

FABIO BISOGNI

TIME RETURNED

AI, Robotics and a New Idea of Progress



Fabio Bisogni

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BEYOND NEEDS

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Beyond Needs

Contents

- 1. What Will We Do with Our Time.....1
- 2. Two Centuries of Working Less.....4
- 3. The New Cognitive Automation.....9
- 4. When Productivity Becomes Time.....14
- 5. The Value of What Remains Human.....19
- 6. The Return of Otium.....25
- 7. The Risk of Technological Inequality.....29
- 8. Institutions for a Society That Values Time.....34
- 9. Imagining 2050.....39
- 10. A New Measure of Progress.....44
- Bibliography.....49

Chapter 1

What Will We Do with Our Time

Every major technological transformation raises a familiar question: what will happen to human work? It arose with mechanisation, electricity, industrial automation and computing. It arises today with artificial intelligence and robotics. The fear is understandable: losing a job puts income, independence and part of a person's identity at risk. We therefore need to ask how many jobs might disappear. But we should ask another question alongside it: how much human labour could machines save, and what will we decide to do with the time we gain?

To answer it, we must first look at the tasks that make up an occupation. A doctor gathers information, interprets test results, talks to patients and completes paperwork. A teacher prepares materials, explains ideas, assesses learning and motivates pupils. Each carries out different activities, which technology may affect in different ways. Autor, Levy and Murnane (2003) proposed an account of technological change based precisely on the nature of tasks: routine or non-routine, manual or cognitive. This perspective helps explain why automating a proportion of the tasks in a job does not mean eliminating the same proportion of jobs.

Introducing a new tool can change the content of work, the price of a service and the demand for it. Some activities disappear; others become more important. Even when an occupation remains recognisable, the time needed to carry out its tasks may change. This essay focuses on that change.

Imagine a professional who uses AI to prepare a report more quickly, even after allowing for the time needed to check it. The saving might allow them to take on another client, explore a problem in greater depth or finish the working day earlier. In an organisation, however, the decision may rest with whoever allocates the work. Decisions about targets, pay and workloads then determine how the hours

saved are used. The outcome also depends on who is in a position to make those decisions.

This book argues that some productivity gains should give people greater control over their own time. This aim deserves a place in decisions about innovation, alongside income, the quality of services and businesses' capacity to invest. How much weight it should carry will depend on the circumstances. Leaving it implicit, however, means failing to discuss it at the very moment when we are deciding how to use the benefits of progress.

History offers a precedent. Over the past two centuries, industrial working hours have fallen substantially in many economies, following different paths across countries and periods (OECD, 2021). Greater productive capacity helped make that transformation sustainable. Workers' demands, collective bargaining, legislation and changes in how businesses organised their activities also gave it shape. The hours reclaimed from factory work reflected a different idea of what people could expect from life.

In *Economic Possibilities for Our Grandchildren*, published in 1930, John Maynard Keynes imagined that economic progress might make a working week of around fifteen hours possible within a century. His question went beyond the length of the working week: how would we live once the pressure of economic necessity had eased? For Keynes, growing wealth also posed the challenge of learning how to use greater freedom. We can return to that question without treating his prediction as our destiny.

I shall use the term *time dividend* to describe the possibility of using some of the benefits of innovation to secure this freedom. To understand it, we will need to distinguish the time that technology can save from the hours that people actually gain for themselves. We must also ask who receives them. Shorter hours accompanied by an inadequate income mean something very different from a reduction that allows a person to live with dignity.

There are real conflicts along the way. A business must meet the costs of innovation and find customers; a worker may prefer higher income to shorter hours; some services need more staff and greater

continuity. Other workers risk losing their jobs before they can share in the benefits of change. Any discussion of time returned must address these conditions and identify who bears the costs of the transition.

We can begin here: by making time an explicit aim of progress, so that competing interests can be discussed and decisions made. A free afternoon, the chance to study and the care invested in a relationship all have a place in this discussion. To understand how these possibilities might become part of everyday life, we should return to the long history of efforts to turn some of our growing wealth into time to live.

Chapter 2

Two Centuries of Working Less

The reduction in working hours is one of the most profound transformations of the past two centuries. Seen from a distance, it might appear to have followed a steady course: ever more efficient machines, progressively shorter days. Yet the early stages of industrialisation tell a different story. In some settings, work occupied an increasing share of life even as productive capacity grew. To understand how we came to work less, we must begin with this apparent contradiction.

Hans-Joachim Voth sought an answer in an unusual source: witness statements given at London's Old Bailey. When recounting an event, witnesses often said where they had been and what they had been doing at a particular time. By cross-referencing thousands of statements, the historian reconstructed aspects of the working day that contemporary statistics had not recorded. His estimates suggest that annual working hours in London rose by around 20% between the middle and the end of the eighteenth century. Fewer days off and the decline of customs such as taking Monday off played an important part (Voth, 1998). The finding concerns a specific setting, but it is enough to challenge the idea that the arrival of machines immediately made workers' lives easier.

The factory also changed the rhythm of the day. Operating machinery required workers to be present at coordinated times, with common schedules and fixed breaks. For workers, this meant less freedom to decide when to begin, pause or finish. The history of working time is therefore about control over hours as well as their number.

The historical estimates brought together by the OECD in *How Was Life? Volume II* show how extensive the demands could be: in the nineteenth century, working weeks in manufacturing could reach sixty, seventy or even ninety hours. These figures refer to different

countries and periods and must be read with the limitations of historical sources in mind (OECD, 2021).

To give some sense of the difference, twenty fewer hours a week amount to a thousand hours a year, assuming fifty working weeks. This is an illustrative calculation, but it helps convey the scale of the change. A thousand hours can make room for rest, study, relationships and activities pushed aside when work takes up the whole day. Shorter working hours changed the conditions in which people could build their lives.

In the second half of the nineteenth century, the demand for shorter days became one of the labour movement's central causes. The formula of eight hours for work, eight for rest and eight for personal life expressed an aspiration readily understood beyond the factory. Setting a limit meant recognising that a wage purchased work for a defined period and that the rest of the day deserved protection of its own. Greater productive capacity could make that limit sustainable. Securing it also required bargaining power and political decisions.

Even in Britain's munitions factories during the First World War, where the need to produce was urgent, there were limits to what longer hours could achieve. John Pencavel (2015) reanalysed production data for workers in these factories. Most of the workers studied were women. Beyond a certain point, additional hours contributed progressively less to output. Production continued to grow, but more slowly than the time spent at work. This is a specific case; it cannot establish an optimal schedule for every occupation. It does, however, show why prolonged attendance cannot, on its own, be treated as a measure of effective work.

In 1919, the first Convention adopted by the International Labour Organization (ILO) addressed hours of work in industry. It established the principle of eight hours a day and forty-eight a week, with exceptions and specific arrangements (ILO, 1919). Those forty-eight hours remind us of a difference easily forgotten today: eight hours a day could still mean six days at work. The shorter working day and the weekend were separate achievements, secured through successive changes.

In the United States in the 1930s, shorter hours also served a different purpose. During the Great Depression, reducing individual working hours was one means of trying to spread the available work among more people. Neumann, Taylor and Fishback (2013) show that the fall in hours per worker made a particularly substantial contribution to the decline in total labour input during that period. Work-sharing policies sought to limit redundancies. This episode reminds us that shorter hours can accompany either better living conditions or a crisis. To interpret them, we must also consider income, employment and freedom of choice.

After the Second World War, the spread of the five-day week brought many developed economies towards the forty-hour benchmark. Paid holidays also increased (OECD, 2021). In her account of the US labour market in the twentieth century, Claudia Goldin (2000) includes shorter days, holidays, sick leave and the opportunity to retire earlier among the improvements in workers' conditions. The change was felt across the week, the year and a person's lifetime.

These dimensions are not interchangeable. A free hour every evening, a whole day to oneself and several weeks away from work allow for different experiences. Someone looking after a child may need a shorter daily schedule; someone living far from their family may place greater value on an uninterrupted period. Looking only at the total number of hours risks concealing an important part of the benefit. The ability to organise time matters alongside its quantity.

Comparisons between countries also reveal different paths. Studying working days and hours between 1870 and 2000, Huberman and Minns (2007) find persistent differences between Europe and countries such as the United States, Canada and Australia. The reduction was generally more pronounced in continental Europe. The authors link these trajectories to wage growth, inequality, workers' bargaining power and the historical characteristics of societies. An explanation based solely on available technologies or individual preferences would therefore be insufficient.

The long decline in hours has not continued everywhere with the same intensity. In the OECD's manufacturing data, the reduction

tends to slow in many advanced economies during the second half of the twentieth century, often around the forty-hour benchmark for full-time work. National differences remain, as do changes associated with part-time work, making averages less straightforward to interpret (OECD, 2021).

To understand this slowdown, we must also consider what we expect from economic growth. When income is inadequate, access to more goods and services may be more urgent than shorter hours. Even in more comfortable circumstances, new opportunities for consumption may compete with the desire for leisure. Preferences matter, but they operate within constraints: housing costs, income security, available services and the schedules an organisation allows people to choose. Those who work long hours have not always freely chosen to do so. Those who work less are not always content with that outcome.

Finally, we should remember that these historical accounts mainly describe paid work and, in several cases, particular industrial sectors. They do not, by themselves, capture the time needed to run a household or care for a relative. Fewer hours in a factory or office may leave the burden of responsibilities outside work untouched. The historical achievement remains significant, but it should be measured without confusing the reduction of one obligation with the disappearance of all the others.

Shorter working weeks, holidays and leave have made commonplace something that once had to be fought for. This is the lesson from history that seems most useful to me today: ways of organising time that appear inevitable can change. Change requires resources, agreements and the ability to represent different interests. Productivity creates room for manoeuvre. How that scope for change translates into people's daily lives depends on the decisions made alongside productivity gains.

