How can 'orare et laborare' guide the person-technology relationship during the Fourth Industrial Revolution?

José Luis Fernández Fernández [a], Javier Camacho Ibáñez [a,*], Cristina Díaz de la Cruz [b], Bernardo Villazán Gil [a]

[a] Comillas Pontifical University, Spain
[b] Universidad Técnica Particular de Loja, Ecuador

A B S T R A C T

This article has an exploratory scope based on a theoretical-conceptual approach. The purpose is to shed light on how the human-technology relationship should be in the context of the Fourth Industrial Revolution to discover the profound meaning of human work. We have elaborated our proposals from a perspective emanating from Catholic Social Teaching and Ethics, grounded in the connection between the transcendent dimension of life (represented by the verb 'orare') and labour activity ('laborare'). Given the importance of humans' spiritual dimension and the new challenges presented by the Fourth Industrial Revolution, we examine which principles should guide the person-technology relationship to ensure the meaning of work in this new context. First, we scrutinise the vision of 'work' from an anthropological angle. Next, we investigate the characteristic features of the Fourth Industrial Revolution, and we review these new circumstances' foreseeable impact from an organisational standpoint. Finally, we give recommendations to enhance the individual's spiritual dimension, work, and business decision-making.

1. Objectives, scope and framework

This article is situated alongside two intellectual traditions: On the one hand, it is aligned with the tradition of Moral Philosophy, which is close to Virtue Ethics, as interpreted by Catholic Social Thought [1,2]; on the other hand, it connects with the vision of the person, who emanates from the Philosophical Anthropology implicit in that tradition. Namely, human beings are considered natural, cultural, social, psychological, and psychic subjects and spiritual beings [3–5]. This characteristic makes the person capable of transcending in a symbolic activity that enables him/her to pray [6]. That is, to go beyond oneself and connect with a greater mystery. In this regard, Ludwig Wittgenstein pointed out in *Notebooks 1914*–1916 that 'to pray is to think about the meaning of life' [7].

The objective that moved us to write this article is to help elucidate—from a theoretical-conceptual approach—the meaning and ethical implications of what *meaningful work* will signify in the future at the service of a more fulfilled flowering of humanism, as well as human beings and their meaning [8] as a whole.

The question is relevant in a double sense: First, the process of secularisation may be accelerated as cybertechnology advances. This circumstance might distance humans from religious traditions and the question of the meaning of life. Second, due to the Fourth Industrial Revolution [9], human labour activity could be reduced and replaced in many cases. However, it does not seem easy to eliminate the ultimate questions guiding the Western world's dynamics for the last fifteen centuries. It is uncertain which scenarios will occur and how the spiritual dimension of human life will take shape in the future. We should not exclude the possibility that labour activity will evolve in a 'network and service-oriented' direction. This would mean that instead of witnessing a reduction in work activity, we would instead be seeing an evolution into becoming available for helping any other person who might need that service.

If we ask ourselves if it is possible to live by the motto 'orare et laborare' during the Fourth Industrial Revolution, our answer would be: *We believe it is possible to* continue praying and working in the scenario opened up by the Fourth Industrial Revolution, *but* it also turns out to be *strictly necessary*. Both characteristics constitute proper *conditions of*

possibility for human flourishing in the new contexts and in the face of the new realities. From another perspective, these capacities—to pray and work—constitute the best of antidotes to the unethical consequences that could derive from the advent of *post-humanist dystopia*: an exacerbated asymmetry of power among people, an increase in inequality between groups and cultures, and, above all, a more than probable violation of fundamental human rights and the trampling of personal dignity.

Therefore, our purpose is to explore whether it will be possible—and desirable—to continue praying, even if it will *be possible to continue working*. If work, as a labour practice, contributes to personal growth, and if prayer constitutes an anthropological-spiritual constant, perhaps it is appropriate to re-interpret the meaning of both *orare* (to pray) and *laborare* (to work) in the new context that the Fourth Industrial Revolution will bring. This will help to identify ways and means of articulating policies and modes of organisation that will result in *meaningful work* in the future.

There will undoubtedly be far-reaching changes and unpredictable mutations. Nevertheless, it is to be expected that *organisations* and companies will continue to be necessary. Without a doubt, they will have to be impacted and, in specific ways, transform their uses, customs and rituals. However, at the same time, we can expect convergences and synergies to emerge. In addition, without necessarily having to postulate cultural or religious syncretism of any kind, homogenisation does not necessarily have to always be considered an ethical value. Once fundamental equality is guaranteed, diversity enriches the expression of what it means to be human.

As mentioned above, in addition to the possible threats posed by digitalisation, it is important to note the great possibilities that these new realities bring. Indeed, the 4.0 work environment, among other things, will have to be characterised by an express desire for collaboration between various actors, including human beings, who aspire to achieve common and worthwhile goals together. As we would like to think, the venerable Benedictine motto *ora et labora* may undergo an evolution from which the transcendent dimension of its meaning could be strengthened.

Although the title of this article resonates with the Benedictine motto and the implicit reference to the Benedictine Rule [10], we do not claim to focus on a study of that rule, its practical wisdom [11], or the Benedictine spirituality as a whole. Our article's scope and objective are to strengthen the anthropological approach to work, and to shed light on the challenges and foreseeable consequences of the Fourth Industrial Revolution.

In this text, the concept of *orare* (to pray) should be understood rather broadly [6]. In other words, without excluding religious prayer, we wish to go beyond it and ask if it will be possible for human beings to maintain their capacity to work and pray in the realm of the spiritual *lato sensu* [4,5,12–15].

As some of the most conspicuous referents of the Christian tradition have repeatedly pointed out, the fact of praying does not necessarily imply refraining from action, but rather the contrary [16]; Caussade, 1981; [17]. Depending on the intention with which it is carried out and the way it is interpreted by the one who performs it, any activity can be considered an occasion for prayer. From this intuition, it is easy to adduce relevant examples in the Christian tradition. Thus, it is worth recalling the well-known phrase of a 16th-century Spanish saint, Doctor of the Church, Teresa of Jesus, when she affirmed, 'God also walks among the pots and pans'. Along the same lines, we could mention the motto of St. Ignatius of Loyola when he encouraged the Jesuits to try *to be contemplative in action*.

We understand prayer as a way of connecting with an ultimate transcendent guide that illuminates human freedom. Thus, prayer enables a person to make better choices about his/her life and his/her interactions with the world and other connotations in terms of worship, adoration, and diverse religious rites.

Prayer is also an invitation not to allow life's contingencies (difficulties, emergencies or daily struggles) to determine how we make decisions and guide our future. As most traditions widely recognise, it seems necessary to dedicate time to reflecting or meditating on what is best for human beings [18].

In the economic dynamics before the First Industrial Revolution, monks represented unique examples of how a suitably contemplative life (i.e. prayer) combined with the exercise of manual labour (i.e. work) allowed for both for the creation and distribution of wealth, and for the cultivation of the spiritual dimension of life through prayer.

Sociological transformations inevitably arise from the *new realities*, as analogously happened at the end of the 19th century, when the new realities derived from the First Industrial Revolution propitiated the starting point for CST with *Rerum Novarum*, and the subsequent encyclical letters and pontifical documents of relevance [19–33]. The impact of the Second and Third Industrial Revolutions made it necessary to reconsider the profound meaning and spiritual dimension of human work in this new context [34].

