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Can Work Be Meaningful Under Algorithmic Management?

A MacIntyrean Perspective

Pablo García-Ruiz, University of Zaragoza

Marta Rocchi, Dublin City University

Abstract

Algorithmic management is deeply changing the way work is performed and the interaction between managers and workers in organizations. It also heavily affects the conditions for meaningful work highlighted by existing literature. Therefore, organizations need an appropriate framework to enable meaningful work when adopting algorithmic management systems: this article presents a normative study of the conditions for work to be meaningful in this new scenario. To fulfil this purpose, it adopts a MacIntyrean approach, according to which work is meaningful when it embodies practice-like characteristics. The article identifies the main threats of algorithmic management and characterizes the normative conditions organizations should meet to enable meaningful work. In addition, the article explores the strategies of resistance that workers use to live up the standards of meaningful work when organizations are not capable or willing to provide those conditions.

Keywords: meaningful work; algorithmic management; ethics; artificial intelligence; MacIntyre.

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"Algorithmic management" is a specific form of managing workers and labor through algorithm-based processes (Noponen et al. 2023; Baiocco et al. 2022). It is widely used in organizations to coordinate workflows, select personnel, assess performance, and even impose sanctions (Curchod et al. 2020; Möhlmann et al. 2021). Algorithmic management is changing the way managers and workers interact, how results are tracked and rewarded, and how workers are evaluated (Bucher, Schou, and Waldkirch 2021; Stark and Pais 2021). Ultimately, algorithmic management challenges workers' opportunities for interpersonal relationships, autonomy, and self-development, thus heavily affecting the conditions of meaningfulness highlighted by existing literature.

Business ethics scholars have examined whether there are some objective characteristics of meaningful work to which workers are entitled (Lysova et al. 2019; Michaelson et al. 2014) and, therefore, whether organizations have a moral responsibility to provide such conditions (Michaelson 2021). These normative accounts of meaningful work have been built primarily around job content (Hackman and Oldham 1975), autonomy (Bowie 1998), and the job capacity for workers' self-development (Yeoman 2014). More recently, the advent of new technologies, especially AI-based technologies such as algorithmic management systems, has fueled a new wave of academic interest in meaningful work (Lysova et al. 2023; Mejia 2023; Sison 2024).

However, a normative study of the conditions that need to be guaranteed for work to be meaningful in this new scenario is lacking. There are studies on the consequences of using robots (Smids, Nyholm, and Berkers 2020) and artificial intelligence (Bankins and Formosa 2023) for meaningful work, and it has been affirmed that the effects of these technological changes on meaningful work are uncertain and deserve further study (Bykov 2023). However, there is no systematic normative study of whether meaningful

work is still possible under algorithmic management. Beyond a mere gap-spotting approach to the present research question (Sandberg and Alvesson 2011), there is an urgent need to provide organizations with the appropriate framework to facilitate meaningfulness when adopting algorithmic management systems. This urgency is dictated by three reasons: i) without an ethical framework, the dangers connected to the growing deployment of algorithmic management in organizations (which are going to be extensively described in the article) are likely to take over the advantages workers can experience in this technology-driven context, especially in terms of personal and professional development; ii) algorithmic management interferes with the traditional manager-employee relationship creating situations that were not present previously (e.g., the automated and not filtered systems of review and rewards); iii) the job market is now populated by a generation whose expectations of meaningfulness in their work are much higher than previous generations had (Michaelson and Tosti-Kharas 2024). Without guidance on how to preserve meaningful work under algorithmic management, organizations risk to lose an important part of the workforce because they are not able to provide for what is now a primary need for the current generation: GenZ members do not want just an employment, they want a work worth doing (Twenge 2023).

This article aims to present the normative conditions that make work meaningful for workers and organizations under algorithmic management. It examines how organizations should meet the conditions for meaningful work, and what undermines the possibility to realize these conditions. To do so, we turn to Alasdair MacIntyre's goods-virtues-practice-institution schema and his critique of professional management as a manipulative relationship (MacIntyre 2007), and to relevant MacIntyrean scholarship on meaningful work (Beadle and Knight 2012). MacIntyre's moral proposal helps us identify

some critical threats that algorithmic management poses to meaningful work and how such threats may be overcome under certain conditions, which this article explores in detail. This article contributes to current literature on meaningful work by arguing how organizations should provide workers with the possibility of experiencing meaningful work under algorithmic management, and how workers could realize this potential in their daily work, even when organizations are not capable or willing to support meaningful work.

The article is structured as follows: Section 1 introduces algorithmic management and its core features, reporting examples from organizations using this system. Section 2 describes the essential traits of meaningful work in light of MacIntyre's theory of practice, and the main threats posed by algorithmic management to meaningful work. Section 3 presents the normative conditions for developing meaningful work in organizations using algorithmic management, and explores strategies that workers use when organizations ignore those conditions. Section 4 concludes and provides avenues for further research.

1. WHAT IS ALGORITHMIC MANAGEMENT?

A joint study from the International Labor Organization and the European Commission states, "Algorithmic management can be defined as the use of computer-programmed procedures for the coordination of labour input in an organisation" (Baiocco et al. 2022, 5). Algorithmic management constitutes a combination of digital technologies typical of the Fourth Industrial Revolution (such as AI-based technologies, big data analytics, machine learning, geolocalization, internet of things), in order "to automate or at least support some of the functions previously carried out by human management for the

coordination of work" (p. 8) such as task allocation, scheduling, and performance appraisal (Stark and Pais 2021). It emerged in the context of online platforms and is also being implemented in traditional workplaces.

The main characteristics of algorithmic management applied to organizations are: a) it helps match consumers and service providers; b) it helps companies monitor workers from different perspectives (presence, punctuality, performance, etc.); c) it provides mechanisms for feedback on workers' performance through rating systems, which then score workers depending on their internal and external reviews. The following paragraphs offer a description of these characteristics.

Matching consumers and service providers. Algorithmic management is present in the management of online commerce platforms such as Uber, TripAdvisor, Upwork or Freelancer, where it facilitates the encounter between consumers and service providers (Vallas and Schor 2020; Wood et al. 2019). Consumers pay for a service, which needs to be carried out through a human worker, and the platform assigns the worker performing the service. Thanks to digital technologies (for example, geolocalization), apps can identify which workers might be in a better geographical position to take the job. Some platforms allow workers to see which jobs they are accepting. In contrast, other platforms suggest options that cannot be explored (e.g., Uber drivers do not know the passenger's destination before the pickup). Unlike conventional taxis, Uber, Cabify or Lyft drivers do not need to go around looking for customers: it is the platform that matches them with the passengers (Möhlmann et al. 2021). Similarly, furniture assemblers on TaskRabbit, or software developers on Freelancer, find clients thanks to the platform's ability to analyze their information and put them in touch (Wood et al. 2019). Algorithms give workers access to consumers in the virtual marketplace.

Monitoring workers. Through algorithmic management, companies easily monitor workers without direct reporting. For example, Amazon uses AI-powered cameras to supervise delivery drivers so that management may know how many deliveries each employee makes daily (Bankins and Formosa 2023). Some authors describe this feature as "algorithmic control" (Wood et al. 2019). Workers frequently experience information asymmetries and dependency relationships in this form of management (Cutolo, Hargadon, and Kenney 2021). Moreover, worker-platform communication is usually automated. The worker with doubts, complaints or questions often only receives preset answers. There is no room for authentic dialogue (Curchod et al. 2020). Many workers experience frustration and anxiety for being unable to communicate and account for their actions. The algorithm has the power to assess, classify, reward or sanction, to the point of firing, even without prior notice. Platforms are not required to provide reasons for those actions. Moreover, in their case, the reasons given are invariably cryptic, and the criteria might be externally unclear. Appeals are hardly accepted, and even in the case of a successful appeal, workers or suppliers who were sanctioned, downgraded, or dismissed, do not return to the previous status quo since other workers/competitors will have replaced them (Luca and Zervas 2016).

Some authors have pointed out that there is a new version of panoptic power between platform and worker (Woodcock 2020), a continuous supervision of the individual, both in the form of control and sanction, as well as in the form of shaping and transformation, according to patterns developed by the algorithmic programming of the platform. Algorithms thus become "power technologies" (Galière 2020), which "materialize the needs, wants and desires of the platform owner; they coordinate the

collection, analysis and interpretation of data; and they enable, as well as constrain, multiple forms of agency on the online platform" (Curchod et al. 2020, 668).

Rating system. Platforms provide systems of rating, which allow consumers to assign a score to the tasks performed by the workers, so workers receive an overall score of their performance over time. Consumers can decide whether to hire a software developer, or choose accommodation for their holidays, based on the score they see the developer, or the hotel, have accumulated over time (Bucher, Schou, and Waldkirch 2021; Luca and Zervas 2016). It is a fact that ratings work: consumers pay attention to them and decide based on that information.

