



FROM LINEAR TO CIRCULAR ECONOMICS

And how to help stakeholders of future ecological solutions thanks to the principle of interoperability

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Abstract:

Fight against global warming inevitably leads us to think about the transformation of the current economy that carries the ideal of a consumer society into a different economy that carries new ideals. The transition from a linear economy to a circular economy opens up paths whose meaning is not pre-established and whose ideals have yet to be defined. This transition from one to the other requires economic agents to revolutionise their relationship with each other. Indeed, the circular economy intrinsically requires that economic operators work closely together. However, the construction of the single market in Europe has been based on the need for economic agents to compete with each other in order to stimulate innovation and find the right balance in product prices with a view to protecting the consumer. Cooperation does exist within the business community, but it is restricted to the borders that separate companies from one another, i.e. within companies understood as a single economic entity. Cooperation also exists within a particular sector of companies that unite with the intention of coordinating and acting to provide a political message to the public authorities. The circular economy opens a new path to cooperation: the inter-sectoral relationship of companies from different fields in order to achieve synergies that ensure the ideal harmony of human activities with the limits of the planetary metabolism. We will draw inspiration from the theory of essential facilities that was applied by judges in the United States and then in Europe in the context of competition law. This theory is useful in order to remove obstacles in a market blocked by a monopoly economic actor by forcing it to collaborate with its current and potential competitors in order to protect the consumer. Here, collaboration is synonymous with an opening-up to competition, a paradox of two antagonists who mutually strengthen each other. The Microsoft case in Europe was to some extent the pinnacle of this theory in the early 2000s. We will observe that the theory of essential facilities was coupled with a cardinal principle of the information society - a society where information and communication technologies are the main tools used by individuals for its advent - the principle of interoperability. We propose to transpose the principle of interoperability from its strict domain of preference and extend it more broadly to all domains in order to accelerate the transition to a virtuous circular economy. The public authority has a dual role in this process, that of encouraging economic agents to implement the principle of interoperability and, where appropriate, of coercing recalcitrant actors to welcome stakeholders capable of finalizing ecologically virtuous synergies. The principle of interoperability is seen as an instrument designed

to achieve the best and fastest possible advent of the circular economy in Europe, an economy that will ensure the most optimal synergy of activities and maximize the use of available and limited resources. We will focus on the potential actors who will provide future solutions and realize the synergies necessary to build the circular economy. We believe that all European citizens have a place and an opinion to give on the ecological transition, informed by the opinion of experts where appropriate, and we even affirm that this general citizen participation will strengthen democracy in Europe. Indeed, individuals will be led to act and think, as closely as possible to their local realities, about solutions that respect life on earth in the long term and not be forced to react and calculate strategies to survive in an uninhabitable environment. In addition, this citizen participation will be able to embrace the ideals of social justice: the just recognition of all people (being), the just distribution of wealth (having) and the just division of labour (acting). One of the forms of workers' organization capable of carrying the ideals of social justice as well as the synergistic objectives of the circular economy and the transformative dynamism of the current dominant economy is named "commons". The commons will associate themselves with the current agents of the linear economy and transform these organisations into resilient collectives that respect the planetary metabolism and are autonomous in defining and satisfying needs.

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Introduction

The current dominant economic model operates according to the following linear pattern: extraction of natural resources, production, consumption and destruction. This process is of course an extreme simplification of the current economic system. However, it reveals two important things at the ends of the diagram: the extraction of natural resources and the destruction of products. *In abstracto*, the two ends are independent and exclusive of each other. There are no limits to these two processes¹.

On the contrary, the circular economy operates according to the scheme that links the two ends of the current economic system: "production" and "destruction of products". The unifying principle of the circular economy is the maximization of resources use. At each step of the process, it involves minimizing the waste of resources and, conversely, making the most efficient use of available resources.

The Ellen MacArthur Foundation report states: « the circular economy is defined as an economy that provides multiple value-creation mechanisms which are decoupled from the consumption of finite resources »².

The European Commission considers that the: « transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and

¹ Ellen MacArthur Foundation, *Growth within: A circular economy vision for a competitive Europe*, 2015, p. 12 : « The European economy is surprisingly wasteful in its model of value creation and – for all practical purposes – continues to operate a take-make-dispose system. In 2012, the average European used 16 tonnes of materials. Sixty percent of discarded materials were either landfilled or incinerated, while only 40 percent were recycled or reused as materials. » ; Heidi Rapp Nilsen, « The Hierarchy of Resource use in a Sustainable Circular Economy », University of Oslo Faculty of Law Legal Studies Research Paper Series, No. 2017-22, April 2017, p. 4 : « In mainstream economics which build on weak sustainable development, there are no physical restrictions on the input-side, only relative restrictions through prices and consequent technological innovations. The value-chain in figure 1 stops with ‘consumption’, as the output has been considered waste which per definition has no value (Daly and Cobb, 1994, Daly and Farley, 2004). »

² Ellen MacArthur Foundation, *Growth within: A circular economy vision for a competitive Europe*, 2015, p. 23

the generation of waste minimised, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy³ ».

Therefore, the circular economy model is one response to climate change among others. It aims to reduce the negative impact of economic activities on the environment by proposing to do more with less. The circular economy can then be understood as the set of solutions contributing to the most efficient possible use of natural resources. It requires economic operators to cooperate with each other at the production stage of goods and services so that the unused resources of one become the consumption resources of the other and vice versa. Similarly, it implies that consumers change their behavior to avoid wasting products as much as possible. Finally, all stages of the linear economy are part of the scope of the definition of the circular economy.. As the European Commission itself points out: « The proposed actions support the circular economy in each step of the value chain – from production to consumption, repair and remanufacturing, waste management, and secondary raw materials that are fed back into the economy⁴ ».

