

**A DIFFERENT WAY
A TRIBUTE TO BRUNO MAGGI
ESSAYS ON SOCIAL ACTION AND ORGANIZATION**

**FRANCESCO MARIA BARBINI, GIOVANNI MASINO, MASSIMO NERI,
GIOVANNI RULLI, ANGELO SALENTO, MARCO ZAMARIAN**

Abstract

In this ebook, six scholars from diverse disciplines - organization studies, sociology, and medicine - reflect on the influence of Bruno Maggi's work on their research and theoretical development and production. The specific topics include organizational change in enterprises and in work, and its relationship with technology, negotiation, learning, legal regulation, and health. These themes recall Maggi's scientific career and pay tribute to his original contribution to the interpretation of social action: the Theory of Organizational Action. Through his theoretical reflection, research, and teaching, Maggi has shown that, in line with what the epistemology of the human and social sciences has clearly indicated, it is possible to pursue a pathway that is distinct from the usual and opposing views of objectivism and subjectivism.

Keywords

Organizational action, Technology, Organizational negotiation, Well-being, Regulation, Learning.

A different way. A tribute to Bruno Maggi. Essays on social action and organization, Barbini Francesco Maria, Masino Giovanni, Neri Massimo, Rulli Giovanni, Salento Angelo, Zamarian Marco. Bologna: TAO Digital Library, 2025.

Licenza: CC BY-NC-ND 4.0
© Copyright 2025 degli autori

ISBN: 978-88-98626-40-3
DOI: <http://doi.org/10.6092/unibo/amsacta/8608>



The TAO Digital Library is part of the activities of the Research Programs based on the Theory of Organizational Action proposed by Bruno Maggi, a theory of the regulation of social action that conceives organization as a process of actions and decisions. Its research approach proposes: a view on organizational change in enterprises and in work processes; an action on relationships between work and well-being; the analysis and the transformation of the social-action processes, centered on the subject; a focus on learning processes.

The contributions published by the TAO Digital Library are legally deposited and receive an ISBN code. Therefore, they are to be considered in all respects as monographs. The monographs are available online through AMS Acta, which is the institutional open archive of the University of Bologna. Their stable web addresses are indexed by the major online search engines.

TAO Digital Library welcomes disciplinary and multi- or inter-disciplinary contributions related to the theoretical framework and the activities of the TAO Research Programs:

- Innovative contributions presenting theoretical or empirical analysis, selected after a double peer review process;
- Contributions of particular relevance in the field which are already published but not easily available to the scientific community.

The submitted contributions may share or not the theoretical perspective proposed by the Theory of Organizational Action, however they should refer to this theory in the discussion.

EDITORIAL STAFF

Editor: Bruno Maggi

Co-editors: Francesco M. Barbini, Enrico Cori, Giovanni Masino, Massimo Neri, Giovanni Rulli, Angelo Salento, Luca P. Vecchio, Marco Zamarian

International Scientific Committee:

Jean-Marie Barbier	CNAM, Paris	Science of the Education
Yves Clot	CNAM Paris	Psychology of Work
Daniel Faïta	Université d'Aix-Marseille	Language Science
Vincenzo Ferrari	Università degli Studi di Milano	Sociology of Law
Armand Hatchuel	Ecole des Mines Paris	Management
Paolo Pascucci	Università di Urbino Carlo Bo	Labour Law
Roberto Scazzieri	Università di Bologna	Economics
Laerte Sznelwar	Universidade de São Paulo	Ergonomics, Occupational Medicine
Gilbert de Terssac	CNRS Toulouse	Sociology of Work

ISSN: 2282-1023

www.taoprograms.org – dl@taoprograms.org
<http://amsacta.cib.unibo.it/>

The Italian original edition, “*Un'altra via. Scritti su agire sociale e organizzazione dedicati a Bruno Maggi*”, has been published by Carocci Editore in 2023. The English translation of the essays has been done by the authors and coordinated by Giovanni Masino.

Publicato nel mese di novembre 2025 da TAO Digital Library – Bologna

A DIFFERENT WAY
A TRIBUTE TO BRUNO MAGGI
ESSAYS ON SOCIAL ACTION AND ORGANIZATION

**FRANCESCO MARIA BARBINI, GIOVANNI MASINO, MASSIMO NERI,
GIOVANNI RULLI, ANGELO SALENTO, MARCO ZAMARIAN**

Table of contents

<i>Social action and organization, by Bruno Maggi</i>	1
Introduction	6
FRANCESCO MARIA BARBINI, Enterprise change	9
GIOVANNI MASINO, New technologies and work transformations	30
MASSIMO NERI, Organizational negotiation	58
GIOVANNI RULLI, The interpretation of the relationship between work and health	81
ANGELO SALENTO, Rules, regulation, organization	103
MARCO ZAMARIAN, Learning and organization	127

New technologies and work transformations

Giovanni Masino

Introduction

Organizational change and, more specifically, the transformation of work organization, has been the central focus of my research activity since the beginning of my academic career. It is a particularly broad topic, open to interdisciplinary exploration and articulated in numerous specific themes. In this contribution, I will address some of the issues I have dealt with since the early stages of my research career. I will follow a thread that largely mirrors the trajectory of my own reflections, though its aim is not autobiographical. Rather, the primary objective is to highlight how encountering a theory and its proponent (in my case, the Theory of Organizational Action proposed by Bruno Maggi) can significantly influence and support a researcher's work. In fact, such influence may well go beyond research. A good theory can quite literally change a life: it can alter how one conceives of oneself in relation to the world, change the decisions one makes, and shape one's professional and personal journey. In today's world, where social sciences are often criticized for being self-referential, disconnected from reality, incapable of offering "useful" and "practical" solutions, and where critical thinking seems to be an increasingly scarce resource, I believe it is essential to reaffirm the importance of theorization. Describing a personal journey in which the encounter with a specific theory deeply changed one's way of acting and thinking can be an effective way not only to emphasize its relevance, but also to honor those who, like Bruno Maggi, have devoted their lives to theorization and research.

A secondary (yet still important) objective of this text is to offer some interpretive tools that I believe to be useful for understanding the transformations of work (especially from an organizational perspective) that have emerged over the past three decades. The goal is not to provide an

exhaustive description of these transformations, but rather to propose and exemplify a way of reasoning about them, one that is guided and informed by Bruno Maggi's theory. It should be underlined that what is presented on these pages is the result of my own, personal reading of Maggi's thinking, an interpretation that is inevitably subjective, personal, and certainly different from other possible ones. As Maggi himself wisely likes to say, "each person has her own theory", and this holds true even when one's own theory is explicitly grounded in the work of those who came before. To truly understand any author's thinking, it is always best to refer to the source, to read the author's own texts, and never rely solely on shortcuts or secondhand interpretations. It is therefore important to clarify that even when I will attempt to illustrate certain concepts proposed by Maggi, what I present will always reflect my own personal understanding of them, without any intention or presumption of summarizing them in a "faithful" way, or of being able to replace the original texts.