Positive evaluations are necessary to climb and stay in the rankings. Negative reviews are less common but have a more significant impact than positive or neutral reviews and can ruin a supplier's or worker's reputation almost immediately (Curchod et al., 2020). Ratings and rankings are important because the platform economy is an attention economy (Stark and Pais 2021). For those who provide services through platforms, it is necessary to "be seen" and, thus, to be able to be chosen.

Thus, in the platform economy, workers find themselves in need of "satisfying" the algorithm (Bucher, Schou, and Waldkirch 2021). However, the criteria for calculating the rating are not stable or entirely understandable. It is unclear what the minimum score for not being "deactivated" is, nor to what extent the acceptance and rejection rates of the reviews received influence the position in the ranking, nor what parameters are used to establish who is recognized as an "elite worker", i.e. a worker who has high ratings and therefore a high position in the system's ranking. "It is the algorithms within the system that decide what is valuable and what is not" (Baskerville, Myers, and Yoo 2020, 517).

Algorithms act as "black boxes" whose inner operations are not really grasped by users, workers, or human managers.

Following existing literature (Noponen et al. 2023), we contend that algorithmic management represents a new model of management as it creates new power structures that differ from traditional ones not just in degree but in kind. Algorithmic management is neither a new Taylorism, nor an automation of bureaucracy, nor a further step in the digitalization of work. Algorithmic management does not tell workers how best to work, but guides them in a distinctive way characterized by a specific combination of autonomy and dependence (Curchod et al. 2020; Möhlmann et al. 2021). Algorithmic management has been originally associated with the platform economy; however, more traditional workplaces and organizations are now using it (Jarrahi et al. 2021). Wood (2021) details the different sectors which are currently using algorithmic management. These sectors range from hospitality to retail, and, as Wood explains, logistics is increasingly using algorithmic management to increase efficiency and requesting the intervention of human managers in "critical moments" (p. 13). In addition, algorithmic management is seen both in white-collar and blue-collar jobs. Consulting and financial firms use algorithmic management for its potential to organize teamwork and support project managers, while in the manufacturing sector, algorithmic management is used for "work allocation and instruction" (p. 4).

As we have just detailed, algorithmic management is increasingly present in all kinds of workplaces (Cameron et al. 2023; Acemoglu and Johnson 2023). It touches on essential nerves of the relationship between managers and workers, ranging from autonomy to control, from creativity to trust. Those are also some essential aspects of meaningfulness, which is now explored. Next Section reviews the literature regarding

meaningful work: this review prepares the groundwork for the characterization of normative conditions for work to be meaningful under algorithmic management.

2. WHAT MAKES WORK MEANINGFUL?

2.1 Characteristics of Meaningful Work

Research based on social psychology and management sciences has identified relevant elements or factors related to meaningful work (Bailey et al. 2019; Hackman and Oldham 1975; Lips-Wiersma and Morris 2009; Rosso, Dekas, and Wrzesniewski 2010). On the one hand, factors related to the *content* of work contribute to its meaningfulness (Martela 2023; Michaelson 2021; Veltman 2016). These factors entail:

- Skill variety: the number and diversity of different skills used by workers.
- Task integrity: the extent to which workers perform a job from start to finish.
- Task significance: the extent of the achievement or the contribution to a worthy goal; its point and purpose.

On the other hand, factors related to the subjective *experience* of work influence whether workers perceive it as meaningful or not (Breen 2019; Lips-Wiersma and Morris 2009; Weeks and Schaffert 2019; Yeoman 2014). These factors include:

- Autonomy: the degree to which the job provides substantial freedom, independence, and discretion to the individual in determining the procedures to carry it out; this trait includes participation in decision-making regarding work and job crafting and design.

- Self-development: this trait describes how work facilitates skill cultivation and use, and its impact on the realization of a worker's professional and personal flourishing.
- Self-esteem: the extent to which work allows integration with other components of one's life and leads to a meaningful life.
- Social relationships and social recognition: meaningful work provides a sense of belongingness and relatedness, of being accepted by colleagues, being mentored, and supported; and a shared sense of agency and common purpose, a sense of connection and "unity with others".

The subjective experience and the objective content of work are connected. Work is often experienced as meaningful when its content has a worthy purpose, in the achievement of which the worker participates from start to finish using a varied set of skills. However, this connection does not always hold (Michaelson 2021). Sometimes, dull and fragmented work, which objectively does not involve an actual achievement or require a set of professional skills, is experienced as meaningful. Conversely, sometimes work that does involve achievement, allows participation in a complete process, and helps to develop one's skills is subjectively experienced as meaningless. This possible dissociation between subjective experience and objective content shows that the worker's motives for engaging in work depend not only on its content but also on other external motives (such as salary and status), for which work is only an interchangeable means. In this regard, some authors have pointed out ethical problems concerning workers' motivation and its potential manipulation by managers, i.e., how managers might promote their own interests against those of the workers by implementing certain types of work (Breen 2019)

and why workers should desire a job with certain objective characteristics over one that reflects other kinds of preferences (Ciulla 2000; Mortimer 2023).

Understanding the connection between work's subjective and objective aspects and avoiding possible manipulation requires a normative approach (Michaelson 2021; Sison 2024). Objectively, work is meaningful to the extent that it contributes to a meaningful life (Ciulla 2000; Mejia 2023). Subjectively, work is meaningful to the extent that workers have convincing reasons to engage in it (Mortimer 2023).

Alasdair MacIntyre's moral sociology (2007; 2016) offers an approach that considers both dimensions from a normative perspective. To show that something has "meaning" or is "meaningful" is to clarify its place in a broader context that makes it intelligible (MacIntyre 1999b). Work, like other human activities, has a teleological structure. Subjective experiences are meaningful not only because they are experienced as such but because "there are good non-circular reasons for that experience" (Michaelson 2021, 421). Meaningful life is not the kind of life one considers good and worth living, whatever that may be, but the kind of life one has reason to consider good and worth living (MacIntyre 2016, 17ff). Accordingly, work is meaningful when the one who works "has good reasons to experience it as meaningful, that others have good reasons to perceive as socially worthwhile, and that is independently (intersubjectively or objectively) meaningful" (Michaelson 2021, 420). MacIntyre's Neo-Aristotelian ethics offers such reasons in three stages.

First, MacIntyre (2007) presents "practices" (socially established complex activities with internal goods whose excellence is defined mainly by expert practitioners) in contrast to "institutions" (activities or organizations pursuing external goods, such as wealth, status, and power, whose effectiveness can be judged by anyone). Second, he

examines how individual practitioners render compatible various roles and practices by ordering different types of goods in their quest for a good life. Third, he argues how excellence in practices contributes not only to practitioners' good lives but also to the advancement of their communities. It is this normative perspective that justifies and substantiates the legitimacy of the subjective experience of meaningful work (Beadle and Knight 2012). In this article, we adopt this normative perspective.

In the following sections, we present in more detail the MacIntyrean approach to: i) meaningful work, ii) the tension between meaningful work and professional management, and iii) the conditions that management must meet to sustain and promote meaningful work. We then contrast this approach with the characteristics of algorithmic management and, finally, elucidate whether and how organizations using algorithmic management leave room for meaningful work.

2.2 A MacIntyrean Approach to Meaningful Work

According to MacIntyre (2007), there are goods internal to certain activities that he calls "practices," in which individuals can work and be educated in a way that informs their sense of meaning (Beadle and Knight 2012, 438). To clarify this claim, it is necessary to explain, first, what kind of activities practices are; second, what kind of goods are internal to practices; and third, why people would prefer those internal goods over other external goods such as money, prestige, or power.

First, a practice, according to an oft-quoted definition by MacIntyre, is "any coherent and complex form of socially established cooperative human activity through which the goods internal to that form of activity are realized in the course of attempting

to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended" (MacIntyre 2007, 187). Examples of practices are found in sciences, arts, and sports. Many professions can also qualify as practices (Higgins, 2010; MacIntyre, 2007, pp. 187-189; Moore, 2017), including interpersonal services like nursing (Sellman 2000), as well as productive activities like farming (Sinnicks 2019).

Second, MacIntyre follows Aristotle in identifying two kinds of goods internal to practices (2007, pp. 189-190). On the one hand, there is the excellence of the product: this encompasses both the excellence of practitioners' performance (e.g., the skill of the artist who makes portraits or the teacher who lectures) and the excellence of the result (the portrait or the lecture). A productive practice such as painting has standards of excellence, the actualization of which by individual painters produces excellent portraits. The same can be said for teachers (Dunne 2003), nurses who care for people (Sellman 2000), and farmers who cultivate fields (Sinnicks 2019). On the other hand, MacIntyre argues that the actualization of these standards also actualizes something else: "the good of a certain kind of life. [...] it is the painter's living out of a greater or lesser part of his or her life *as a painter* that is the second kind of good internal to painting" (2007, 190). Something similar can be affirmed of the lifestyle of the teacher, the nurse, and the farmer as kinds of life that realize different modes of human excellence, only accessible from within each profession.