The Fourth Industrial Revolution is shaping a new reality, potentially affecting work and with a broader scope. Some jobs and tasks may change or be replaced by innovative technological development, robotics, and artificial intelligence [35–38]. Nevertheless, at the same time, this new revolution entails a broader, more complex scenario, linking us with areas with a much higher scope, conceptualised by the acronym NBIC: Nanotechnologies, Biotechnologies, Informatics (Big Data, Internet of Things) and Cognitivism (Artificial Intelligence and Robotics). In addition to this revolution, there is a complete set of new interfaces and relationships that will enable novel methods of collaboration and interactions between people and other digital entities.

As we have already stated, it is appropriate to investigate the new conditions of possibility for the humanisation of life in the context of the Fourth Industrial Revolution. Consequently, our objective is twofold: to strengthen the anthropological approach to work, and to shed light on the challenges and foreseeable consequences of the Fourth Industrial Revolution.

Thus, a possible formulation of our main research question is as follows: Given the importance of the human being's spiritual dimension and the new challenges presented by the Fourth Industrial Revolution, what principles should guide the person-technology relationship to ensure the meaning of work in this context?

We also take up the concern presented by Pope Francis in his encyclical letter *Laudato Si*, when he mentioned the current tendency to solve all problems based on the technocratic paradigm, with blind trust in technology and ignoring the ethical and anthropological root of the problems [32]. It is necessary to establish principles that favour an authentic consideration of the human being in the labour, economic, social, and environmental spheres.

The article is structured as follows: First, we briefly discuss what 'work' means from an anthropological angle. We then account for some of this new reality's characteristics, pointing out the opportunities and dangers that could arise from it. We briefly describe the foreseeable impact of the new circumstances from an organisational perspective on individuals' management. In the final section, we delve into considerations that are more relevant to philosophical anthropology and business decision-making in contexts as novel and challenging as those that lie ahead. We conclude with provisional considerations, which will lay out areas that ought to be addressed from a constructive standpoint, remaining open to dialogue and calling for multiple moral discourses where there can be room for multiple voices derived from different faiths, as well as from various ethical and cultural traditions.

Our approach aligns with the theories emanating from Catholic Social Teaching and with the work of other colleagues who have been conducting investigations in the same line of research [39–41].

2. Beyond paid employment: the anthropological meaning of work

In this first section, we intend to highlight considerations about the meaning of human work. The human being, considered from the perspective of philosophical anthropology, continues to be a mystery; his/her ultimate reality is an enigma, always subject to revision. However, we can try to establish some commonly agreed-upon characteristics.

One of the most visible and indisputable characteristics connects with human life's ethical dimension: one's inevitable development through praxis. At birth, the individual does not arrive in this world completely 'finished'; thus, the human being is a task for him/herself. We are born biological but end up being biographical.

In fact, neither in the psychological, physical, nor spiritual realms is it conceivable to find a complete subject without the ethical process of constructing one's own identity. Throughout that process, each moment's culture, place and group offer options and possibilities, as well as limits and obstacles. All of these must be managed appropriately to attain personal happiness (i.e. flourishing for each individual's possibilities). Ethics aims to establish evaluating criteria from which to discern between alternatives and to offer proposals for the humanisation of life.

Within this framework, an opportunity appears to reflect on human work as an anthropological fact and essential key to *autopoiesis*. There have already been some considerations regarding the evolution of the concept of work itself [41], as well as contributions to the undisputed spiritual dimension and its religious and transcendent sense [42–44].

Hence, we can relate a problem based on the following statements:

- From an anthropological and ethical point of view, human work contributes to self-realisation and personal flourishing by revealing the individual's capacities.
- From an economic standpoint, human work is a source of income to meet life's needs.
- From a social angle, human work represents one of the most direct forms of participation in society's dynamics through the organisational-business reality.

In the following paragraphs, we will further develop these statements to build a context for the potential changes that the Fourth Industrial Revolution might bring.

As mentioned above, human work contributes to self-realisation and personal flourishing by revealing the individual's capacities. Unfortunately, how a work activity is often carried out makes it difficult (if not impossible) for this potential to occur as an inherent part of the work process.

This idea is repeated in many traditions. For instance, young Marx was confronted with the problem of *alienation*, objectification, and the estrangement of the worker [45]: 'What, then, constitutes the alienation of labour? […] First, the fact that labour is *external* to the worker (i.e. it does not belong to his intrinsic nature); that in his work, therefore, he does not affirm himself but denies himself, does not feel content but unhappy, does not develop his physical and mental energy freely, but mortifies his body and ruins his mind […] External labour, labour in which man alienates himself, is a labour of self-sacrifice, of mortification … ' [45]; p. 30).

The idea can also be found in the encyclical letter *Labourem Exercens* by Saint John Paul II [26]. A clear distinction is made between *subjective* and *objective* work and the courageous commitment to prioritising the subjective dimension over the objective one. This confirms the personalistic aspect of the work and the dignity of human work, conveniently ethically and spiritually carried out: 'Work is for man and not man for work' [26]; paragraph 6).

Work and paid employment have points of intersection, but they do not cover the same realities. The circumstances arising from the Fourth Industrial Revolution will seriously change the possibility of obtaining paid employment in traditional fields.

We do not know for sure which scenario will eventually be consolidated. Wage labour might undergo radical challenges. Social fracture and division might happen among those who will have work and those who will never find it again. This dichotomization raises moral questions since it affects, among other things, the problem of social inequality. González-Páramo [46] covered some of these scenarios, possibilities, and consequences in detail.

The issue, however, is not new. Lord Keynes approached it in a conference held in Madrid in 1930 [47]. On that occasion, he stated that humankind's economic growth had been extraordinary from the 16th century onwards: 'All this means, in the long run, that mankind is solving its economic problem' [47]; p. 327). He was likely right in his conclusion that the economic problem is not *the* problem. Once it has been resolved, we will face yet another, more basic trouble: that of *identifying the fundamental objective of human life*. The statement is visionary: 'Thus, we have been expressly evolved by nature—with all our impulses and deepest instincts—for solving the economic problem. If the economic problem is solved, humankind will be deprived of its traditional purpose' [47]; p. 328). The real and permanent matter that humankind must solve will then clearly appear, which, in short, is an ethical issue: 'How to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well' [47]; p. 329).

Every human being works, and working allows oneself to develop physically, psychologically, and spiritually. The part of the *orare*, above all, since modernity, has moved very much in parallel with work activity. However, the Fourth Industrial Revolution will substantially change the situation, and we will have to see how we act accordingly.

3. Work during the Fourth Industrial Revolution

After introducing propositions about the importance of human work, we will briefly describe in this section some of the changes that the Fourth Industrial Revolution might bring to the world of work.

There is a broad consensus on the significant transformation of the economy and society caused by adopting digital technologies. Since its conception, the core digital technologies (hardware, software and networks) continue to develop and offer incremental orders of magnitude in processing and data storage capabilities [48]. Following Moore's law [49], any smartphone today is millions of times more potent than a state-of-the-art computer from 1975.