The starting point: new information technologies

My academic journey began, in the first half of the 1990s, with a research project proposed to me by Bruno Maggi on the topic of work transformations in the field of industrial design. At that time, the introduction of the first CAD (Computer-Aided Design) systems was emerging, and Maggi suggested me to study the changing nature of the work carried out by designers and draftsmen in the manufacturing industry, work environments where intellectual and creative contributions were central and, until then, considered irreplaceable. It is worth noting that, in the early 1990s, the digital revolution was still in its infancy, underestimated by most, or even dismissed as a transient and low-relevance phenomenon. A short article by Nobel laureate Paul Krugman published in 1998 (at a time when the growth of the Internet was already clearly accelerating) became famous for precisely this reason: in it, Krugman argued that the economic impact of the Internet would be comparable to that of the fax machine¹.

¹ I refer here to a short but provocative article that Krugman (1998) published in *Red Herring*, in which he argued that the optimistic predictions about the progress of information technology,

Maggi had already conducted a study years earlier on work supported by CAD systems (Maggi *et al.*, 1988), recognizing the relevance of the transformations that information technology would bring to the world of work without falling into the easy enthusiasm shown by many. I quickly realized that Maggi was not only proposing a cutting-edge research topic but also a “way” (that is, a proper theory) to study and understand the phenomenon, one that struck me as decidedly unusual compared to what I was encountering in the available literature. Over time, I came to understand that his theory was rooted in a radically different worldview from that of the mainstream and was grounded in a different epistemology.

The research on CAD turned out to be a fortunate starting point, as it involved work environments that had traditionally been considered impermeable to any real attempt at automation. Designers were, at the same time, workers of both mind and hand, part engineers and part artists, part calculators of measurements and geometries, and part creative geniuses guided by intuition and inspiration. Despite the ongoing process of automation that, since Ford, had never stopped advancing into new fields of activity, it was not even conceivable that a machine could replace the problem-solving capacity of these designers, let alone their creativity, which was seen as intrinsically human and therefore (at least seemingly) irreducible to programs that, no matter how complex, was at the time viewed as a mere set of codes and procedures. Certainly, there had already been some early signs: for example, experiments with the so-called “expert systems”, which relied on highly formalized methods for codifying solutions to clearly defined problems. Although such tools were

which was already widespread in 1998, were wildly exaggerated. In another passage, Krugman writes: “*As the rate of technological change in computing slows, the number of jobs for IT specialists will decelerate, then actually turn down; ten years from now, the phrase information economy will sound silly*”. On the one hand, it’s easy to poke fun at Krugman’s glaring forecasting error (particularly striking because his prediction was framed in terms of economic impact). On the other hand, I think that Krugman’s position can be better understood if one does not confuse the speed of technological progress with the growth of its actual benefits, especially when those benefits are assessed not just in strictly economic terms, but also in terms of human well-being and quality of life. These two aspects do not necessarily coincide, as I will argue later in this text. In that article, Krugman himself briefly mentions (though in a single sentence and without clarification) the issue of the *usefulness* of technology as distinct from the notion of technical advancement.

referred to as “decision systems”, the complexity of the decisions they addressed was entirely contained within the developers’ ability to match predetermined responses to precisely and exhaustively defined problems within the software’s algorithms. Otherwise, the solutions provided by these systems would have been entirely ineffective. Nevertheless, these were the first interesting attempts to use computers to support human decision-making processes in specific, well-delimited work contexts. But the idea that such “expert systems” could even come close to being marginally useful in work environments (such as industrial design) that combined high levels of creativity and variability was, at that time, almost unimaginable.

However, from the 1980s onward, and even more clearly in the 1990s, the exponential growth of computing power gained momentum, allowing for increasingly sophisticated programming that was progressively less hindered by the slowness of early processors. Programming languages became more flexible and powerful, user interfaces more accessible and usable by a wider range of people, while other much more advanced programming techniques (neural networks, genetic algorithms, and later, the methods that underpin what we now call “artificial intelligence”) developed rapidly. It is fair to say that advances in software added to the evolution of hardware, the latter often described in terms of the so-called “Moore’s Law”². These transformations directed the use of information technology into areas of activity that, just a few years earlier, had appeared largely resistant to advanced automation. The case of industrial design, therefore, offered fertile ground for inspiration, both in relation to what was

² The so-called “Moore’s Law” is a prediction made in 1965 by Gordon Moore, co-founder of Intel, regarding the pace at which computing power would increase. Specifically, the prediction was that computing capacity (at constant cost) would double approximately every eighteen months, thus following an exponential growth trend. According to available data, the prediction remains valid today, albeit with a slight slowdown since 2010 that nonetheless does not change an overall trend of very rapid growth, which is essentially what Moore foresaw. It is important to notice that exponential growth leads to astronomical values in relatively short timeframes. However, the sustainability of such growth in the coming years is uncertain, since current technologies seem to be approaching “physical” limits to further development. Nevertheless, new and particularly advanced technological paths, radically different from traditional ones, are being explored (for example, quantum computing), making further rapid growth at least possible.

already happening in those early 1990s, and as a premonition of what would unfold in the decades to come.

From pencil to mouse and from free creation to constrained choice

My research on CAD clearly highlighted two distinct, albeit interconnected, modes of work transformation following the introduction of computers.

The first can be represented by the image of the designer's pencil being replaced by the computer mouse. This is the metaphor that illustrates the use of computers to make a certain human activity more efficient and/or more precise and/or easier - an activity that is essentially physical or material in nature or characterized by a low level of decision-making complexity. This is precisely the case with the manual part of the design process, the physical drawing on the board: the transfer of a human idea onto a material medium (paper, in this case) that allows for its reproduction and dissemination. The designer (who in this case is more accurately described as a "draftsman"), using simple tools like a drafting board, manually draw on paper (with the greatest precision that was practically possible, given the individual ability and the available tools) the design that would later be transferred to the workshop for the physical production of the object. The draftsman's experience and skill mattered: the quality of the drawing, its clarity and precision, could make a difference in its usefulness for production purposes. However, this was an activity (and a set of skills) whose output could be improved by a specific software: the precision of a line drawn on a screen with a mouse, where the software program corrects even the slightest imperfection of the human hand with absolute accuracy, far surpasses that of even the most skilled draftsman. There were, of course, other advantages as well, such as execution speed and the elimination of some of the physical constraints of traditional drawing (for example, the ability to instantly erase and modify any element without negatively affecting the quality of the drawing or the speed of execution). Today, all of this seems trivial: we are now deeply familiar with the multitude of cases in which work activities that once took place in the "analog"

world (made of matter, atoms, and physical manipulation) have been transported into the “digital” realm (made of information bytes). Information technology thus finds its most obvious initial application: *doing better what was already being done*. The draftsman remains a draftsman, but the tools change. The writer remains a writer, even if they use a word processor instead of a pen or an Olivetti Lettera 22.