However, researcher Heidi Rapp Nilsen points out one important thing: European regulations in the field of the circular economy focus on the stage of the production of consumer goods and services to the end of the products' life, and do not focus on the extraction of natural resources. Indeed, according to Heidi Rapp Nilsen, it is also necessary to regulate (and strongly limit) the extraction stage of natural resources to initiate a sustainable economic transition⁵.

³ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, *Closing the loop - An EU action plan for the Circular Economy*, Brussels, 2.12.2015, COM(2015) 614 final, p. 2

⁴ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, *Closing the loop - An EU action plan for the Circular Economy*, Brussels, 2.12.2015, COM(2015) 614 final, p. 3

⁵ Heidi Rapp Nilsen, « The Hierarchy of Resource use in a Sustainable Circular Economy », University of Oslo *Faculty of Law Legal Studies Research Paper Series*, No. 2017-22, April 2017, p. 10 : « A circular economy where the production and consumption of goods is spinning even faster, due to recycling, is not sustainable. A paradox outcome of a circular economy is that it may take us further into a throwaway society, even though we are throwing things into recycling. A circular economy which does not put the necessary constraints on extraction of raw materials will increase the depletion of both renewable and non-renewable resources. It would be a lost opportunity to stay within the planetary boundaries and a violation of moral obligations towards future generations. »

In any case, it should be noted that the circular economy requires a large number of economic operators to meet. Indeed, it is necessary for them to act together synchronously in order to make the most efficient use of available resources.

A The problem of the cooperation of economic actors

The proper functioning of the circular economy requires that all actors involved in this process be in contact with each other in order to work together to achieve the objective of maximizing the use of resources. The Ellen MacArthur Foundation report states that: « Many industries limit opportunities for cooperation in non-competitive areas, such as packaging materials and common infrastructure, for fear of violating competition laws or disclosing sources of competitive advantage⁶ ».

It is possible to present this cooperation mechanism as the synergy of the activities of different companies. For example, a "substitute" synergy could consist in exchanging the non-valued resources of one company with another company that will valorise them. Some people's waste becomes another person's raw material. Or, a "mutualised" synergy will consist in sharing resources in common in an optimal way. The search for all synergistic solutions is an integral part of the circular economy as defined by the Ellen MacArthur Foundation : « the circular economy is defined as an economy that provides multiple value-creation mechanisms which are decoupled from the consumption of finite resources⁷ ».

We can also illustrate the concept of synergy by drawing inspiration from Anna Tsing's work. She discusses the different ways of understanding the term sustainability⁸. Sustainability can be summarized as the desire to transmit to future generations a habitable planet for humans and non-humans, so it is necessary to distinguish between natural phenomena that ensure the sustainability of life and

⁶ Ellen MacArthur Foundation, *Growth within: A circular economy vision for a competitive Europe*, 2015, p. 21

⁷ Ellen MacArthur Foundation, *Growth within: A circular economy vision for a competitive Europe*, 2015, p. 23 and see also : « Figure 8 outline of a circular economy » in Ellen MacArthur Foundation, *Growth within: A circular economy vision for a competitive Europe*, 2015, p. 24

⁸ Anna Tsing, « A Threat to Holocene Resurgence Is a Threat to Livability », *The Anthropology of Sustainability*, New York, Palgrave Macmillan, 2017, p. 51-65

human practices that contravene this objective, including those that are adorned with the word sustainability. Anna Tsing takes the example of the synergies that exist between, for example, pine trees, the Matsutake mushrooms and farmers practising traditional agriculture in Japan. Farmers deforest part of the forests beside which they live by their activity. This makes the soil poor in nutrients and facilitates the spread of the Matsutake on this mineral soil. Through its activity, the mushroom transforms mineral salts into nutrients available to pines and in return pines provide the carbohydrates needed to feed the fungus. Pines and mushrooms support each other and grow thanks to each other while rehabilitating poor soil through their combined action. There is a synergy between pine and Matsutakes that is beneficial to the growth of living organisms. This process would end if hardwood trees re-established themselves on soils that were once again rich in nutrients. But farmers continue to clear bits of forest, making it easier for pines and matsutake mushrooms to spread. The farmer's activity is synergistic with that of mushrooms and pines.

On the opposite, Anna Tsing notes the existence of an unsustainable human economic activity: the industrial ash tree production. She explains that “the industrial nursery trade is an instance of the reorganization of the living world into assets, that is, resources for further investment. This is the principle behind what I am calling the plantation⁹.” This plantation simplifies the ecology of life by subtracting the organism from its heterogeneous and synergetic environment in favour of a rationalisation of the production process that speeds up replication but also encourages pests and diseases to the point of hindering its very sustainability. Fewer multi-species synergies and more single-species risks illustrate the unsustainability of the manufacturing process, which is also effective in terms of replicability and adaptability to the global market.

We can then very briefly summarize the benefit of a synergistic approach: by crossing and mutually reinforcing the actions of living organisms with each other promotes the growth of living organisms globally and on the long term basis. On the contrary, the non-synergistic approach of the living organism increases its effectiveness on the short term basis but also the risk of its destruction and, in the long term, its unsustainability.