Third, practitioners can prefer internal goods over other goods, such as a better salary or better working conditions, because internal goods are valued according to the standards of excellence proper to the practice. Goods such as money, power or prestige

can be attained in many different ways, while internal goods can be obtained only in each specific practice: having more money does not make one a better painter, a better teacher, or a better nurse. Certainly, external goods are necessary to sustain practices and practitioners: good painters, teachers, and nurses need adequate resources and conditions to carry out their work in an excellent way, as do art schools, universities and hospitals. However, for practitioners committed to their profession, it is the internal goods which are essential in the evaluation of their work. The meaning of their work lies in achieving excellence in their profession, both in the results produced and the skills developed, and in the kind of life, specific to their profession, that they aspire to live.

To identify and obtain goods of excellence, workers need some skills and virtues that can only be acquired by becoming expert practitioners. As they become better in the practice, workers also acquire higher levels of skills and insights (better reasons) that were not previously available, that beginners do not know, do not understand well or do not value enough. "Not only skills, maxims and rules but also practical judgment and moral character are learned through work that actualizes the goods of a certain kind of life" (Beadle and Knight 2012, 438). Work is perceived as meaningful when workers take the achievement of its internal goods to be constitutive of their own good.

Meaningful work is thus preferred over other possible goods for moral reasons: it is valued as part of the kind of life one has good reasons to consider good and worth living. "There is a close connection between being a good human being and doing good work" (MacIntyre 2011, 323). This criterion is not purely subjective, nor does it depend on individual preferences. Rather, it depends on work endowing practice-like features (Beadle and Knight 2012). Thus, a work may be meaningful insofar it is: a) complex and coherent enough to require skill variety and task integrity; b) socially established and

cooperative enough to promote social relationships within which a sense of belongingness, unity and common purpose can be developed; c) able to actualize internal goods, providing purpose, as well as a sense of achievement and self-development; d) able to hold standards of excellence according to which products are judged, and practitioners obtain self-esteem and social recognition; e) with the result that extension of human powers and human conceptions of the ends and goods involved can be pursued with autonomy and discretion in such a way that that work becomes morally educative; and, f) its contribution to society is realized in the advancement of practitioners' communities.

Table 1 summarizes what has just been described, associating the different characteristics of a "practice" according to MacIntyre (2007) with the characteristics of meaningful work highlighted above.

Table 1: Characteristics of MacIntyrean Practices and Meaningful Work

Characteristics of a Practice	*Characteristics of Meaningful Work*
Complex and coherent	Skill variety
	Task integrity
	Task significance
Extension of human powers	Autonomy
Internal goods	Self-development
Standards of excellence	Self-esteem
Socially established and cooperative	Social relations and recognition
Moral education	Professional and personal growth
Advancement of community	Contribution to society

These categories help us argue why some kinds of work are meaningful and others are not. Some types of work have such poor and limited content that they do not allow the development of professional competencies in quantity and quality. Other types of work are organized in such a way that they do not allow for the development of social and moral competencies conducive to a fulfilling life. Other types of work do not contribute to the good of society. MacIntyre's moral sociology connects objective and subjective dimensions of meaningful work as it captures the elements that the literature associates with meaningful work and explains the reasons that lead workers to engage in it. Besides, this approach also identifies some important threats to the very existence of meaningful work, which are discussed in the next sections.

2.3 Institutions and Meaningful Work

For practices to thrive they need to be institutionalized (MacIntyre 2007, 193). Practitioners must organize themselves to establish standards, obtain resources, and advance other common objectives. For this purpose, academies of arts and sciences, schools, hospitals, sport federations, professional bodies, and business enterprises emerge. These organizations are a combination of practice and institution (Moore 2012). While practices are concerned with internal goods (also called goods of excellence), institutions focus on the acquisition of external goods (or goods of effectiveness), such as money, power, and prestige necessary for the sustaining and flourishing of practices (MacIntyre 1988). Institutions are supposed to protect practices and promote their healthy development.

The simultaneous pursuit of excellence and effectiveness typically causes tensions in organizations. The acquisition of goods of effectiveness is a necessary and valuable function of an organization, as long as it is subordinate to the sustenance and development of the practices it hosts (Moore and Beadle 2006). However, there is a constant risk that the order of priorities will be reversed and effectiveness considerations will prevail: "The ideals and the creativity of the practice are always vulnerable to the acquisitiveness of the institution, in which the cooperative care for common goods of the practice is always vulnerable to the competitiveness of the institution" (MacIntyre 2007, 194). For MacIntyre, the custodians of the delicate relationship between practices and institutions are the virtues. The integrity of a practice causally requires the exercise of the virtues by at least some of the members of the organization, both managers and employees; conversely, the corruption of institutions is always in part at least an effect of their vices (MacIntyre 2007, 195).

In *After Virtue*, MacIntyre (2007) warns about the manipulative nature of professional management that arises from rationalization processes in bureaucratic organizations, as described by Max Weber. Professional managers leading all kinds of private and public bureaucratic organizations claim the authority to manage workers on the pretense that they have superior knowledge and experience on how to be effective. Such expertise and authority are assumed to be universally applicable, and transferable from one organization to another regardless of the particular type of activity carried out there (pp. 26-27). However, according to MacIntyre (pp. 90-108), social and organizational studies do not provide a basis for such knowledge and, therefore, do not truly justify the belief in managerial expertise that has become institutionalized in business.

In business organizations, the harshness of competition and the immoderate drive for profit incite managers to prioritize the achievement of effectiveness objectives over the pursuit of goods of excellence (MacIntyre 2015). Professional management tends to manipulate human resources by treating them as mere means to the fulfillment of the manager's ends. Managers characteristically insist on dividing the work in such a way that they reserve to themselves the power to decide and expect their subordinates to execute their decisions. As a result, "practices are often distorted by their modes of institutionalization, when irrelevant considerations relating to money, power and status are allowed to invade the practice" (MacIntyre 1994, 289).

Nevertheless, MacIntyre admits that institutions are necessary to sustain practices, formalize and enforce rules, and obtain and distribute resources. To avoid manipulation, management must aim to defend the goods internal to the practice, the standards of excellence and the common good of the organization's members (Beadle and Moore

2006). These goods and standards give meaning and purpose to the acquisition of external goods. A management that "defends" internal goods is only possible if managers are also practitioners who have learned to value internal goods through participation in the practice (West 2024). In organizations with this kind of management, managers and practitioners engage in rational critical dialogue regarding how to adequately order the goods of excellence and the goods of effectiveness (MacIntyre 2016). This is the institutional context that promotes meaningful work, based on trust and cooperation relationships between managers and employees (Moore 2012). However, meaningful work is compromised when power structures deny workers control over their activity and, consequently, prevent them from cultivating goods of personal excellence (Beadle and Knight 2012).

As explained in Section 1, the current use of algorithmic management systems introduces new forms of control and power relations in organizations (Noponen et al. 2023). Its increasing diffusion is generating significant consequences for the relationship between practices and institutions: on the one hand, it generates new ways of sustaining practices but, on the other hand, it introduces new threats to the proper order between goods of excellence and of effectiveness. As we have seen above, this order is closely linked to work meaningfulness. Therefore, in the following section, we will analyze the threats that algorithmic management specifically poses to meaningful work.

2.4 How Algorithmic Management Threats Meaningful Work

In the reality of algorithmic management, the three components identified in Section 1 (matching users and service providers; helping companies monitor workers; providing

mechanisms for feedback on workers' performance) are dynamically interrelated. In addition to the many advantages that algorithmic management brings to organizations in terms of improved efficiency, there are specific aspects which threaten exactly those practice-like characteristics identified in Table 1.

The use of algorithmic management tends to heavily affect the aspects related to skill variety and task significance: indeed, algorithmic management divides tasks and assigns them automatically to different workers (Baiocco et al. 2022; Wood 2021), causing that workers lose the context of their work, being assigned a specific task without necessarily knowing how it contributes to the final product or service. This directly affects variety, integrity and significance, as described above, and it causes *deskilling and fragmentation*.

Algorithmic-managed platforms use reviews to measure workers' performance and give or deny them access to the critical resource of visibility. In doing so, the use of algorithmic management indirectly induces workers to care more about *ratings and rankings* than the achievement of the standards of excellence (Bucher, Schou, and Waldkirch 2021; Roberts and Zietsma 2018). Workers maintain, therefore, a double *dependency*: they depend on users, who evaluate them (or not), and the platform; this gives them visibility (or not), according to the calculation that the algorithm makes based on the evaluations received, following frequently opaque rules. Thus, work no longer contributes to the moral education and excellence of workers, since it disregards critical thinking and personal growth.

Platform algorithms sustain workers' as practitioners, as they provide them access to reputation, prestige and income, but they do so by establishing a power structure that exerts control over workers' activity, and thus undermine the achievement of internal

goods, making the workers prioritize their *reputation and standing* (Möhlmann et al. 2021; Vallas and Schor 2020). Moreover, algorithmic management is usually implemented through software or apps, which move the conversation between manager and worker from a personal social relationship to a system of *automated communication* (Cameron et al. 2023; Cutolo, Hargadon, and Kenney 2021).