This transformation, however, is not so straight-forward: with digital tools, new competencies become necessary, while others become obsolete, and this in turn changes the power dynamics within the organizational setting. Career paths change, jobs and roles change, and in some situations, the overall organization of work processes changes. In the case of industrial design, for example, the role of drawing gradually became marginalized in favor of pure creative design work - the activity of those who create, imagine, solve problems, find solutions. At the time, this could seem reassuring: what truly makes work “human” - hence, irreplaceable by machines - is the purely intellectual and creative part, because that cannot be codified into a software program. This was the prevailing belief in those early years. Physical drawing was becoming marginal, but intellectual, creative ideation remained intact. Or so we hoped.

The reality is that information technology has had an increasingly significant influence, even on those activities with high intellectual content, and that influence continues to grow at an even faster pace today. If we go back to the example of industrial design, as CAD systems became more and more sophisticated, designers no longer found themselves facing a blank page to be filled with their own inventiveness and expertise. Over time, CAD systems didn’t just replace the hand and the pencil, they began to provide design “options” (involving shapes, materials, measurements, mechanisms, and more) that became increasingly intelligent: these options, eventually, became actual ideas, complex design solutions that were less predetermined and increasingly aligned with the specific design problems at hand. problems that the software could even anticipate and propose to the user before the user had consciously recognized them. Human intelligence and creativity were first supported, then integrated,

and finally, gradually but unmistakably, replaced by the machine. Design as free creation increasingly turned into *constrained choice among given options*. Of course, a boundary still persisted between what requires human intervention and what can be delegated to the machine. But it is important to notice that this boundary kept moving, and continues to move, further and further back, leaving human beings with increasingly smaller spaces of irreplaceability. The same phenomenon I observed in the 1990s in the specific context of industrial design was later repeated in a wide array of human activities – indeed, almost all of them, even those we would typically consider artistic or highly creative.

Garry Kasparov, the world-renowned chess grandmaster who was defeated for the first time by a software program (the “Deep Blue” program developed by IBM), commented on his experience by saying that, at a certain point: “*quantity becomes quality*”³. In other words: when computational capacity becomes sufficiently high, the solutions that emerge from algorithms acquire qualities and traits that we typically attribute to human creativity - and, at a certain point, they surpass it, as it happened in the game of chess. The ability to explore and evaluate an immense number of solutions or alternatives in a matter of seconds, or to analyze massive amounts of data in depth to uncover hidden and entirely invisible patterns and relationships (invisible to even to the most talented experts) is what Kasparov meant when he talked about this transformation from “quantity” to “quality”. After they surpass a certain level of complexity and sophistication, algorithms become “creative”, that is,

³ This quote is from a *New York Times* article dated February 12, 1996, titled *In Kasparov vs Computer, The Chess Scorecard is 1-1*. The author, Bruce Weber, recounts the historic match between IBM’s Deep Blue program and Garry Kasparov, considered by many the greatest chess grandmaster of all time. The article describes the second game of the first match (held in 1996 and eventually won by Kasparov 4-2), which was followed by a rematch a year later, in which Kasparov was defeated 3.5 to 2.5. In the article, Kasparov comments: “*What I discovered yesterday is that we are now seeing for the first time what happens when quantity becomes quality*”, and then he adds that the strategy he had used against the computer in the previous game, lost by Kasparov, would have worked against any human being. He continues: “*The depth of this computer’s calculation gives it its positional strength*”. Kasparov’s 1997 defeat caused a major stir, both because of his reputation as an almost unbeatable player and, more importantly, because of the complexity of the game of chess, which many believed required intuition and creativity beyond what computational capacity could ever match. In 2016, Kasparov declared that many common chess programs, easily run on any laptop, would now easily defeat Deep Blue.

unpredictable, effective, capable of learning in ways not predefined (and no longer necessarily based on human experiential data, as the case of AlphaGo Zero⁴ clearly illustrates), and therefore ultimately opaque (in relation to their outcomes) even to the programmers themselves. The traditional idea that the code of a program necessarily produces predictable, standardized, rigid, predetermined, or otherwise knowable outcomes for the programmers is simply incorrect (perhaps not philosophically, but certainly for all practical purposes) when it comes to advanced self-learning programming techniques like the ones mentioned above and when supported by sufficiently powerful computing capabilities.

Information technology reveals, in this new phase, the reason for its historical importance and its uniqueness compared to all previous technological leaps: it is no longer merely a technology that allows humans to do better what they were already doing, but increasingly one that decides, creates, and learns. One that enables doing new things, where the subject of that “doing” becomes increasingly blurred, increasingly an ambiguous combination of human and machine⁵. The existence (however desirable) of a fixed boundary beyond which

⁴ In 2016, a Google subsidiary, DeepMind, first introduced AlphaGo and shortly afterward a more powerful version called AlphaGo Master, programs capable of defeating the best Go players in the world. AlphaGo Master remains undefeated. Go is a board game characterized by a complexity that is orders of magnitude greater than chess and, like chess (before Kasparov’s defeat in 1997), had been considered a domain where human creativity and intuition were unassailable by artificial players. It is noteworthy that AlphaGo Master was trained on data from human-played games, but in 2017 DeepMind introduced AlphaGo Zero, a significantly more powerful version than AlphaGo Master, which was trained without any human-derived data. AlphaGo Zero essentially learned the game of Go by playing against itself. It surpassed AlphaGo’s level in just three days of self-training and then outperformed AlphaGo Master in twenty-one days. In 2019, grandmaster Lee Se-Dol, the only player ever to beat AlphaGo (the original version, later far surpassed by newer ones), announced his retirement, stating that it had become impossible to defeat AI programs (Vincent, 2019). I believe this is a troubling case. It is plausible that what demotivated Se-Dol and led him to abandon his profession and his greatest passion was not simply the inability to win anymore, but the realization that AlphaGo’s arrival had stripped his professional identity of all intrinsic meaning. If a machine can perform better (actually, much better) the same activity that defines a person’s professional or artistic identity, it is entirely plausible that the person may feel that their abilities are devalued, emptied of worth, and therefore meaningless. One might wonder in which and how many other work domains similar transformations will emerge in the near future.

⁵ A recent example, among many, concerns the development of AlphaFold, an artificial intelligence system aimed at studying protein structures, a scientific domain of extreme complexity and vital importance for identifying new treatments for a variety of diseases. Despite major efforts, medical science had, for decades, failed to make significant progress in this area

machines will never be able to go has, to date, been refuted by history and facts. That boundary has continuously shifted, and the territory of what is exclusively human is steadily shrinking. Perhaps one day we will encounter that insurmountable limit. But, as of now, there is no clear evidence that such a limit even exists. It may be time to begin grappling with the opposite hypothesis: that the boundary does not exist at all, or that the exclusively human domain is much narrower than our intuition (or our desire) suggests. And, consequently, we must begin asking the questions that inevitably arise from that hypothesis. First and foremost: what might all of this mean (and what does it already mean) for the transformation of work?

