM Watson Group to better capture the commercial opportunities arising from public interest by focusing on its new cognitive solutions. Whereas for IBM, the establishment of the Watson Group took off as a corollary of its public success, DeepMind has explicitly

focused on developing AI technology since its inception. DeepMind gained a spurt of publicity in 2016 after AlphaGo's victory against Lee Sedol. According to DeepMind's publication in 'Nature', the game of Go is heralded as a long-standing grand challenge for AI research owing to its "enormous search space and the difficulty of evaluating board positions and moves" (Silver et al. 2016, p. 484). The self-learning nature enacted by its reinforcement learning component eventually led to projecting an image of AlphaGo as a machine that could "think". As in Watson's case, AlphaGo's identity became hyperbolic with the man versus machine narratives. Celebrities like Nick Bostrom and Elon Musk have all identified DeepMind as the leader in the global AI race. However, the form of AlphaGo was nevertheless limited in catering to such expectations. A computer scientist at DeepMind explained in their AlphaGo documentary: "For us, AlphaGo is obviously just some computer program. But looking at the commentary on the Internet, I already saw the commentators call AlphaGo like 'he' and 'she' during the games. Completely unconsciously…AlphaGo is really a very, very simple program. It's not anywhere close to full AI, and we already see that happening".

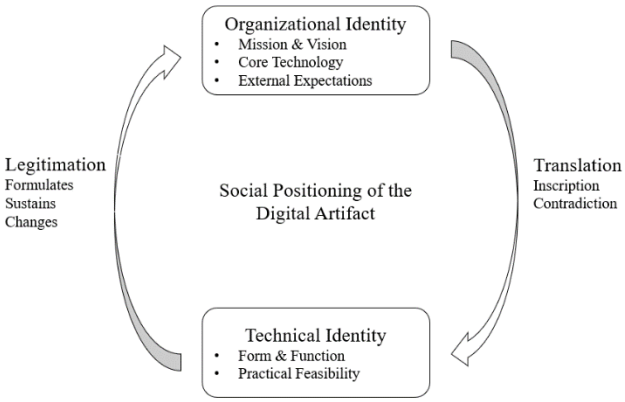

Figure 2. Hyperbolic Organizational Identity Formation and Change

Identity Translation

Identity Spillover from Organization to Technology (IBM Watson)

Watson was publicly perceived as capable of answering broad, complicated questions, which IBM followed up in their healthcare innovations by choosing oncology as their primary area. As reflected by cardiologist Eric Topol (2019, p. 155), "when IBM Watson first headed toward healthcare, it was little surprise that the field of cancer medicine was at the top of the list". Following the announcement of Watson's focus in healthcare, the media ran amok with anthropomorphic headlines such as "IBM's Watson gets its first real job", "Paging Dr. Watson", and "IBM's Watson to offer medical advice to doctors". Such media rhetoric heightened external expectations of Watson's potential for cancer treatment. IBM's first major partnership to this end was announced in March 2013 with Memorial Sloan Kettering Cancer Center (MSK). By involving the center's oncologists in the training process, the initiative aimed to develop a tool, i.e., Watson for Oncology, that was projected as being capable of providing individualized cancer diagnostic and treatment recommendations for the patients. Watson for Oncology was adopted across hospitals in Europe and Asia where expert oncologists were lacking. Many attribute Watson's eventual struggles in healthcare to IBM's 'marketing-first' approach. To this matter, there was a divergence in perspectives between actors from a technical background involved in the development of Watson and the top management. Insiders from IBM noted that the company's executives at the time were largely from sales and services backgrounds (Lohr 2021). Personalities including David Ferrucci cautioned against overpromising beyond what presently looks to be technically feasible. While the spillover of the Watson label and the hype that emanated from it were instrumentalized by the top management to a certain extent, it was also largely an unintended consequence. As described by Paul Grundy, a former global director of healthcare transformation at IBM:

"Certainly none of us on the clinical side ever talked about this being Dr. Watson. That's not what it does" (Wachter 2015, p. 105).

Identity Bifurcation between Organization and Technology (DeepMind)

In comparison with IBM Watson's approach to align the technical identity of their digital artifact in oncology with their organizational identity, DeepMind initially preserved a separate identity for their 'real-world' AI, separate from that gained through the events of AlphaGo, even contradicting its core organizational identity in the process. A month before the unveiling of AlphaGo, DeepMind launched its healthcare unit, DeepMind Health, having worked with the National Health Service (NHS). Despite AlphaGo's role in resuscitating the global hype around AI, co-founder Mustafa Suleyman followed up in an interview commenting that "people expect the algorithm to do too much" (quoted in BBC, 2016). Unlike the carryover of the 'Dr. Watson' label with IBM, DeepMind managed to steer clear of addressing the 'Alpha' label in moving into healthcare. The first tangible outcome of the DeepMind-NHS partnership was 'Streams', an iPhone app that was deployed at the Royal Free Hospital in 2017. Developed to aid doctors and nurses in the early detection of acute kidney injury (AKI), Streams alerts the clinical staff when test results indicate that the patient is at risk of developing AKI. To the bemusement of many, however, Streams did not involve any AI components despite DeepMind's wide-held identity as a leading innovator in AI. Rather, it used a well-established formula for kidney function evaluation. One journalist remarked: "While DeepMind is best known as an AI company, the Streams app doesn't at present have any artificial intelligence elements" (Best 2018). Although DeepMind and clinicians at Royal Free explored how AI could be leveraged to improve AKI care at first, there was gradual awareness that solving the core problem had less to do with developing a better algorithm alone. DeepMind's orientation in steering clear of the spillover of hyperbolic expectations in its healthcare projects, along with their deferral of AI embeddedness in designing healthcare solutions led to a bifurcation between the organization's identity and the technical identity of their application. This allowed the functionality of a potential solution to be shaped by clinicians with less preconceived expectations of AI as a panacea, which nonetheless enhanced the existing clinical staff-patient relations.

