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Article

Relational Ecosystems in AI Workplaces: Developing a Post-Human Relations Framework

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Abstract: There is an ontological shift currently taking place in the modern workplace due to AI and collaborative technologies. The classical theories of human relations, which rely on human interaction and human co-presence, fail to explain the relational issues involved in the modern hybrid human-AI workplace environment. This paper proposes a theoretical framework known as the Post-Human Relations Theoretical Framework (PHRTF). The PHRTF is conceptualised using post-humanist organisational theory, actor-network theory, sociotechnical systems analysis, and sociology of work and technology. In light of the systematic theoretical synthesis and review of empirical papers written between 2015 and 2024, the study finds four interrelated foundations of the post-human relational ecosystem: distributed agency and relational ontology; affective infrastructure and hybrid trust; temporal-spatial dislocation and presence reconstitution; and algorithmic authority and moral accountability. The framework challenges classical human relations' anthropocentrism, arguing that ethical, productive AI-workplace relationships require a new understanding of relational actors.

Keywords: Relational Ecosystems; Post-Human Relations; Posthumanism; Human-AI Collaboratio; AI in Workplace; Remote Collaboration

1. Introduction

The relationship dynamic in today's organisations is experiencing an evolution unparalleled in its history. The adoption of telecommuting and blended workplaces in the aftermath of the pandemic, along with the deployment of artificial intelligence into the core of organisational operations, has upended completely the spatial, temporal, and social frameworks within which work relationships have traditionally been constructed, sustained, and imbued with meaning. The physical proximity that was at the heart of the relationship dynamics of the classical human relations perspective, such as Mayo's (2004) Hawthorne employees, Maslow's (1943) hierarchy of need for belongingness, and McGregor's (1971) dynamics of trust and motivation, is no longer taken for granted in organisational settings.

This transformation raises an issue that is both practical and theoretical in its essence. The theories that have been guiding researchers and managers

studying relationships in organisational contexts have been formulated in relation to a world where work was primarily done by people. These theories presuppose a certain kind of actors –humans –whose interrelations depend on proximity, face-to-face interaction and material surroundings. In cases where actors become digital AI assistants tracking performance, assigning tasks, creating content and coordinating workflow; where colleagues appear in digital formats on screens whose embodiment is not visible; and where organisational decision-making takes place as the result of a hybrid human-AI entity where agency cannot be attributed straightforwardly, these theories will inevitably yield analysis that is incomplete or even wrong.

Human Relations Theory, while facing the dynamic shift in the nature of work, maintains its foundational assumptions of human-only agency, co-presence, and dyadic interpersonal interactions, and thus fails to have the language that can address the relational dynamics in AI-enhanced, geographically distributed workplaces. Current literature on AI and work is voluminous, yet fragmented. (Mayo, 2004). On one hand, studies of algorithmic management address the issue of control and surveillance, while paying little attention to the relational and affective aspects. On the other hand, studies of virtual teams focus on trust and communication norms, but do not perceive technology as anything other than neutral means of communication. Sociomaterial and post-humanist perspectives provide great ontologies of human-technology relations, but do not turn them into practice. Studies of trust in human-AI interaction focus on micro-perceptions and ignore macro-structures. This article fills the identified gap by proposing the Post-Human Relations Theoretical Framework (PHRTF), an approach which brings together the three theoretical perspectives discussed below (posthumanism, actor-network theory, and sociotechnical systems theory) in order to propose an integrated framework for reconceptualising agency, trust, presence, and accountability in the context of AI-driven remote and hybrid work and their relationship to organisation design and governance. (Maslow, 1943).

In organisational settings, the notion of post-human relations cannot be interpreted in such a way as to mean that human-to-human interaction is replaced with human-machine interaction or that humanistic principles should be abandoned when designing workplaces. Instead, it refers to a theoretical approach which recognises the ontological uniqueness of modern organisational practices by refusing to apply categories that have evolved in a completely different setting. In other words, post-human relations also encompass human-to-machine and machine-to-machine interactions and thus necessitate theories that account for the complexity of the phenomenon (Braidotti, 2013; Haraway, 2013; Orlikowski & Scott, 2008).

This paper responds to this gap by introducing the Post-Human Relations Theoretical Framework (PHRTF), which is a unified theoretical instrument aimed at accounting for the relational ecologies of today's AI-enhanced digital workplaces. The paper is structured as follows. After the methodology, the human relations tradition is briefly examined and its inadequacies for today's contexts are noted. The theoretical foundations of the PHRTF are then developed based on posthumanist thinking, actor-network theory, and sociotechnical systems theory. Four sections follow, each presenting one of the four pillars that form the basis of the PHRTF. The paper then discusses implications for practice and governance, together with the limitations of the framework and directions for future research, and closes with some concluding remarks.