Conceptions of work organization

The example of industrial design was useful in my research journey precisely because it allowed me to grasp both sides of the phenomenon: the less complex activities such as drawing, and the more intrinsically intellectual ones, often considered more deeply and fundamentally human. The question that arose then, and continues to arise today, is the following: how are work and its organization transformed in the wake of this new technological explosion? In my effort to explore this issue, Bruno Maggi's Theory of Organizational Action became my essential reference point, an alternative proposal to the ones that were more widespread but, in my view, inadequate for fully capturing the phenomenon.

On the one hand, the excessive simplification of the functionalist view appears unsatisfactory. Such view is entangled in the attempt to understand

due to its nearly insurmountable complexity. This changed in 2016 with the introduction of AlphaFold. Like AlphaGo Zero, AlphaFold was trained without relying on any specific human expertise in the problem of protein folding. It succeeded in more than doubling the effectiveness of the analysis in a very short time, leading to new and important biological and medical discoveries that would otherwise have been unreachable. According to Kissinger, Schmidt, and Huttenlocher (2021), this is an example of how technical evolution is becoming increasingly integrated into intellectual domains (such as research), where machines are capable of proposing "surprising" solutions - that is, completely unpredictable even to experts and surpassing them in a creative sense - thanks to programming and training techniques no longer bound by prior human knowledge.

reality through interpretive “models” based on hypothetical universal cause-effect laws that, no matter how elaborated, cannot grasp the complexity of a reality undergoing such rapid and radical transformation. Nor its obsession with prescriptiveness seems useful, especially given the evident heuristic limitations of the models it proposes. Moreover, the idea of technological determinism, which derives from functionalism and posits that social and organizational change is a dependent variable of technological transformation, completely misses a crucial point: the human and social origin of technology itself. It leads to a technocentric drift (and sometimes even a technophile one), which I find unacceptable in light of the constructively critical orientation that, in my opinion, should characterize social sciences⁶.

On the other hand, the subjectivist view appears to me a kind of renunciation, a disheartening capitulation in the face of complexity. A surrender, as the only possible outcome is the adoption of a hyper-relativistic posture that results in a form of knowledge that is essentially self-referential: certainly rich and full-bodied in its narrative, but fragmented in substance, destined to evaporate into near-total irrelevance. Extreme relativism produces a view of human relations that I consider genuinely dangerous, even in moral terms: in the exaggerated triumph of subjectivity, where everything is unique and everything has equal subjective value, the inevitable conclusion is that nothing has real value. The exaltation of uniqueness and incommensurability (paradoxically) leads to the *irrelevance of difference* as a way to understand reality. This vision, too, therefore appears unsatisfactory, especially for the study of work organization, which I have always considered part of the broader study of human experience and, as such, cannot avoid engaging with ethical and moral considerations, no matter how complex or unresolved.

Bruno Maggi’s theory, and the epistemology on which it is based, offered me an alternative path, a “third way” that has accompanied me ever since. Organization is conceptualized by Maggi as *organizational action*, and thus as a

⁶ For a critical reflection on technological determinism, see Salento (2018).

process of regulation guided by intentional and bounded rationality (Maggi, 2003). In the chapter *Social Action and Organization*, Maggi emphasizes that the concept of “action” should be understood in the sense used by Max Weber (Weber, 1922), who used the term *Handeln* instead of *Handlung* to underline, with the use of the noun verb (*Handeln*), the interpretation of the *process* of action (not the *performed* action) - that is, its unfolding over time, and the social meaning attributed to it by the acting subject - with time considered a fundamental dimension. The idea of *regulation* is therefore central to Maggi’s thinking, and it can serve as a point of reference in relation to various interpretive questions, depending on the specific goal being pursued. For example, one may inquire into the *source* of regulation - namely, the origin of the rules that guide action - and the implications of different sources of regulation for the process as a whole and for individuals as well. This is certainly one of the most interesting and important topics, not least because many other research questions depend, directly or indirectly, on it. This was the focal point in my studies on CAD-supported industrial design and, as will be discussed in the following paragraphs, remains one of my main conceptual reference points to this day, precisely because of its cross-cutting relevance across thematic and disciplinary interests, its pervasiveness across sectors and domains of human (not just work-related) action, and its significance both conceptually and practically. What opened up a particularly stimulating field of reflection for me was Maggi’s distinction between the concept of *autonomy* (as opposed to *heteronomy*) and that of *discretion*, both of which pertain to the source of organizational regulation (Maggi, 1993; 2003/2016).

The notion of autonomy has been defined (and often misunderstood) in various ways throughout academic literature (Barbini, 2022). Maggi addresses the issue by starting from the term’s etymology. Autonomy, he notes, literally means “self-regulation”, and thus represents an appropriate characterization of a regulatory process in which the acting subject is the protagonist of the regulation itself, in the sense of being its source, the one who produces the rules (formal or informal, written or unwritten, explicit or implicit, even conscious or

unconscious) for their own action. Clearly, when defined so precisely, autonomy can no longer be attributed to the broad set of work processes that are nonetheless commonly (and often erroneously, even in academic literature) described as “autonomous”. The concept thus helps disentangle many misunderstandings, particularly by distinguishing between situations in which the work process is regulated in radically different ways, which would otherwise remain indistinguishable due to the use of vague or imprecise terminology. In Maggi’s writings it becomes evident that work processes not characterized as autonomous can be interpreted as *heteronomous*. In other words, situations (opposed to autonomy) in which the source of regulation is external to the action process: the acting subjects do not regulate their own actions but must comply with rules created by “others” - that is, by regulatory sources external to the observed action process. This is a radical distinction in the sense that it draws a clear, unambiguous conceptual boundary between *self-regulated* and *other-regulated* processes. It also provides fertile ground for studying a multitude of other important issues (regarding, for example, well-being, learning, work, and more).

Maggi’s formulation does not stop there. Observation of reality exposes us to a multitude of work situations in which individuals retain possibilities of choice, even within a heteronomously regulated context of action. These choice options may vary: sometimes they are broader, other times limited to a narrow range of possibilities; in some cases, heteronomous regulation leaves no margin at all and becomes pure and simple imposition. A concept is therefore needed to help us grasp these differences. Moreover, it is also necessary to understand the “multi-level” nature of any process of social action: every human action (and thus every regulatory choice) is embedded within broader regulatory processes that generate more general rules (referring to a different level of analysis), which may constrain the subject’s regulatory capacity. Consequently, there are various possible levels of analysis through which each regulatory process can be studied and understood. And only with respect to the appropriate level of analysis (which in turn depends on the research goals being pursued) one can determine

whether a given process is characterized by autonomy or heteronomy. To assist us in this interpretive challenge, Maggi introduces the concept of *discretion* (Maggi, 1993; 2003/2016). In everyday language (and once again, even in academic literature), the term is often used as a synonym for autonomy or confused with it, but the distinction is actually fundamental. Discretion, according to Maggi's proposal, refers to the presence of spaces for choice and action *within a heteronomously regulated process*. Thus, the concept has a dual interpretive value: on the one hand, discretion immediately evokes a context of heteronomous regulation and should be understood in opposition to autonomy; on the other hand, it points to margins of choice that are varied and variable, wider or narrower, depending on how pervasive the heteronomous regulation is and how much constraint it produces⁷. Therefore, the observation of discretion in a given work process does not in any way indicate or corresponds to autonomy. Naturally, variations in the breadth of discretionary spaces can have very different implications for people's experiences, their well-being, their learning capacity, the effectiveness of work processes, and so on. Significant differences can be observed even among heteronomous work contexts depending on whether they allow wide or narrow discretionary spaces, or, in extreme cases, none at all.