The growing number of people using the internet and the exponential trend in connecting devices and objects to the global network are transforming how human beings live, work and interact. The wide deployment of renewable energies and spectacular advances in biotechnology and genetic sequencing, among others, coexist with digitalisation, promoting new and profound changes that give rise to the birth of a new revolution: the Fourth Industrial Revolution [9]. The combination of different technologies and their adoption, faster than previous revolutions, have caused the Fourth Revolution to expand globally and have had a notable impact on the economy, corporations and organisations, business models, education, and of course work.

The term Industrie 4.0 emerged in Germany at the 2011 Hannover Fair [50], revealing new possibilities for the hybridisation of the physical and digital worlds: intelligent, sustainable and connected industries, flexible and self-organised, ready for the hypercustomised manufacturing of products and services. New business models and collaborative platforms emerge and increase in this context, altering the game's rules dramatically.

These emerging possibilities require new professional profiles to meet the needs that these models will demand. Some studies estimate that many current primary school students will work in jobs that do not currently exist [51].

Therefore, the Fourth Industrial Revolution requires new skills to

which the academic world should respond. Those will undoubtedly involve a redefinition and redesign of curricula and programmes to properly incorporate new competencies [52–54]. The World Economic Forum (WEF) [55] identifies advanced robotics, artificial intelligence, big data and machine learning, the Internet of Things, augmented reality, nanotechnology, and 3D printing, among others, as areas requiring new professionals in less than five years from now.

Soft skills are also of the utmost importance: autonomous continuous learning, verbal and written communication skills, flexibility, teamwork, and empathy [56]. This revolution will influence organisations' policies of recruitment, retention, and the promotion of talent. Companies will connect and collaborate more with independent professionals and freelancers, with the emergence of new frameworks for work relations [57].

The Organisation for Economic Co-operation and Development (OECD) [58] offers generic recommendations; for instance, the increase in the flexibility of the workforce and continuous education. Professionals will need to have the time, motivation and means to receive effective training throughout their working lives. However, having quality time for training and the successful balancing of professional and family life remains a challenge requiring attention and solutions [59]. Recent studies show which motivations lead a worker to take on more hours, to the detriment of quality time, related to salary or incentive expectations and perceived status [60].

Therefore, the future of work raises important questions. While in previous revolutions, jobs that were destroyed in one sector due to innovation could be replaced by new jobs in new sectors, there is currently no certainty that this will happen again [61]. In addition to recent studies that point to a dramatic negative impact of automation on wages and employment [62], people such as Bill Gates have made relevant statements calling for the application of taxes on robots as a solution to mitigate the impact on society [63].

While the net result in terms of job creation or destruction during the Fourth Industrial Revolution may be different based on geography and country, it is increasingly evident that workers trained in digital technologies, or with access to relevant training, will be better positioned to work, with higher wages and quality time for training and developing a work-life balance [64].

4. Organisational trends during the Fourth Industrial Revolution

In this section, we will discuss some of the digital era's significant repercussions on the organisational sphere, where human work is carried out. Suppose we are to develop proposals capable of improving human working conditions in this new era. It is necessary to determine future scenarios for the business world in the medium term. More specifically, we will outline these possibilities: structural changes in employment, self-employment and on-demand work, influences on the decision-making process, and the management of senior talent in organisations.

We have chosen these four topics based on the literature review for their high current relevance, particularly in Europe and the United States, and consequent presence in the business environment's theoretical-practical debates, as detailed in the following paragraphs.

4.1. Structural changes in employment

We can see structural changes in disappearing occupations, declining occupations, and new occupations resulting from the demand or introduction of new services, processes, and regulations [65]. However, we must distinguish between occupations and jobs (i.e., new occupations that generate few jobs and occupations that generate many new jobs). In this sense, health-related services will be the largest source of new jobs [66]. We find a firm reference to more significant interactions between people, which will require enhancing personal qualities and 'soft' skills

[67], as mentioned above. The main areas that will generate up to 50% of new jobs in the United States in 2016–2026 [66] are health, people's care, and learning.

4.2. Self-employment and on-demand work

There is likely to be an increase in self-employment instead of traditional long-term employment contracts [68]. This self-employment has three main characteristics: a high degree of autonomy, payment per job, and a short-term relationship between the worker and the employer/client. Currently, between 20% and 30% of the working-age population in the United States or the leading 15 countries of the European Union are self-employed [68], often as a form of additional income. New digital platforms have transformed self-employment through the availability of connections and the locations of mobile devices, as well as the vast pool of workers and clients they can reach to meet supply and demand based on information accessible in real-time [69].

This trend is set to increase with the proliferation of sector-specific platforms, which are likely to turn more full-time jobs into short-term projects and job arrangements. This trend should not necessarily be harmful, as it can bring benefits, such as cushioning unemployment, stimulating demand, increasing productivity, and increasing efficiency in the client-supplier relationship.

From the worker's point of view, although this model provides autonomy and flexibility, aspects related to occupational safety, training and accreditation, and access to funding cannot be neglected [68].

4.3. The decision-making process

Advances in artificial intelligence will not wholly replace decision-making. Perhaps artificial intelligence systems might make logical decisions fully autonomously, but not choices with an intuitive component or complex decisions within environments of considerable uncertainty [70,71]. The key is to cooperate between human talent and artificial intelligence to develop better decision-making processes in these cases.

Managers in organisations will have more tools and available information to make decisions, but this does not necessarily imply easier decision-making, contrary to what it may seem. The development of the ability to discern, evaluate alternatives considering economic factors, and assess the effects in the medium and long term are aspects that will become much more important [72].

4.4. The issue of so-called 'senior talent'

The future competitiveness of businesses will be based primarily on older workers' performance and productivity [73]. This segment is likely to represent one-third of the workforce, but much more in terms of organisations' talent, knowledge, and culture.

Ageing and older workers' management may create new ethical problems and dilemmas [74]. Given these workers' distinctive characteristics, this situation may also represent companies with an opportunity to utilise older workers' skills and motivation [75,76]. Senior workers are better at ethical behaviour because moral reasoning or perspective does not decline with age. In contrast, moral sensitivity (being able to recognise moral facts) increases with age, as does the tendency towards altruism, or an adult's propensity to protect future generations [77]. These trends can give companies employing older workers a competitive advantage.

In any case, an older workforce offers the potential for better decision-making. However, at least three actions are needed to realise this potential: placing older workers in positions that prolong their productive activity (not isolating them); creating new mentoring, consultancy, and advisory positions; and identifying older workers who show 'wisdom' skills (superior knowledge, management of difficult situations, applied knowledge and balanced to specific situations, being well-intentioned, mind and character, difficult to obtain but easy to

recognise). Undoubtedly, the Fourth Industrial Revolution offers opportunities for this.

5. The paradigm of the human-technology relationship in the new digital age

All that has been said thus far about the Fourth Industrial Revolution and human work leads us to reflect on what paradigm should guide the development of the new digital age's human-technology relationship. In this section, we will describe an anthropological vision that highlights humans' spiritual dimension. Based on this vision, we will offer proposals related to our research question.