Today, automation reaches an increasing share of cognitive activities. Writing, analysing documents, translating and programming are becoming part of a transformation that raises new problems, including the need to learn how to check what a machine produces. To understand how much time could be saved, we must examine these tasks closely. History helps us recognise the scope for choice. The characteristics of AI will tell us which possibilities are opening up and what new constraints they bring.

Chapter 3

The New Cognitive Automation

Cognitive automation did not begin with generative artificial intelligence. Calculators, spreadsheets and management software had already transferred some mental work to machines. What is new is the range of tasks involved and the way we can entrust them to a system. Tasks such as drafting texts, summarising documents, translating and writing code no longer always require every step to be set out in rigid instructions. We can describe an objective in ordinary language and receive a result to assess. This form of automation has an unobtrusive presence: it appears on the screens we already use and changes activities that, until recently, required more extensive human involvement.

To understand its reach, we must distinguish the technical potential to change a task from the effects of that change on employment. Eloundou, Manning, Mishkin and Rock (2023) estimate that large language models could affect at least 10% of the tasks performed by around 80% of the US workforce. For around 19% of workers, that share reaches at least half of their tasks. This is an estimate of exposure: it identifies activities that the technology could affect, without determining when it will be adopted or how many jobs will disappear.

Using a different method to assess exposure worldwide, the ILO estimated in 2025 that one in four workers is employed in an occupation with some degree of exposure to generative AI. The share rises to 34% in high-income countries, while only 3.3% of global employment falls into the highest exposure category (Gmyrek et al., 2025). These percentages are not directly comparable with those in the US study. In the ILO's assessment, the presence of tasks that require human involvement makes the transformation of occupations more likely than their complete replacement.

Research on exposure thus identifies a range of possibilities. Experiments allow us to observe what happens when a tool is

actually used. Noy and Zhang (2023) assigned professional writing tasks to 453 university graduates, giving some of them access to ChatGPT. The average time needed to complete the tasks fell by 40%, while independent assessors' quality ratings rose by 18%. The tasks were limited in scope and did not reproduce all the demands for accuracy and contextual knowledge found in real employment. The result shows a substantial time saving on those activities; it does not tell us how much shorter an entire working day could become.

Another experiment reveals the same potential in programming. Peng and colleagues (2023) asked developers to build an HTTP server in JavaScript. Among those who completed the task, the group using GitHub Copilot took, on average, 55.8% less time than the control group. The precision of this figure also reflects the narrow scope of the exercise: building that program was a defined objective that could be checked through tests. A software project also involves maintenance, integration, discussions with users and decisions about what is worth developing.

The move from a controlled experiment to an organisational setting is particularly clear in the work of Brynjolfsson, Li and Raymond (2025). The authors studied the gradual introduction of a generative AI assistant among 5,172 customer support agents at a software company. During conversations, the system suggested replies that agents could use, amend or ignore. The number of issues resolved per hour rose by an average of 15%. The benefits were greater for less experienced agents and those who were initially less productive. For the most skilled, the gains were limited, with some deterioration in the quality of conversations.

This case also points to a possible role in learning: the authors find indications that the tool can spread effective practices and help new agents achieve better performance more quickly. For our purposes, however, the key point is what is being measured: issues resolved per hour. An increase in this indicator documents greater productive capacity. To establish whether it translates into time returned, we must also examine shifts, workloads and the decisions made by the company.

Effectiveness also varies across tasks that may appear equally difficult to a person. Dell’Acqua et al. (2026) describe this unevenness as a ‘jagged technological frontier’. In their experiment with 758 consultants, access to GPT-4 improved speed and quality in activities within the model’s capabilities. In a management task selected because it lay outside that frontier, AI users were less likely to reach the correct solution. The practical problem is recognising where the boundary lies. A good result on one request does not guarantee that the tool will be reliable on the next.

Nor does the presence of a person, on its own, guarantee effective collaboration. In a meta-analysis of 106 studies, Vaccaro, Almaatouq and Malone (2024) find that combinations of humans and AI perform, on average, worse than the better of the two working separately. The studies cover different systems and tasks, rather than generative AI alone. The finding invites us to assess collaboration by how it works in practice: who frames the problem, what information the system receives, who checks the answer and with what expertise.

Checking takes time. A draft must be compared with its sources, code must be tested, and a response must be adapted to the context in which it will be used. The speed at which text appears on a screen tells us little, on its own, about the time needed to arrive at a usable result. Savings must be measured with preparation, review and correction included. Assigning oversight to someone without the necessary knowledge may leave formal responsibility intact while weakening the actual ability to exercise it.

A study by Humlum and Vestergaard, in its updated 2026 version, helps explain why changes in tasks may precede changes in working hours. Linking surveys on chatbot adoption to Danish administrative records, the authors find rapid uptake and productivity benefits reported by workers. Two years after the launch of ChatGPT, however, they find no significant effects on earnings or recorded hours. What they do observe is a reorganisation of activities, including new tasks involving content production, AI supervision and the integration of AI into workflows. The finding concerns that

setting and period and shows how important it is to follow the transformation beyond the individual task.

The move from individual productivity to productivity across the economy also requires care. Acemoglu (2025) shows that aggregate gains depend both on the improvement achieved in the tasks affected and on those tasks' share of economic activity. A large saving in a limited segment of work may have a modest overall effect. To interpret the results correctly, we must keep distinct the task, the worker's day, the organisation of the firm and the economy as a whole. At each level, we count different things and encounter different constraints on how widely the benefits can spread.

Savings may also be absorbed by growing demands. If preparing a report becomes quicker, an office may decide to produce more reports or update them more frequently. The time needed to read them, discuss them and decide what to do may then become the new constraint. Information is produced faster, while recipients' attention remains a contested resource. To assess the benefit, we must follow the work through the process and consider the time that an output also requires of others.

Finally, there is a kind of time whose value becomes apparent mainly later: time spent learning. A young professional preparing an initial analysis practises recognising problems and noticing their own mistakes. If they always delegate that stage to a system, through what experiences will they acquire the judgement needed to check its answers? We can examine this question closely in schools.

Strömberg, Lei and Wu (2026) analysed thirty months of data covering 26,811 pupils in Chinese secondary schools. Comparing the progress of those who had begun using AI with those who had not yet adopted it, they estimate that within six months homework scores rise by 18%, while average completion time falls from around 64 to 45 minutes. In unaided classroom tests, however, scores fall by 20% relative to peers who had not adopted AI. Better submitted work may therefore conceal a loss of learning.

The losses are concentrated among those who complete their homework very quickly. Those who continue to spend roughly as

much time on it as peers working without AI show only a limited deterioration. The comparison is observational, and pupils choose how to use AI. These differences therefore do not establish that simply requiring more time on homework would restore learning: motivation and the way the work is approached may also matter.

An experiment by Contractor and Reyes (2026) shows a different possibility. The authors asked around two hundred university students to study an unfamiliar topic and write an essay, randomly assigning access to AI. In unaided tests immediately afterwards, the group with access to the tool performed better, and the advantage was still observable a week later. Those students also reported spending less time writing and more time reading and gathering information. The time saved on writing could therefore be used for other parts of the learning process. The experiment concerns a limited activity and a short period, rather than the effects over the course of an entire university education.

These are two working papers, covering different students, activities and observation periods. Comparing them encourages us to look at what remains after the task. In work, as in education, a ready-made answer can help us understand a problem, or allow us to skip the very practice we need in order to understand it. Time spent discussing a solution and correcting an error can build the expertise needed later. Treating it solely as a cost to be reduced would leave the productivity calculation incomplete.

Cognitive automation offers concrete possibilities for saving time, distributed unevenly across activities and workers. To assess them, we must ask how long it previously took to achieve a result, how long it takes afterwards once additional work is included, and how the difference is used. This information allows us to move from technological promise to a measure of the time dividend. In the next chapter, we will work through that calculation.

Chapter 4

When Productivity Becomes Time

Imagine a business that produces one hundred units of a good using a total of one hundred working hours each week. A new technology reduces the hours required for existing activities to seventy, but adds ten hours of system oversight and management. Producing the same quantity to the same standard therefore requires eighty hours. The net saving is twenty hours. This is the room for manoeuvre that the business and its workers can begin to discuss.

The *potential time dividend* is the reduction in human working hours needed to achieve a given result, after allowing for any additional work required by the innovation. In our example, it is twenty hours, rather than the thirty removed from previous activities. The distinction matters: if we ignored system oversight, we would attribute a greater benefit to the technology than is actually available. The comparison must hold the quantity and quality of the result constant and include everyone involved in the process.

Now suppose an agreement allocates twelve of the twenty hours to training and service improvement, while the remaining eight become a reduction in working time. Staffing remains unchanged, and each worker retains their total pay. The firm's total working hours fall from one hundred to ninety-two: eighty for production and twelve for the newly agreed activities. The eight hours released from work obligations constitute the *actual time dividend*: the part of the saving that becomes time available to people.

We can use d_e to denote the share of the potential dividend converted into an actual dividend. In this example, $d_e = 8/20 = 0.4$: 40% of the net saving has been returned. Total working time has fallen by 8%; the 40% refers to the share of the saving allocated to people. If all twenty hours were used within work, d_e would be zero. If they were all converted into shorter hours, it would be one. The ratio is meaningful when there is a positive net saving.

As a conceptual tool, d_e shows how the hours saved are allocated, while leaving open the question of how best to use them. Hours devoted to improving an inadequate service can be highly valuable, even if working time remains unchanged. A doctor who gives a patient the time previously absorbed by filling in forms improves the quality of their work and, potentially, the quality of care. This benefit should be recognised as a different use of time within work. It also becomes time returned outside work when, for example, it removes the need to finish paperwork in the evening. The calculation must distinguish the two components.