2. Methodology

The study develops the Post-Human Relations Theoretical Framework (PHRTF) through a systematic theoretical synthesis and critical integrative review

of literature published between 2015 and 2024. This methodology is appropriate for building a theoretical framework because theoretical development on relational dynamics in AI-assisted and remote work environments has lagged behind rapid organisational change. The research does not involve hypothesis testing and primary data gathering but rather reformulates existing theoretical and empirical knowledge into an analytical structure to address relational issues beyond classical human relations theory.

The search was iterative and staged and was conducted in databases such as Scopus, Web of Science, Business Source Complete, and Google Scholar. The search terms included algorithmic management, human-AI cooperation, remote/hybrid working arrangements, virtual teams, agency, trust, accountability, presence, and sociomateriality among other related terms. The foundational texts from posthumanist, actor-network theory, and sociotechnical theories were also included. Citation chaining was carried out alongside the search process. Sources were included if they were published in peer-reviewed outlets and dealt with the relational, affective, temporal-spatial, or governance issues of AI or distributed work. Purely technical or descriptive sources prior to 2015 have been excluded from the literature search.

Through iterative thematic coding and constant comparison, several tensions emerged regarding agency, trust, presence, and accountability that were grouped under the four PHRTF principles: distributed agency and relational ontology; affective infrastructure and hybrid trust; temporal-spatial dislocation and presence reconstitution; and algorithmic authority and moral accountability. Classical human relations tenets have been systematically juxtaposed against post-human facts. Tables 1-3 show the conceptual contrasts, implications, and governance domains involved.

This being a theoretical synthesis, there is no empirical validation of the theory, and the framework largely draws on Global North, English-speaking literature. This is acknowledged in the section on limitations and future research. This framework offers a theoretically robust heuristic tool to analyse and govern the relational ecosystem in modern AI-enabled workplaces.

A total of 1,240 citations were identified during the initial search. After screening of titles and abstracts, 312 records were retained. These 312 records were then assessed in full against the inclusion criteria stated above, and a record was retained only when it (i) was published in a peer-reviewed outlet; (ii) addressed at least one of the four relational dimensions of the framework (agency, trust, presence, or accountability) in AI-mediated, remote, or hybrid work; and (iii) made a substantive theoretical or empirical contribution to understanding relational, affective, temporal-spatial, or governance issues, rather than a purely technical or descriptive one. Records that did not meet these criteria, that duplicated or substantially overlapped with other retained studies, or that dealt with the technical performance of AI systems without a relational focus were excluded. In the end, 87 relevant sources (both theoretical and empirical) from 2015 to 2024 were selected, through an iterative process of coding and citation tracing, as the basis of the framework. Texts from the pre-2015 era pertaining to posthumanism, actor-network theory, and sociotechnical systems were also included.

3. Human Relations Theory: Heritage and Conceptual Limitations

3.1 The Classical Human Relations Tradition

The human relations approach within the organisational theory became prominent in the first decades of the twentieth century as an alternative to the scientific management's mechanistic view of the worker. It is based on the insights gained from the Hawthorne experiments performed in the Western

Electric Company during 1924-1932, and mainly developed by Elton Mayo and his associates. They found that worker productivity was determined not only by working conditions and material incentive but also heavily depended on social interaction, group pressure, supervision, and feelings of belonging to the community of workers (Mayo, 2004; Roethlisberger & Dickson, 1939). Although the empirical support for the approach has been questioned by subsequent research (Bramel & Friend, 1981), the relational approach to the study of organisational behaviour has dominated for almost a hundred years.

The classical school of human relations was further developed through the hierarchy of needs of Maslow (1943), where social belongingness and self-esteem were considered to be primary motivational needs that supersede the physiological and security needs. Further developments included the theory Y of McGregor (1971), where the managerial philosophy is based on the assumption of sociability of human beings as well as their intrinsic motivation. The concept of participative management proposed by Likert (1967) also reflected the principles of human relations approach with special emphasis on the roles of supervision, cohesive group work and lateral communication. All these developments have enriched the knowledge about human relationships at the workplace, however, all these theories rest upon anthropocentric and copresence assumptions.

Three problems within the structure of classical human relations theory make it an incomplete model of analysis in today's AI-enabled and remote working landscape. First, classical human relations theory is based on an ontological anthropocentrism –the belief that human beings are the only subjects relevant to analysis and ethical discussion within workplace contexts. Such an approach completely ignores the existence of non-human actors, such as AI technologies, algorithms, and digital communication media which serve as participants in workplace relations by monitoring, evaluating, communicating with, and exercising authority over human workers in the process (Danaher, 2020; Turkle, 2011).

The second limitation is spatial co-presence normativity, which is predicated on the notion that truly effective, productive relationships in the workplace can only be developed by being physically present together and engaging in face-to-face interactions. There have been ample studies on remote and hybrid work that prove that effective professional relationships can be developed and maintained via digital media (Gilson et al., 2015; Leonardi et al., 2013), but classical human relations theory lacks any terminology to address the 'presence' issues, trust building and other relationship aspects in online work communities.