Work regulation and technical artifacts

There is little doubt that technology, especially information technology, is at the center of the debate on the current and future transformation of work. The research I conducted on CAD systems, later extended to other fields, led me to develop a proposal, together with Marco Zamarian (Masino, Zamarian, 2003), that was largely founded on the theoretical framework proposed by Maggi. This proposal focuses on how the presence of technical artifacts (of any kind, from the

⁷ A detailed discussion of the concept of "constraint" (which is our translation of "costrittività", the original Italian term proposed by Maggi) goes beyond the scope of this text. For details, see Maggi (1984/1990).

simplest to the most complex ones) can be interpreted in relation to changes in work processes. Here, I will attempt to summarize its essential elements.

First of all, a technical artifact can be seen as a source (albeit, as we'll see, an indirect one) of regulation. In fact, it *must* be considered as such, or one would be unable to grasp its influence within the regulatory process. Therefore, work must be interpreted in light of the regulation in which the technical artifact becomes a relevant component. For this purpose, the conceptual framework we proposed (ibid.) distinguishes between three different analytical levels.

First, an artifact must be considered in terms of its technical characteristics (which can be physical, if it's a material tool, or digital, related to the interface and all points of interaction between the tool itself and the user, if it's a software application). These technical characteristics are the result of specific choices, which we can succinctly call *design choices* made by those who design and then produce the artifact. Any artifact, by definition, is the outcome of a design and production process that leads to its concrete realization: a set of technical features that inevitably generate constraints and opportunities for the end users. These features influence, in various ways, the users' ways of acting and thinking. In this sense, the influence of the artifact is not so far removed from what Gibson (1979) called *affordance*⁸, although in our framework the focus is more specifically on the constraints and regulatory opportunities that the artifact's materiality creates for the users. The same reasoning applies to any type of tool, whether simple or complex: from a basic knife (the shape of the blade and handle, the length, the materials) to a sophisticated software system like a CAD program. Constraints can be interpreted, from the user's point of view, as heteronomous rules. Opportunities can be interpreted, again from the user's perspective, as potential

⁸ The noun *affordance*, first introduced by psychologist James Gibson (1979), derives from the verb *to afford*, which means "to allow oneself" or "to be able to do something" (including in the economic sense, but not only). In short, Gibson's concept conveys the idea that the physicality of an object (for example, its shape) makes certain uses more or less evident than others, thus making some actions more or less "permissible" (to varying degrees and in different ways), and therefore more likely to be carried out by a subject. Davis (2020) centers her exploration of *affordance* on how technical artifacts constrain and enable human action in various domains and situations.

spaces for action that become possible thanks to the artifact's presence, spaces that the user may or may not choose to exploit. Thus, the materiality of the artifact must be understood, for the purpose of work analysis, as a set of rules for action. These may include both constraining (thus, heteronomous) elements that reduce discretionary margins, and enabling elements that increase or transform the possible spaces for action.

But the analysis cannot stop here. The materiality of the artifact is, in itself, "inert"; in other words, it has no concrete influence on the work process unless the work action is actually carried out. It is therefore necessary to examine what other types of regulatory choices come into play through the artifact's presence. On the one hand, we identify the analytical level of *adoption choices*, understood as the set of decisions regulating the general context in which the artifact is introduced and used within the work process. Just like a knife can be used in a multitude of different action processes, the same holds true for sophisticated tools like CAD systems. For example, CADs can be implemented primarily as drawing tools, or as tools for supporting ideation, or as both at the same time. They can be made available to certain groups of people and not to others. They can be designated for certain types of goals and projects, and not for others. All these examples (and many more) concern the ways in which the artifact is, in the language proposed here, *adopted* - that is, integrated into a work process (or into a set of interrelated processes). The variety and variability of these decisions naturally depend on numerous situational elements, but they are always choices that, in turn, generate constraints and opportunities: they generate both heteronomous rules for users, and opportunities for action as well. It is also clear that adoption choices and design choices are interdependent: those who design the artifact typically anticipate the work contexts in which it might be adopted, and based on that, they adjust the design and thus the artifact's materiality; meanwhile, those responsible for adoption choices must take the artifact's materiality into account. The temporal sequence between these two levels of decision-making can vary. We are more accustomed to thinking of design and material production as preceding the artifact's adoption into an action process

(as it's typical in the flawed functionalist notion of so-called "technological determinism"), but the sequence can also be simultaneous or even reversed. For example, future adopters might commission the design and development of a software tool by asking developers to implement specific technical features based on adoption choices they have already envisioned.

Lastly, we must consider the actual work action process: the actions carried out by those who directly use the artifact to perform their work tasks. Here, we speak of *utilization choices*, referring again to the regulation of action from the perspective of the acting subjects (the end users of the artifact). These subjects regulate their work process within a set of pre-existing rules, which include the implicit rules embedded in the artifact's materiality (stemming from the design choices) and the rules resulting from its integration into the work process (stemming from adoption choices). It is important to notice once again that the temporal sequence between design, adoption, and usage choices is not necessarily one-directional. Users thus find themselves in a regulatory environment altered (often significantly) by the presence of the new technology, understood here as a set of technical artifacts. And they inevitably interpret their situation through their own intentional and bounded rationality. Sometimes they simply accept the new constraints and thus are forced to operate under increased heteronomy or reduced discretion; other times, they attempt to produce their own rules, thereby asserting autonomy by taking advantage of the opportunities provided by the context (including, specifically, the new action spaces enabled by the artifact). And there is no necessary separation between the actors making these three types of choices: the distinction proposed here pertains to the *analytical level* of the choices, not to the subjects themselves. The same individual may, at different times, or even simultaneously, make design, adoption, and utilization choices.

It is important to clarify in what sense the presence of an artifact can generate not only constraints (as might appear at first glance) but also opportunities for action. It is also useful to note that the presence or the increase of constraints is not always a negative or disabling factor for the subject, and that

the absence or reduction of constraints is not necessarily positive or enabling. A few examples may help clarify these two points.

The simplest case is when the presence of an artifact enables the subject to perform actions that would be impossible without it (*e.g.*, I can't assemble a certain piece of furniture without a screwdriver), or when the subject uses the artifact for purposes not intended by its designers (*e.g.*, using the screwdriver not to build something but to threaten or injure someone). In these situations, it is rather obvious that the artifact creates new action opportunities for the subject.