The meaning of the dividend also requires attention to people's economic circumstances. Eight fewer hours obtained through a loss of income that forces someone to seek a second job are unlikely to increase freedom of choice. Involuntary unemployment cannot be recorded as time returned. The definition of the actual dividend adopted here therefore excludes the simple loss of work and requires us to establish that fewer work obligations really do increase personal time. The number of hours must be considered alongside information on income and the ability to choose: d_e , on its own, does not measure well-being.

Beyond this illustrative example, establishing how much time has been saved requires a reliable comparison. Hours may also fall because orders have declined or part of a service has been withdrawn. Conversely, higher output may conceal an improvement in efficiency. We need to compare equivalent activities, observe what happens after the initial learning phase and include work transferred to others. If an office takes less time because customers must complete longer procedures, the office's gain does not amount to an equivalent saving for everyone involved.

Even a verified time saving has to be organised so that it can be used. Twenty hours saved in small increments across many people do not automatically add up to a usable day off. It may be necessary to change shifts, move activities or coordinate handovers between colleagues more effectively. In services requiring continuous attendance, time saved on one task does not remove the need to

maintain cover. Shorter hours therefore also depend on the ability to bring those savings together and turn them into periods that people can actually use.

A concrete example comes from BMW's Spartanburg plant in the United States. In a pilot project during 2025, the humanoid robot Figure 02 was used to pick up and position sheet-metal components for welding. According to the company's account, it handled more than 90,000 components over ten months, contributing to the production of over 30,000 cars (BMW Group, 2026). Behind these numbers is an action repeated along the production line: picking up a part, orientating it and positioning it precisely so that production can continue. This activity requires attention and physical effort, especially when repeated for hours.

Entrusting these movements to a machine can ease the work even when the shift remains the same length. To understand whether time is also being returned, however, we must follow people's working days. If those who performed the operations are assigned to other activities for the whole shift, the content of their work changes, while the hours available outside the factory remain unchanged. Shortening the day requires knowing the net saving, including the work needed to operate the new system, and reorganising shifts. BMW's account documents the robot's deployment without demonstrating a reduction in workers' hours. Turning an automated task into time for people to use outside work still requires a deliberate choice and the arrangements to put it into practice.

The time savings must then be assessed alongside the costs. Technology may require investment, subscriptions, maintenance and training. With total pay unchanged, fewer working hours mean higher hourly labour costs. Higher productivity, however, may help contain unit production costs. We need to establish whether the gain also covers the new expenditure and how long it takes to recover the initial investment. A proposal to reduce working hours becomes credible when it makes these conditions explicit and clarifies how the benefits will be shared.

We must also consider what people want. Labour economics distinguishes two effects of an increase in hourly pay. On the one hand, giving up an hour's work means forgoing more income: this is the substitution effect, which may encourage people to work more. On the other, higher income may allow people to meet their needs while working less: this is the income effect. Boppart and Krusell (2020) interpret the historical tendency towards shorter hours through a model in which, as the economy grows, the second effect slightly outweighs the first.

This account does not, however, allow us to infer a country's working hours from its level of wealth. Using labour force surveys from 160 countries, Gethin and Saez (2026) find that hours worked per adult decline only slightly as GDP per adult rises and, overall, have a weak relationship with the level of development. Hours per adult depend both on the hours of those in work and on the share of the population employed. Greater labour force participation can offset reductions in individual hours. These are different measures, which must also be read in the light of institutions and the composition of the population.

Preferences, moreover, operate within practical possibilities. Employees do not have sole control over their working hours, and the self-employed must respond to clients' demands. If a service is paid for by the hour, completing it more quickly may reduce the fee. If payment is based on the result, some of the gain may remain with the professional. The ability to use saved time therefore also depends on contracts, bargaining power and demand. The same technology can increase one person's autonomy while raising the amount of work expected from someone else.

Looking only at the relationship between working hours and income would nevertheless leave out an important part of life. Becker (1965) showed how households combine purchased goods and time to carry out activities from which they derive well-being. Ingredients do not become a meal without time to prepare them; a purchased book requires time to read it. This perspective helps explain why greater

financial resources may lose some of their value when there is no time to use them.

Time returned may take the form of shorter days, additional holidays or periods of leave spread across different stages of life. For someone caring for a relative, leaving earlier each day may be more useful; for someone wishing to resume their studies, an uninterrupted period may matter more. Predictable schedules also affect people's ability to organise their lives. The four-day week is one possible form of the dividend, to be assessed against people's needs and the way a service operates.

Measuring the time dividend therefore makes explicit a choice about how to use time that often goes unspoken. In the opening example, choosing how many of the twenty hours remain within work and how many are returned changes both the organisation of the business and people's lives. To judge that choice, we must recognise the value of the work to which hours are redirected and of the activities that become possible outside it. We shall begin with the former: where should we devote more time and attention, and take greater responsibility, in our work?

Chapter 5

The Value of What Remains Human

Think of a teacher who asks an AI system to prepare an initial set of exercises. Within a short time, they have materials they would previously have had to create themselves. The work that follows involves choosing those suitable for the class, recognising a difficulty the program has overlooked and understanding why a pupil keeps making the same mistake. Having the exercises available is helpful. The value of the teacher's contribution also depends on knowing the pupils and being able to use those materials to help them progress.

I propose using this distinction to assess human work in organisations that use advanced technology. When some tasks are entrusted to machines, the decisions made before and after those tasks come more clearly into view: understanding a need, choosing an objective and assessing whether the result is adequate. These activities require specific skills. Describing them broadly as 'human' does not explain how they are acquired, when they provide an advantage or why anyone should recognise their value.

Comparative advantage concerns the relative benefit of performing one task rather than others. Acemoglu and Restrepo (2019) describe two movements that can coexist: automation transfers tasks from labour to capital, while the creation of new tasks can open up areas in which human labour has a comparative advantage. The balance depends on the strength of these movements. Higher productivity alone does not guarantee growth in the demand for labour or in its remuneration.

Part of professional expertise therefore concerns how work is allocated. Delegation means deciding which stages to entrust to a system and how much autonomy to give it. A suggestion offered for discussion, a draft to be revised and an action carried out by the system have different consequences. Whoever oversees the process must be able to recognise when a case needs attention, stop the system from proceeding and explain the decision. Responsibility has

substance only when people can intervene and have the time and information they need to do so.

Experience also gives us knowledge we can use without expressing it fully as instructions. Polanyi (1966) describes this through the tacit dimension of knowledge: we can recognise something or know how to perform an action without being able to spell out every element that guides us. An experienced teacher may notice that a correct answer conceals an insecure grasp of the subject and decide to ask another question. That intuition needs to be checked, but it can guide the enquiry. Professional knowledge also includes this ability to read a concrete situation, testing what experience suggests.

How can we preserve it as work changes? The learning problem encountered in Chapter 3 requires choices about training. Learners can be asked to formulate an initial hypothesis before consulting a system, compare different solutions and explain a correction. Some of the time saved can be spent discussing errors with more experienced colleagues. The aim is to build the ability to decide even when the available answer looks convincing and accepting it would be more convenient.

Social skills also serve a productive purpose. Studying the US labour market between 1980 and 2012, Deming (2017) finds particularly favourable employment and wage outcomes in occupations requiring both mathematical and social interaction skills. In his model, the latter reduce coordination costs and allow people to make better use of different abilities. Being able to collaborate, clarify a disagreement and understand what a colleague is trying to communicate can affect the result as much as mastery of a tool. The study concerns a period before generative AI became widespread: it offers a way of interpreting change, rather than an automatic prediction of its impact.

More recent evidence also suggests examining how combinations of skills are changing. Green (2024) finds that management and business skills are particularly sought after in occupations highly exposed to AI. Creativity illustrates why it would be of little use to search for an area of professional work permanently safe from

automation. Doshi and Hauser (2024) asked 293 participants to write an eight-sentence story. Some worked without assistance; others could receive one or more initial ideas generated by GPT-4. A separate group of readers then assessed the stories. Access to AI ideas improved average ratings of creativity, writing quality and enjoyment, particularly for those who had scored lower on the initial creativity measure. At the same time, the assisted stories tended to resemble one another more closely.

This finding concerns a limited exercise, but it raises a useful question for writers, designers and researchers. A solution that is better when considered on its own can contribute to a less varied whole. Preserving an independent direction requires time to explore, compare very different ideas and recognise when a suggestion is narrowing the range of possibilities. AI can take part in this work. The decision remains which idea to develop, and why, without mistaking the ease with which an idea is generated for how interesting it is.

Some forms of value also depend on relationships between people. For a teacher, knowing a pupil means being able to connect a difficulty with their learning so far, recognise progress and agree on a task to review together later. A pupil may find an automated explanation useful and still want a teacher to notice their effort. Recognition is part of the educational experience. In deciding which activities to entrust to a system, we must also consider what people seek in their relationship with the person providing a service.

Social robotics brings these questions even closer to everyday life. A robot can be designed to interact through voice, movement and responses to the behaviour of the person in front of it. Its purpose may be to accompany an activity, encourage an exercise or prompt a conversation. In such cases, the outcome also depends on how the person experiences the encounter with the machine.

A recent example comes from Japan. In a study published in 2025, Murayama and Takase tested BOCCO emo, a small social robot, with older people living alone. The device relayed messages from family members, provided reminders about everyday tasks and enabled

conversations with human operators, whose replies were voiced by the robot. After four weeks, participants who had used it showed a greater reduction in loneliness and an improvement in psychological well-being compared with the control group.

The result concerns a small sample and a short period. It does not show that a robot can replace care or reduce the time needed to provide it. It does, however, suggest an interesting possibility: a technological presence in the home can make contact with other people more accessible. Behind the machine's voice was a person who listened and responded.