The third limitation is dyadic relationship reductionism, that is, the tendency to understand workplace interactions as two-way, person-to-person relationships between individual humans. Modern workplaces rely more than ever on distributed networks of humans, artificial intelligence, data systems, and platforms that engage in actions whose effects are organisational in nature and that cannot be explained through simple two-way human interaction. Actor-network theory, as proposed by Latour (2005) and Law (1992), for example, has long advocated the theoretical inclusion of non-human actors within the scope of social study; modern workplaces now supply the empirical need for it.

Table 1 contrasts classical human relations theory with the PHRTF. The sources listed represent foundational theoretical contributions to each dimension.

Table 1. Human Relations Theory vs Post-Human Relations Framework: Comparative Conceptual Mapping

Dimension	Classical Human Relations Theory	Post-Human Relations Framework (PHRTF)	Theoretical Sources
Ontology of actors	Human beings only; biological, embodied, individual	Relational assemblages: human + AI + platform + algorithm	Latour (2005); Haraway (2013); Barad (2007)
Spatial assumptions	Physical co-presence as relational norm	Distributed presence across digital-physical continuum	Giddens (1990); Orlikowski (2007); Turkle (2011)
Trust mechanisms	Interpersonal trust through familiarity and face-to-face interaction	Multi-register trust: interpersonal + algorithmic + institutional	Mayer et al. (1995); Hancock et al. (2011)
Agency	Human agency, individual or collective	Distributed, relational agency: human-AI co-production	Pickering (1993); Danaher (2020)
Temporal structure	Synchronous, shared temporal experience	Asynchronous, fragmented, algorithmically structured time	Wajcman (2020); Barley et al. (2017)
Authority and accountability	Managerial hierarchy; human supervisory control	Hybrid authority: algorithmic management + human governance	Kellogg et al. (2020); Duggan et al. (2020)
Relational motivation	Social needs; belonging; recognition by human others	Relational ecology: belonging + algorithmic feedback + digital community	Deci & Ryan (2000); Bailenson (2021)

4. Theoretical Foundations of the Post-Human Relations Framework

The philosophical position of posthumanism, as articulated in Continental philosophy, feminist science studies, and critical theory by writers such as Haraway (2013), Braidotti (2013), Barad (2007), and Hayles (1999), forms the ontological framework of the PHRTF. Posthumanism stands opposed to the humanist vision of the human subject as an autonomous, self-contained, and rational agent with essential characteristics that are independent of her environment. Instead, it proposes a relational ontology where the human is always defined through its connections to other beings. This connection is not secondary to the essence of the human, but rather constitutive of it; in other words, human subjectivity is intrinsically relational and processual.

From the perspective of organisational theory, posthumanism questions the anthropomorphic presupposition that organisations are made up of and by humans and that the non-human elements, such as technologies and algorithms and the material surroundings, are only tools for achieving human purposes. In their work, Orlikowski and Scott (2008), inspired by the ideas of Barad (2007) on intra-action, emphasise that the organisational phenomenon is brought into being through the constitutive intertwining of human and material agencies, which cannot be explained by prior human agency exerted upon passive material environments.

4.1 Actor-Network Theory and Relational Assemblage

Actor-network theory (ANT), which was formulated by scholars such as Callon (1984), Latour (2005), and Law (1992), is the analytic framework that PHRTF draws on in its description of relational agents and agency. ANT posits that social phenomena emerge out of the interactions of heterogeneous actants – human and non-human entities –within networks of relations that construct and stabilise the social. At the heart of ANT is the concept of generalised symmetry, which refers to the methodology of giving equal weight to both human and non-human actants in one's analysis, regardless of whether one assumes that humans and their agency are distinct from or more important than non-humans in any way. The principle of generalised symmetry does not entail the claim that AI agents are conscious or morally equal to humans; rather, it is simply a methodological decision to trace the real network.

For today's workplace setting, the language of analysis provided by ANT is especially relevant. Where, for example, an algorithmic performance management

system assigns tasks to employees, measures productivity, provides performance reports, and initiates disciplinary action, such an algorithm can be understood as acting in the organisational network with effects upon relational experiences among humans. And where a remote collaboration technology determines whose presence is known, establishes the temporal pattern of interaction, and conditions the potential for informal relationship formation, such a technology actively helps construct the workplace relational ecosystem in a manner that resists being classified as a neutral tool.

5. Sociotechnical Systems Theory

The sociotechnical system (STS) approach, which traces its origins to the research on coal mines carried out by the Tavistock Institute (Trist & Bamforth, 1951), and which has continued to evolve since then, furnishes the PHRTF with its organisation theory and systems perspective. According to the STS approach, organisations comprise an integrated set of technical and social systems, where optimal work design involves consideration of the interaction between technological and social factors, and not the optimisation of one or the other independently. The classic insight from STS theory about the effect of the design of technical systems on the social system through the quality of work relations, skill formation, group cohesiveness, and autonomy of workers is all the more applicable now in light of AI and digital platform designs.