Platform control is also deployed in other forms of power, in particular, the discourse of the worker as an independent contractor (Galière 2020). Like the repressive power of algorithmic control, the discourse of worker autonomy and entrepreneurship aims to achieve the same compliance, only by other means. The platform presents itself as a tool, an aid for workers to better organize their work. In this discourse, the role of the algorithm is always legitimized by its effectiveness. However, this discourse is not free from contradictions. A paradigmatic example is that of Uber (Roberts and Zietsma 2018; Rosenblat and Stark 2016). On the one hand, the company's official discourse refers to drivers as partners who join Uber to set up a transportation business together: "Be your own boss." On the other hand, the company itself implies that drivers are at its disposal as cogs in an automated service: "Uber drops people off everywhere in the city at the press of a button" (Roberts and Zietsma 2018, 208). The high availability of drivers has allowed Uber to relate to drivers as mere executors of orders under the threat of being replaced by other drivers eager to take their position in the ranking (Möhlmann et al. 2021). "The conflicts and contradictions between a driver-bot role and driver-partner role closed off the positive aspects of the driver-partner identity by eliminating the autonomy and freedom that constructed the work as entrepreneurial, and thus meaningful" (Roberts and Zietsma 2018, 218). The discourse of the independent contractor thus becomes, in this case and many others, a form of manipulative relationship between management and

workers that happens through the implementation of algorithmic management. This clearly contrasts the practice-like characteristic related to the extension of human powers and, in terms of meaningful work, the expression of autonomy through work, substituting this trait with *surveillance and control*.

Indeed, algorithmic management manifests the characteristics that MacIntyre attributes to professional management (2007, pp. 26-32)[1]. It establishes a division of labor in which the algorithm holds the power of decision and assigns the execution to the workers. This authority is claimed under the claim of superior knowledge on how to achieve the greatest effectiveness (algorithmic calculation), which is assumed to be universally applicable, regardless of the type of activity being managed. This approach results in the treatment of workers as mere means in the service of pre-established objectives, clearly moving work from the domain of an intentional positive contribution to society, to a new form of *alienation*, where ends cannot be put into question.

Table 2 summarizes the threats to meaningful work posed by algorithmic management, following the scheme emerged from the analysis synthetized in Table 1.

[1] In addition to MacIntyre's critique of management (MacIntyre 2007), there is a large scholarship which discussed whether management can be considered a practice (Beadle and Moore 2006; Sinnicks 2018; Knight 2017) or rather a domain-relative practice (Beabout 2012). Sison and Redín (2023b) also synthetizes the MacIntyrean account of management as second-order practice, affirming that "Management is a 'second-order practice' through which institutions supply external, material resources to sustain and support 'first-order' core practices" (p. 277). We clarify this aspect as we are not discussing in this article the MacIntyrean status of algorithmic management, but the "practice-like" characteristics of the activities that algorithmic management sustains. In this sense, we cannot exclude the intuition that algorithmic management, in itself, resembles the features of a second-order practice; however, this conversation goes beyond the scope of this article and relates to the conversation regarding moral agency of AI-based technologies. As it stands, algorithmic management is an interface, so it does not show, as it is, the proper characteristics of a second-order practice.

The first two columns report the findings of Table 1, and the third column pairs them with the threats to meaningful work described in this section.

Table 2: How Algorithmic Management Threats Meaningful Work

Characteristics of a Practice	*Characteristics of Meaningful Work*	*Threats to Meaningful Work Posed by AM*
Complex and coherent	Skill variety	Deskilling and fragmentation
	Task integrity	
	Task significance	
Extension of human powers	Autonomy	Surveillance and control
Internal goods	Self-development	Reputation and standing
Standards of excellence	Self-esteem	Ratings and rankings
Socially established and cooperative	Social relations and recognition	Automated communication
Moral education	Professional and personal growth	Dependency
Advancement of community	Contribution to society	Alienation

As we have just explored, algorithmic management undoubtedly poses a threat to meaningful work, affecting exactly those practice-like characteristics which constitute the nucleus of meaningful work. Consequently, and given its pervasive diffusion, it is compelling to ask what the conditions for work to be meaningful under algorithmic management are, and who has the responsibility to enable meaningfulness under algorithmic management. Next Section addresses exactly those questions.

3. MEANINGFUL WORK IN AN ALGORITHMICALLY MANAGED WORKPLACE

As we argued, from a MacIntyrean perspective, the basic condition for work to be meaningful is to be ordered towards goods of excellence within activities endowing practice-like features (Beadle and Knight 2012), i.e., activities that order workers towards

a meaningful life. For MacIntyre, such meaning is compromised by the manipulative nature of management, which typically treats workers as mere means to the managers' ends (MacIntyre 2007). Certainly, MacIntyre accepts that management is necessary to sustain practices by effectively providing external resources. In doing so, management actually promotes meaningful work. However, when managers strive for such external goods regardless or even against the internal goods of excellence, practices get distorted and, thus, unable to provide meaning for those who engage in them (West 2024).

Algorithmic calculations transform the power of management. Algorithm-based management systems help owners and managers to achieve pre-established goals (although often in ways that they do not fully understand) by guiding workers as a relational interface, i.e. a mediation that shapes the content and the experience of their work (Capone, Rocchi, and Bertolaso 2023). In MacIntyrean terms, algorithmic management becomes an interface between practices and institutions, shaping management's ability to promote meaningful work and workers' ability to find meaning in their work. In this section we explore the role of algorithmic management in this scenario, and then we proceed to the characterization of the normative conditions for work to be meaningful under algorithmic management.

3.1 *The Practice-Institution Scheme Revisited in the Age of Algorithmic Management*

As we noted above, for MacIntyre, managers can promote meaningful work by enabling workers to engage in rational critical dialogues about how to appropriately advance the goods of the practice and the organization (MacIntyre 2016). These shared deliberations should be based on relationships of trust and cooperation among members and managers. To do this, managers need virtues such as courage, justice, constancy, and, above all,

practical wisdom (Moore 2017; Moore and Beadle 2006; Sison, Beabout, and Ferrero 2017).

However, in organizations managed by algorithms, these conditions do not seem to be met: the relationship between management and workers is based on automated communication, monitoring and control, rather than trust and cooperation (see Table 2). Thus, decision processes are not based on shared deliberations among members but on opaque algorithmic calculations. Moreover, algorithmic management cannot find a virtuous relation between goods of excellence and goods of effectiveness since it does not have virtues in itself.[2]

What algorithms do is to act as an interface between workers and the organization. On the one hand, algorithms improve managerial activities' effectiveness. On the other hand, they constrain workers' activities and limit their autonomy by enforcing predetermined patterns of action. However, the outcomes of the deployment of this kind of technologies in organizations are often unintended. As Sandberg and Tsoukas affirm, referencing Orlikowski (2000):

> "Technology does not have, nor can it be developed to have, certain inherent features that determine how it will be used or appropriated in organizations.

[2] There is a stream of literature that has discussed whether and in what sense artificial intelligence-based systems can be considered "virtuous" (Gamez et al. 2020; Wallach and Vallor 2020). Some projects have been launched to train AI-based systems in virtuous behaviors by incorporating moral values in their programming (Sharkey 2020; van de Poel 2020). However, the results are not encouraging so far (Cheruvalath 2023). In a similar vein, some authors argue that AI systems such as algorithmic management should be considered as "moral agents" (Floridi and Sanders 2004; Formosa and Ryan 2021) with moral responsibility for the outcomes of their workings (Dignum 2019; Bernáth 2021). However, we hold that such systems do not qualify as moral agents since they do not have necessary conditions (Sison and Redín 2023a; Hagendorff 2020).

> Technology, rather, constitutes, along with human agency, a 'technology structure' that emerges from the repeated, recursive, and situated interaction between people and particular technologies" (Sandberg and Tsoukas 2011, 352).

In *Dependent Rational Animals*, MacIntyre (1999a) argues that people's reasons for acting are biologically and socially molded, but they can still regain some autonomy by using their practical reasoning capacity to become aware of and evaluate those reasons. Similarly, we may argue that human work, in addition to being biologically and socially shaped, is technologically mediated (Waelbers 2011)[3]. This technological mediation also allows for the exercise of practical reasoning by workers. In one of his few references to the use of technology at work, MacIntyre states that, even when work seems to be purely mechanical, human workers (he offers the example of ticket sellers) always face choices that machines never confront:

> "How to play her or his role, cheerfully or sullenly, carelessly or conscientiously, efficiently or inefficiently. And for all roles, the way in which the role is enacted presupposes not only an answer to a question posed to and by the role-player: 'How

[3] The term "mediation" here is used in accordance with Waelbers (2011). However, it is important to note that we are not attributing to algorithmic management the role of a neutral tool for its users, but we join the thesis of Capone et al. (2023) in defining digital technology as a relational interface according to a constitutive conception of digital, as opposed to a merely instrumental conception. We are neither attributing moral agency nor responsibility to algorithmic management. Some authors, based on a specific stream of relational ontology, speak of a "distributed morality" (Floridi 2013) between humans and machines in conjoined agency. However, it is only humans who hold moral agency and responsibility (Bernáth 2021; Sison and Redín 2023a). First, that of designers and human managers that implement algorithmic management in the workplace. Second, that of the workers who interact with such systems, which condition (but do not determine) their actions. Based on a relational critical realist view (Leonardi 2011), we hold that algorithmic management as a structural condition do constrain and enable human action providing some affordances and putting some limitations to workers. But it is still workers those who decide (even in a strongly conditioned context) to follow or to oppose algorithms instructions for action.