⁹ Anna Tsing, « A Threat to Holocene Resurgence Is a Threat to Livability », *The Anthropology of Sustainability*, New York, Palgrave Macmillan, 2017, p. 58-59

The circular economy aims to maximize the possible synergies between all human economic activities in order to ensure the sustainability of the global environment. As a matter of principle, it aims to encourage collaboration between multi-sectoral economic entities and to reduce uni-sectoral monopolies as much as possible, as is the case with monoculture. Can this mix of economic activities take place within the European single market?

It should be recalled that the single market is based on the principle of the free competition of economic actors¹⁰. As a result, the business environment defers voluntary cooperation for fear of sanctions under EU competition law rules. Similarly, economic competition leads economic operators to protect information, knowledge and know-how in order to gain an advantage over their competitors and ultimately achieve the best possible return on investment¹¹.

Yet, the circular economy is partly governed by the opposite logic of information dissemination and cooperation of economic entities in order to achieve resource maximisation. It is therefore necessary to focus on the issue of cooperation between economic operators in a market economy based on free and non-distorted competition.

B The history of essential facilities theory in competition law

The purpose of competition law is to protect consumers by ensuring healthy competition between economic operators so that product quality and price setting are as fair as possible. Thus, an economic operator who, by his action, blocks the entry of new operators into a market similar to the one on which it operates may be sanctioned if it turns out that it distorts free and equal competition. Among the anti-competitive actions, one is of particular interest to us: the refusal of one company to trade with another.

¹⁰ Article 101 TFUE : « the following shall be prohibited as incompatible with the internal market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market [...] »

¹¹ DIRECTIVE (EU) 2016/943 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2016 on the protection of undisclosed know-how and business information (trade secrets) against their unlawful acquisition, use and disclosure, *OJ L 157*, 15.6.2016

Very early on, judges in the United States sanctioned companies which refused to contract with other economic operators when such behaviour revealed a desire to distort competition. For example, the famous case of *United States v. Terminal Railroad Association*, the US Supreme Court sanctioned a group of railway companies that had in its possession all the railway infrastructure (bridges and switches) needed to access the city of Saint Louis and refused to allow its competitors to use this infrastructure to provide their own transport services through or to this city¹². This case law was later conceptualized by lawyers as the theory of essential facilities¹³.

In Europe, a similar concept was also theorized and used by the institutions and judges of the European Community. The evolution of the theory of essential installations can be summarized in three successive steps. The first phase was the *Commercial Solvents*¹⁴ and *Hugin*¹⁵ cases, which determined four cumulative conditions to prove the abuse of a dominant position by a company that terminates its commercial relationship with another company¹⁶: the dominant company had to terminate or change the terms of the commercial relationship, the company had to have a dominant position on the upstream market, this behaviour had to have negative effects on competition and the company did not put forward any objective grounds for justification.

The second phase was the *Oscar Bronner*¹⁷ judgment, which was part of a series of judgments relating to network industries, a sector in which many public companies had a public monopoly that ended with the liberalisation of these services. When a company has an "essential facility", such as access to national electricity grid inter-connectors or the local loop of the fixed telephone network,

¹² United States Supreme Court decision, *United States v. Terminal Railroad Ass'n*, 224 U.S. 383 (1912)

¹³ Abbott B. Lipsky and J. Gregory Sidak, « Essential Facilities », *Stanford Law Review*, n° 51, 1999, p. 1187-1249

¹⁴ Judgment of the Court of 6 March 1974, *Istituto Chemioterapico Italiano S.p.A. and Commercial Solvents Corporation v Commission of the European Communities*, Joined cases 6 and 7-73

¹⁵ Judgment of the Court of 31 May 1979, *Hugin Kassaregister AB and Hugin Cash Registers Ltd v Commission of the European Communities*, Spare parts for cash registers, Case 22/78

¹⁶ Commercial Solvent refused to supply a chemical active substance in a medicinal product to a company wishing to compete with it on the downstream market for that product and Hugin refused to supply a repair company with cash registers or spare parts that it could not otherwise obtain because there was a selective distribution system on the wholesale market.

¹⁷ Judgment of the Court (Sixth Chamber) of 26 November 1998, *Oscar Bronner GmbH & Co*, Case C-7/97

it has an obligation to provide access if: the company has a monopoly on an essential facility, it is impossible to duplicate that facility, it denies access to the facility, and there is no practical impediment to provide access to the facility. Judges distinguished essential installations from “convenient” facilities which assume that there is an actual or potential substitute for the service essential to the exercise of the activity. Where an intellectual property right is involved, such as the refusal to grant a licence on intellectual property rights covering car spare parts to other companies wishing to produce such parts¹⁸, judges required, in addition to the four conditions of the Oscar Bronner decision, the additional condition that the company's behaviour prevented the emergence of a new product for which consumer demand would exist¹⁹.

The third phase was the Microsoft judgment, which worked with the concept of product interoperability, as detailed hereafter. To summarize the theory of essential facilities, several elements must be present:

- a company in a dominant position on a market;
- an essential product, in other words, one that is essential to the exercise of an activity by a competing company and for which no existing or potential product can be substituted;
- access to the product is denied to the competitor;
- the access denial is abusive in the light of exceptional circumstances such as the restriction of competition in a neighbouring market, the obstacle to the emergence of a new product likely to lead to a potential market and the absence of objective grounds for justification for such refusal.