In considering time returned, this example raises a further question. How much time we can free up matters, but so does how the available hours are experienced. For someone living alone, a less burdensome day may still be an empty one. A technology that facilitates conversation can help make it more fulfilling. Its value should therefore also be sought in the relationships it helps sustain and the opportunities for contact it creates.

Imagine a care worker using a robot during an activity with an older person. The technology might help engage the person, suggest an opportunity for conversation or make part of the work easier. It might also require preparation, supervision and an intervention if the person does not wish to take part. The benefit should be assessed across the whole experience, including the work needed to make it useful and respectful of individual preferences.

These tools must also be distinguished from robots that perform physical care tasks. Carrying objects or helping with certain chores can reduce effort and free up minutes in the day. A social robot also affects how that time is experienced. It may provide a welcome activity, but its use might become a reason to reduce opportunities to meet family members and care workers. The same innovation can therefore accompany very different organisational choices.

People receiving care must be able to express a preference, end the interaction and find someone available when they need them. Clarity about the nature of the tool also matters: a machine can respond reassuringly without feeling what its words seem to express. The

affection someone develops towards it can be real. Recognising this requires care, particularly when the person finds it difficult to understand how the system works.

Social robotics therefore asks us to judge progress by more demanding criteria. Counting the minutes saved by care workers is insufficient. We must ask whether those receiving care have greater autonomy, whether they can choose how to spend their day and whether there is more room for relationships with others. We must also consider the time available to a family carer: easing a responsibility may allow them to rest and return to the relationship with more to give.

Here, time returned has a reciprocal meaning. It concerns those who give care and those who receive it, their choices and the quality of the hours spent together. Some of the technological benefit could be devoted precisely to making less hurried encounters possible. For this to happen, relationships must be included among the aims of innovation and given room in the organisation of services.

The same care is needed when a decision has significant consequences. The person affected may need to understand the reasons, add information that has been overlooked or ask for the decision to be reconsidered. The value of human involvement also lies in keeping this exchange open. A formally correct answer may leave the recipient's problem unresolved. Taking responsibility means listening to that person and being willing to change the decision when new information emerges.

For these contributions to become part of everyday practice, organisations must recognise them in the work they assign and assess. Returning to the teacher, time recovered in preparing materials might allow individual discussions of pupils' work or conversations with colleagues about difficulties in the class. It might also be absorbed by demands for new materials and additional reporting. The school's objectives and the conditions in which the teacher works will shape the choice. A technical possibility leads to a better service when organisational decisions create the conditions for it.

Assessing this improvement requires more care than counting documents produced or minutes saved. The number of exercises set tells us little, on its own, about what pupils have understood. In other services, the speed with which a case is closed may conceal requests left unanswered. Quantity measures need to be accompanied by an examination of outcomes: whether recurring errors become less frequent, whether people understand decisions better, and whether a problem is resolved without having to start the process again. This assessment also requires time and judgement.

Recognising a contribution, however, does not ensure that it will be properly paid. An activity may be highly useful and remain poorly paid, while greater responsibility may be assigned without additional resources or autonomy. The social value of work and its market price do not coincide. If we want some of the potential dividend to improve the content of work, we must give it a place in schedules, training and the agreements governing that work. Otherwise, an invitation to devote more attention to people risks becoming one more task to be completed in the same hours.

Some of the time saved can be used to build these conditions: allowing people to examine their work in greater depth, develop their expertise and understand what happens as a result of their decisions. This is a choice about the work we wish to offer and receive. When savings become personal time instead, a different question arises.

Our time continues to matter outside work and training. Resting, pursuing an interest or being with someone has a value that does not depend on professional returns. Here, reflection on work meets reflection on life. An ancient word can help us continue: *otium*.

Chapter 6

The Return of Otium

If robotics and artificial intelligence gave us back a significant amount of time, an apparently simple question would remain: what would we want to do with it? Work determines income, structures our days, organises relationships and confers status. Asked ‘What do you do?’, we often answer with an occupation. A society capable of reducing necessary work would therefore also face a cultural change: recognising the value of hours that need not be justified by a task performed. The word *otium* helps us explore this possibility, along with its ambiguities.

The Latin word *otium* had different meanings depending on the author and context: tranquillity, a respite from public affairs, time for study or for private life (Laidlaw, 1968). In *Pro Sestio*, paragraph 98, Cicero links the phrase *cum dignitate otium* to the defence of the political order and its institutions. This is far removed from our idea of leisure. In *De otio* (4, 1–2), Seneca argues that study and contemplation can serve a community wider than the one into which we are born: the community of gods and human beings. Withdrawal from public life can therefore have a meaning beyond individual interest.

These conceptions belonged to a deeply unequal society. The life of study and conversation in the villas of Roman elites also depended on the labour of enslaved people (Joshel and Petersen, 2014). Reclaiming the word *otium* today requires us to acknowledge this distance. This essay proposes making it widely available: a democratic *otium*. We can draw from the ancient tradition a question about the value of life beyond business and public affairs without adopting its social hierarchies. We can also go further: an activity that has value only for the person experiencing it deserves a place too.

Contemporary research uses the term *time affluence* to describe having ample time. In four studies by Kasser and Sheldon (2009),

the perception of having enough time is associated with subjective well-being even after material wealth is taken into account. This finding encourages us to look both at available hours and at how they are experienced. From the perspective taken here, autonomy also matters: being able to decide how to use at least part of one's day.

Imagine two people who each have four hours between finishing work and going to bed. The first can read, go out, meet someone or rest. The second must make a long journey, deal with paperwork and care for a relative. Counting only the hours outside paid work would make them appear to be in the same position. Their possibilities are, in fact, very different. This difference reveals time poverty: insufficient room for one's own needs and wishes, even when a job does not occupy the whole day.

Care deserves particular attention here. Being with a child or looking after a parent can be a chosen activity and an essential part of life. It can also become a responsibility that absorbs every spare moment, particularly when there is no one with whom to share it. Ferrant, Pesando and Nowacka (2014) show how the unequal distribution of domestic and care work shapes women's employment opportunities. The same reduction in paid working hours can therefore produce different outcomes: a break for one person, more time for existing responsibilities for another. The second benefit can also be valuable, but it must be recognised for what it is.

Control over one's time can remain fragile even when the chores are finished. The phone that simplifies an administrative task also allows a work request to reach us during dinner. Reading it may take only a few seconds, but our attention can remain elsewhere for much longer. To understand how much time is being returned, we should also ask whether we can stop being available. An hour of constant interruptions offers different possibilities from an hour we can spend without waiting for the next call.

Outside work too, an abundance of possibilities can become demanding. A platform offers thousands of films, a digital library millions of titles, a social network an endless stream of content. The

time available to enjoy them remains limited. We may have access to an enormous range of things yet struggle to find something we want to spend time on. Yet it would be paradoxical to respond by turning *otium* into a new obligation: 'Now you have more time, use it well.'

The meta-analysis by Kuykendall, Tay and Ng (2015) finds a positive association between leisure activities and subjective well-being. In their findings, the frequency and variety of activities are more closely associated with well-being than the amount of leisure time alone. This is a useful indication of the limits of counting hours, rather than an instruction to fill the calendar. Preferences differ, and the opportunity to rest without plans must have a place alongside the opportunity to pursue an interest.

Cultural life offers many such opportunities. Reading a novel, going to the theatre, playing music or visiting a museum can enrich life without serving a professional need. Drawing in part on time-use surveys in five countries, Murtin (2024) shows how cultural participation can be associated with enjoyable experiences, while emphasising the role of preferences: those who choose an activity may be precisely those most inclined to enjoy it. These findings do not point to a way of spending time that suits everyone. We can, however, ask whether each person has real opportunities to discover what they enjoy: a nearby library, somewhere to play music, accessible cultural activities.

The same applies to relationships. Trust and friendship require opportunities to meet that cannot always be planned in advance or compressed into an efficient appointment. We may want a calculation to be instantaneous, but we rarely ask for dinner with friends to last as little time as possible. Technology could help us precisely here: shortening some chores so that we can slow down where duration is part of the experience.

There is also time to think without already knowing what the outcome should be. Anyone who studies, writes or researches knows the value of reading beyond their immediate subject, an unexpected conversation or a question left open. This space can generate ideas, but it cannot be defended solely by promising that it will. Rest and

curiosity retain their value even when they do not lead to a project, an article or a marketable skill.

Otium can also provide time for civic life. Keeping informed, discussing a public decision, taking part in an association or volunteering requires mental space as well as hours in the diary. Someone absorbed by everyday necessities may formally enjoy the same rights as someone with time to spare, yet have fewer opportunities to exercise them. Recognising this limitation means addressing the conditions for participation, without imposing a further duty on those already struggling to find room for themselves.

Needs change over the course of life. A person may want more time when a child is born, a break to study at forty or a period to care for a relative. At other times, they may prefer to work more to increase their income. Freedom to choose also depends on how shared responsibilities are organised. Accessible childcare, reliable transport or a simple administrative procedure can return time in very concrete ways. The institutions discussed later should make these possibilities compatible with different needs and paths through life.

The *otium* that interests us is an everyday condition: being able to use part of the day without having to justify every hour through income, performance or a result. Some people will use it for a long-postponed project; others will first need to rest. A society that values time should leave that choice open.

One of the deepest forms of wealth might be precisely this: being able to waste time without feeling guilty. A conversation that lasts longer than necessary. A book that serves no work purpose. A walk without a destination. An interest pursued without knowing where it will lead.

But for this possibility to be credible, we must ask who will really have access to it. If it remains confined to those who already have income, autonomy and services, we will merely have given a new name to an old privilege.

To whom will time be returned?

Chapter 7

The Risk of Technological Inequality

Imagine two people for whom an AI assistant saves an hour a day. The first works in a professional practice and is paid for results: if commitments and demand allow, they can choose to keep part of that hour for themselves. The second works in a service centre and receives new cases to complete during the same shift. The technical gain is similar; the personal outcome differs. Who sets the objectives, how work is paid and how much bargaining power the person has all matter. These arrangements also determine how the benefits of progress are shared.