> is it best for me to play this role?', but also to such further questions: 'By what standards am I to judge what is best?' and 'Should I continue to play this role in this way?' It is the inescapability on occasion of such questions that suggests that practical reasoning that is adequate for doing what a particular role requires will itself generate reasons for acting *beyond* those requirements and even sometimes *against* those requirements" (MacIntyre 1999b, 327, emphasis added).

MacIntyre refers this comment to the social structures in which people find themselves as moral agents, but we can also apply it to algorithmic management, that is, the technological structure in which workers find themselves in organizations managed by algorithms. This technological structure sets specific constraints and affordances for human work, and workers usually conform more or less willingly to its requirements, even deflecting the responsibility for morally questionable courses of action to technology (Köbis, Bonnefon, and Rahwan 2021; Krügel, Ostermaier, and Uhl 2023). Algorithmic management guides the way work is performed and, as a result, how workers perceive their work as meaningful at different levels or according to different aspects (as detailed above).

This relationship between worker and algorithmic management happens within organizations. For this reason, two aspects must be investigated: i) what conditions must algorithmic management meet for an organization to enable and even promote meaningful work; ii) how workers can act *beyond* and even sometimes *against* the requirements of algorithmic management when an organization is not capable or willing to meeting those conditions. The following sections are dedicated to the development of these normative conditions (3.2) and to the exploration of the scenario where organizations are not willing or capable to enable them (3.3).

3.2 The Normative Conditions for Meaningful Work under Algorithmic Management

MacIntyre's scheme has helped us to reframe what meaningful work is and why people engage in it (Section 2.2). Work becomes meaningful when workers take the achievement of specific goods to be part of the kind of life they consider meaningful and worth living. This criterion is not purely subjective, nor does it depend on individual preferences. Rather, it depends on work endowing practice-like features (see Table 1), i.e, work that allows for professional and moral excellence and contributes to the advancement of workers' communities. In addition, we have explored how algorithmic management threatens meaningful work exactly along those characteristics that make work meaningful (Table 2).

The implication of this analysis is, according to our argument, work can be meaningful under algorithmic management when organizations meet some normative conditions, which are now presented and explained. Thus, to sustain and promote meaningful work, organizations must design and manage jobs in such a way that their employees can actually meet these same conditions. The normative conditions are described in this section, and they are summarized in Table 3, which gives evidence of how each condition enables a specific trait of meaningful work, corresponding to a practice-like characteristic.

Job crafting: Organizations using algorithmic management should allow workers enough autonomy to craft their activities with some degree of skill variety, task integrity, and task significance. For example, telemedicine increasingly uses algorithms to monitor patients' health, replacing some of the tasks typically performed by nurses. Nurses must now acquire new skills, such as expertise in reading screens with information about

patients and integrating these tasks into a new style of caring (Nicolini 2012). Similarly, teachers must know how to use specialized software for their students' education (Sandberg and Tsoukas 2011).

Alternative use of technology: Organizations should use their improved capacity for monitoring and control to help workers extend their powers and put their talents to their highest and best uses. For example, automated patient monitoring introduces the risk that nurses find themselves "treating the numbers instead of the patient" (Jones 2014, 907), i.e., paying more attention to the data on the screen than to the actual condition of the person, but this automated monitoring allows them to devote their time to more careful attention to each patient. Similarly, teachers can easily access many sophisticated technological devices to conduct their lessons, but they must learn how to use them wisely for the good of their students (Higgins 2010).

Improving results: *Organizations should reward workers who take advantage of the system's affordances to improve results in terms of excellence and not only in terms of effectiveness, reputation, and standing*. For example, organizations should use rating and ranking systems not only to help workers access resources and share good practices, but also to further standards of excellence together with colleagues.

Help assess achievements: Organizations should help workers obtain information about their achievements and benchmark their performance. For example, teachers whose performance is evaluated quantitatively may seek to improve their rating to secure rewards, but they may also find out the most valued teaching qualities and try to acquire them, thus improving their teaching. In this way, they can build professional prestige and strengthen their self-esteem.

Connecting people: Organizations should sustain human work by facilitating forms of communication that promote rather than preclude the development of significant social relationships in the workplace. For instance, in large companies, algorithms can be used to identify and connect employees with similar profiles, interests, or abilities, and sustain possible collective initiatives.

Sharing goods: *Organizations using algorithmic management should strengthen cooperation and workers' deliberation about common goods*. For example, professional groups of nurses must deliberate on what it means to be a good nurse in a technological context where traditional tasks and standards of excellence have changed. The same applies to teachers and other professions. Participation and shared deliberation about how to reframe one's work can occur not only in service professions but also in jobs such as drivers or other blue-collar occupations (Acemoglu and Johnson 2023; Wrzesniewski, Dutton, and Debebe 2003; Schwartz 2015). Those workers' communities may develop guidance and direction not only for colleagues but also for human managers and other stakeholders, such as designers, marketers, and regulators.

Empowerment: *Organizations should ensure a working environment that favors professional and moral development.* Due to the adoption of algorithmic management systems, human managers also undergo task automation and risk of redundancy. However, those human managers who keep their jobs have a new task of undoubted moral relevance: to ensure that algorithmic systems not only increase the effectiveness in achieving the organization's objectives but also help obtain its members' excellence, i.e., empower employees to further their professional and moral development. Managing the relationship between algorithms and workers in this way is the ultimate necessary condition for sustaining and providing meaningful work in their organizations.

Table 3 summarizes the essence of what has been explained so far, connecting the normative conditions that organizations using algorithmic management systems need to guarantee to sustain and promote meaningful work with the traits of meaningful work and the corresponding practice-like characteristics. An organization that wants to enable meaningful work for its employees under algorithmic management should enforce the conditions presented in the left column. In this way, the organization ensures that traits typical of meaningful work are realized (second column) in the course of an activity which has practice-like characteristics and is so ordered towards a meaningful life (third column).

Table 3: Normative Conditions for Meaningful Work under Algorithmic Management

Normative Conditions for Meaningful Work under Algorithmic Management		***Characteristics of Meaningful Work***	***Characteristics of a Practice***
Job crafting	*Organizations using algorithmic management should allow workers enough autonomy to craft their activities with some degree of skill variety, task integrity, and task significance.*	Skill variety	Complex and coherent
		Task integrity	
		Task significance	
Alternative use of technology	*Organizations should use their improved capacity for monitoring and control to help workers extend their powers and put their talents to their highest and best uses.*	Autonomy	Extension of human powers
Improving results	*Organizations should reward workers who take advantage of the system's affordances to improve results in terms of excellence and not only in terms of effectiveness, reputation, and standing.*	Self-development	Internal goods
Help assess achievements	*Organizations should help workers obtain information about their achievements and benchmark their performance.*	Self-esteem	Standards of excellence
Connecting people	*Organizations should sustain human work by facilitating forms of communication that promote rather than preclude the development of significant social relationships in the workplace.*	Social relations and recognition	Socially established and cooperative
Empowerment	*Organizations should ensure a working environment that favors professional and moral development.*	Professional and personal growth	Moral education
Sharing goods	*Organizations using algorithmic management should strengthen cooperation and workers' deliberation about common goods.*	Contribution to society	Advancement of community

The realization of the normative conditions represents the ideal situation, when organizations are willing to make meaningful work possible under algorithmic management. However, what happens when organizations are not aware of these needs, or are not capable or willing to guarantee these conditions? The next section is dedicated to exploring this scenario. Without a cooperating and supporting organization, workers can develop various forms of resistance to algorithmic systems, with which they try to regain some autonomy and advance their own way of understanding and orienting work as meaningful. These are "strategies of resistance," and they are described in the next section.

3.3 Strategies of Resistance: How Workers Can Make the Normative Conditions for Meaningful Work a Reality

The normative conditions presented in this article provide a perspective on how to sustain meaningful work under algorithmic management from the perspective of the organization. However, when organizations are not responsive or do not engage with the conditions to make work meaningful under algorithmic management, then the worker does not receive adequate support to make his or her work meaningful. Also, in the case of an empowering organization, it is anyway the worker who needs to decide whether to engage in his or her work in a meaningful way or not. However, the case is even more extreme when an organization hinders the potential of meaningful work under algorithmic management, not taking care of this aspect. In this case, the onus of the realization of the conditions for meaningful work is completely transferred to workers. This last section explores some strategies of resistance that workers can put in place in non-collaborative organizations.