We cannot allow everything that concerns human beings, in their interactions with technology, to be determined solely by the rules of the free market, since that is a helpful mechanism when allocating prices, but is usually extraneous to the determination of human ends and the establishment of humanising social relations [29]. In this sense, research on the meaning of work also emphasises human relations and a transcendent common purpose of achieving commitment and a sense of belonging [78–80].

We should not assume that humanity will reach a spontaneous consensus on the best possible use of technological resources for human development at the global level. One piece of proof of the lack of consensus in this field is the debate around human beings' nature, comparing transhumanists' vision to other less materialist currents [81–83]. Indeed, there is no agreement on who human beings are, which means that there is no consensus on how to guide their development and relationship with technology.

In the Third Industrial Revolution paradigm, machines and people coexist in a productive process in which the bottleneck tends to be on the human side. This situation often leads to the overexploitation of people and their abilities to reach production and competitiveness levels typical of machines. The pressure for increased productivity and the perception of the risk of losing one's job due to the automation of specific processes can contribute to work-related stress. According to a pan-European opinion poll, 51% of workers recognise that stress is commonplace, with 72% of respondents consider job reorganisation or job insecurity as one of the main causes. On the other hand, 66% also attribute stress to excessive hours worked and overall workload [84].

This type of side effect of work automation leads us to consider the urgent need to redefine the relationship between people and technology to not only improve the individual's working conditions, but also to attribute to human work its real value and recognition. Therefore, the chief question is the individual's role in a world where machines can take on an increasing number of functions and tasks [85].

We are possibly moving from a paradigm where *the individual* acts, in many cases, as the machines, to a paradigm where *the person* should only do what the machines are not capable of doing. The changes produced in previous industrial revolutions were centred above all in the physical-body order of human life (machines replace human effort of the mechanical type). The Fourth Industrial Revolution focuses on the human mind's capacity to prioritise information and seek optimal solutions to various problems.

Machines cannot replace, under any circumstances, the spiritual dimension within an understanding of human nature rooted in three levels (body, mind, and spirit). The individual's ultimate motives, creativity, and ability to overcome physical and psychological limits to obtain a 'greater good' of transcendent character exist in that spiritual dimension [86–88].

Without going into further detail about how the different philosophical traditions have described this spiritual realm, we will adhere to the spirit's idea as an opening to transcendence without material components. At the same time, the psychological dimension is more related to the physical-organic structures of our being. Undoubtedly, the human being is a whole, and we cannot radically separate the three levels of the individual since they are wholly interrelated. However, we believe the

spiritual level should govern the other levels. Hence, from here, we must respond to the significant challenges of humanity [88–90].

Taking this premise into consideration, below, we offer proposals on how we think this vision could guide the development of the relationship between the individual, work, and technology during the Fourth Industrial Revolution, given the context we have described in the previous sections.

5.1. Intentionally seeking individuals' well-being as a priority

When implementing specific technological development projects or initiatives, it is necessary to consider whether its purpose is to improve human life or to merely obtain an economic benefit. Indeed, ensuring good intentions in the development of initiatives is not enough, since multiple ethical paradigms lead to supposed good for human beings [91]; however, this should be a necessary condition for any project of great importance.

To ensure individuals' well-being, we can use different models and proposals. For example, the human needs model, expressed by Maslow, in its extended version, details higher-order needs precisely, bearing in mind that it is not a question of a rigid order of priorities, but an ascending relationship of areas necessary for cultivating the individual [92–94]. Perhaps we are at a historic moment in humanity's history where we must effectively promote the realisation of higher-order needs such as transcendence, self-actualisation, and aesthetics.

Suppose we are interested in machines that are able to make ethical choices. In that case, we must also keep in mind that there is neither absolute objectivity nor absolute information about what is 'good'. Indeed, the concept of good can vary across human beings according to their circumstances. From particular philosophical or religious perspectives, we can believe in the existence of an ultimate guide for perfection and goodness. However, no human being will be able to understand how to achieve this good fully. For the same reason, since we cannot be entirely objective in determining what is good, it is essential to establish the intentionality of actions and to determine who is responsible for consequences. Thus, the human being's role in making decisions is even more relevant in this new stage of history.

By way of example, if we think about principles for action, machines are usually programmed to solve problems to achieve previously defined objectives. This logic is well adapted to the economistic paradigm, which focuses on the system's variables that can be controlled by the agent, and that result in a more significant individual benefit (selfish logic). A different logic is the service logic, which guides many current leadership theories that try to be inclusive and consider the interests of others in the decision-making process [95]. Thinking of service as a way of exercising power, as proposed by Pope Francis in his homily at the beginning of his pontificate, can be a parameter that significantly alters current ways of contemplating decision-making processes [30,31]. Therefore, technological advancement must include principles for action that are appropriate for the person's spiritual dimension, such as solidarity and inclusion, oriented towards achievement of the common good.

On the other hand, if we perform this analysis from a more technical angle, a detailed study of the types of jobs that are likely to involve greater human-machine collaboration may also be relevant to anticipate the impact on workers' well-being [96,97]. It is also necessary to further develop studies that can anticipate what alternatives exist for jobs that will continue to be replaced by machines [98,99].

5.2. Defining which areas of work (activities, tasks, functions) are most appropriate for human beings

We must identify which tasks cannot be performed by machines and think about which tasks should not be replaced, either due to the value of the person to whom the service is provided, or due to the value it represents for the person performing the work. In both cases, individuals

should perform these tasks as much as possible and at a reasonable cost.

To establish what tasks these might be, it would also be helpful to have an anthropological model that details which functions are most closely linked to the individual's spiritual realm. In addition to the previous section in this article, we can turn to different philosophical models or advocate for different faiths. Some studies on spirituality in business may also shed light on this reflection [86,100].

Another possible approach to human beings' specific contribution to organisations is the concept of wisdom, which differentiates it from similar notions such as knowledge, information, and data [101]. The Cambridge dictionary defines wisdom as using knowledge and experience to make the right decisions and judgements [102]. Although many leading proponents of Western philosophy have focused on the practical dimension of wisdom, such as Aristotle, Thomas Aquinas, or Kant, it is interesting to consider contributions such as that of Tolstoy in *War and Peace*, which stresses that the highest wisdom is not based solely on reason, but rather on the worldly sciences into which intellectual knowledge is divided. According to this novel, the highest wisdom has only one science, the science of everything, which explains creation fully and humans' place in it [103].

From this kind of perspective, even granting benefits to be derived from technology's development in areas such as health, efficiency, or the resolution of diverse problems, it is difficult to imagine a world where machines could make better choices than humans themselves on issues that affect us. We defend an anthropological idea that giving particular importance to the spiritual realm considers the individual as being open to transcendence, endowed with abilities that can never be replaced by other realities that are not personal. This could serve as a beacon or reference to manoeuvres in the above described fast-changing environment.

5.3. Increasing the recognition of what is specifically human in work

Human labour's value cannot be determined by the cost or return on investment of replacing its work with a machine, as is the case with other products that are subject to market rules. An essential factor that must be developed is the adequate valuation of jobs according to human contributions. It is about adequately rewarding a person's value to a job that technology cannot compensate for.

Even in countries where the use of robotics is more widespread, such as Japan, the value of the human being for some jobs and for the development of the productive sector itself has been demonstrated [104]. Determining and valuing this human contribution is a new challenge for markets and regulators.