Every technology enters a society in which differences in income, education, wealth and services already exist. It can lessen or reinforce them. Business owners, employees and customers take part in the transformation from different positions. Even when the overall benefit is positive, some may bear substantial costs. The problem becomes particularly clear when we look at places where automation has already changed work.

Acemoglu and Restrepo (2020) studied the effects of industrial robots in US local labour markets between 1990 and 2007. To measure local exposure, they considered the mix of industries in each area and the spread of robots across sectors. In the more exposed areas, they estimated negative effects on employment and wages. The finding concerns a particular historical and economic context and does not justify predicting the same effects for every robot or for generative AI. It does, however, show why a technological gain must also be assessed from the perspective of the people affected. For those who lose a job, time previously spent working may become job-seeking, uncertainty and waiting. A sustainable transition must address this interval too.

With AI, the relationship between skills and benefits is complex. The experiments discussed in Chapter 3 show that, in some activities, less experienced workers can gain more. This does not establish how the distribution of income will change across the economy. Cazzaniga et al. (2024) identify a risk of rising inequality when AI mainly complements the work of those who already earn more, while returns to capital benefit its owners. They also consider the possibility that broad productivity gains could improve many workers' incomes. Narrower performance gaps within a task may therefore coexist with new economic divides.

Ownership of the technology introduces another distinction. The *AI Index* report documents a sharp fall in model usage prices at equivalent measured levels of performance, while the resources needed to develop the most advanced systems increase (Stanford Institute for Human-Centered Artificial Intelligence, 2025). A small business can thus purchase capabilities previously difficult to obtain. Yet there remains a difference between being able to use a tool and controlling its prices, terms and development. Moreover, two firms purchasing the same service may derive different benefits: one has well-organised data and time to train staff, while the other must introduce it while struggling to keep day-to-day operations running.

Internationally, these differences become more pronounced. The World Bank (2025) identifies four foundations for AI adoption: connectivity, computing capacity, data suited to the context and skills. An internet connection alone does not ensure that an organisation can use a tool effectively. Reliable energy, financial resources and the ability to adapt it to local needs are also required. The digital divide concerns the ability to turn access into a concrete benefit.

Gmyrek, Viollaz and Winkler (2026) describe a specific risk as *disruption without dividend*: a transformation that imposes costs without making the benefits accessible. Their analysis finds that, in developing countries, workers in the jobs most vulnerable to automation often have the connectivity that makes automation possible. Many workers who could be helped by AI, by contrast, face

gaps in digital infrastructure. Both conditions can therefore coexist within the same country. The authors also warn that the same occupation may comprise different tasks in different economies: applying identical exposure estimates everywhere risks overstating the impact. These are potential risks and opportunities, which must be distinguished from effects already observed in employment.

Within organisations, the ability to influence how tools are used also matters. Algorithmic management includes systems that allocate tasks, organise shifts, monitor work or assess performance. The phenomenon extends beyond generative AI (OECD, 2025b). Imagine a warehouse where the next task arrives as soon as the previous one is finished. The system may reduce unnecessary movement, but it may also squeeze breaks. A worker may walk fewer metres and end up more tired if every interval is filled. Assessing the change requires listening to those doing the work and observing its pace, alongside the number of operations completed.

The cases collected by Doellgast et al. (2025) show how these choices can enter collective bargaining. At Deutsche Telekom in Germany, the agreements examined provided for consultation with workers' representatives before new technologies were purchased and for joint risk assessment. Rules on the analysis of employee data limited individual monitoring and automated decisions without human supervision. The framework also included commitments to job security and retraining. The case illustrates what has been negotiated in one setting; it does not show that every agreement produces the same results. It does, however, give concrete form to a possibility: discussing a system's objectives and limits while choices remain open.

This control over work also has consequences outside the firm. Two people on similar pay may have very different days: one knows their shifts weeks in advance; the other finds out at the last moment. One can plan a course or coordinate family responsibilities; the other must remain available. Inequality in time therefore also concerns the predictability of hours. And, as we saw in the previous chapter,

domestic and care responsibilities may absorb a substantial share of the time released from paid work.

Gender differences cut across both areas. Analysing data from 84 countries, the ILO (2026) finds greater exposure to generative AI in occupations predominantly held by women, partly because of their concentration in administrative and support activities. Exposure describes the possibility of transforming tasks, rather than the number of jobs that will be eliminated. For one woman, automating some documentation may open the way to new responsibilities. For another, it may reduce the activities on which her job rests. Being able to participate in reorganisation and having real opportunities to learn become decisive.

Offering a course is insufficient if attending means giving up part of one's income or finding someone to look after the children. Training may be formally available and remain beyond the reach of those who need it. Changing occupation at sixty also involves different costs and time horizons from doing so at twenty-five. These differences do not, however, tell us what a person is capable of simply on the basis of age. Transition policy must take account of the time needed to learn and the material conditions that make learning possible.

Preferences are not uniform. For someone whose income is inadequate, higher pay may be the priority. For others, shorter hours or study leave may matter more. Inequality also concerns this ability to choose. A choice between an unsustainable workload and an inadequate income leaves very little room for autonomy.

The coefficient d_c , introduced in Chapter 4, makes visible the share of net savings that becomes available time. The same value may correspond to shorter hours spread widely or concentrated in a small group. To judge the transformation, we need to know how many people benefit, how many hours they gain and what happens to income, workloads and employment. Comparisons should cover different roles, contractual arrangements, genders, age groups and regions.

We can use the term *distributed dividend* to describe who receives the benefits and to what extent. This adds no further hours to the

calculation: it shows who benefits from the hours already counted. It also prevents us from losing sight of those working in activities where savings are harder to achieve. If the opportunity to work less were confined to the sectors most easily automated, an essential part of society would remain excluded. The distribution of innovation's benefits must also be discussed beyond the boundaries of the individual firm.

The future of work will also depend on the ability to negotiate this distribution. Costs may arrive before benefits and fall on people other than those who will receive them. Addressing that gap gives the promise of time returned a credible foundation. Institutions cannot remove every difference, but they can widen the possibilities of those starting with fewer resources. It is here that technological promise becomes a political question.

Chapter 8

Institutions for a Society That Values Time

The eight-hour day, paid holidays and leave are also innovations in the organisation of time. They made possibilities accessible that had previously depended much more heavily on individual circumstances. In the face of automation, we can begin with three commitments: making the use of time saved at work a matter for negotiation, supporting people through transitions and organising services that reduce everyday burdens. Each requires clearly assigned responsibilities and resources.

The first commitment concerns the agreements under which a technology is introduced. Businesses and workers' representatives should be able to discuss which activities will change, how actual savings will be verified and what share will go towards shorter hours, training or service quality. A credible agreement should also specify pay, workloads and review dates. If hours fall on paper but work continues in the evening, the promised benefit does not materialise. Sectoral bargaining can also provide a framework where company-level bargaining is weaker.

The four-day week is the most visible proposal. Yet reducing hours must be distinguished from compressing them: forty hours spread across four days remain forty hours. Fan et al. (2025) studied 2,896 workers in 141 organisations across six countries involved in six-month trials of shorter hours without loss of pay. They found reduced burnout and improvements in job satisfaction and participants' self-reported mental and physical health, a pattern not observed in the twelve comparison organisations.

These results are promising, but they concern organisations willing to experiment, which had also reorganised work before the trial. The reduction in hours was therefore part of a broader intervention: not every improvement can be attributed to the additional day off alone.

Nor do well-being benefits, by themselves, demonstrate that the model is economically sustainable everywhere. The review by Utzet et al. (2026) also presents a generally favourable but varied picture, while identifying the need for stronger evidence on lasting effects and implementation in different settings.

A hospital makes the practical limit clear. Reducing time spent on repetitive procedures may allow patients to receive better care. Reducing staff members' working hours as well, while maintaining continuous service, may require additional staff. Who will fund them, and how they will be recruited, must be established. The same saving cannot be counted twice, first as more care and then as free hours. A trial should make this choice explicit, protecting both the quality of care and the working conditions of those providing it.

Shorter days, additional holidays and leave meet different needs. For someone caring for a relative every day, an hour each day may be worth more than several days accumulated at the end of the year. The possibility of choosing should be part of agreements, subject to the requirements of the service, so that the best arrangements do not remain reserved for those with greater bargaining power.

Clear boundaries are also needed. The consultation launched by the European Commission in 2025 on telework and the right to disconnect addressed the problem of continuous availability in digital workplaces (European Commission, 2025a). Within organisations, a practical response may be to agree when a reply is expected, which emergencies justify contact and how on-call availability is organised and recognised. Without these rules, flexibility risks leaving each person to negotiate their own rest alone.

The second commitment concerns the ability to face change without being overwhelmed by it. Analyses of lifelong learning remind us that, alongside skills and motivation, learning requires time and resources (OECD, 2025a). A free course can remain inaccessible to someone who would lose income by attending. Training needed to perform a job should therefore take place within paid working hours, while training for a career change should also be backed by financial support and services compatible with family responsibilities.

A training entitlement that workers retain when they change employer may provide more secure access to learning. Its usefulness nevertheless depends on who funds the hours away from work, the quality of the courses and the opportunities to which they lead. For those who lose their jobs, income support must accompany guidance and the time needed to prepare. Promising new career opportunities means little unless people have the means to take them up. Hours devoted to learning should also be recognised for what they are: an investment in one's capabilities, distinct from freely available personal time.

Training should include the ability to assess AI. The framework developed by the OECD and the European Commission for schools emphasises understanding systems, critically assessing outputs and using AI thoughtfully (OECD and European Commission, 2026). These principles can also inform adult learning when adapted to professional experience. Recognising an uncertain result and knowing when to seek verification may be more useful than simply learning to operate the latest application.