In recent times, theoretical contributions such as those made by authors Orlikowski (2007), Barley et al. (2017), and Kellogg et al. (2020) have expanded the scope of STS theories to be applied to the phenomenon of algorithmic management and digital work platforms, providing clear evidence for the effects that arise from the particular design of algorithms and platform architectures and their impact on worker autonomy, relational potential, and identity. In line with this theoretical development, the PHRTF adopts the insights of the STS tradition to contend that post-human relational ecosystems at the workplace can only exist sociotechnically –that is, they depend on particular arrangements of technology and sociality.

Even though there is much to be gained from sociotechnical systems theory and actor-network theory regarding relations between humans and technologies, these theories do not give a relational approach that integrates all four of these relational dimensions within one framework and is aimed specifically at analysing relationships in distributed settings mediated through AI. The Post-Human Relations Theoretical Framework takes these theories forward by developing a systematic reconceptualisation of agency, trust, presence, and accountability in one model.

5.1 Pillar I: Distributed Agency and Relational Ontology

5.1.1 Reconceptualising Agency in Human-AI Work Assemblages

One of the fundamental pillars on which the PHRTF is built centres on the essence of agency and its deployment in modern workplaces enhanced through AI. The classical human relations paradigm defines agency in terms of human agents, whereby the ability to act intentionally through free human will directed towards human ends is seen as a central feature. However, this definition of agency is contested in light of how agency takes place in the actual world of human-AI work collectives, wherein outcomes arise through complex human-algorithm-data-platform interactions that defy any easy assignation of agency to one single source (Pickering, 1993; Danaher, 2020).

Studies exploring algorithmic management systems, which refer to the growing practice of using AI algorithms in order to manage, oversee, evaluate, and discipline employees through coordinating tasks in the platforms and gig economies, provide strong support for the idea of agency exercised by non-human

actants within today's organisations (Kellogg et al., 2020; Duggan et al., 2020; Wood et al., 2019). Whether it is delivery drivers who have their routes and wages calculated by algorithms, content moderators whose processes of moderating are governed by AI classification systems, or knowledge workers who perform under the supervision of monitoring software —all these employees work in environments where non-human actants significantly influence their work. The proposed framework of PHRTF suggests the concept of distributed relational agency to reflect on this issue —a type of agency not belonging to an individual entity but to the assemblage itself.

5.1.2 Relational Ontology and Workplace Becoming

Based on the idea of intra-action proposed by Barad (2007), which posits that things do not exist prior to their relations, but instead come into existence through relations with others, the PHRTF develops an ontology of workplace actors based on relations. Workers do not exist prior to entering into relations in the workplace; instead, they become a particular sort of worker, colleague, manager, and professional through the process of relational practices and material-discursive conditions that are specific to their context at work. This dynamic of productive relationality becomes especially salient in relation to work carried out through AI-augmented technologies in remote work settings, whereby workers' professional identities are continually produced by their relation to AI performance management systems which establish standards for productivity, digital communications platforms which manage their professional visibility, and other remote workers whose digital identities shape their social recognition.

5.2 Pillar II: Affective Infrastructure and Trust in Hybrid Human-AI Teams

5.2.1 Trust in Remote and Human-AI Collaborative Environments

Trust is the essential relational resource of organisational life –the key to cooperation, information exchange, risk-taking and the vulnerability necessary for learning and innovation (Mayer et al., 1995; Rousseau et al., 1998). The classic model of organisational trust is one that sees trust as the property of personal relations between humans based on repeated interactions, reliability, benevolence and a shared social environment which makes possible mutual vulnerability. This model raises important difficulties when trust is needed in environments augmented by AI and where interaction is at a distance. Not only must trust relations be established between people who lack much in common, but increasingly trust relations may need to be established between human beings and AI entities.

The literature examining trust in remote teams reveals that the first principle underlying trust within these groups is the idea of swift trust, a kind of immediate, categorically-based trust among distributed teams who lack sufficient time to build up relationships based on familiarities that generate interpersonal trust, such as the case with collocated teams (Meyerson et al., 1996; Jarvenpaa & Leidner, 1999). While swift trust may be necessary to start working together in the initial stages, research suggests that remote team trust requires greater reliance upon reliable signalling through dependable responsiveness and fulfilment of promises and deliberate relational investments than collocated trust. In the context of AI-assisted workplaces, the PHRTF posits that trust has to be seen as multi-register: interpersonal, in terms of trust in remote human colleagues, algorithmic, referring to trust in the AI-mediated workplace, and institutional, meaning trust in organisations and their governance systems (Hancock et al., 2011; Schoorman et al., 2007, Mahajan et al., 2026).

When viewed from the lens of employees, the interaction of workers with AI management systems leads to a combination of different experiences. While some workers like the idea of objectivity and impartiality provided by the algorithmic

assessment, others feel less empowered, lack transparency, and experience less relational justice since they do not have the ability to comprehend the rationale behind the decisions made by the system.