In a traditional workplace, workers can defend their rights and improve their conditions through various strategies, such as collective action, individual resistance, or collaboration with management (Crozier and Friedberg 1980). In organizations managed by algorithms, in an attempt to balance power relations, in addition to the demands for legislative regulation, some collective action initiatives have arisen. These include the Online Merchants Guild, which brings together entrepreneurs who sell their products on Amazon, and the YouTubers Union, which unites some content creators (Cutolo, Hargadon, and Kenney 2021).[4] Cooperatives of platform workers have also emerged (Scholz 2016). However, these attempts are proving insufficient (Schor 2021).

Some platform workers, based on the practical knowledge they are gaining about how the system works, are developing individual strategies to reduce their dependence on the algorithm and achieve some autonomy (Bucher, Schou, and Waldkirch 2021; Möhlmann et al. 2021). For example, on professional services platforms such as Freelancer, Upwork, and Fiverr, some workers, who know how the platform works better than their occasional clients, know how to circumvent the system's supervision, establish direct communication with the beneficiaries of their services, and secure assignments and positive evaluations (Cameron and Rahman 2022).

An illustrative ethnographic study of platform drivers (Cameron 2022) explores how these workers develop individual strategies that help them find meaning in their work

[4] A group of German YouTubers created in 2019 an organization they called "FairTube" and affiliated with IGMetal, the main German union. Their demands were to ask YouTube to put in place an appeals process overseen by an independent board, and to facilitate contact with human managers, to handle content disputes and other conflicts, so that YouTubers could better understand the decision process on rewards and penalties. The platform agreed to talk with FairTube representatives but refrained from establishing changes to its coordination and reward system (https://fairtube.info/en/seite/press-coverage-of-fairtube/).

and engage with it. Working in a technologically structured and often socially isolated environment, instead of experiencing alienation, these drivers set their own specific goals in their work through two different games, the "relational game" and the "efficiency game." In the "relational game" drivers look for meaning by "crafting their job as a positive encounter service" (p. 231). To do this, drivers personalize their interactions with clients, trying to generate a connection and, where appropriate, offer physical or emotional support. For example, some drivers offer water bottles or tissues (without being obliged to do so by the system); others listen empathetically to customers' outbursts; others carefully choose the music they play on each ride. These initiatives allow them to establish rich social exchanges. The purpose of all this work is "to connect with customers and provide good customer service" (p. 237). The app's rating system allows them to closely monitor their achievement, based on the customers' assessment of their efforts. A good rating is "a source of professional pride" (p. 238). What drivers consider "succeeding" in this game is also what the company wants. Therefore, the company supports this type of behavior with recognition and awards. However, the "relational game" goes beyond incentives and rewards, and incorporates a certain sense of excellence. For drivers, there is no concrete benefit in improving their rating from 4.8 to 4.9, nor in decorating their car with care, and yet they still do it. These drivers see the app as a facilitator of their work, a tool that gives them valuable information to do their job better (p. 247).

The "efficiency game," on the other hand, aims to complete rides as quickly as possible, ideally at the highest fare (p. 244). For drivers who play this game, the goal of their work is to optimize the time spent on a trip and the revenue earned. These drivers choose to depersonalize their encounters with customers by emphasizing physical and

social boundaries. For example, they do not comfort crying passengers so that their help is not misinterpreted, nor do they offer extra services to protect themselves from potential liability (p. 242). Some have themselves installed cameras in the car, not as instruments of surveillance and control, but as an effective means of defense against unfounded accusations by clients. This game is about limiting interactions with customers, which can be time-consuming, emotionally draining and financially unprofitable. The purpose of work performed in this way is simply to get passengers to their destination quickly (p. 242). The measure of success is different in this game than in the relational game. The app does not provide information on the yield of each ride. Drivers distrust the algorithm. They think that it does not always assign them profitable trips and, therefore, they keep their own financial records to monitor their activity and try to secure their income. In this game, drivers see themselves repeatedly trying to thrive in a system in which they are at a disadvantage, and often "feel trapped in a game they cannot win" (p. 245). Thus, they view the algorithm as an adversary that they must "cheat" to obtain more lucrative results.

In both games, workers relate to the system in such a way that they gain some autonomy to set their own goals and craft their jobs. Algorithmic management indicates both types of drivers which rides to take and which route to follow, but it does not tell them the purpose of their work, beyond the task of driving. Some drivers set for themselves the goal of providing good service. These drivers find in the algorithm an ally to monitor their achievements, which helps them excel in their job providing valuable information. On the contrary, drivers who mainly aim to optimize revenue experience the algorithm as an obstacle to their work. The system imposes work patterns on them, withholds crucial information from them and thus stands in their way of achieving their

goals. Their only chance of getting away with it is the unlikely strategy of cheating the system.

These examples give us insights into meaningful work under algorithmic management in a non-collaborative organizational environment: they are illustrative of the behaviors and strategies that workers can put in place under algorithmic management. In addition, these examples demonstrate that, ultimately, the threats posed by algorithmic management to meaningful work constitute an additional and novel stimulus for workers, who, even in an adverse organizational environment, can creatively use the affordances of the technological structure to restore the conditions for meaningful work.

4. CONCLUSION

This article contributes to the characterization of the normative conditions for meaningful work in organizations that adopt algorithmic management systems. Building on MacIntyre's moral architecture, we argue that there are normative conditions that organizations can realize for work to be meaningful under algorithmic management: these conditions are built on the theoretical basis that work to be meaningful needs to be endowed with practice-like features (Table 1). We support this claim by extending the normative theory of meaningful work (Michaelson 2021; Mejia 2023; Beadle and Knight 2012) to algorithmic management, which we depict as setting specific constraints and affordances for human action.

We describe how algorithmic management threatens essential features of meaningful work, often causing deskilling and task fragmentation, putting workers under constant surveillance and control through rating systems that enforce specific relations of

power and dependency. We show how these threats undermine exactly those characteristics which make work meaningful (Table 2). We then characterize seven normative conditions, which portray the ideal scenario in which an organization is willing to restore the conditions for meaningful work under algorithmic management (Table 3). Doing so, we develop a theory that enacts the critical conditions (Sandberg and Alvesson 2021) for producing and reproducing meaningful work in such a technological context.

However, it is possible that organizations are not willing or capable to realize the normative conditions. In this scenario, the onus of making work meaningful is on the workers. Interacting with technology, some workers can develop strategies of resistance to craft their activities so that they not only improve results effectively but also identify and share new and enhanced standards of excellence.

The formulation of the normative conditions for meaningful work under algorithmic management opens avenues for further research. Ethnographic studies are needed to understand better how people suffer from algorithmic management threats and how workers can achieve and sustain excellence both in a collaborative and in a non-collaborative organizational environment. The normative conditions have practical implications for organizations and managers striving to create meaningful work environments, and each condition can be detailed in terms of courses of action, decision-making processes, and design of empowering work relationships under algorithmic management.

Among the current studies on the consequences of algorithmic management in organizations, only a few deal with work meaningfulness in platform jobs (Möhlmann et al. 2021; Cameron 2022) or more traditional professions (Olsen 2023). Many other professions, as well as many jobs in the platform economy and traditional workplaces,

would also provide significant evidence to learn what unforeseen uses of technology, what strategies of resistance, what new roles and professional relationships, and what "games" (forms of practical wisdom) played by workers help them give meaning to their work. It is also interesting to explore potential pedagogies to bring this topic to the business school classroom at different levels: the elaboration of case studies or the use of novels or movie narratives can be an inspiration to design teaching to make students aware of their present and future of work scenario, so they can reflect on meaningful work as professionals and future managers.

REFERENCES

Acemoglu, Daron, and Simon Johnson. 2023. *Power and Progress: Our Thousand-Year Struggle Over Technology and Prosperity*. New York: PublicAffairs.

Bailey, Catherine, Ruth Yeoman, Adrian Madden, Marc Thompson, and Gary Kerridge. 2019. 'A Review of the Empirical Literature on Meaningful Work: Progress and Research Agenda'. *Human Resource Development Review* 18 (1): 83–113.

Baiocco, Sara, Enrique Fernandez-Macías, Uma Rani, and Annarosa Pesole. 2022. 'The Algorithmic Management of Work and Its Implications in Different Contexts'. Joint Research Centre: ILO and European Commission. https://www.ilo.org/employment/Whatwedo/Projects/building-partnerships-on-the-future-of-work/WCMS_849220/lang--en/index.htm.

Bankins, Sarah, and Paul Formosa. 2023. 'The Ethical Implications of Artificial Intelligence (AI) For Meaningful Work'. *Journal of Business Ethics*, February.

Baskerville, Richard L., Michael D. Myers, and Youngjin Yoo. 2020. 'Digital First: The Ontological Reversal and New Challenges for Information Systems Research'. *MIS Quarterly* 44 (2): 509–23.