Less obvious, but no less interesting, are cases in which the subject uses the artifact for purposes aligned with those intended by its designers and/or adopters, but asserts modes of action not anticipated, or even hindered, by the artifact's material features or by the context in which it is used (*i.e.*, by design and/or adoption choices). Let's consider, for example, the performance activity of a musician. The neck of traditional string instruments such as a guitar forces the musician to play only a limited set of notes⁹ (typically the twelve notes of the chromatic scale, if we refer to Western musical tradition) - that is, the notes produced by pressing the fingers on the frets. The presence of the frets *constrains* (strongly) the variety of "playable" notes. However, consider the interpretive complexity of the matter: the frets' presence can also be seen as *enabling*, since it significantly reduces the chances of error such as playing out-of-tune notes relative to the musical context. At the same time, guitar players can assert different action spaces and, through special techniques, may produce notes the instrument was not designed to play (in fact, that the design - *i.e.*, the shape of the neck and the placement of the frets - explicitly tries to prevent, precisely to

⁹ Here, for simplicity, we assume that the term "musical note" refers to the frequency of the sound wave produced by the instrument. In Western musical culture, the chromatic scale includes twelve notes per octave, each associated with a specific frequency. For example, the most commonly used tuning system assigns (by convention) a frequency of 440 hertz to the note "A". In reality, every single frequency produces a distinct pitch, and since the number of possible frequencies is essentially infinite (or at least extremely large within the range of human auditory perception), the number of possible "notes" (*i.e.*, sounds produced by a given oscillation frequency) is vastly greater than twelve. There is, in fact, a musical style known as *microtonal music* (and instruments adapted to perform it), where the number of playable notes is far more than twelve (although still few compared to the theoretically infinite frequencies).

facilitate intonation in musical expression). For example, on the guitar, techniques like bending are used to produce notes that are not “included” in the structure of the frets (this technique works by forcing the string with the finger to move beyond the limits set by the “design rules” embedded in the artifact’s construction). This is not possible with a piano, which, when it comes to note variety, does not allow performers to assert new action spaces during execution (of course, the piano can be tuned differently before playing, but during performance, the player can only produce the notes that the structure of the keyboard allows). In this case, the piano’s material constraint does not permit, even through creative or unexpected actions, the exploration of sonic spaces (in terms of generated frequencies) beyond those “designed” into it. The opposite is true of fretless string instruments (like a fretless electric bass, double bass, violin, viola, cello), which allow the musician to play an unlimited range of frequencies (notes) precisely because there are no frets. These instruments offer much greater discretionary action spaces (since fret absence doesn’t limit the frequencies that can be generated), but they also don’t reduce the risk of errors caused by even small inaccuracies in finger placement. As a result, the regulation of finger movements to produce perfectly “in tune” notes becomes much more difficult and requires highly developed skills in the case of fretless instruments.

In summary: design choices (and, similarly, adoption choices) produce constraints and action spaces for utilization choices, spaces that are sometimes consistent with what was planned or anticipated by the design and adoption choices, but sometimes are not. Both the constraints and the action spaces can have positive and/or negative implications for action effectiveness.

The interpretive framework outlined above helps us understand how the artifact transforms the work process by looking specifically at the regulation of that process across the three analytical levels of regulatory choice. It is therefore the overall interplay of these regulatory sources that produces the organizational (regulatory) outcome. An outcome that is never final, always in flux, always subject to new learning and new choices. And it is not a deterministic outcome, nor one that is predefined or necessarily aligned with a general narrative (such

as the idea of technological imperative), as functionalist approaches suggest. Nor is it an outcome that is inscrutable, unevaluable, or comprehensible only *ex-post* and from a purely individual perspective, as subjectivist approaches would argue.

New interpretive challenges for the work of today and tomorrow

The research I conducted on computer-aided design (CAD) in the second half of the 1990s led to conclusions that, in light of the key concepts in Maggi's theory, can be summarized as a general trend toward increased heteronomy and the reduction of previously autonomous activities to merely discretionary ones, though with differences that depend on specific circumstances. Many years have passed since CAD systems could be considered cutting-edge technology. Today, their use is taken for granted, widespread, and indispensable in many productive sectors; technical advancements have made them extremely sophisticated, capable of intervening deeply even in the most creative aspects of the design process. The boundary between action spaces that we consider "fundamentally human" and those that technology can occupy continues to shift, in every domain. In just two decades, work and economic systems have become tightly interwoven with information technology and its countless, ubiquitous applications. The interpretive challenges facing those who reflect on the present and even more so, on the future of work are numerous, significant, and often directly or indirectly tied to ongoing technological evolution.

On the one hand, we should pay attention to phenomena that, though already widespread, still demand fresh reflection. One example is the digitization of many work process contents and outcomes - texts, images, sounds, and even objects (via 3D printing). A second example concerns the spatial and temporal constraints typical of traditional work, which are being completely redefined by practices such as remote working. A third example involves the rise of business models that are heavily based on information systems (particularly in the online sale of goods and services), where human labor appears to be

replaced, made residual, or still present but tightly constrained by complex algorithms.

On the other hand, we should also focus on technical applications that are still limited but rapidly expanding, and whose implications could be of major importance in the near future. A clear case involves artificial intelligence (AI) techniques and advanced robotics, which promise (or threaten) not only to support and integrate human work (as it is already happening in many workplaces), but also to *replace* it in activities, such as complex decision-making and creativity, that until now have remained relatively untouched. Yet there are already early signs of change in these areas, including the advancement of CAD systems in industrial design, as described above. In all these cases, I believe it is essential to avoid simplistic narratives, whether optimistic or pessimistic, as well as passive resignation that abandons any attempt at critical analysis.

For instance, it is far from clear that digitization and dematerialization, which are often linked to the rise of new entrepreneurial opportunities and to the increased independence of an entire generation of “digital” workers (freelancers in the so-called “gig economy”), actually lead to improved working conditions, especially if we examine them through the lens of the autonomy–heteronomy distinction proposed by Maggi. In a recent paper, Pompa (2021) argues that legal independence and autonomy in regulating the work process (or, more often, the ability to exercise mere discretion) are separate, mostly non-overlapping issues. This is especially evident in various intellectual and creative sectors (graphic design, music, design, programming, consulting) where new “digital professionals” find themselves at the mercy of companies that, using complex information systems to channel their service offerings into the market, effectively eliminate their ability to assert autonomy and often leave them with minimal discretion (Masino, 2021). In these cases, the central issue is the power/dependence relationship between the client company and the freelancers, a relationship heavily skewed in favor of the former, because that imbalance determines each party’s ability to assert their own rules. On one side, technology allows such companies to build information systems that manage service supply

and demand in efficient, pervasive, and centralized ways, favoring concentration even in highly fragmented markets. On the other side, open internet access offers freelancers only the *illusion* of autonomy, which instead becomes significantly reduced discretion within a heteronomous process. The internet expands the competitive boundaries for freelancers, making competition global and largely focused on price. This is because human skills become increasingly irrelevant, integrated or replaced by software that can handle ever-larger portions of the final product or service. Meanwhile, the end-market customers cannot, nor could they, appreciate these differences or assign them real value. All of this makes so-called “independent” workers easily replaceable: their bargaining power vanishes, their ability to find market outlets outside of centralized information systems is diminished, and these system-companies dictate the rules of the work process (timing, methods, prices, content) down to the smallest detail. Legal independence remains, while autonomy vanishes.