We can already announce how essential facilities theory is proving to be a rich teaching tool for our subject of study. It proves to us that economic actors operating on a market are not only in the terms of a purely competitive relationship. They also act, either by coercion or voluntarily, in the terms of a cooperative relationship. In other words, the terms of the relationship between two economic operators on a market will be influenced by the very quality of the market and the object it proposes to

¹⁸ Judgment of the Court of 5 October 1988, AB Volvo v Erik Veng (UK) Ltd, Case 238/87

¹⁹ Judgment of the Court of 6 April 1995, Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v Commission of the European Communities, Joined cases C-241/91 P and C-242/91 P and Judgment of the Court (Fifth Chamber) of 29 April 2004, IMS Health GmbH & Co. OHG v NDC Health GmbH & Co. KG, Case C-418/01

trade. Healthy competition from economic actors may be distorted because of the intrinsic qualities of the product and the attitude of the operator. Also, for the proper implementation of a free and competitive market, in certain circumstances it will be fair to oblige certain economic operators to cooperate with other operators despite their willingness.

The Microsoft case will allow us to tackle the singular notion of interoperability. This concept is particularly common in the information and communication technology sector and will be useful, We believe, to complement and make more efficient the emerging circular economy.

C The Microsoft case²⁰

Microsoft refused to grant its competitors access to technical information from the Windows operating system arguing that it was protected by intellectual property rights. The relevant markets were the market for client computer operating systems (90%) and the market for work group server operating systems (60%). However, the information that is refused to divulge is essential for anyone who wishes to enter in the operating system market either by offering a competing operating system on the work group server market or by offering a competing software that runs on the Windows operating system. This information is therefore necessary for competitors seeking to make their own software compatible on the Windows operating system (whether it is that of client computers or that of work group servers) or who are seeking to improve or manufacture their own work group server operating system.

Microsoft disputed this refusal could be interpreted as an abuse of a dominant position. The General Court, in the wake of the previous cases cited supra, applied the four cumulative criteria used by the Courts and found that the exceptional circumstances proved Microsoft's abuse of a dominant position. First, the refusal concerns a product indispensable for the exercise of an activity by competitors in a neighboring market (the market for server operating systems for work groups), then the

²⁰ Order of the President of the Court of First Instance of 22 December 2004, Microsoft Corp. v Commission of the European Communities, Case T-201/04 R and Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007, Microsoft Corp. v Commission of the European Communities, Case T-201/04

refusal is likely to exclude competition in that neighboring market; this refusal prevents the emergence of potential new products and finally it is not objectively justified.

The Microsoft case supplemented criterion number three (appearance of a new product) by specifying that the refusal of access had prevented the technical development of new products, i.e. in the end innovation itself to the detriment of the consumer. In addition, the Court stated that Microsoft's refusal was not objectively justified by the fact that the disclosure of the information would no longer encourage it to invest in research and development. Indeed, Microsoft did not prove this claim and, on the contrary, the disclosure of technical information promoted product interoperability and therefore encouraged innovation in the information and communication technology sector.

The concepts of interoperability and compatibility should be now defined. The Interoperability Working Group defines it as follows²¹:

« Interoperability is a characteristic of a product or system, whose interfaces are completely understood, to work with other products or systems, present or future, in either implementation or access, without any restrictions. »

Three degrees of interoperability exist, from least open to most open: the compatibility of a product or system A with a system or product B to the exclusion of any other system or product C, D, etc. The *de facto* standard that defines the compatibility of a product or system A with products or systems B, C, D etc. without this being reciprocal with regard to products or systems B, C, D etc. Finally, interoperability, which defines the ability of a product or system A, B, C, D etc. to work with products or systems A, B, C, D etc. because their interfaces are fully known and without restriction of access or implementation.

²¹ <http://interoperability-definition.info/en/>



Screenshot of the Interoperability Working Group website : <http://interoperability-definition.info/en/>

The Directive on the legal protection of computer programs also defines the concept of interoperability in recital 10²²:

“The function of a computer program is to communicate and work together with other components of a computer system and with users and, for this purpose, a logical and, where appropriate, physical interconnection and interaction is required to permit all elements of software and hardware to work with other software and hardware and with users in all the ways in which they are intended to function. The parts of the program which provide for such interconnection and interaction between elements of software and hardware are generally known as ‘interfaces’. This functional interconnection and interaction is generally known as ‘interoperability’; **such interoperability can be defined as the ability to exchange information and mutually to use the information which has been exchanged.**”

In the Microsoft case, the subject of the disclosure requirement is the protocol or interface specifications and not the source code itself. Indeed, the source code corresponds to an implementation, i.e. the execution of “all the operations that make it possible to define a project and carry it out,

²² Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (Codified version), *OJL III*, 5.5.2009, p. 16–22

from the analysis of the need to the installation and implementation of the system or product²³”. Thus, “implementation is the code that constitutes the program and runs on the computer while a specification is a description of what the program produces and therefore the implementation it must achieve. In other words, the specification describes what the implementation should achieve and not how to achieve it²⁴.” In addition, Microsoft was asked to “provide a description of all rules for interconnection and interaction between work group server operating systems and Windows operating systems for client or server computers. These protocols are considered necessary to allow Microsoft’s competitors to develop work group server operating systems that interact with Windows’ domain²⁵”.

Several lessons can be drawn: on the one hand, intellectual property rights and by extension property rights do not preclude the establishment of an obligation on economic operators to provide certain types of information to other competing operators. Judges thus have to arbitrate the interests involved, which lie between the protection of the exclusivity of legitimately appropriate information by an author and the duty to disseminate it with the aim of promoting innovation and free and equal competition between operators if it is essential for the activity of competitors.