Beabout, Gregory R. 2012. 'Management as a Domain-Relative Practice that Requires and Develops Practical Wisdom'. *Business Ethics Quarterly* 22 (2): 405–32.

Beadle, Ron, and Kelvin Knight. 2012. 'Virtue and Meaningful Work'. *Business Ethics Quarterly* 22 (2): 433–50.

Beadle, Ron, and Geoff Moore. 2006. 'MacIntyre on Virtue and Organization'. *Organization Studies* 27 (3): 323–40.

Bernáth, László. 2021. 'Can Autonomous Agents Without Phenomenal Consciousness Be Morally Responsible?' *Philosophy & Technology* 34 (4): 1363–82.

Bowie, Norman E. 1998. 'A Kantian Theory of Meaningful Work'. *Journal of Business Ethics* 17 (9/10): 1083–92.

Breen, K. 2019. 'Meaningful Work and Freedom: Self-Realization, Autonomy, and Non-Domination in Work'. In *The Oxford Handbook of Meaningful Work*, edited by Ruth Yeoman, Catherine Bailey, Adrian Madden, and Marc Thompson, First Edition, 51–72. New York, NY: Oxford University Press.

Bucher, Eliane Léontine, Peter Kalum Schou, and Matthias Waldkirch. 2021. 'Pacifying the Algorithm – Anticipatory Compliance in the Face of Algorithmic Management in the Gig Economy'. *Organization* 28 (1): 44–67.

Bykov, Andrey. 2023. 'A Sociological Perspective on Meaningful Work: Community versus Autonomy'. *Business Ethics Quarterly*, September, 1–31.

Cameron, Lindsay, Laura Lamers, Ulrich Leicht-Deobald, Christoph Lutz, Jeroen Meijerink, and Mareike Möhlmann. 2023. 'Algorithmic Management: Its Implications for Information Systems Research'. *Communications of the Association for Information Systems* 52:518–37.

Cameron, Lindsey D. 2022. '"Making Out" While Driving: Relational and Efficiency Games in the Gig Economy'. *Organization Science* 33 (1): 231–52.

Cameron, Lindsey D., and Hatim Rahman. 2022. 'Expanding the Locus of Resistance: Understanding the Co-Constitution of Control and Resistance in the Gig Economy'. *Organization Science* 33 (1): 38–58.

Capone, Luca, Marta Rocchi, and Marta Bertolaso. 2023. 'Rethinking "Digital": A Genealogical Enquiry into the Meaning of Digital and Its Impact on Individuals and Society'. *AI & Society*, May. https://doi.org/10.1007/s00146-023-01687-0.

Cheruvalath, Reena. 2023. 'Artificial Intelligent Systems and Ethical Agency'. *Journal of Human Values* 29 (1): 33–47.

Ciulla, Joanne B. 2000. *The Working Life The Promise and Betrayal of Modern Work*. New York: Random House.

Crozier, Michel, and Erhard Friedberg. 1980. *Actors and Systems: The Politics of Collective Action*. Translated by Arthur Goldhammer. Chicago: University of Chicago Press.

Curchod, Corentin, Gerardo Patriotta, Laurie Cohen, and Nicolas Neysen. 2020. 'Working for an Algorithm: Power Asymmetries and Agency in Online Work Settings'. *Administrative Science Quarterly* 65 (3): 644–76.

Cutolo, Donato, Andrew Hargadon, and Martin Kenney. 2021. 'Competing on Platforms'. *MIT Sloan Management Review*. https://sloanreview.mit.edu/article/competing-on-platforms/.

Dignum, Virginia. 2019. *Responsible Artificial Intelligence: How to Develop and Use AI in a Responsible Way*. Artificial Intelligence: Foundations, Theory, and Algorithms. Cham: Springer International Publishing.

Dunne, Joseph. 2003. 'Arguing for Teaching as a Practice: A Reply to Alasdair MacIntyre'. *Journal of Philosophy of Education* 37 (2): 353–69.

Floridi, Luciano. 2013. 'Distributed Morality in an Information Society'. *Science and Engineering Ethics* 19 (3): 727–43.

Floridi, Luciano, and J.W. Sanders. 2004. 'On the Morality of Artificial Agents'. *Minds and Machines* 14 (3): 349–79.

Formosa, Paul, and Malcolm Ryan. 2021. 'Making Moral Machines: Why We Need Artificial Moral Agents'. *AI & Society* 36 (3): 839–51.

Galière, Sophia. 2020. 'When Food-Delivery Platform Workers Consent to Algorithmic Management: A Foucauldian Perspective'. *New Technology, Work and Employment* 35 (3): 357–70.

Gamez, Patrick, Daniel B. Shank, Carson Arnold, and Mallory North. 2020. 'Artificial Virtue: The Machine Question and Perceptions of Moral Character in Artificial Moral Agents'. *AI & Society* 35 (4): 795–809.

Hackman, J. Richard, and Greg R. Oldham. 1975. 'Development of the Job Diagnostic Survey.' *Journal of Applied Psychology* 60 (2): 159–70.

Hagendorff, Thilo. 2020. 'The Ethics of AI Ethics: An Evaluation of Guidelines'. *Minds and Machines* 30 (1): 99–120.

Higgins, Christopher. 2010. 'Worlds of Practice: MacIntyre's Challenge to Applied Ethics'. *Journal of Philosophy of Education* 44 (2–3): 237–73.

Jarrahi, Mohammad Hossein, Gemma Newlands, Min Kyung Lee, Christine T. Wolf, Eliscia Kinder, and Will Sutherland. 2021. 'Algorithmic Management in a Work Context'. *Big Data & Society* 8 (2): 205395172110203.

Jones, Matthew. 2014. 'A Matter of Life and Death: Exploring Conceptualizations of Sociomateriality in the Context of Critical Care'. *MIS Quarterly* 38 (3): 895–925.

Knight, Kelvin. 2017. 'MacIntyre's Critique of Management'. In *Handbook of Virtue Ethics in Business and Management*, edited by Alejo José G. Sison, Gregory R. Beabout, and Ignacio Ferrero, 79–87. Dordrecht: Springer Netherlands.

Köbis, Nils, Jean-François Bonnefon, and Iyad Rahwan. 2021. 'Bad Machines Corrupt Good Morals'. *Nature Human Behaviour* 5 (6): 679–85.

Krügel, Sebastian, Andreas Ostermaier, and Matthias Uhl. 2023. 'Algorithms as Partners in Crime: A Lesson in Ethics by Design'. *Computers in Human Behavior* 138 (January):107483.

Leonardi. 2011. 'When Flexible Routines Meet Flexible Technologies: Affordance, Constraint, and the Imbrication of Human and Material Agencies'. *MIS Quarterly* 35 (1): 147–67.

Lips-Wiersma, Marjolein, and Lani Morris. 2009. 'Discriminating Between "Meaningful Work" and the "Management of Meaning"'. *Journal of Business Ethics* 88 (3): 491–511.

Luca, Michael, and Georgios Zervas. 2016. 'Fake It Till You Make It: Reputation, Competition, and Yelp Review Fraud'. *Management Science* 62 (12): 3412–27.

Lysova, Evgenia I., Blake A. Allan, Bryan J. Dik, Ryan D. Duffy, and Michael F. Steger. 2019. 'Fostering Meaningful Work in Organizations: A Multi-Level Review and Integration'. *Journal of Vocational Behavior* 110 (February):374–89.

Lysova, Evgenia I., Jennifer Tosti-Kharas, Christopher Michaelson, Luke Fletcher, Catherine Bailey, and Peter McGhee. 2023. 'Ethics and the Future of Meaningful Work: Introduction to the Special Issue'. *Journal of Business Ethics*, April. https://doi.org/10.1007/s10551-023-05345-9.

MacIntyre, Alasdair C. 1988. *Whose Justice? Which Rationality?* Notre Dame, Ind: University of Notre Dame Press.

———. 1994. 'A Partial Response to My Critics'. In *After MacIntyre: Critical Perspectives on the Work of Alasdair MacIntyre*, edited by John Horton and Susan Mendus, 283–304. Cambridge: Polity Press.

———. 1999a. *Dependent Rational Animals: Why Human Beings Need the Virtues*. Chicago, Ill.: Open Court.

———. 1999b. 'Social Structures and Their Threats to Moral Agency'. *Philosophy* 74 (289): 311–29.

———. 2007. *After Virtue: A Study in Moral Theory*. 3rd ed. Notre Dame, Ind: University of Notre Dame Press.

———. 2011. 'Where We Were, Where We Are, Where We Need to Be'. In *Virtue and Politics: Alasdair MacIntyre's Revolutionary Aristotelianism*, edited by Paul

Blackledge and Kelvin Knight, 307–34. Notre Dame, Ind: University of Notre Dame Press.