5.2.2 Affective Infrastructure and Emotional Ecologies

The PHRTF uses the notion of affective infrastructure to refer to the set of technologies, organisations, and spaces that make certain emotions and relationships possible or impossible within the context of digital and hybrid working environments. Traditional workplaces feature abundant informal affective infrastructures –from the coffee maker providing serendipitous interactions to the open office space allowing for ambient awareness about what is going on with others, or the lunch space where informal socialisation needed for team solidarity takes place. The move to remote/hybrid working does not do away with the requirement for affective infrastructure but makes its digital reconstruction necessary (Bailenson, 2021; Wajcman, 2020).

It is becoming common practice to use artificial intelligence technologies in the affective infrastructure of digital workplaces, and such practices must be critically examined. Employee well-being management through AI, sentiment analysis based on data from communications, and team health tracking through algorithmic dashboards are examples of technology that seek to replicate the affective presence provided by informal observation in the past. All of these technologies pose critical questions regarding surveillance, privacy, and the commercialisation of emotions that the PHRTF considers to be among the most important issues of post-human relational governance. The theory posits that, although affective infrastructure powered by algorithms may aid human relational care in digitally distributed workplaces, it cannot substitute human traits associated with emotional recognition, empathy, and relational attunement; treating it as a substitute would therefore be a category mistake. Pillars are analytically distinct but empirically interdependent. Each pillar addresses a structural dimension of post-human relational ecosystems in AI-augmented, distributed work environments as shown in **Table 2**.

Table 2. The Post-Human Relations Theoretical Framework (PHRTF): Four Pillars, Core Concepts, and Organisational Implications

Pillar	Core Concept	Key Theoretical Sources	Organisational Implications
I. Distributed Agency & Relational Ontology	Agency as property of human-AI assemblage; workers constituted through relational entanglements	Barad (2007); Latour (2005); Pickering (1993)	Redesign accountability frameworks; distribute governance across human-AI networks; audit algorithmic agency
II. Affective Infrastructure & Hybrid Trust	Multi-register trust; deliberate digital affective infrastructure; AI as relational actor in emotional ecologies	Mayer et al. (1995); Hancock et al. (2011); Bailenson (2021)	Design digital belonging architectures; develop AI trust governance; invest in remote relational rituals
III. Temporal-Spatial Dislocation & Presence	Presence as multidimensional construct; asynchronous relational community; digital chronotope	Giddens (1990); Orlikowski (2007); Wajcman (2020)	Develop asynchronous communication norms; redesign meeting architectures; create temporal equity policies
IV. Algorithmic Authority & Moral Accountability	Hybrid authority structures; accountability gaps in human-AI governance; moral agency distribution	Kellogg et al. (2020); Danaher (2020); Floridi et al. (2018)	Establish algorithmic accountability frameworks; develop AI ethics governance; maintain human decision authority

Despite their theoretical independence from one another, the four pillars of the PHRTF are interdependent in practice. Thus, when an organisation adopts an AI-based performance management system, the redistribution of agency between humans and algorithms (Pillar I) shapes employees' sense of trust and fairness (Pillar II). Similarly, the adoption of such a system changes temporal expectations

through continuous feedback (Pillar III) and poses moral challenges (Pillar IV). A concrete example of such a situation would be a multinational technology corporation that used artificial intelligence in order to rank remote workers in terms of promotion opportunities. It turned out that in the absence of careful consideration of affective infrastructure and human supervision procedures, trust deteriorated.

5.3 Pillar III: Temporal-Spatial Dislocation and the Reconstitution of Presence

5.3.1 The Disembedding of Workplace Relationships

According to Giddens (1990), disembedding refers to the process under modernity whereby social relations have been 'disembedded' out of particular contexts of interaction into abstract systems and symbolic tokens, thus becoming capable of recontextualising themselves across potentially indefinite periods of time-space distance. Working remotely and with Artificial Intelligence (AI) assistance can thus be seen as a form of intensifying the process of disembedding: interactions, previously bound to physically co-existing participants as well as temporally synchronised activities, become spread over geographic distance, time-zone differences, and asynchronous times of interaction, thus changing their very nature. People may know one another intimately on the job without ever having met face-to-face; they can cooperate intensely over long stretches of time without experiencing being together in real-time.

Consequences of this time-space dislocation have important implications for the development and sustainability of relational ecosystems in remote and hybrid organisations. Peripheral awareness –the sense of what colleagues are doing and how they feel due to being physically present with them –has been found to be among the most salient relational elements eroded by the practice of remote working (Leonardi et al., 2013). Informal contacts, eavesdropping on conversations, and all other non-verbal cues that help maintain relational knowledge and team spirit in the case of physically-present teams cannot be expected in the context of digitally-mediated work arrangements.