On the other hand, it is possible for economic operators with radically different ways of carrying out their activities to coexist within the same market. These two ways are: the exclusive model that seeks to protect its creation in order to obtain the best return on investment and the non-exclusive model that aims to share knowledge and technology in order to foster innovation and, where appro-

²³ Free translation, *Journal Officiel de la République Française n°93 du 20 avril 2007 page 7078*, texte n° 84, Vocabulaire de l’informatique (liste de termes, expressions et définitions adoptés), “Implémenter : Effectuer l’ensemble des opérations qui permettent de définir un projet et de le réaliser, de l’analyse du besoin à l’installation et la mise en œuvre du système ou du produit”

²⁴ Free translation, Jérôme Gstalter, « Open source, interopérabilité et concurrence : À l’aube de l’arrêt Microsoft », *Concurrences*, N° 3-2007 – p. 52, note 49: “l’implémentation est le code qui constitue le programme et qui s’exécute sur l’ordinateur tandis qu’une spécification est une description de ce que le programme produit et donc l’implémentation qu’il doit réaliser. Autrement dit, la spécification décrit ce que l’implémentation doit réaliser et non comment le réaliser”

²⁵ Free translation, *ibidem* p. 52 : “de fournir une description de toutes les règles d’interconnexion et d’interaction entre les systèmes d’exploitation pour serveurs de groupe de travail et les systèmes d’exploitation Windows pour ordinateurs clients ou pour serveur. Ces protocoles sont jugés nécessaires pour permettre aux concurrents de Microsoft de développer des systèmes d’exploitation pour serveur de groupe de travail qui interagissent avec le domaine Windows”

appropriate, generate a source of income²⁶. Thus, according to Jérôme Gсталter: "In a concern for neutrality with regard to the way software is used (open source or not) and in a concern to reconcile the two modes of promoting innovation, it is not a matter of questioning the exclusive and closed use of the source code but only of the interface specifications. More specifically, the closed model would [be] challenged only to the extent necessary for interoperability²⁷." However, the author acknowledges the difficulties and ambiguities that sometimes result from the coexistence of these two modes of carrying out activities²⁸.

Our research has worked on broadening the application of the principle of interoperability. The principle is at the heart of the Microsoft case and we will observe that it irrigates the entire sector in which the company operates: information and communication technologies.

D The principle of interoperability applied to the information and communication technology sector

Europe was concerned at an early stage with promoting an "information society", a concept first used in the 1993 White Paper "Growth, competitiveness, employment - The challenges and ways forward into the 21st century²⁹", which can be summarised as follows:

« The term 'information society' describes a society where a significant degree of activity focuses on the creation, distribution, use and reuse of information. This activity takes place by means of what are known as information and communication technologies (ICTs). The use of ICTs, the growth of the internet and the opening up of telecommunications markets have revolutionised Eu-

²⁶ Ibidem p. 49

²⁷ Free translation, ibidem p. 50 : "Dans un souci de neutralité vis-à-vis du mode d'exploitation des logiciels (open source ou fermé) et dans un souci de conciliation entre les deux modes de promotion de l'innovation, il ne s'agit pas de remettre en cause l'exploitation exclusive et fermée du code source mais uniquement des spécifications d'interface. Plus précisément, le modèle fermé ne serait [être] remis en cause que dans la mesure nécessaire à l'interopérabilité."

²⁸ Ibidem p. 50

²⁹ « *GROWTH, COMPETITIVENESS, EMPLOYMENT - THE CHALLENGES AND WAYS FORWARD INTO THE 21st CENTURY* », WHITE PAPER, COM/93/700FINAL, 07/12/1993

Europeans' daily lives over the last 25 years. They offer opportunities like teleworking, ehealth and elearning to name but a few³⁰. »

Subsequently, the Corfu European Council emphasised the importance of the information society and the role to be played by the European institutions. It stated that « the Community and its Member States do however have an important role to play in backing up this development by giving political impetus, creating a clear and stable regulatory framework (notably as regards access to markets, compatibility³¹ between networks, intellectual property rights, data protection and copyright) and by setting an example in areas which come under their aegis³². »

One of the main steps to promote the information society has been to liberalise and open up to competition the telecommunications sector, which was once the subject of national monopolies³³. This opening of markets to competition was mainly regulated by the "electronic communication" package in 2002, amended in 2009³⁴. This regulation covers a « harmonised framework for the regulation of electronic communications networks, i.e. transmission systems which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed and mobile terrestrial networks, electricity cable systems, networks used for radio and television broadcasting and cable television networks, irrespective of the type of information conveyed. It also covers electronic communications services, which consist of the transmission of signals over these networks, and associated facilities and services of the networks or of the electronic communications services, which enable or support the provision of services via that network or service³⁵. »

³⁰ https://eur-lex.europa.eu/summary/glossary/information_society.html

³¹ The French translation refers to the word "interopérabilité" and not "compatibilité"

³² European Council conclusion, Corfu, 24-25 June 1994, <https://www.consilium.europa.eu/media/21207/corfu-european-council.pdf>

³³ Paul Nihoul and Peter Rodford, *EU Electronic Communications Law, Competition and Regulation in the European Telecommunication Market*, Oxford University Press, 2004 ; Jérôme Gstalder, *Droit de la concurrence et droits de propriété intellectuelle*, Bruylant, 2012

³⁴ The EU regulatory framework on electronic communications is composed of Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services as amended by Directive 2009/140/EC and Regulation 544/2009 (known as the Framework Directive) and 4 specific Directives : https://eur-lex.europa.eu/summary/glossary/electronic_communications.html

³⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:l24216a&from=FR>

The objective pursued by the European institutions is to ensure that any economic operator can freely enter the market. Operators also need access to essential facilities³⁶. One of the basic obstacles was recognised at an early stage by the European Commission:

« The interconnection of networks, interoperability of services and technical compatibility of equipment have been the primary tools to liberalise and harmonise the EU telecommunications sector over the last two decades and remain important for achieving a pan-European market. These three factors – affecting networks, services and terminals – will continue to be the primary focus in the context of creating an Information Society for all³⁷. »

The principle that permeates the entire field of information and communication technologies is that of interoperability. Indeed, « Access to electronic communications markets and the provision of services to end-users are [...] dependent on access to interoperability information³⁸. »

The European institutions have used two means to ensure that the principle of interoperability permeates the entire information society market: imposing access to interoperability information on the one hand and framing the market initiative itself to spontaneously standardise access to interoperability information on the other hand³⁹.

With regard to the first way, imposing access to interoperability information, it can be seen that the 2002 "electronic communication" package requires Member States to set up independent authorities to regulate and impose on economic operators the ex ante obligation to provide access to their networks, equipment and services. Indeed, Article 2 of Directive 2002/19/EC defines access as: « the

³⁶ Jérôme Gсталter, *Droit de la concurrence et droits de propriété intellectuelle*, Bruylant, 2012, p. 815

³⁷ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on *Barriers to widespread access to new services and applications of the information society through open platforms in digital television and third generation mobile communications*, COM/2003/0410 final, p. 10

³⁸ Free translation, Jérôme Gсталter, *Droit de la concurrence et droits de propriété intellectuelle*, Bruylant, 2012, p. 817: “L'accès aux marchés des communications électroniques et la fourniture de services aux utilisateurs finals sont [...] tributaires de l'accès à des informations d'interopérabilité”

³⁹ *Ibidem* p. 818

making available of facilities and/or services, to another undertaking, under defined conditions, on either an exclusive or non-exclusive basis, for the purpose of providing electronic communications services »⁴⁰. Thus, the definition of access is very broad and covers both tangible and intangible aspects⁴¹. It should be noted that interoperability information can be protected by intellectual property rights and sometimes even trade secrets⁴².

It should also be noted that the obligation to provide access to networks and elements of the electronic communication network is precisely regulated by the Directive. Indeed, Member States must do only what is strictly necessary, i.e. act in markets where one or more companies have significant market power and where the application of competition law would be inadequate. National authorities and the European Commission jointly seek to identify companies with significant market power by delimiting relevant markets and analysing competition in these markets⁴³. If the European Commission and the national authority have identified one or more companies as having significant market power in a market, then Article 12 of the Directive provides that the operator must “ give third parties access to specified network elements and/or facilities, including unbundled access to the local loop », and also « grant open access to technical interfaces, protocols or other key technologies that are indispensable for the interoperability of services or virtual network services », « provide specified services needed to ensure interoperability of end-to-end services to users », « provide access to operational support systems or similar software systems »⁴⁴.

⁴⁰ Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, *Official Journal L 108*, 24/04/2002 P. 0007 – 0020

⁴¹ Ibidem article 2, (a) : « [...] It covers inter alia: access to network elements and associated facilities, which may involve the connection of equipment, by fixed or non-fixed means (in particular this includes access to the local loop and to facilities and services necessary to provide services over the local loop), access to physical infrastructure including buildings, ducts and masts; access to relevant software systems including operational support systems, access to number translation or systems offering equivalent functionality, access to fixed and mobile networks, in particular for roaming, access to conditional access systems for digital television services; access to virtual network services; »

⁴² Jérôme Gstalder, *Droit de la concurrence et droits de propriété intellectuelle*, Bruylant, 2012, p. 820

⁴³ Ibidem p. 821

⁴⁴ Article 12 Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities

However, Article 12 recalls that the authorities must act in a balanced manner with regard to the objectives pursued by the Directive and take into account « where appropriate, any relevant intellectual property rights »⁴⁵. However, taking into account the operator's intellectual property rights does not mean that such rights can be invoked to oppose the requirement to provide access to interoperability information⁴⁶. In addition, Article 5 of Directive 2002/19/EC provides that national authorities must require operators « to the extent that is necessary to ensure end-to-end connectivity, obligations on undertakings that control access to end-users, including in justified cases the obligation to interconnect their networks where this is not already the case »⁴⁷. This allows national authorities to target companies that control access to end-users and to deal with markets that have not been analysed by the Commission.

With regard to the second approach, framing the market initiative itself to spontaneously standardise access to interoperability information, it can be seen that the preferred means used by economic operators to regulate the information and communication technology sector is standardisation. The European Union has adopted a regulation on the standardisation process in Europe. It specifies that « The primary objective of standardisation is the definition of voluntary technical or quality specifications with which current or future products, production processes or services may comply. Standardisation can cover various issues, such as standardisation of different grades or sizes of a particular product or technical specifications in product or services markets where compatibility and interoperability with other products or systems are essential⁴⁸. »

According to The European Committee for Standardization (CEN): « The formal definition of a standard is a “document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context”⁴⁹. » In principle, all

⁴⁵ Ibidem Article 12, 2, (e)

⁴⁶ Jérôme Gstalter, *Droit de la concurrence et droits de propriété intellectuelle*, Bruylant, 2012, p. 822-825

⁴⁷ Article 5, 1 Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities

⁴⁸ Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, *OJ L 316*, 14.11.2012, p. 12–33

⁴⁹ <https://www.cencenelec.eu/standards/DefEN/Pages/default.aspx>

interested parties are invited to participate in the development of standards through a technical committee specialised in the sector concerned⁵⁰. Therefore, either economic operators act voluntarily to adopt standards to facilitate product interoperability or the European institutions will intervene directly with the European Standards Organization to adopt such standards⁵¹.