An even clearer example is the so-called *riders* (what we might call “digital couriers”), independent contractors who offer delivery services to companies that have computerized the entire process from customer order to product delivery. They, too, are in a situation of formal independence but near-total heteronomous regulation of their work process (Neri, Maggi, 2021).

One might ask whether these are fringe, non-generalizable cases, or whether they are symptoms of a broader problem that could worsen over time instead. We can consider two possible interpretations.

The first is that the phenomena described above should not necessarily be seen as negative or pessimistic, at least not in the long term, and perhaps not even in the short term. The technological imperative holds that technical evolution leads to greater efficiency and quality, and that short-term costs are minimal compared to long-term, overall benefits. According to this view, every significant technological shift causes radical changes in the labor market: old jobs disappear, new ones emerge, new skills become desirable, and others become obsolete. The net result, for the economic and social system as a whole, is always positive: the skills and jobs lost to machine substitution are more than compensated by new

skills and jobs related to designing the machines themselves and the new service and manufacturing processes they enable. For workers, the effect is equally positive: a comprehensive transformation occurs, leading to what is called *upskilling*, the abandonment of alienating and repetitive tasks in favor of the development and enhancement of higher-level capabilities and competencies.

This is the narrative that currently accompanies the rise of what is called “Industry 4.0”: companies that integrate, in an organic way, a set of advanced technologies (artificial intelligence, advanced robotics, 3D printing, data mining, and others) into their production and control processes. These technologies promise to increase process control, dramatically reduce production costs, improve quality and flexibility, and finally, replace low-level tasks with jobs characterized by higher intellectual content. In a typically socio-technical logic (Emery & Trist, 1960), organizational choices (and more broadly, social change) should facilitate this transformation and ensure the best possible adaptation of the human and social context to technology, which is seen as the primary bearer of rationality and, ultimately, of progress.

The interpretation I propose here is different. More generally, it is not at all certain that what happened in the past can be extrapolated to predict the future. History sometimes repeats itself, but not always. Looking at the past, one might indeed be tempted to conclude that the skills and occupations rendered obsolete by technology were progressively replaced by others, typically in sectors dedicated to developing new machines or their applications, and that the net effect, from a long-term, system-wide perspective, has been positive¹⁰. Even if we

¹⁰ The claim that the overall balance of humanity’s progress through technical evolution has so far been “positive” is a general assertion which, although supported by some metrics, overlooks others, or overlooks elements that are not easily measurable in a universally accepted way (such as people’s happiness, for example). Steven Pinker (2019), in *Enlightenment Now*, effectively illustrates a wide variety of reasons (not solely technological) and data to support the idea that humanity, particularly since the Enlightenment and thanks to it, has moved in a direction of progress and positive change. Even if we accept the plausibility of this narrative about the past (without thereby inferring that the direction of progress is inevitable or easily replicable in the future), one cannot ignore the fact that the superior technological power now available to humans has also created extremely high-risk situations - perhaps not strongly perceived in everyday experience, but certainly looming - and these should be seriously considered in any truly comprehensive assessment (for example, the risk of nuclear catastrophe, the risks associated with

assume this narrative to be true, the reason why history might not repeat itself in the coming decades is that once technology reaches a sufficiently advanced level, humans may no longer be able to compete with it in *any* field. What has happened so far, a shift of human labor from one domain to another, may simply become *complete substitution*. In some creative fields, it is already evident that this trajectory is not only plausible but highly likely. Even the design of next-generation machines could one day be handled by the machines themselves, once they exceed a certain level of capacity and “intelligence.” The general point I wish to make is that the *upskilling* process - *i.e.*, improving work conditions by replacing low-level tasks with higher-level capabilities - is by no means guaranteed. The opposite scenario, once a certain level of technological development is reached, is at least plausible, if not likely. And the mere plausibility of this scenario should already prompt careful reflection and preventative action to mitigate its less desirable consequences. For this purpose, Maggi’s conceptualization of work regulation represents what I consider to be an essential reference point. That’s because phenomena like the potential loss of meaning in work and the retreat of the human domain in favor of technology are, in essence, transformations of the spaces of work and life regulation. In other words, they involve a progressive increase in the *intensity of work constraints* (*costrittività*, Maggi, 1984/1990), both through the reduction of opportunities for the affirmation of autonomy and through the increasingly extreme narrowing of discretionary spaces, until every possibility of personal expression and for the development of one’s capabilities, one’s aspirations, one’s potential for self-realization, and ultimately of work meaning, is emptied. Moreover, the importance of these general elements (even though conceptualized in very different ways) is also highlighted by numerous studies in the field of psychology (Deci, Ryan, 1985; Locke, Latham, 2013; Amabile, 2012). More specifically, what I claim about the evolution of future work is neither an uncritically optimistic position (such as the one known as *upskilling*), nor an uncritically pessimistic one

genetic engineering and biotechnology, environmental risks, risks linked to social inequality, etc.).

(like the Bravermanian *deskilling* view). The criticism I raise concerns the conceptual and observational framework that is often used to interpret reality and to anticipate the most plausible future trajectories. On this point, I believe there are two essential aspects to consider, which are closely interconnected.

On the one hand, I believe it is necessary to place the issue of regulation, as proposed by Maggi, at the center of any interpretive effort. The overall effects of technical evolution must be assessed in light of changes in the regulation of work. It is certainly true that new technologies can liberate work from the constraints of space and time, that they reduce production costs, and that they allow to achieve results that would otherwise be unattainable. All of this is desirable but, at the same time, we must evaluate the “price” we pay – both collectively and individually, as workers and as clients/users – in terms of the reduced possibility to affirm autonomy or in terms of decreased discretion. This is the key point. If we do not pay attention to this, we risk overlooking profoundly negative consequences, well hidden behind superficial, short-term, and ultimately meaningless advantages. There are many concrete examples of this which already affect numerous and diverse fields of activity: commercial services, artistic production, education and teaching, technical consulting services, and much more.