5.3.2 Presence as a Multidimensional Construct

The PHRTF offers a reconceptualisation of presence in remote and hybrid working situations by integrating the concepts of presence into a multidimensional approach based on studies within media psychology, computer-mediated communications, and organisational behaviour. As opposed to the idea of presence as a dichotomy, where one is either physically present or not, this theory introduces four dimensions of presence, namely physical presence (being present in body), social presence (feeling psychologically close and aware of others), cognitive presence (engaging with the same issues intellectually), and organisational presence (visible as part of the organisational community making recognisable contributions). Remote working conditions can provide cognitive presence but lack both social and physical presence, while the organisational presence facilitated through AI-driven algorithms may lack social presence that provides relational basis for human interactions.

Of particular significance is the fact that AI systems are being used in presence management in the realm of remote work. "Presence indicators," i.e., the online/ offline status indications, the typing signals, and other kinds of monitoring information, included in collaboration software, provide an example of a technologically supported form of presence management that both opens up and restricts opportunities for building relations within remote work settings. According to the PHRTF framework, when designing such AI-supported presence management tools, it is essential to consider their relational implications because poorly constructed systems may lead to surveillance anxiety, busy work, and even destroy the preconditions of productive relations (autonomy, trust, etc.).

5.4 Pillar IV: Algorithmic Authority and Moral Accountability

5.4.1 The Architecture of Algorithmic Management

The fourth PHRTF pillar refers to the rise of algorithmic authority as an organisational structure feature –that is, management direction, performance evaluation, task distribution, and discipline being carried out via artificial intelligence technologies instead of human managers. Kellogg et al. (2020) define algorithmic management as a separate form of control over work, which is marked by three characteristics, namely digital surveillance as a way to evaluate and direct activities, the absence of managerial discretion due to decisions made algorithmically, and digital means for directing and disciplining employees. Studies carried out in various organisational settings, such as gig economy platforms, logistics and warehouses, call centres, and even knowledge-intensive organisations show the expansion of this type of management (Wood et al., 2019; Duggan et al., 2020).

In its impact on the relations within the workplace, algorithmic management creates an entirely new form of relational dynamic with serious ramifications for those issues of human relations that were at the heart of classic organisational theory. Under algorithmic management, the relational elements of performance evaluation –recognising achievements, explaining results, situating performance in context and negotiating expectations –collapse into something less or not at all, resulting in the creation of a mode of managerial power that workers perceive as being impersonal, dehumanising and unfair (Wood et al., 2019). The elimination of human discretion in algorithmic management creates a unique form of relational alienation, as workers cannot appeal to, relate to, or humanise the system managing them.

5.4.2 Distributed Moral Accountability and the Problem of Many Hands

The distribution of agency between humans and machines gives rise to what organisational ethics scholars have described as the “problem of many hands”, that is, the difficulty of assigning moral culpability for the actions or consequences of an organisation when these are the product of the activities of various people and machines, with none of them individually responsible (Nissenbaum, 1994; Floridi et al., 2018). In cases where an AI-powered recruitment system discriminates against certain candidates; where a performance management software wrongfully fires an employee, or when the architecture of a remote collaboration tool systematically excludes persons with disability —who will be morally responsible?

The PHRTF asserts that the governance of post-human relational ecologies necessitates the creation of new accountability frameworks aimed at dealing with the distributed agency that characterises human-AI work assemblages. Such accountability frameworks must go past the assumptions of individualised ethical responsibility that characterise traditional management ethics and the technicism involved in seeing AI systems as being value-neutral tools, whose impacts can easily be attributed to humans operating them. Based on Floridi et al.‘s (2018) notion of ’distributed moral agency,‘ the proposed accountability framework holds that morality in AI-augmented organisations should not only be distributed among various parts of the human-AI work assemblage but also that accountability responsibilities be allocated to designers of AI systems, organisations utilising such systems, managers, and regulation agencies respectively.

6. Implications for Practice, Policy, and Governance

6.1 Organisational Design for Post-Human Relational Ecosystems

Implications of the PHRTF on the Design of Organisational Relational Conditions in AI-Augmented, Remote and Hybrid Work.

Classical HR theories like supervisory support, group cohesion, participation in decision-making, recognition, and sense of belonging continue to retain their relevance despite the need for rethinking in light of the post-human relational environment. In the case of hybrid work environments, supervisory support will need to take into account the effort to develop relationships through multi-channel efforts since it is no longer possible to enjoy the benefits of face-to-face interactions. Similarly, group cohesion will have to be addressed through digital social architecture that allows for socialisation through online interaction.

Four key design recommendations can be derived from the principles underlying this framework. First, concerning distributed agency, companies need to periodically audit the allocation of decision-making authority between humans and algorithms to ensure that important decisions related to the livelihood, growth, and welfare of workers involve discretionary oversight from humans. Second, on affective infrastructure, companies need to carefully plan the design of the digital spaces that provide opportunities for social and affective interactions since they are not inherently provided by digital work tools and require architectural investment. Third, in regard to temporal-spatial presence, companies need to adopt temporal equity policies for managing time zone differences, set norms for response time in asynchronous communications, and create mechanisms that allow relational presence among dispersed workers. Fourth, regarding algorithmic authority and moral accountability, organisations need to establish clear accountability frameworks that allocate responsibility among system designers, deploying organisations, managers, and regulators, and that document the human oversight exercised over algorithmic decisions (Jain et al., 2026).