The third commitment concerns public services. Accessible childcare or reliable home care can change what a family is able to do each day. We might call this *welfare that returns time*: services assessed also in terms of the autonomy they give back to people. That autonomy, however, requires other people's work. Families' time should not be freed through unsustainable shifts and low pay for those providing care. Adequately funding these services means including the people who make them possible among the beneficiaries.

Public administration offers another example. Imagine a procedure whose completion time falls from fifty to ten minutes and which is used a million times: the direct saving would be around 667,000 hours. This is an initial calculation, not an established result. Errors, requests for assistance and difficulties of access must be considered, alongside the work required to manage the new system. An apparently quick procedure may transfer burdens to less experienced users or the relatives helping them. A meaningful

measure covers the entire process, through to the actual resolution of the case.

The *Digital Government Outlook 2026* encourages services to be rethought around people's needs, including by reducing repeated requests and reusing information already available (OECD, 2026). Digitalisation can become an opportunity to remove unnecessary steps while keeping assistance accessible. Otherwise, an administration that appears faster in its own records may continue to consume a great deal of citizens' time.

The three priorities raise different financial questions. In a business, whether hours can be reduced without cutting pay depends on actual savings, the cost of the technology and how the value produced is shared. Care services and support through transitions require collective resources. These must also reach people working in sectors with fewer opportunities for automation. A temporary contribution may support a trial; a lasting service requires lasting funding. We need to decide which spending takes priority and how to distribute the tax burden across incomes and the wealth produced. Future benefits from AI may widen the possibilities, but they should not be treated as resources already available.

Population ageing makes these choices more demanding. The *OECD Employment Outlook 2025* draws attention to the pressure that a shrinking working-age population may place on many advanced economies (OECD, 2025c). Higher productivity may be needed to maintain incomes and services, as well as to reduce hours. We therefore need to consider the whole working life. A shorter week accompanied by later retirement may redistribute the burden without reducing total working hours. This may be a desirable choice for some people, but its value and costs should be described clearly.

Progress requires trials that can be evaluated. Before they begin, the objectives, those bearing the costs and the intended beneficiaries should be made clear. Evaluation must then cover hours actually worked, incomes, the quality of work and services, costs and well-being, using a credible comparison where possible. A time account can show how many hours have been saved net of new tasks, where

they have been reallocated and who has received personal time. The final chapter will return to this measurement. What matters here is that the findings allow decisions to be revised: a model that works in some organisations must be tested in other settings before it is adopted more widely.

We can call the practical ability to divide one's time between work, learning, care and personal activities, under sustainable conditions, *temporal freedom*. Some people will want to work a great deal out of ambition, creativity or vocation. Institutions should make more choices possible in practice, particularly for those who currently have fewer, and prevent long hours from being the only way to live with dignity. People should also remain free to decide how to use the time they gain: study, care and participation in the community can give it value without exhausting the reasons why it is worth having.

Finally, guiding these choices requires an idea of what we want to make possible. We do not need to predict every detail of the future. We need to imagine one concrete enough to help us judge decisions in the present.

Chapter 9

Imagining 2050

Let us imagine a Wednesday in 2050. Someone finishes work in the early afternoon. They have completed what was expected and know they will not have to continue in the evening. Before going home, they stop to talk to a friend they meet in the street. The conversation lasts longer than expected. The day still holds commitments and worries, but leaves room for something unplanned.

This scene describes a desirable possibility, rather than a prediction. Futures studies distinguish what could happen, what seems more likely and what we would like to make possible. Foresight connects the exploration of these alternatives to present decisions, without treating current trends as destiny (Voros, 2003; Inayatullah, 2008). Imagining 2050 serves here to give concrete form to the temporal freedom we have discussed and to ask what conditions might sustain it.

The same technological development could accompany very different days. In a society of relentless production, every saving is absorbed by a new activity, and efficiency grows alongside demands. In a polarised society, some enjoy greater autonomy while others face intense work or insecurity. In a society that gives people back their time, some productivity gains sustain incomes and services, while others become personal time. These outcomes may coexist in the same city, even within the same organisation. Our aim is to understand how to make the third accessible to more people.

The person we have met does not necessarily work four days a week. They may have chosen shorter days or to alternate periods of greater commitment with longer breaks. At another stage of life, they may wish to work more, to build a business or pursue a project. The difference is that they have sustainable alternatives. Leaving early does not result from a shortage of assignments and does not force them to find a second job. Their income and the services they can access make the choice practicable.

For this afternoon to become possible, some repetitive activities have been automated, others simplified or removed. Part of the saving has remained within the organisation; part has become an actual reduction in working hours, agreed and respected. Some burdens outside work have also eased: a procedure no longer requires information already supplied, and care for a relative can rely on a dependable service. It is the combination of these conditions that creates space in the day. No machine, on its own, could have guaranteed it.

The change is visible during a medical appointment too. Documentation has been prepared with the help of an automated system, and the doctor checks the relevant details. The time saved allows her to listen when the patient raises a question they had previously hesitated to ask. In the same service, robotic tools help with transport and physically demanding tasks. Maintenance, checks and professional responsibilities remain. In this scenario, innovation has improved care and working conditions because these outcomes were deliberately pursued in the organisation of the service.

At school, meanwhile, pupils continue to write, construct arguments and solve problems. A system could complete some exercises more quickly, but doing them builds the capabilities needed to assess its answers. In one lesson, an automated summary is compared with the sources on which it is based. A convincing passage is discussed because it overlooks an important point. AI is used, but time is still set aside for understanding. The speed of obtaining an answer has not replaced the process through which people learn to judge it.

Those who left education many years ago can also return to learning. At a university in this imagined 2050, an adult takes a course compatible with work and family responsibilities. Time to attend has been planned for, rather than carved out solely from evenings and weekends. People can deepen professional expertise, but also explore questions left at the margins of everyday work. Education, work and care thus remain part of life at different ages, rather than being confined to rigidly separate stages.

We do not know which occupations will fill these days, or how many people will work in each. Even for the nearer horizon of 2030, the World Economic Forum (2026) explores four scenarios built on the interaction between AI advancement and workforce readiness. Their value lies in the alternatives and the conditions that distinguish them. For the 2050 we are imagining, choosing a single forecast for the net change in employment and basing every decision on it would be even less credible. The ability to change activities, learn and navigate a transition must therefore be as much a part of the scenario as shorter hours.

Economic and material constraints remain in this future. A society with an older population will need care, and some productivity gains will have to support it. The OECD's long-term scenarios also show how strongly economic prospects depend on assumptions about climate damage and the costs of the energy transition (OECD, 2025d). Time returned will have to find a place within these demands. If the gains from AI are modest, the room for manoeuvre will be narrower. If they are substantial, how to use them will still have to be decided.

Even a better-organised day can be disrupted by a crisis. The European strategic foresight report for 2025 draws attention to the interaction of climate, geopolitical, demographic and social pressures, encouraging preparation for unfamiliar scenarios too (European Commission, 2025b). We can therefore put forward a hypothesis: people and organisations operating with more spare capacity might have greater room to respond to the unexpected. This possible benefit would need to be tested. It nevertheless suggests that eliminating all spare capacity is not always a sound principle of organisation.

To connect the vision to the present, we can use *backcasting*: starting from a desirable condition and working backwards to reconstruct the steps that might make it possible (Robinson, 1990). Placing a few objectives on a calendar is insufficient. We need to understand which depend on others, which require resources and

which decisions might obstruct them. The dates that follow mark illustrative stages in this process, to be revised in the light of results.

Imagining the future becomes, in this sense, a practical activity. It does not remove conflicts, constraints or uncertainty. It allows us to see alternatives that the language of mere adaptation risks concealing. Choices will need to be revised as new evidence emerges. A desirable direction and a willingness to correct the course can coexist.

If we want more people to enjoy temporal freedom by 2050, the conditions sustaining it should be accessible beyond the most advanced organisations by 2040. Training should reach those with fewer resources; care services should have adequate staffing and funding; agreements on working hours should be applicable in different settings. The decisive step would be extending the benefit beyond the first experimenters, without compromising quality or transferring costs to more vulnerable workers.

To get there, by 2035 we should understand more clearly which models work and under what conditions. We would need comparable findings on hours actually worked, incomes, service quality and the distribution of benefits. This would require trials designed to produce knowledge as early as 2030: measurements before interventions, defined responsibilities and resources to track their effects. Businesses, social partners, public administrations and researchers would have different tasks but a shared question: has the promised time reached the people for whom it was intended?

Today, the process can begin with a limited activity. A business introducing a digital assistant can measure the work required before and after adoption, including checks and errors, and agree on the use of part of the saving. After a few months, it can assess whether the improvement persists, who benefits and what costs have emerged. A well-designed trial makes it possible to decide the next step. If it fails, it helps establish what needs to change before further resources are committed.

The path must also stand up to less favourable futures. If productivity grows slowly or energy costs rise, some reductions in

hours may prove difficult to sustain. Improving basic skills, removing unnecessary administrative burdens and making services more reliable may, by contrast, retain their value under different conditions. The vision provides a direction. Evidence must be allowed to change the instruments and the timetable. Keeping both requirements in view is part of shaping the future.

In 2050, we will be able to ask whether greater technological capability has expanded our freedom to live. Counting robots or measuring systems' speed will be insufficient. Let us return, finally, to that Wednesday. The conversation has ended, and the person continues walking home. There will still be things to do, perhaps an unforeseen problem to face. Yet they have been able to stop without compromising their work or taking time away from an immediate obligation. The change we seek also takes shape in possibilities as ordinary as these.

In 2050, judging progress will mean recognising these possibilities in people's daily lives. Many of the decisions that will make this possible need to be taken today.