Among the human capacities that should be highly valued, we highlight wisdom, as mentioned above, understanding it as the capacity for discernment and decision-making in matters that affect people [101, 105,106].

To understand which jobs are specifically human, we can think of the health field. Although technology can facilitate medical personnel's work and increase the effectiveness of their procedures, there will always be a need for those who accompany, comfort, and assist people experiencing pain and suffering. Another example is automatic decision-making, which increases a bank's profits, but might not consider whether vulnerable people are left without their assets or whether other human values are violated. In this case, a mathematical algorithm should have decision-making criteria established by people who consider such consequences for people based on human values.

These considerations are linked, on the one hand, with *the subjective dimension* of human labour, in line with what John Paul II pointed out in *Labourem Exercens*, and on the other, with what we have outlined above regarding human *autopoiesis*, referring to the never-ending process of fulfilling the ethical dimension of a person's life.

5.4. Reducing collateral damage

If the destruction of specific jobs because of technological change is a 'necessary evil' that improves human life, one of our main concerns should be to reduce the collateral damage of these actions. There will undoubtedly be a shift in the structure of jobs, as explained in the previous sections. However, if we orient organisational and political action in such a way as to mitigate these adverse effects, we will certainly reach a new situation of optimised stability. These are the same kinds of problems we face regarding the correct use of natural resources. We cannot consider those that clearly go against our natural environment as a welcome change for the individual [32].

5.5. Promoting dialogue, interdisciplinarity, and training

Finally, we cannot allow technological growth to serve only certain specific interests. The systemic changes we are experiencing require adequate regulation; this regulation's development should also be highly participatory. Since consensus in decision-making that affects many people is not automatic or spontaneous, a continuous dialogue needs to be encouraged. This process should involve different religious and cultural traditions, experts from diverse disciplines, and those most affected, from both developed and developing countries, to minimise the highest possible degree of the adverse social effects they may generate.

Keynes elaborated his proposals so that the state could intervene to ensure that market inefficiencies would not generate insurmountable inequality between different socioeconomic segments of society; we now face the need to ensure human well-being from a global perspective.

Another way to avoid marginalisation and inequality arising from technological advancement is to establish efficient lifelong learning mechanisms. As mentioned above, the Fourth Industrial Revolution highlights new technological and human skills that must be developed both dynamically and continuously. This learning should address the needs of those who do not have easy access to technology, and the needs of people who, while being able to use technology, should develop other competencies and soft skills that are highly necessary to prepare for future jobs. A review of existing education systems will also be required to respond to these new challenges.

6. Conclusions

This article addresses a vision of human work from an anthropological perspective, describing some of the Fourth Industrial Revolution's characteristic features. We also present some of the opportunities and challenges that may arise, briefly reviewing the foreseeable impact on organisations and individuals' management. We underscore the individual's spiritual dimension for work and decision-making in business. As we noted at the beginning of this paper, we do not intend to provide answers to all the questions and issues raised, but rather to offer guidelines that may facilitate discussion and actions to promote technological development that watches over the good of the human being, thus providing profound meaning based on the emphasis on the spiritual dimension of human work in the new context emerging from the Fourth Industrial Revolution.

We frame the entire discussion within a perspective emanating from Catholic Social Teaching and Ethics as a discipline that seeks to establish evaluation criteria to discern between alternatives and possibilities. It should also be noted that the intuitions derived from Karl Marx and John M. Keynes on the nature of human labour and the meaning of life, respectively, have contributed to identifying answers to our research question about the meaning of human labour. Although the context of Marx (between the First and Second Industrial Revolutions) and Keynes (between the Second and Third Revolutions) is utterly different from the situation of the Fourth Industrial Revolution, something relevant has not changed in all this time: the essence of human nature.

The growing interconnections of economic, political, demographic, cultural, technological, and educational phenomena and realities must be noted, which requires a multifaceted analysis of challenges and possible solutions. A critical nuance will be the differentiation between work and paid employment, which are currently more connected than they may be in the near future. This dichotomization raises moral questions since it may impact social inequality.

When carried out in a meaningful and fulfilling way, human work is attentive to its spiritual and transcendent dimensions. It contributes to development, self-realisation, and personal flourishing by deploying the individual's abilities and potential. Work is one of the most direct forms of participation in the dynamics of society through the organisational-business reality. However, this organisational reality is going to change because of the Fourth Industrial Revolution: Some of its effects will be reflected in structural changes in employment, an increase in self-employment and on-demand work, a reconsideration of the human factor's influence on the decision-making process, and a growing need, as well as an opportunity, to harness the potential of senior talent in organisations.

The human being, born without being finished, aspires to become a humanly complete person, precisely through the conscious and responsible exercise of freedom, always incomplete but discernible: inserted in contexts that are more or less favourable or generous, which we can call *circumstances*.

Therefore, we deem necessary an in-depth reflection on human beings' roles and value, and their relationship with technology concerning work. In this regard, we propose the following lines of action and research to guide the human-technology relationship during the Fourth Industrial Revolution:

1. To define which areas of work are most appropriate for the human being, not only from an economic point of view, but also for the development of the individual and the value they bring to the person receiving the service, or the value they bring to the person performing the work.
2. To identify and attribute its real value and recognition to human work, establishing a non-economic scale to separate work, talent, and paid employment.
3. To identify which human abilities should be valued most, such as discerning and making decisions on issues that affect people.
4. To promote new competencies and soft skills in training to prepare to face the new challenges caused by the Fourth Industrial Revolution. This training must include a greater capacity to adapt to changing environments and highly flexible work scenarios.
5. To explore the possible role of the Saint Benedict Rule as an educational tool in work training. This possibility could face problems of a new vision of work and enforce an anthropological approach to function like the one we have tried to propose in this article.
6. To identify measures to guide organisational, social, and political actions in such a way as to defend working conditions and mitigate possible adverse effects, to guarantee people's economic stability, and not to exacerbate social inequality.
7. To stress the need for dialogue, interdisciplinarity, and training to address the challenges posed successfully. Special attention should be given to senior talent to avoid wasting skills acquired through life experience, especially ethics.

During the Fourth Industrial Revolution, the importance of the transcendent and spiritual dimension of life—what we have provocatively called 'orare'—is not only going to be technically possible. It will be desirable from an ethical point of view. Further, from the perspective of philosophical anthropology, it will become an essential requirement for humanity to achieve the development of its full potential following its spiritual dimension.

However, the challenges are so formidable that no one should be—or feel—excluded from the common task of attempting to articulate theoretical proposals and practical policies to help shape a sustainable and better world, to contribute to the development of a more prosperous and fair economy, and to contribute to the design of a more equitable and peaceful international order. In short, we all should help humanity advance towards the objectives and goals that it has dreamed of for millennia and which, today, are within its reach, provided there are the necessary political will and unwavering moral commitment to achieve them.

Regarding the new possibilities that Industry 4.0 creates in terms of collaboration and interactions, not only among people but also at the human-machine level, future research could explore some of the evolving standards in that regard and how specific they are considering some of the principles pointed out in this paper.