For example, in the implementation of AI-driven performance evaluation, HR managers may use the PHRTF in that they (a) audit the allocation of decision-making rights between the AI tool and human evaluators (distributed agency), (b) maintain transparency in communication and appeals to preserve trust (affective infrastructure), (c) set norms for feedback response time within various time zones (temporal-spatial presence), and (d) record the duties of human monitoring (algorithmic accountability).

6.2 Human Resource Development in Post-Human Relational Contexts

PHRTF is highly significant for Human Resource Development (HRD) practice, especially in such HRD domains as leadership development, team effectiveness, and organisational learning. In AI-enabled remote organisations, effective leaders need capabilities that were never addressed by conventional leadership models: the ability to establish trust and use authority through digital medium; the ability to operate in hybrid relational environments where the roles of humans and AI systems overlap; ethical awareness necessary to analyse AI systems' value systems and misuse of AI technologies; and emotional maturity needed to maintain the emotional component of managerial relations when physical proximity is lacking.

Efficiency in teams within post-human relational settings calls for considerations regarding the uniquely human aspects of relationships that the distributed team must deliberately establish in order to counterbalance the absence of such dynamics that emerge from co-presence. Studies on high-performance virtual teams have continually highlighted deliberate relational investment in terms of social processes, communication standards, conflict resolution, and temporal synchronicity in meetings as vital ingredients for success, which can help create an artificial sense of some informal relational processes made possible by co-presence (Gilson et al., 2015; Martins et al., 2004). This suggests that HRD specialists must be able to design programs for developing this kind of relational

expertise among professionals.

Three implications arise for HR practitioners in this context. First, there is a need to intentionally build digital rituals and recognition mechanisms to make up for the loss of informal social cues. Second, the performance management process has to include algorithms along with human interaction to maintain notions of justice and development opportunities. Third, trust building initiatives must account for interpersonal trust between distant co-workers as well as calibration of the trust towards AI systems through transparency and explainability training.

6.3 Policy and Regulatory Implications

The issues of governance discussed in the context of the PHRTF's fourth pillar include distributed moral accountability, algorithmic authority, and loss of autonomy on the part of workers. The EU AI Act calls for certain measures of transparency and oversight from human beings when it comes to employing AI in high-risk scenarios within the workplace; however, according to the PHRTF, further regulation is required. This will include ensuring that the right of the workers to have a meaningful explanation of performance ratings provided by algorithms exists; the presence of documentation of human supervision in algorithms at designated thresholds; protection of workers from surveillance through affective monitoring; and mechanisms for collective worker voice concerning the AI systems used in their workplace. Governance domains are interdependent; effective governance requires coordinated action across all five domains simultaneously (**Table 3**).

Table 3. PHRTF Governance Framework: Accountability Domains, Responsible Actors, and Governance Instruments

Accountability Domain	Primary Responsible Actors	Key Governance Obligations	Governance Instruments
AI System Design	Technology developers; AI vendors; platform companies	Value embedding documentation; bias audit; limitation disclosure; worker impact assessment	Algorithmic impact assessments; design ethics reviews; mandatory transparency reports
Organisational Deployment	Executives; HR directors; IT governance; procurement	Contextual appropriateness audit; worker consultation; oversight mechanism design	Procurement ethics checklists; worker representation in AI governance; deployment reviews
Managerial Oversight	Line managers; team leaders; HR business partners	Discretionary correction capacity; individual worker advocacy; algorithmic decision contestation	Manager AI literacy training; override protocols; appeal mechanisms
Regulatory Framework	Government regulators; labour inspectorates; industry bodies	Minimum standards for algorithmic workplace justice; enforcement; sector guidance	EU AI Act implementation; labour law AI amendments; sector codes of practice
Worker Agency	Individual workers; trade unions; worker representatives	Informed consent; contestation rights; collective bargaining on AI deployment	AI workplace rights charters; union AI negotiation frameworks; works council mandates

The Post-Human Relations Theoretical Framework outlined in this paper constitutes more of a shift from the basic tenets of the classical human relations approach than an evolution of it, owing to the nature of AI-enabled work environments in which fundamentally different relationships exist from those assumed by human relations theories. In its explicit rejection of the notion that new kinds of organisational relationships can be adequately understood by applying old humanistic principles, the PHRTF does not negate the value of the humanistic tradition and its preoccupation with such issues as worker dignity, social affiliation, the significance of the job, and participatory voice, but recognises that a more complex framework is necessary for addressing these issues today.