———. 2015. ‘The Irrelevance of Ethics’. In *Virtue and Economy*, edited by Andrius Bielskis and Kelvin Knight, 7–21. Farnham, Surrey, UK ; Burlington, VT: Ashgate.

———. 2016. *Ethics in the Conflicts of Modernity: An Essay on Desire, Practical Reasoning, and Narrative*. New York: Cambridge University Press.

Martela, Frank. 2023. ‘The Normative Value of Making a Positive Contribution–Benefiting Others as a Core Dimension of Meaningful Work’. *Journal of Business Ethics*, February. https://doi.org/10.1007/s10551-023-05341-z.

Mejia, Santiago. 2023. ‘The Normative and Cultural Dimension of Work: Technological Unemployment as a Cultural Threat to a Meaningful Life’. *Journal of Business Ethics*, April. https://doi.org/10.1007/s10551-023-05340-0.

Michaelson, Christopher. 2021. ‘A Normative Meaning of Meaningful Work’. *Journal of Business Ethics* 170 (3): 413–28.

Michaelson, Christopher, Michael G. Pratt, Adam M. Grant, and Craig P. Dunn. 2014. ‘Meaningful Work: Connecting Business Ethics and Organization Studies’. *Journal of Business Ethics* 121 (1): 77–90.

Michaelson, Christopher, and Jennifer Tosti-Kharas. 2024. *Is Your Work Worth It? How To Think About Meaningful Work*. First edition. New York, NY: PublicAffairs.

Möhlmann, Mareike, Lior Zalmanson, Ola Henfridsson, and Robert Wayne Gregory. 2021. ‘Algorithmic Management of Work on Online Labor Platforms: When Matching Meets Control’. *MIS Quarterly* 45 (4): 1999–2022.

Moore, Geoff. 2012. 'The Virtue of Governance, the Governance of Virtue.' *Business Ethics Quarterly* 22 (2): 293–318.

———. 2017. *Virtue at Work: Ethics for Individuals, Managers and Organizations*. New York, NY: Oxford University Press.

Moore, Geoff, and Ron Beadle. 2006. 'In Search of Organizational Virtue in Business: Agents, Goods, Practices, Institutions and Environments'. *Organization Studies* 27 (3): 369–89.

Mortimer, Samuel A. 2023. 'What Makes Work Meaningful?' *Journal of Business Ethics*, February. https://doi.org/10.1007/s10551-023-05356-6.

Nicolini, Davide. 2012. *Practice Theory, Work, and Organization: An Introduction*. First edition. Oxford: Oxford University Press.

Noponen, Niilo, Polina Feshchenko, Tommi Auvinen, Vilma Luoma-aho, and Pekka Abrahamsson. 2023. 'Taylorism on Steroids or Enabling Autonomy? A Systematic Review of Algorithmic Management'. *Management Review Quarterly*, April. https://doi.org/10.1007/s11301-023-00345-5.

Olsen, Gunhild Ring. 2023. 'Enthusiasm and Alienation: How Implementing Automated Journalism Affects the Work Meaningfulness of Three Newsroom Groups'. *Journalism Practice*, March, 1–17. https://doi.org/10.1080/17512786.2023.2190149.

Orlikowski, Wanda J. 2000. 'Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations'. *Organization Science* 11 (4): 404–28.

Poel, Ibo van de. 2020. 'Embedding Values in Artificial Intelligence (AI) Systems'. *Minds and Machines* 30 (3): 385–409.

Roberts, Anna, and Charlene Zietsma. 2018. 'Working for an App: Organizational Boundaries, Roles, and Meaning of Work in the "On-Demand" Economy'. *Research in the Sociology of Organizations* 57 (October):195–225.

Rosenblat, Alex, and Luke Stark. 2016. 'Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers'. *International Journal of Communication* 10:3758–84.

Rosso, Brent D., Kathryn H. Dekas, and Amy Wrzesniewski. 2010. 'On the Meaning of Work: A Theoretical Integration and Review'. *Research in Organizational Behavior* 30 (January):91–127.

Sandberg, Jörgen, and Mats Alvesson. 2011. 'Ways of Constructing Research Questions: Gap-Spotting or Problematization?' *Organization* 18 (1): 23–44.

———. 2021. 'Meanings of Theory: Clarifying Theory through Typification'. *Journal of Management Studies* 58 (2): 487–516.

Sandberg, Jörgen, and Haridimos Tsoukas. 2011. 'Grasping the Logic of Practice: Theorizing through Practical Rationality'. *Academy of Management Review* 36 (2): 338–60.

Scholz, T. 2016. *Platform Cooperativism. Challenging the Corporate Sharing Economy.* New York: Rosa Luxemburg Stiftung.

Schor, Juliet. 2021. *After the Gig: How the Sharing Economy Got Hijacked and How to Win It Back*. Oakland, California: University of California Press.

Schwartz, Barry. 2015. *Why We Work*. New York: Simon & Schuster.

Sellman, Derek. 2000. 'Alasdair MacIntyre and the Professional Practice of Nursing'. *Nursing Philosophy* 1 (1): 26–33.

Sharkey, Amanda. 2020. 'Can We Program or Train Robots to Be Good?' *Ethics and Information Technology* 22 (4): 283–95.

Sinnicks, Matthew. 2018. 'Leadership After Virtue: MacIntyre's Critique of Management Reconsidered'. *Journal of Business Ethics* 147 (4): 735–46.

———. 2019. 'Moral Education at Work: On the Scope of MacIntyre's Concept of a Practice'. *Journal of Business Ethics* 159 (1): 105–18.

Sison, Alejo José G. 2024. 'Can Digitally Transformed Work Be Virtuous?' *Business Ethics Quarterly* 34 (1): 163–91.

Sison, Alejo José G., Gregory R. Beabout, and Ignacio Ferrero, eds. 2017. *Handbook of Virtue Ethics in Business and Management*. 1st ed. 2 vols. Springer.

Sison, Alejo José G., and Dulce M. Redín. 2023a. 'A Neo-Aristotelian Perspective on the Need for Artificial Moral Agents (AMAs)'. *AI & SOCIETY* 38 (1): 47–65.

———. 2023b. 'If MacIntyre Ran a Business School… How Practical Wisdom Can Be Developed in Management Education'. *Business Ethics, the Environment & Responsibility* 32 (1): 274–91.

Smids, Jilles, Sven Nyholm, and Hannah Berkers. 2020. 'Robots in the Workplace: A Threat to—or Opportunity for—Meaningful Work?' *Philosophy & Technology* 33 (3): 503–22.

Stark, David, and Ivana Pais. 2021. 'Algorithmic Management in the Platform Economy'. *Sociologica*, January, 47–72.

Twenge, Jean M. 2023. *Generations: The Real Differences between Gen Z, Millennials, Gen X, Boomers, and Silents--and What They Mean for America's Future*. First Atria Books hardcover edition. New York: Atria Books.

Vallas, Steven, and Juliet B. Schor. 2020. 'What Do Platforms Do? Understanding the Gig Economy'. *Annual Review of Sociology* 46 (1): 273–94.

Veltman, Andrea. 2016. *Meaningful Work*. Oxford: Oxford University Press.

Waelbers, Katinka. 2011. *Doing Good with Technologies*. Vol. 4. Philosophy of Engineering and Technology. Dordrecht: Springer Netherlands.

Wallach, Wendell, and Shannon Vallor. 2020. 'Moral Machines: From Value Alignment to Embodied Virtue'. In *Ethics of Artificial Intelligence*, edited by S. Matthew Liao, 383–412. Oxford University Press.

Weeks, Kelly Pledger, and Caitlin Schaffert. 2019. 'Generational Differences in Definitions of Meaningful Work: A Mixed Methods Study'. *Journal of Business Ethics* 156 (4): 1045–61.

West, Andrew. 2024. 'Business without Management: MacIntyrean Accounting, Management, and Practice-Led Business'. *Business Ethics Quarterly*, March, 1–30. https://doi.org/10.1017/beq.2024.4.

Wood, Alex. 2021. 'Algorithmic Management. Consequences for Work Organisation and Working Conditions'. *JRC Working Papers Series on Labour, Education and Technology, European Commission*, no. 07. https://joint-research-

centre.ec.europa.eu/document/download/32f3a2e1-21cf-4869-b470-3e691ec284d6_en.

Wood, Alex J, Mark Graham, Vili Lehdonvirta, and Isis Hjorth. 2019. 'Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy'. *Work, Employment and Society* 33 (1): 56–75.

Woodcock, Jamie. 2020. 'The Algorithmic Panopticon at Deliveroo: Measurement, Precarity, and the Illusion of Control'. *Ephemera* 20 (3): 67–95.

Wrzesniewski, Amy, Jane E Dutton, and Gelaye Debebe. 2003. 'Interpersonal Sensemaking and the Meaning of Work'. *Research in Organizational Behavior* 25 (January):93–135.

Yeoman, Ruth. 2014. 'Conceptualising Meaningful Work as a Fundamental Human Need'. *Journal of Business Ethics* 125 (2): 235–51.