Credit author statement

José Luis Fernández Fernández: Conceptualization and writing. Javier Camacho Ibáñez (corresponding Author): Writing – review & editing. Cristina Díaz de la Cruz: Writing and review. Bernardo Villazán Gil: Writing

References

[1] C. Díaz de la Cruz, J.L. Fernández Fernández, Misión profética del Pensamiento Social Cristiano en la era digital, Perseitas 7 (nº 2) (2020) 220–246.
[2] J.L. Fernández Fernández, D. Blázquez Bernaldo de Quirós, Investment inspired by the principles of catholic social thought (CST) as a contribution to the social development goals (SDG): a case study, in: En L. San José, J.L. Retolaza, L. V. Lidekerke (Eds.), Handbook on Ethics in Finance (Págs, Springer, 2020, https://doi.org/10.1007/978-3-030-00001-1_33-1.
[3] D. Lama, Ethics for the New Millennium, Riverhead Books, New York, 1999.
[4] L. Boff, Espiritualidad, Sal Terrae, Santander, 2002.
[5] G. Ravasi, Spiritualità e Bibbia, Editrice Queriniana, Brescia, 2018.
[6] C.M. Martini, M. Trevi, R. de Monticelli, S. Minegishi, La preghiera di chi non crede, Arnaldo Mondadori Editore, Milano, 1994.
[7] L. Wittgenstein, Notebooks 1914-1916, University of Chicago Press, Chicago, 1984.
[8] V.E. Frankl, Man's Search for Ultimate Meaning, Random House, 2011.
[9] K. Schwab, The Fourth Industrial Revolution, Kindle Edition, World Economic Forum, Davos, Switzerland, 2016.
[10] G. Arroyo, Sancti Benedicti Regula Monasteriorum. Cum concordantis eiusdem (Editio Iubilaris). Regalis Abbatia S. Dominici de Silos Burgis in Hispania : Imprenta Aldecoa - Burgos, 1947.
[11] D.A. Tredget, Practical wisdom and the rule of Benedict, J. Manag. Dev. 29 (7/8) (2010) 716–723.
[12] S. Krisnakumar, C.P. Neck, The 'what', 'why' and 'how' of spirituality in the workplace, J. Manag. Psychol. 17 (3) (2002) 153–164.
[13] G. Gotsis, Z. Kortezi, Philosophical foundations of workplace spirituality. A critical approach, J. Bus. Ethics 78 (4) (2008) 575–600.
[14] Szolnai (Ed.), Spirituality and Ethics in Management, second ed., Springer, Dordrecht, 2011.
[15] D. Melé, J. Fontrodona, Christian ethics and spirituality in leading business organisations: editorial introduction, J. Bus. Ethics 145 (4) (2017) 671–679.
[16] M. Eckhart, Meister Eckhart (CWS), vol. 28, Paulist Press, 1981.
[17] B. Lawrence, The Practice of the Presence of God, Shambhala Publications, 2005.
[18] E. Dane, Paying attention to mindfulness and its effects on task performance in the workplace, J. Manag. 37 (4) (2011) 997–1018, https://doi.org/10.1177/0149206310367948.
[19] P. Leo XIII, Encyclical Letter Rerum Novarum (21 September 2021), 1891. Retrieved from: http://www.vatican.va/content/leo-xiii/en/encyclicals/documents/hf_l-xiii_enc_15051891_rerum-novarum.html http://www.vatican.va/content/leo-xiii/en/encyclicals/documents/hf_l-xiii_enc_15051891_rerum-novarum.html.
[20] P. Pius IX, Encyclical Letter Quadragessimo Anno, 21 September 2021. Retrieved from: http://www.vatican.va/content/pius-xi/en/encyclicals/documents/hf_p-xi_enc_19310515_quadragesimo-anno.html.
[21] X.X.I.I.I. John, P. (21 September 2021). Encyclical Letter. Mater et Magistra, 1961. Retrieved from: http://www.vatican.va/content/john-xxiii/en/encyclicals/documents/hf_j-xxiii_enc_15051961_mater.html.
[22] X.X.I.I.I. John, P. (21 September 2021). Encyclical Letter. Pacem in Terris, 1963. Retrieved from: http://www.vatican.va/content/john-xxiii/en/encyclicals/documents/hf_j-xxiii_enc_11041963_pacem.html.
[23] V.I. Paul, P. (21 September 2021). Pastoral Constitution. Gaudium et Spes, 1965. Retrieved from: http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_const_19651207_gaudium-et-spes_en.html.
[24] V.I. Paul, P. (21 September 2021). Encyclical Letter. Populorum Progressio, 1967. Retrieved from: http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_26031967_populorum.html.

[25] V.I. Paul, P. (21 September 2021 Apostolical Letter. Octogessima Adveniens, 1971. Retrieved from: http://w2.vatican.va/content/paul-vi/en/apost_letters/documents/hf_p-vi_apl_19710514_octogesima-adveniens.html.

[26] John Paul II, P. (21 of September 2020). Encyclical Letter. Laborem Exercens, 1981. Retrieved from, http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_14091981_laborem-exercens.html.

[27] John Paul II, P. (21 September 2021). Encyclical Letter. Sollicitudo Rei Socialis, 1987. Retrieved from: http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_30121987_sollicitudo-rei-socialis.html.

[28] John Paul II, P. (21 September 2021) Encyclical Letter. Centesimus Annus, 1991. Retrieved from, http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_01051991_centesimus-annus.html.

[29] X.V.I. Benedict, P. (21 September 2020). Encyclical Letter. Caritas in Veritate, 2009 got from, http://www.vatican.va/content/benedict-xvi/en/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate.html.

[30] Francis, Homilía imposición del palio y entrega del anillo del pescador en el solemne inicio del magisterio petrino del obispo de Roma, 2013, March 19. https://www.vatican.va/content/francesco/es/homilies/2013/documents/papa-francesco_20130319_omelia-inizio-pontificato.html.

[31] Francis, P. (21 September de 2021). Apostolic Exhortation. Evangelii Gaudium, 2013. Retrieved from: http://www.vatican.va/content/francesco/en/apost_exhortations/documents/papa-francesco_esortazione-ap_20131124_evangelii-gaudium.html.

[32] Francis, P. (21 September 2021). Encyclical Letter. Laudato Si, 2015. Retrieved from, http://www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html.

[33] Francis, P. (21 September 2021). Fratelli Tutti. Encyclical Letter of the Holy Father Francis on Fraternity and Social Friendship, 2020. Retrieved from: https://www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20201003_enciclica-fratelli-tutti.html.

[34] C. Rozuel, N. Kakabadse, Ethics, spirituality and self: managerial perspective and leadership implications, Bus. Ethics Eur. Rev. 19 (4) (2010) 423–436.

[35] B.D. Mittelstadt, P. Allo, M. Taddeo, S. Wachter, L. Floridi, The ethics of algorithms: mapping the debate, Big Data & Society 3 (2) (2016) 1–21.

[36] M. Haenlein, A. Kaplan, A brief history of artificial intelligence: on the past, present and future of artificial intelligence, Calif. Manag. Rev. 61 (4) (2019) 5–14.

[37] K. Martin, K. Shilton, J. Smith, Business and the ethical implications of technology: introduction to the symposium, J. Bus. Ethics 160 (2019) 307–317.

[38] European Commission, White Paper. On Artificial Intelligence - A European Approach to Excellence and Trust, 2020. Retrieved from: https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf.