Chapter 10

A New Measure of Progress

At the end of this journey, productivity remains an essential concern, but it is no longer enough on its own to judge progress. Knowing how much value we produce in an hour helps us understand a society's economic possibilities. It does not tell us how people experience the rest of their time, how predictable their days are or what choices they have. If time returned is to become a credible objective, we must learn to observe it without turning life into another contest in efficiency.

GDP, income and employment continue to provide indispensable information. A society that cannot produce essential goods and services has limited choices. Yet people in similar economic circumstances may lead very different daily lives. Frameworks for measuring well-being, such as the OECD's, already consider health, social relationships and work-life balance alongside the resources needed for the future (OECD, 2024). This essay contributes to that work by focusing on the process through which productive efficiency becomes time people can actually use.

The first question is what we are counting. Contractual hours do not always coincide with hours actually worked. A day also includes travel, domestic work, care and administrative tasks. Looking after a loved one can be both a demanding responsibility and an activity we value. A useful framework must recognise this complexity: time outside paid work includes obligations, choices and activities in which the two are intertwined.

Quantity must be considered alongside autonomy. Two hours we can use as we choose are not equivalent to two hours spent waiting for a work call. Predictability matters too: knowing one's shifts makes it possible to organise a course, an appointment or a meeting. Finally, the quality of the experience matters: tiredness, interruptions and the ability to concentrate all affect how we spend our time. Shorter hours may leave the feeling of being constantly available almost

unchanged. To understand the change, we must observe these dimensions together.

We therefore need different ways of measuring these changes. Time-use surveys describe how activities are distributed; organisational data help reconstruct hours and shifts; questions put to people help us understand how they experience those conditions. The OECD's guidelines on subjective well-being offer principles for collecting and interpreting people's assessments and reported experiences in a rigorous and comparable way (OECD, 2025e). Bringing these sources together allows us to check whether fewer hours correspond to greater autonomy, less pressure or a different quality of life.

When a new technology is involved, we must examine how work was carried out before and after its introduction. The comparison must concern outputs comparable in quantity and quality. If documents are prepared more quickly but require extensive correction, the initial saving must be revised downwards. If the task of checking is transferred to a colleague, a customer or a relative, that work has not disappeared. Net savings must be assessed across the whole process, distinguishing the initial effort of learning from effects sustained over time.

We must also ask what accounts for the improvement. Demand, staffing, procedures and skills may change during the same period. Where possible, comparison groups, phased introductions and measurements taken before the intervention help distinguish the effects. Where these conditions are absent, the evaluation should say so. Knowing that an estimate is uncertain allows it to be used cautiously. Giving an exact figure for a saving we cannot reliably attribute weakens the decisions that follow.

Once the hours saved have been estimated, we need to track how they are used. Some may support greater output; others may improve services or enable training. Some may become personal time. The *time account* proposed here shows how the hours saved are allocated, alongside the economic results. It should state the period observed, the activities included, the costs and the people

involved. This makes the use of those hours an explicit choice that can be discussed.

The coefficient d_e , introduced in Chapter 4, describes the share of net savings that translates into fewer work obligations and more personal time. It is meaningful only if that saving is positive and can be credibly estimated. The actual dividend excludes involuntary unemployment and reductions in hours that undermine income and force people to seek other work. d_e remains a conceptual tool to be developed and tested, rather than an already validated indicator. A higher value does not, on its own, demonstrate that a choice produces greater well-being: incomes, the quality of work and living conditions must also be known.

In public services, the organisation's time must be distinguished from citizens' time. A simplified procedure may reduce waiting, paperwork and travel without changing its users' working hours. This benefit should be recognised separately from the administration's internal saving and assessed for different users. A service that is quick for someone with digital skills may become slower for someone who needs help. Accessibility is also reflected in the time needed to obtain the actual result, rather than merely complete the online stage.

Distribution is part of the measure. We need to know who receives time, who faces a heavier workload and who undergoes an employment transition. Gender, age, income, place, contractual conditions and care responsibilities can change the outcomes. Shorter average hours may conceal gains concentrated among a few people. The distributed dividend makes this difference visible: it examines how the benefits already observed are shared, without adding further hours to the count.

There is no need to merge all this information into a single index. Health, relationships, security and autonomy are not freely interchangeable. A society may use productivity gains to improve healthcare or reduce dangerous work. In other circumstances, it may choose a greater reduction in working hours. Separate measures help us discuss these trade-offs without concealing them within an

average. Time returned becomes a new measure of progress when it is routinely assessed alongside the other things that make life worth living.

Our approach to measurement should also respect this aim. Data collection should be limited to what the evaluation needs, protect people's privacy and avoid adding disproportionate burdens. A time account does not require surveillance of every individual action. Its purpose is to make the effects of organisational and political choices verifiable, particularly when promised benefits fail to reach those meant to receive them.

There is another boundary to preserve: personal time must not become another form of performance to be accounted for. No one should be required to demonstrate that every hour gained has been well spent. The value of *otium* includes precisely this freedom. We can read without learning anything useful for work, walk without reaching a destination and rest without preparing for another task. Measurement must stop before it turns into a judgement on how each person chooses to live.

Work will continue to play an important role. It offers income, recognition, relationships and opportunities for fulfilment. This essay does not assume that everyone wants to reduce their working time in the same way. It argues that greater productive capacity should give people more ways to combine work with other activities, particularly for those who currently have few alternatives. Temporal freedom exists when the time we gain comes with economic security and a genuine ability to choose.

Every hour of work is also part of someone's life. This fact tends to disappear when we think only in terms of costs and quantities. Achieving the same result with less effort and in less time may allow a visit, an afternoon with a child, a course put off until now or an unhurried evening.

For the past two centuries, we have worked to increase labour productivity. As we continue to pursue that goal, we should also ask how higher productivity can help us live the lives we want. Time returned is not a promise made by machines. It is an outcome to be built and verified in people's days.

Producing what we need while using fewer hours of our lives. And being able to devote some of those hours to what we choose, without having to explain its usefulness. Technology can open this space; institutions can make it accessible. Its value begins when someone can finally inhabit it.

Bibliography

- Acemoglu, D. (2025). The Simple Macroeconomics of AI. *Economic Policy*, 40(121), 13–58. DOI: 10.1093/epolic/eiae042.
- Acemoglu, D., & Restrepo, P. (2019). Automation and New Tasks: How Technology Displaces and Reinstates Labor. *Journal of Economic Perspectives*, 33(2), 3–30. DOI: 10.1257/jep.33.2.3.
- Acemoglu, D., & Restrepo, P. (2020). Robots and Jobs: Evidence from US Labor Markets. *Journal of Political Economy*, 128(6), 2188–2244. DOI: 10.1086/705716.
- Autor, D. H., Levy, F., & Murnane, R. J. (2003). The Skill Content of Recent Technological Change: An Empirical Exploration. *The Quarterly Journal of Economics*, 118(4), 1279–1333. DOI: 10.1162/003355303322552801.
- Becker, G. S. (1965). A Theory of the Allocation of Time. *The Economic Journal*, 75(299), 493–517. DOI: 10.2307/2228949.
- BMW Group (2026). *Il BMW Group è il primo costruttore a impiegare robot umanoidi nella produzione in Germania* [BMW Group is the first car manufacturer to deploy humanoid robots in production in Germany]. Press release, 27 February. BMW Group PressClub Italia. Online press release. Last accessed 1 October 2026.
- Boppart, T., & Krusell, P. (2020). Labor Supply in the Past, Present, and Future: A Balanced-Growth Perspective. *Journal of Political Economy*, 128(1), 118–157. DOI: 10.1086/704071.
- Brynjolfsson, E., Li, D., & Raymond, L. R. (2025). Generative AI at Work. *The Quarterly Journal of Economics*, 140(2), 889–942. DOI: 10.1093/qje/qjae044.
- Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A. J., Pizzinelli, C., Rockall, E. J., & Tavares, M. M. (2024). *Gen-AI: Artificial Intelligence and the Future of Work*. IMF Staff Discussion Note 2024/001. DOI: 10.5089/9798400262548.006.
- Cicero. *Pro Sestio*, § 98. Latin text, The Latin Library. Online text.

- Contractor, Z., & Reyes, G. (2026). *Experimental Evidence on the Learning Impact of Generative AI*. IZA Discussion Paper 18792. Preprint, arXiv:2607.08849. DOI: 10.48550/arXiv.2607.08849.
- Dell’Acqua, F., McFowland III, E., Mollick, E., Lifshitz, H., Kellogg, K. C., Rajendran, S., Kraye, L., Candelon, F., & Lakhani, K. R. (2026). Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of Artificial Intelligence on Knowledge Worker Productivity and Quality. *Organization Science*, 37(2), 403–423. DOI: 10.1287/orsc.2025.21838.
- Deming, D. J. (2017). The Growing Importance of Social Skills in the Labor Market. *The Quarterly Journal of Economics*, 132(4), 1593–1640. DOI: 10.1093/qje/qjx022.
- Doellgast, V., Appalla, S., Ginzburg, D., Kim, J., & Thian, W. L. (2025). *Global Case Studies of Social Dialogue on AI and Algorithmic Management*. ILO Working Paper 144. DOI: 10.54394/VOQE4924.
- Doshi, A. R., & Hauser, O. P. (2024). Generative AI Enhances Individual Creativity but Reduces the Collective Diversity of Novel Content. *Science Advances*, 10(28), eadn5290. DOI: 10.1126/sciadv.adn5290.
- Eloundou, T., Manning, S., Mishkin, P., & Rock, D. (2023). *GPTs are GPTs: An Early Look at the Labor Market Impact Potential of Large Language Models*. Preprint, arXiv:2303.10130. DOI: 10.48550/arXiv.2303.10130.
- European Commission (2025a). *Commission Starts Second-Stage Talks with Social Partners on Right to Disconnect and Fair Telework*. Directorate-General for Employment, Social Affairs and Inclusion, 25 July. Institutional webpage.
- European Commission (2025b). *2025 Strategic Foresight Report: Resilience 2.0 - Empowering the EU to Thrive amid Turbulence and Uncertainty*. COM(2025) 484 final, 9 September. Online report.
- Fan, W., Schor, J. B., Kelly, O., & Gu, G. (2025). Work Time Reduction via a 4-Day Workweek Finds Improvements in Workers’ Well-Being. *Nature Human Behaviour*, 9, 2153–2168. DOI: 10.1038/s41562-025-02259-6.