Identity Legitimation

Identity Spoil and Change from Implementation Failures (IBM Watson)

Watson's actual capabilities were not well understood by the public nor the hospitals that were using it, leading to flaws that became emergently evident on the frontline of care. Specifically, Watson suffered from the black box problem where its inputs and processes were opaque to its users. In upholding the vision of a system that embodies the world's leading experts, the shaping of Watson's function became highly reliant on its training by a small panel of oncologists at MSK, who unwittingly injected biases into the system toward American methods of care. Contrary to its initial description as embedded with a machine learning capability, Watson for Oncology generated no new insights but rather required a continuous manual update by its trainers in keeping up with the latest knowledge. In this regard, Watson's form resembled more akin to an "expert system" and one journalist described it as a "human-driven engine masquerading as an artificial intelligence". IBM struggled to retain broad adoption of Watson for Oncology and abandonments from hospitals ensued. All in all, Watson's struggles became recounted as the epitome of Silicon Valley firms' failure story in transforming healthcare, thereby causing damage to IBM's identity. In contrast to the earlier hype, now the media headlines read, "Why IBM Watson Health could never live up to their promises". IBM became criticized for being overly ambitious and for its "deceptive", even "unethical" marketing of Watson. IBM executives sought to reposition Watson Health towards offering data analytics solutions rather than solving the more complex clinical diagnostic problems like cancer treatment but eventually divested Watson Health in January 2022. Although the Watson label was kept, the 2020 annual company report described Watson as a "portfolio of enterprise-ready pre-built applications and tools designed to reduce the costs and hurdles of AI adoption through industry-leading natural language processing, automation and trust in our responsible use of AI". Thus, Watson's identity has come to instead represent a collection of tools that companies use to automate basic tasks, similar to most other mundane AI applications.

Identity Sustenance with Ambidextrous Innovations (DeepMind)

In 2019, DeepMind's partnership with the U.S. Department of Veterans Affairs subsequently unveiled a machine learning tool that could forecast AKI in a patient up to 48 hours in advance as compared to the current care by doctors. Although this was kept as a separate project, it created expectations around its potential integration with Streams. A 'Wired' article wrote: "the Veterans Affairs experiment suggests that an AI-powered version of Streams could make a significant impact on patient health" (Simonite 2021). Beyond AKI, DeepMind engaged with multiple hospitals across different specialty areas. To date, none of its healthcare technologies has been implemented in clinical practice. Yet, industry analysis reports describe DeepMind as leading in both the AI-enabled transformation of healthcare as well as the frontiers of reaching artificial general intelligence (AGI). Moreover, unlike Watson's unchanged NLP embedment, reinforcement learning was not present in any of their clinical diagnosis tools. Nevertheless, DeepMind continued to advance and innovate with reinforcement learning outside healthcare. In addition to the healthcare projects, DeepMind has been evolving its 'Alpha' series in tandem. DeepMind launched AlphaGo's successors in sequence, namely, AlphaGo Zero and AlphaZero in 2017, AlphaStar in 2019, and AlphaFold in 2021. This further shaped public perception and fueled the hype around the progress toward AGI. For example, this view was expressed by Tesla's director of AI and Autopilot Vision Andrej Karpathy at the 2017 NIPS: "If you look at the progress of AlphaGo Zero, there was a long period of quiet engineering effort and algorithmic advances, then reached superhuman status in just three days".

Discussion and Concluding Remarks

While our study is still in progress, our work to date already hints at several potential contributions. First, by introducing the notion of hyperbolic organizational identity, we extend the literature by conceptualizing how organizational identity may be changing in the contemporary sociotechnical landscape characterized by the ubiquity of emerging technology (Bailey et al. 2022; Yoo 2010). Second, technology has rather been portrayed as a deterministic source of identity change, where the adoption and use of new technologies create an impetus for a shift in how an organization views itself (Gal et al. 2008; Tripsas 2009). Our findings instead suggest that there may be a bidirectional rather than a unidirectional effect between them, such that a change in organizational identity reciprocally shapes its artifacts. Further, our study shows that there is a need to better account for how an organization can engage with multiple, contradictory identity-aligning and identity-challenging artifacts at a given period. Additionally, our study is expected to offer implications for hype management. Entrepreneurs face a paradoxical situation where setting expectations on one hand can help them gain initial stakeholder support but may create setbacks in the future if early promises are not delivered (Garud et al. 2014). Further analyses may derive valuable insights for future entrepreneurs. Our future research will be centered on extending and validating our model with the collection and analysis of additional data on IBM Watson and DeepMind. Specifically, a more nuanced temporal dimension is expected to be incorporated in supporting our process theorizing. The boundary conditions of our model will also be explored in greater depth through constant comparison with other streams of literature, data, and our emergent theory. Through a continuous iteration, we hope to reach theoretical saturation such that our final process model can offer a more holistic understanding of hyperbolic organizational identity, and how it may shape and be shaped by an organization's digital innovations.

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