On the other hand, the dissatisfaction with the current state of reflection on these topics also concerns the difficulty of interdisciplinary collaboration. I believe that the social sciences could provide a fundamental contribution to guiding future technological development through collaboration with engineering fields. It is important to notice, however, that this is not just a matter of defining application areas for “intelligent machines” that are compatible with people’s goals of growth, happiness, and well-being (what is often referred to as the “alignment problem”, *i.e.*, the consistency between the machines’ goals and functions and desirable outcomes for humans). Rather, it is necessary to reason in terms of the overall regulation of work, and to consider technological development as a *regulation choice* (in the organizational sense) that, among other possible regulation choices, shapes human development, rather than viewing it

as a technological and/or economic imperative. More specifically, it becomes essential to evaluate in advance whether and how the regulatory framework of work implied by the pervasive use of “machines that decide” can be made compatible with the existence of new spaces for autonomous regulation.

My overall assessment, as of today, is not optimistic. On one hand, the influence of economic logic over both political and corporate decision-makers leads them to neglect any other kind of consideration. The economic and technological imperatives continue to prevail over the human imperative. On the other hand, the time horizon used by decision-makers seems to be dramatically short, which further reduces the possibility of making choices that prove rational, or at least desirable, in the long term. Finally, the intellectual (and practical) drive that could emerge from closer collaborations between technical and social disciplines is seriously hindered by the widespread distorted incentives in today’s social science research landscape, which increasingly push toward fragmentation, isolation, incrementalism, and short-term orientation.

Conclusions: the need for knowledge and the importance of theory

I argued, in the opening paragraphs, that one of the messages I would like to convey with this text is the importance of theorizing. I then offered some brief examples and reflections concerning my ongoing “dialogue” with Maggi’s theory in relation to my personal scholarly journey. These are examples that, inevitably, concern a single personal story, a single professional and life path, but which may perhaps prompt others to a similar reflection. In fact, I do not believe that the need to acquire and produce knowledge pertains only to those, like academics, who are professionally engaged in it. It is a need that concerns everyone. The necessity to understand is perhaps the most distinctive trait of human beings. And understanding can happen effectively only through a process of theorizing, whether conscious or not, formalized or not.

One of the current trends that I consider most dangerous is the spread of an incapacity for critical thinking and logical reasoning, the widespread acceptance of ideas lacking reliable empirical foundations and solid conceptual

references, the dominance of opinion over information, of incompetence over competence, of particular interests over the neutrality of facts, and even of superstition over rationality. This trend is further fueled by recent and rapidly growing phenomena, among them, undeniably, the explosion of social media acting as uncontrollable amplifiers and disseminators of any idea, no matter how unfounded. This drift must be resisted vigorously, at all costs, and in every context, and a good theory is one of the most effective tools for doing so. As I stated above, a good theory can quite literally change a way of thinking, a perspective on the world. That has certainly been the case for me, thanks to the guidance and teaching of Bruno Maggi and his theory, to whom I owe all my gratitude. I believe, and I hope, that the encounter with a theory, and with the noble exercise of conceptualizing and thinking critically, can help each person better navigate their own personal and professional path, regardless of their specific field of engagement or individual goals.

References

AMABILE T.M.

2012 *Componential Theory of Creativity*, Boston: Harvard Business School.

BARBINI F.M.

2022 *L'autonomia distorta e fraintesa*, in Masino G. (Ed.), *Autonomie nel lavoro negli anni 2000*: 12-27, <http://amsacta.cib.unibo.it>, Bologna: TAO Digital Library.

DAVIS J.L.

2020 *How Artifacts Afford. The Power and Politics of Everyday Things*, Cambridge: MIT Press.

DECI E.L., RYAN R.M

1985 *Intrinsic motivation and self-determination in human behavior*, New York: Plenum.

EMERY F.E., TRIST E.L.

1960 *Socio-technical Systems*, in Churchman C.W., Verhulst M. (Eds.), *Management Science. Models and Techniques*, 2: 83-97, Oxford: Pergamon Press.

FEIGENBAUM E.A.

1992 A personal view of expert systems: Looking back and looking ahead, *Expert Systems with Applications*, 5, 3-4: 193-201.

GIBSON J.J.

1979 *The ecological approach to visual perception*, Boston: Houghton Mifflin.

KISSINGER H.A., SCHMIDT E., HUTTENLOCHER D.

2021 *The Age of AI And Our Human Future*, New York: Little Brown & Company.

KRUGMAN P.

1998 Why most economist's predictions are wrong, *Red Herring Online*, 55
<https://web.archive.org/web/19980610100009/www.redherring.com/mag/issue55/economics.html>

LOCKE E.A., LATHAM G.P.

2013 Goal setting theory, 1990, in Locke E.A., Latham G.P. (Eds.), *New developments in goal setting and task performance*: 3-15, Milton Park: Routledge.

MAGGI B.

1984/1990 *Razionalità e benessere. Studio interdisciplinare dell'organizzazione*, Milano: Etas Libri.

1993 Tradizione e innovazione nello studio interdisciplinare del lavoro, Introduzione a Terssac G. de, 1993, *Come cambia il lavoro*: 1-28, Milano: Etas.

2003/2016 *De l'agir organisationnel. Un point de vue sur le travail, le bien-être, l'apprentissage*, <http://amsacta.cib.unibo.it>, Bologna: TAO Digital Library.

MAGGI B., DE FILIPPI F., FABRIS R.

1988 Prima e dopo il CAD: situazioni di lavoro impiegatizio a confronto, in *Obiettivo Ergonomia*, Atti del 4° Congresso della Società Italiana di Ergonomia: 389-403, Ischia.

MASINO G.

2021 Il lavoro nell'epoca delle piattaforme digitali, in Cori E. (Ed.), *Rider at work. Una lettura multidisciplinare*: 67-75, <http://amsacta.cib.unibo.it>, Bologna: TAO Digital Library.

MASINO G., ZAMARIAN M.

2003 Information technology artefacts as structuring devices in organizations: Design, appropriation and use issues, *Interacting with Computers*, 15: 693-707.

NERI M., MAGGI B.

2021 Analisi organizzativa dell'attività di rider, in Cori E. (Ed.), *Rider at work. Una lettura multidisciplinare*: 8-18, <http://amsacta.cib.unibo.it>, Bologna: TAO Digital Library.

PINKER S.

2019 *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress*, Harlow: Penguin Books.

POMPA L.

2021 Autonomia e libertà nelle nuove occupazioni, in Masino G. (Ed.), *Autonomie nel lavoro negli anni Duemila*: 28-44, <http://amsacta.cib.unibo.it>, Bologna: TAO Digital Library.

SALENTO A.

2018 Industria 4.0 e determinismo tecnologico, in Salento A. (Ed.), *Industria 4.0: oltre il determinismo tecnologico*: 6-23, <http://amsacta.cib.unibo.it>, Bologna: TAO Digital Library.

VINCENT J.

2019 Former Go champion beaten by DeepMind retires after declaring AI invincible, *The Verge*, November 27th.

WEBER B.

1996 In Kasparov vs. computer, The chess scorecard is 1-1, *New York Times*, February 12th.

WEBER M.

1922 *Wirtschaft und Gesellschaft*, Tübingen: Mohr (critical edition by J. Winckelmann, 1956).