These four pillars of the model each speak to different aspects of the relational ecosystems that are central to the post-human future. Distributed agency cannot be managed without consideration for the affective infrastructure that supports workers' sense of connectedness and relational safety in assemblages of agency that do not entirely belong to them. Affective infrastructure cannot be created without consideration for the temporal-spatial displacements that have shaped its context and requirements. Temporal-spatial presence cannot be reconstituted without a framework for governance that considers the algorithmic authority infrastructures that determine the ways in which workers' visibility and agency are structured in these contexts. And algorithmic authority cannot be managed without the multi-dimensional trust that demands sustained relational effort in human-machine assemblages.

7. Limitations and Directions for Future Research

Four limitations of the current model need to be considered. First, because the PHRTF has been developed through conceptual synthesis and critical literature review, it remains to be validated through empirical studies in different organisational settings and sectors. Second, the post-humanist ontology of the PHRTF relies on the application of the principle of generalised symmetry proposed by actor-network theory in the context of artificial intelligence. Some researchers may oppose this claim, arguing that the recognition of the relational agency of the systems in question represents a kind of anthropomorphisation of technology which fails to acknowledge the human choices and relations of power involved in creating such systems. The PHRTF neither ignores the essential role of human interests and human choices in creating AI-based workplace systems nor claims otherwise. Third, the implications of the framework for practice and governance are necessarily general and high-level at this stage of theorisation, and the governance framework outlined in **Table 3** is an initial architectural structure that requires further elaboration and application through collaborative research among practitioners, workers, and technologists in specific contexts. Fourth, the underlying literature is predominantly Global North and English-language, which limits the framework's sensitivity to other labour regimes, regulatory contexts, and cultural understandings of work.

Future research should pursue three directions in response to these limitations. First, validation research that tests the hypotheses of the PHRTF model in various organisational environments and cultures is vital for taking this theory from framework to evidence base. Second, action research projects in collaboration with employees, managers, and technologists for applying the lessons drawn from the framework would help to make them more applicable. Third, longitudinal research that follows the development of post-human relational ecosystems in parallel with advancements in the capabilities of AI and the growth of remote working could offer the dynamic evidence base necessary to account for such emergent phenomena.

Future research should empirically validate the Post-Human Relations Theoretical Framework (PHRTF) across different organizational environments by examining the relationships between AI capabilities, organizational agility, employee well-being, trust, and algorithmic accountability. Research on AI capabilities and digital transformation (Khattab et al., 2026), organizational techno-stress (Damaj et al., 2026), organizational safety and digital integration (Alsetoohy et al., 2026), AI-driven decision-making and user experiences (Dalvi-Esfahani et al., 2026), and digital employment transformations (Kolinets et al., 2026) provides complementary perspectives for developing future empirical investigations. Longitudinal studies, structural equation modelling, and mixed-method approaches could be employed to investigate how human–AI collaboration influences employee autonomy, relational trust, organizational

effectiveness, and ethical governance across industries and cultural contexts.

8. Conclusion

In today's modern workspace, a fundamental change in relation to relationships is taking place in light of two factors: the increase in artificial intelligence and the adoption of remote and hybrid working. Human Relations Theory, which is based on premises of human agency only, physical presence of humans, and dyadic interpersonal relationship, fails to explain the nature of relationships where all three factors are at play. This has prompted the development of the Post-Human Relations Theoretical Framework (PHRTF).

The conceptual model is built upon four interlinked pillars. The concepts of distributed agency and relational ontology offer an alternative to seeing workers and technologies separately as independent entities and tools, respectively. The ideas of affective infrastructure and hybrid trust stress that the notion of trust should be considered multidimensional (interpersonal, algorithmic, and institutional) and point to the deliberate construction of digital environments that promote relationality. The concepts of temporal-spatial dislocation and presence reconstitution view presence as multidimensional and suggest novel norms of asynchronous coordination and temporal equity. Algorithmic authority and moral accountability address the problem of emerging managerial authority of non-human origin and its implications for the "problem of many hands."

These pillars taken together question the anthropocentrism of previous thought about human relations without jettisoning its fundamentally humanistic preoccupations with dignity, inclusion, justice, and voice. Rather, they reposition these preoccupations into the sociotechnical assemblies that make up organisational life today. There are significant ramifications for policy and practice in such terms: organisations will need to conduct audits of the balance of decision-making power between humans and algorithms; build digital architectures of affect; develop policies for temporal equity; and design mechanisms of accountability. So too will regulatory regimes, such as the EU AI Act and nascent labour law reform efforts.

In terms of its role as a conceptual framework, the PHRTF is a work in progress. Its hypotheses must be empirically tested in different settings, as outlined in the section on limitations and directions for future research.

Post-human relations do not simply come into existence as a matter of theory. Rather, they are practical and moral necessities. As artificial intelligence becomes increasingly integrated into processes of coordination, evaluation, and communication, and as remote and hybrid arrangements continue to emerge as stable organisational modes, it will be critical to have conceptual tools that make sense of the new world of relations if workers are to feel connected, valued, treated fairly, and part of a community. The PHRTF represents one such conceptual tool.

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