[39] D.P. McCann, Catholic social teaching in an era of economic globalisation, Bus. Ethics Q. 7 (2) (1997) 57–70.

[40] D. Finn, Human work in Catholic social thought, Am. J. Econ. Sociol. 71 (4) (2012) 375–400.

[41] A. Sison, I.J. Ferrero, G. Guitián, Human dignity and the dignity of work: insights from catholic social teaching, Bus. Ethics Q. 26 (4) (2016) 503–528.

[42] K.C. Cash, G.R. Gray, A framework for accommodating religion and spirituality in the workplace, Acad. Manag. Exec. 14 (3) (2000) 124–133.

[43] N.S. Fagley, M.G. Adler, Appreciation: a spiritual path to finding value and meaning in the workplace, J. Manag. Spiritual. Relig. 9 (2) (2012) 167–187.

[44] M. Guillén, I. Ferrero, W.M. Hoffman, The neglected ethical and spiritual motivations in the workplace, J. Bus. Ethics 128 (4) (2015) 803–816.

[45] K. Marx, Economic & Philosophic Manuscripts of 1844, Progress Publishers, Moscow, 1959.

[46] J.M. González-Páramo, Fourth industrial revolution, employment and welfare state, in: Anales de la Real Academia de Ciencias Morales y Políticas, Ministry of Justice, 2018, pp. 89–113.

[47] J.M. Keynes, «Essays in Persuasion. » Economic Possibilities for Our Grandchildren, 7 August 2011, 1930 (last access: 29 de May de 2018), https://gutenberg.ca/ebooks/keynes-essaysinpersuasion/keynes-essaysinpersuasion-00-h.html.

[48] E. Brynjolfsson, A. McAfee, The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies, WW Norton & Company, 2014.

[49] R.R. Schaller, Moore's law: past, present and future, *IEEE Spectrum* 34 (6) (1997) 52–59.

[50] K.D. Thoben, S. Wiesner, T. Wuest, Industrie 4.0" and smart manufacturing–a review of research issues and application examples, Int. J. Autom. Technol. 11 (1) (2017).

[51] C.N. Davidson, Now You See it: How the Brain Science of Attention Will Transform the Way We Live, Work, and Learn, Viking, New York, NY, 2011.

[52] J. Enke, R. Glass, A. Kreß, J. Hambach, M. Tisch, J. Metternich, Industrie 4.0–Competencies for a modern production system: a curriculum for learning factories, Procedia Manufacturing 23 (2018) 267–272.

[53] D. Assante, A. Caforio, M. Flamini, E. Romano, Smart education in the context of Industry 4.0, in: 2019 IEEE Global Engineering Education Conference (EDUCON), IEEE, 2019, April, pp. 1140–1145.

[54] X. Zhang, X. Ming, Z. Liu, D. Yin, Z. Chen, A reference system of smart manufacturing talent education (SMTE) in China, Int. J. Adv. Manuf. Technol. 100 (9–12) (2019) 2701–2714.

[55] World Economic Forum, The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution, World Economic Forum, Geneva, Switzerland, 2016.

[56] J. Marques, Understanding the strength of gentleness: soft-skilled leadership on the rise, J. Bus. Ethics 116 (1) (2013) 163–171.

[57] T.W. Kim, Gamification of labor and the charge of exploitation, J. Bus. Ethics (2016) 1–13.

[58] Organisation for Economic Co-operation and Development, Future of Works and Skills. February 2017, 2017. https://www.oecd.org/els/emp/wcms_556984.pdf.

[59] S. Braun, C. Peus, Crossover of work-life balance perceptions: does authentic leadership matter? J. Bus. Ethics 149 (4) (2018) 875–893.

[60] L. Golden, A brief history of long work time and the contemporary sources of overwork, J. Bus. Ethics 84 (2) (2009) 217–227.

[61] D.A. Spencer, Fear and hope in an age of mass automation: debating the future of work, New Technol. Work. Employ. 33 (1) (2018) 1–12.

[62] D. Acemoglu, P. Restrepo, *Robots And Jobs: Evidence From U.S. Labor Markets* (No. W23285), National Bureau of Economic Research, 2017.

[63] K.J. Delaney, The robot that takes your job should pay taxes, says Bill Gates, Quartz (2017). February 17.

[64] G. Anzera, F. Comunello, Toward digital inclusion: digital divides and new media literacies, in: Digital Multimedia: Concepts, Methodologies, Tools, and Applications, IGI Global, 2018, pp. 373–394.

[65] I. Sohn, The future of work in the United States: projections of occupational employment to 2026, Foresight: The International Journal of Applied Forecasting (49) (2018) 33–38.

[66] A. Chen, Projected New Jobs by Major Occupational Group, 2016–26, Career Outlook, U.S. Bureau of Labor Statistics, 2017. October 2017.

[67] A.E. Gudanowska, Transformation towards Industry 4.0–identification of Research Trends and Aspect of Necessary Competencies in the Light of Selected Publications, Research in Logistics&Production. 2017, 2017.

[68] J. Manyika, S. Lund, J. Bughin, K. Robinson, J. Mischke, D. Mahajan, Independent Work: Choice, Necessity, and the Gig Economy, McKinsey & Company, October, 2016.

[69] A. Sundararajan, The future of work, Finance Dev. 54 (2) (2017). June 2017.

[70] M.H. Jarrahi, Artificial Intelligence and the Future of Work. Draft, Business Horizons, 2018.

[71] R. Gonzalez Fabre, J. Camacho Ibáñez, P. Tejedor Escobar, Moral control and ownership in AI systems, AI Soc. 36 (2021) 289–303, https://doi.org/10.1007/s00146-020-01020-z.

[72] T. Rua, L. Lawter, J. Andreassi, Desire to be ethical or ability to self-control: which is more crucial for ethical behaviour? Bus. Ethics Eur. Rev. 26 (3) (2017) 288–299.

[73] J. Fabisiak, S. Prokurat, Age Management as a Tool for the Demographic Decline in the 21st Century: an Overview of its Characteristics, 2012.

[74] K. Shacklock, A. Shacklock, The ageing workforce: ethical implications for HRM practitioners, in: ANZAM Conference Proceedings, Canberra, 2005, December, pp. 7–10.

[75] G. Hertel, H. Zacher, Managing the Ageing Workforce, The SAGE Handbook of Industrial, Work, & Organizational Psychology, 2016, 3.

[76] B. Wisse, R. van Eijbergen, E.F. Rietzschel, S. Scheibe, Catering to the needs of an ageing workforce: the role of employee age in the relationship between corporate social responsibility and employee satisfaction, J. Bus. Ethics (2015) 1–14.

[77] D.J. Moberg, The ageing workforce: implications for ethical practice, Bus. Soc. Rev. 106 (4) (2001) 315–329.

[78] L. Jiang, M.J. Johnson, Meaningful work and affective commitment: a moderated mediation model of positive work reflection and work centrality, J. Bus. Psychol. 33 (4) (2018) 545–558, https://doi.org/10.1007/s10869-017-9509-6.