Here is what European Telecommunications Standards Institute (ETSI)⁵² states about interoperability: « In a world of converging yet diverse technologies, complex ICT systems must communicate and interwork on all levels – this is interoperability. Interoperability means that users have a much greater choice of products and manufacturers can benefit from the economies of scale that a wider market brings. Interoperability is therefore a crucial factor in the success of modern technologies, and market demand has ensured that interoperability holds a prominent position in standardization. One of the key motives for the development of ICT standards is to facilitate interoperability between products in a multi-vendor, multi-network and multi-service environment⁵³. »

It is understandable that the principle of interoperability has been at the heart of the growth of the information and communication technology sector since its inception in the 1970s, and ergo also of its successes. More generally, an information society would not exist without the principle of interoperability, which enables the "lubrication of the wheels of this machinery". It enshrines the need for economic operators to collaborate *a minima* in a market where, at the same time, they are in constant competition with one another. It can be seen that the boundary between the private and public domain - between data that can be protected by intellectual property rights and data that must be freely accessible to build a healthy market - is in constant evolution.

⁵⁰ Article 5 Regulation (EU) No 1025/2012 : « European standardisation organisations shall encourage and facilitate an appropriate representation and effective participation of all relevant stakeholders, including SMEs, consumer organisations and environmental and social stakeholders in their standardisation activities. »

⁵¹ Article 10 Regulation (EU) No 1025/2012 : « The Commission may within the limitations of the competences laid down in the Treaties, request one or several European standardisation organisations to draft a European standard or European standardisation deliverable within a set deadline. European standards and European standardisation deliverables shall be market-driven, take into account the public interest as well as the policy objectives clearly stated in the Commission's request and based on consensus. The Commission shall determine the requirements as to the content to be met by the requested document and a deadline for its adoption. »

⁵² ETSI is a European Standards Organization (ESO) that deals with the information and communication technology sector : <https://www.etsi.org/about/about-us>

⁵³ <https://www.etsi.org/standards/why-standards>

What yesterday seemed like an innovation that could be appropriated by an economic operator for its sole benefit, will tomorrow become an essential market open to competition in which new economic operators will innovate and challenge each other. We found interesting to reason by analogy and to transcribe the principle of interoperability within the concept of the circular economy.

E The transcription of the principle of interoperability within the circular economy

We have previously observed that the circular economy is governed by the logic of cooperation of economic entities that are seeking maximum optimization of the use of resources. Economic operators must work together to achieve appropriate synergies, such as substitution or pooling, in order to minimise the negative environmental impacts of their activities.

We believe that the principle of interoperability could irrigate the circular economy, i.e. its application, with the help of public authorities and spontaneously by economic actors. Indeed, imagining solutions that will contribute in the future to the most efficient possible use of natural resources presupposes both that the information is as widespread as possible within markets and that economic operators make accessible not only relevant information relating to their production model and process but above all the sites where production takes place in order to test tomorrow's ecological solutions.

The interoperability principle applied to the circular economy would have the virtue of making accessible the modes of production of the individual economic entities of the linear economy and would allow other economic entities to associate themselves on these modes of production in order to extract unused resources useful to their mode of production and to couple the use of originative raw materials while maximising their use.

It should be recalled that all stages of the natural resource value chain of the linear economy are included in the circular economy⁵⁴. From the extraction of the material to its destruction and/or land-

⁵⁴ See for example: « Figure 8 outline of a circular economy » in Ellen MacArthur Foundation, *Growth within: A circular economy vision for a competitive Europe*, 2015, p. 24

filling, the production, consumption, repair, reuse and recycling stages are expected to be finely coordinated in order to "do much more with much less". This coordination itself presupposes that economic operators are precisely synchronized when the processes of extraction, production, consumption, repair, reuse, recycling and destruction and/or landfilling are in progress.

This implies by necessity that economic entities are brought closer together to achieve the basic synergies that will optimize the negative effects of economic activities on the environment. It should be added that the new economic regime is causing a change in the habits of existing linear economic entities. Indeed, the regime of ownership is being somewhat abused since the principle of interoperability constitutes an infringement, certainly a moderate one, as previously seen in the Terminal Railroad Ass'n or Microsoft cases, of this regime.

The two ways of making the principle of interoperability applicable in the information and communication technology sector have been observed: the strong way in which the public authority requires economic entities to make interfaces accessible to enable the interoperability of products and systems between them. The soft way in which the public authority encourages, facilitates and stimulates economic operators to organise themselves among themselves to make the interoperability of systems and products effective through standardisation. These two ways are not exclusive of each other but on the contrary they successfully complement each other.

The strong way is useful at different times. First of all, the principle of interoperability may be used by public authorities to force economic operators to open up access to the interfaces of their industries in order to transform linear economy markets into circular economy markets. Downstream also, and in the context of the application of competition law in the event of a court dispute, the principle of interoperability may be invoked by individuals with the aim of making it accessible to economic entities that are reluctant to make the changes necessary to build a circular economy. It should also be noted that the principle of interoperability can be coupled with the theory of essential facilities and complement the latter's probation. Indeed, particular attention will have to be paid to economic entities whose behaviour restricts the free competition of economic actors on a market. This may be the case when they capture markets at their sole profit by monopolizing them in their

entirety and preventing any entry by a competitor⁵⁵. Thibault Schrepel recently worked on this topic and proposed that the concept of predatory innovation be specifically and legally used in the context of competition law in order to sanction companies that voluntarily, by technically modifying their product, cause anti-competitive effects on the markets to maintain their dominant or monopolistic position⁵⁶.