- Ferrant, G., Pesando, L. M., & Nowacka, K. (2014). *Unpaid Care Work: The Missing Link in the Analysis of Gender Gaps in Labour Outcomes*. OECD Development Centre. DOI: 10.1787/1f3fd03f-en.
- Gethin, A., & Saez, E. (2026). Global Working Hours. *The Quarterly Journal of Economics*, qjag030. Advance online publication. DOI: 10.1093/qje/qjag030.
- Gmyrek, P., Berg, J., Kamiński, K., Konopczyński, F., Ładna, A., Nafradi, B., Rosłaniec, K., & Troszyński, M. (2025). *Generative AI and Jobs: A Refined Global Index of Occupational Exposure*. ILO Working Paper 140. DOI: 10.54394/HETP0387.
- Gmyrek, P., Viollaz, M., & Winkler, H. (2026). *Disruption without Dividend? How the Digital Divide and Task Differences Split GenAI's Global Impact*. ILO Working Paper 166. DOI: 10.54394/00033147.
- Goldin, C. (2000). Labor Markets in the Twentieth Century. In S. L. Engerman & R. E. Gallman (eds), *The Cambridge Economic History of the United States*, vol. 3: *The Twentieth Century* (pp. 549–624). Cambridge University Press.
- Green, A. (2024). *Artificial Intelligence and the Changing Demand for Skills in the Labour Market*. OECD Artificial Intelligence Papers, No. 14. DOI: 10.1787/88684e36-en.
- Huberman, M., & Minns, C. (2007). The Times They Are Not Chargin': Days and Hours of Work in Old and New Worlds, 1870–2000. *Explorations in Economic History*, 44(4), 538–567. DOI: 10.1016/j.eeh.2007.03.002.
- Humlum, A., & Vestergaard, E. (2026). *Still Waters, Rapid Currents: Early Labor Market Transformation under Generative AI*. NBER Working Paper 33777, first published in 2025; version updated 13 March 2026. DOI: 10.3386/w33777.
- Inayatullah, S. (2008). Six Pillars: Futures Thinking for Transforming. *Foresight*, 10(1), 4–21. DOI: 10.1108/14636680810855991.
- International Labour Organization (ILO) (1919). *Hours of Work (Industry) Convention, 1919 (No. 1)*. ILO.

- International Labour Organization (ILO) (2026). *Gen AI, Occupational Segregation and Gender Equality in the World of Work*. Research Brief. DOI: 10.54394/00033798.
- Joshel, S. R., & Petersen, L. H. (2014). Slaves in the Villa. In *The Material Life of Roman Slaves* (pp. 162–213). Cambridge University Press. DOI: 10.1017/CBO9781139030922.006.
- Kasser, T., & Sheldon, K. M. (2009). Time Affluence as a Path toward Personal Happiness and Ethical Business Practice: Empirical Evidence from Four Studies. *Journal of Business Ethics*, 84(Suppl. 2), 243–255. DOI: 10.1007/s10551-008-9696-1.
- Keynes, J. M. (1930). Economic Possibilities for Our Grandchildren. *The Nation and Athenaeum*, 11 and 18 October. Republished in *Essays in Persuasion* (1931).
- Kuykendall, L., Tay, L., & Ng, V. (2015). Leisure Engagement and Subjective Well-Being: A Meta-Analysis. *Psychological Bulletin*, 141(2), 364–403. DOI: 10.1037/a0038508.
- Laidlaw, W. A. (1968). Otium. *Greece & Rome*, 15(1), 42–52. DOI: 10.1017/S0017383500016843.
- Murayama, H., & Takase, M. (2025). Evaluating the Effectiveness of Digital Social Robots in Reducing Loneliness Among Community-Dwelling Older Adults in Japan: Randomized Controlled Trial and Qualitative Analysis. *JMIR Aging*, 8, e74422. DOI: 10.2196/74422.
- Murtin, F. (2024). *The Art of Living Well: Cultural Participation and Well-being*. OECD Papers on Well-being and Inequalities, No. 21. DOI: 10.1787/0219e248-en.
- Neumann, T., Taylor, J., & Fishback, P. (2013). *Fluctuations in Weekly Hours and Total Hours Worked over the Past 90 Years and the Importance of Changes in Federal Policy Toward Job Sharing*. NBER Working Paper 18816. DOI: 10.3386/w18816.
- Noy, S., & Zhang, W. (2023). Experimental Evidence on the Productivity Effects of Generative Artificial Intelligence. *Science*, 381(6654), 187–192. DOI: 10.1126/science.adh2586.

- OECD (2021). *How Was Life? Volume II: New Perspectives on Well-being and Global Inequality since 1820*. OECD Publishing. Chapter 3, 'The Working Week in Manufacturing since 1820', by Oisín Gilmore. DOI: 10.1787/3d96efc5-en.
- OECD (2024). *How's Life? 2024: Well-being and Resilience in Times of Crisis*. OECD Publishing. DOI: 10.1787/90ba854a-en.
- OECD (2025a). *Education Policy Outlook 2025: Nurturing Engaged and Resilient Lifelong Learners in a World of Digital Transformation*. OECD Publishing. DOI: 10.1787/c3f402ba-en.
- OECD (2025b). *How Widespread Is Algorithmic Management in Workplaces?* OECD Publishing. DOI: 10.1787/cda7a114-en.
- OECD (2025c). *OECD Employment Outlook 2025: Can We Get Through the Demographic Crunch?* OECD Publishing. DOI: 10.1787/194a947b-en.
- OECD (2025d). *OECD Global Long-Run Economic Scenarios: 2025 Update*. OECD Economic Policy Papers, No. 36. DOI: 10.1787/00353678-en.
- OECD (2025e). *OECD Guidelines on Measuring Subjective Well-being - 2025 Update*. OECD Publishing. DOI: 10.1787/9203632a-en.
- OECD (2026). *Digital Government Outlook 2026: From Foundations to Transformational Impact*. OECD Publishing. DOI: 10.1787/0496b2bc-en.
- OECD & European Commission (2026). *Empowering Learners for the Age of AI: An AI Literacy Framework for Primary and Secondary Education*. OECD Publishing. DOI: 10.1787/65cd27d4-en.
- Pencavel, J. (2015). The Productivity of Working Hours. *The Economic Journal*, 125(589), 2052–2076. DOI: 10.1111/ecoj.12166.
- Peng, S., Kalliamvakou, E., Cihon, P., & Demirer, M. (2023). *The Impact of AI on Developer Productivity: Evidence from GitHub Copilot*. Preprint, arXiv:2302.06590. DOI: 10.48550/arXiv.2302.06590.
- Polanyi, M. (1966). *The Tacit Dimension*. Doubleday.

- Robinson, J. B. (1990). Futures under Glass: A Recipe for People Who Hate to Predict. *Futures*, 22(8), 820–842. DOI: 10.1016/0016-3287(90)90018-D.
- Seneca. *De otio*, 4, 1–2. Latin text, The Latin Library. Online text.
- Stanford Institute for Human-Centered Artificial Intelligence (2025). *Artificial Intelligence Index Report 2025*. Stanford University. Online report.
- Strömberg, D., Lei, V., & Wu, Y. (2026). *The Generative AI Learning Penalty: Evidence from Chinese Secondary Education*. CEPR Discussion Paper 21577. CEPR Press. Online working paper.
- Utzet, M., Soler, M., Ramada, J. M., Menéndez, M., Silva-Peñaherrera, M., Benavides, F. G., & Serra, C. (2026). Exploring the Health and Well-being Benefits of Reduced Working Hours with Maintained Salary: A Scoping Review and Evidence Map. *Scandinavian Journal of Work, Environment & Health*, 52(2), 125–138. DOI: 10.5271/sjweh.4266.
- Vaccaro, M., Almaatouq, A., & Malone, T. W. (2024). When Combinations of Humans and AI Are Useful: A Systematic Review and Meta-analysis. *Nature Human Behaviour*, 8, 2293–2303. DOI: 10.1038/s41562-024-02024-1.
- Voros, J. (2003). A Generic Foresight Process Framework. *Foresight*, 5(3), 10–21. DOI: 10.1108/14636680310698379.
- Voth, H.-J. (1998). Time and Work in Eighteenth-Century London. *The Journal of Economic History*, 58(1), 29–58. DOI: 10.1017/S0022050700019872.
- World Bank (2025). *Digital Progress and Trends Report 2025: Strengthening AI Foundations*. World Bank. Online report.
- World Economic Forum (2026). *Four Futures for Jobs in the New Economy: AI and Talent in 2030*. World Economic Forum. Online report.

What will we do with the time that AI and robotics return to us?

Every technological transformation promises greater productivity, but its outcome is not predetermined. Time saved can be filled with more work or used for care, creativity, study, relationships and civic participation. Drawing on economics, the history of work, philosophy and foresight, *Time Returned* explores the conditions under which technological progress can become real freedom. Taking a critical view of automation, it asks a political and human question: how should we share the new wealth of time?

FABIO BISOGNI

is a cybersecurity economist and innovation manager. His research has contributed to the development of the economics of cybersecurity and extends to technology foresight and the adoption of artificial intelligence. He has held senior leadership roles in higher education and applied research, and has worked with national and international institutions, including Italy's Presidency of the Council of Ministers, NATO STO and ENISA.