[79] M. Lips-Wiersma, J. Haar, S. Wright, The effect of fairness, responsible leadership and worthy work on multiple dimensions of meaningful work, J. Bus. Ethics 161 (1) (2020) 35–52, https://doi.org/10.1007/s10551-018-3967-2.

[80] M. Matsuo, K. Arai, T. Matsuo, Empowering leadership and meaningful work: the mediating role of learning goal orientation, Int. J. Train. Dev. 23 (4) (2019) 328–338, https://doi.org/10.1111/ijtd.12165.

[81] J. Besnier, Humanity: a failed experiment? Versions of trans-humanism. [L'humanité: une expérience ratée: versions du transhumanisme], Futuribles: Analyse et Prospective 397 (2013) 5–20.

[82] N. Bostrom, A. Sandberg, Cognitive enhancement: methods, ethics, regulatory challenges, Sci. Eng. Ethics 15 (3) (2009) 311–341, https://doi.org/10.1007/s11948-009-9142-5.

[83] R. Cole-Turner (Ed.), Transhumanism and Transcendence: Christian Hope in an Age of Technological Enhancement, Georgetown University Press, Washington, DC, 2011.

[84] European Agency for Safety and Health at Work, May). *European Opinion Polls on Safety and Health at Work*, 2013. Retrieved May 28, 2018, from, https://osha.europa.eu/en/surveys-and-statistics-osh/european-opinion-polls-safety-and-health-work.

[85] E. Brynjolfsson, A. McAfee, The Jobs that A.I. Can't Replace, BBC News, 2015, September 13. Retrieved May 28, 2018, from, http://www.bbc.com/news/technology-34175290.

[86] A.M. Balog, L.T. Baker, A.G. Walker, Religiosity and spirituality in entrepreneurship: a review and research agenda, J. Manag. Spiritual. Relig. 11 (2) (2014) 159–186, https://doi.org/10.1080/14766086.2013.836127.

[87] L. Bouckaert, L. Zsolnai, in: L. Bouckaert, L. Zsolnai (Eds.), The Palgrave Handbook of Spirituality and Business, Palgrave Macmillan, New York, 2011.

[88] F. Rielo, Concepción mística de la antropología, F.F.R, Madrid, 2012.

[89] B. Giovanola, Re-thinking the anthropological and ethical foundation of economics and business: human richness and capabilities enhancement, J. Bus. Ethics 88 (3) (2009) 431–444, https://doi.org/10.1007/s10551-009-0126-9.

[90] I.L. Mitroff, E.A. Denton, A study of spirituality in the workplace, Sloan Manag. Rev. 40 (4) (1999) 83–92.

[91] D. Melé, C. González Cantón, Fundamentos antropológicos de la dirección de empresas, EUNSA, Pamplona, 2015.

[92] M.E. Koltko-Rivera, Rediscovering the later version of Maslow's hierarchy of needs: self-transcendence and opportunities for theory, research, and unification, Rev. Gen. Psychol. 10 (4) (2006) 302–317, https://doi.org/10.1037/1089-2680.10.4.302.

[93] A.H. Maslow, Motivation and Personality, third ed., Pearson Education, Delhi, 1987.

[94] A.H. Maslow, Religions, Values, and Peak Experiences, Penguin, New York, 1970.

[95] N. Eva, M. Robin, S. Sendjaya, D. van Dierendonck, R.C. Liden, Servant Leadership: a systematic review and call for future research, Leader. Q. 30 (1) (2019) 111–132, https://doi.org/10.1016/j.leaqua.2018.07.004.

[96] L. Nazareno, D.S. Schiff, The impact of automation and artificial intelligence on worker well-being, Technol. Soc. 67 (2021) 101679, https://doi.org/10.1016/J.TECHSOC.2021.101679.

[97] J. Selimović, A. Pilav-Velić, L. Krndžija, Digital workplace transformation in the financial service sector: investigating the relationship between employees' expectations and intentions, Technol. Soc. 66 (2021) 101640, https://doi.org/10.1016/J.TECHSOC.2021.101640.

[98] B.I. Chigbu, F.H. Nekhwevha, The future of work and uncertain labour alternatives as we live through the industrial age of possible singularity: evidence from South Africa, Technol. Soc. 67 (2021) 101715, https://doi.org/10.1016/J.TECHSOC.2021.101715.

[99] L. Novakova, The impact of technology development on the future of the labour market in the Slovak Republic, Technol. Soc. 62 (2020) 101256, https://doi.org/10.1016/J.TECHSOC.2020.101256.

[100] L.W. Fry, Toward a theory of spiritual leadership, Leader. Q. 14 (2003) 693–727.

[101] P.E. Bierly, E.H. Kessler, E.W. Christensen, Organisational learning, knowledge and wisdom, J. Organ. Change Manag. 13 (6) (2000) 595–618.

[102] Cambridge University, in: C.U. Press (Ed.), Cambridge Dictionary, 2018. Retrieved May 2018, 28, from, https://dictionary.cambridge.org/dictionary/english/wisdom.

[103] L. Tolstoy, War and Peace, Oxford World's Classics, Oxford, 1869.

[104] P. Cockshott, K. Renaud, Humans, robots and values, Technol. Soc. 45 (2016) 19–28, https://doi.org/10.1016/J.TECHSOC.2016.01.002.

[105] D. Melé, Practical wisdom in managerial decision making, J. Manag. Dev. 29 (7–8) (2010) 637–645, https://doi.org/10.1108/02621711011059068.

[106] B. Schwartz, Practical wisdom and organizations, Res. Organ. Behav. 31 (6) (2011) 3–23.

José Luis Fernández Fernández, PhD and MBA, is Full Professor and Director of the Chair in Economic and Business Ethics at Pontifical University Comillas of Madrid. Fernández has been President of EBEN-Spain since 1993 to 2007. He is a member of the Board of Directors of the European Ethics Network; and Fellow of the Caux Round Table. He is a representative at -CTN 165 Ética: UNE-ISO 26000:2012- at AENOR –*Agencia Española de Normalización y Certificación.* He holds the CESCOM Compliance Certification and is an accredited member of the Internationally Certified Compliance Professional (ICCP), in the International Federation of Compliance Association (IFCA).

Javier Camacho Ibáñez, PhD in Business Ethics at Pontifical University Comillas of Madrid. Javier is a Telecommunications Engineer by the Politechnical Univeristy of Madrid, Executive MBA by the IESE and Master in Research in Economy and Business by the Pontifical University of Comillas. He is a serial entrepreneur, in areas related with management consultancy for SMEs, and collaborates in several research projects on Economic and Business Ethic. He is Assistant Teacher at Universidad Pontificia Comillas.

Cristina Díaz de la Cruz has a PhD in Economics and Business from the Comillas Pontifical University (Spain) and a degree in Industrial Engineering with a mention in Industrial Organization from the University of Zaragoza (Spain). She is a lecturer and researcher in the Department of Business Administration at the Universidad Técnica Particular de Loja (Ecuador). She is also Director General of University Missions at the same university.

Bernardo Villazán Gil, Director of the Chair of Connected Industry at Comillas Pontifical University. Electromechanical Engineer from ICAI, Diploma in Good Corporate Governance by the Institute of Directors of Spain, and in the Independent Directors Program of the ICADE Business School. Founder and first President of the Industry 4.0 Observatory in Spain.