This illustrates in a way the exact reversal of the principle of interoperability and the objective of competition law to ensure a healthy and competitive market for consumer welfare. Predatory innovation blocks the entry of all competitors into a specific market by rendering any competing product, system or network inoperable. On the contrary, the proper functioning of the circular economy presupposes a market where the activities of economic entities can all be modifiable and complementary with each other. This therefore also requires a voluntary approach by economic actors in order to agree on standards and production processes that everyone can know and understand in order to act on this basis.

The soft way will be necessary to accompany the upheaval in the habits of economic operators who will move from a linear to a circular economy. It has been observed that European standardisation policy is already very advanced. European Standards Organization composed of CEN, CENELEC and ETSI « working jointly in the interest of European harmonization, creating both standards requested by the market and harmonized standards in support of European legislation⁵⁷. »

The implementation of the principle of interoperability in a circular economy requires the commitment of European standardisation actors to create intra- and inter-sectoral standards. The process of normalising sectoral activities would take into account sector-to-sector synergies to facilitate the assembly of economic operators on the ground and lead to the association of new economic entities with the historical economic entities. Sectors of the economy that previously did not know each other will have to closely collaborate in a circular economy, and to this end, not only product stan-

⁵⁵ Hearing of Margrethe Vestager, Verbatim report, 08/10/2019, p. 17-18 : « because one of the things that are inherent in a digital economy is that sometimes you don't just see competition within the market, you also see competition for the markets. »

⁵⁶ Thibault Schrepel, *L'innovation prédatrice en droit de la concurrence*, Bruylant, 2018

⁵⁷ <https://www.cenelec.eu/aboutcenelec/whoware/europeanstandardsorganizations/index.html>

standardization processes but also extraction, manufacturing, consumption, use, repair, recycling and destruction and landfilling processes should be standardized in order to facilitate synergies. This will also require particular attention to be paid to property and intellectual property rights and to articulate them proportionately with the obligation to make such an interface or process accessible.

The principle of interoperability in a circular economy regime has the advantage of making economic operators' relations more movable within the European single market. It will facilitate the invention of future synergies that will optimize the use of resources as much as possible, ultimately mitigating the inexorable global warming as we have seen previously. The principle of interoperability in a circular economy regime will be strengthened by the means of the public authority, which will sanction, where necessary, economic operators who are reluctant to convert their polluting activities into sustainable activities thanks to economic entities wishing to join the latter and seeking to reduce their environmental footprint. We consider necessary, at these stage of our research, to look at the actors likely to bring new synergies and how they could organise themselves in order to also bring with them demands for social justice.

F The actors who provide the virtuous synergies of the circular economy

The transition from a linear to a circular economy is equivalent to a paradigmatic shift in economics: the quantitative calculation of the growth rate doubles and in the end will be replaced by the qualitative calculation of the post-growth economy. Society is no longer in demand for more and more products to consume but in demand for a reasoned consumption, of quality and proportionate to the limits of the planetary metabolism. The transition to a circular economy requires an exponential growth of synergistic solutions to ensure that human needs are met while protecting and safeguarding the environment, while striving to minimize greenhouse gas emissions into the atmosphere. This search for solutions is part of a major movement that embraces all sectors of society. No individual can escape the paradigmatic shift, as no individual can live anywhere else but on earth. The best that can be expected is that everyone has a chance to participate in this change, without discrimination, with fulfilling working conditions and a fair return for the work done. We will observe all these points successively.

We argue, following Olivier De Schutter, that the actors behind the synergies of the circular economy are the citizens themselves, autonomous and creative. The author thus denounces "the return of the philosophers kings": "It is understandable that some people[...] advocate authoritarian solutions at worst - as Hans Jonas, for example - or, at best, scenarios that impoverish democracy by giving more weight to experts or enlightened technocrats. Dominique Bourg and Terry Whiteside thus put the idea of a restricted democracy back on the agenda, by setting up an "upper house" specifically responsible for taking into account the interests of future generations⁵⁸." On the contrary, according to Olivier De Schutter, it is thanks to democracy that future solutions will exist: "Not a hollowing out of democracy in the name of urgency and the "false consciousness" of which the mass is said to be a victim, as the dominant ideology of growth has colonized minds - but on the contrary, a radicalization of democracy, so that everyone can better exercise their instituting role: their role as creators of norms, through the exercise by everyone of their autonomy⁵⁹."

We defend the idea that the invention of solutions that will operate the transition from the linear to the circular economy is the primacy of social innovation. It is the citizens themselves, as close as possible to local realities, as close as possible to the industrial base that shapes their daily lives, who will bring innovative solutions to achieve the objective of carbon neutrality. In other words, the initiatives will be citizen-based and therefore plural, diverse and scattered. As Olivier De Schutter writes, "the phantasm of the One solution must be replaced by the experimentalist idea of research in multiple directions at once⁶⁰."

⁵⁸ Free translation, Olivier De Schutter, « La cage et le labyrinthe : S'évader de la religion de la croissance », *Revue interdisciplinaire d'études juridiques*, 2016/2 Volume 77, p. 121 : « On peut comprendre que certains [...] prônent des solutions autoritaires au pire – c'est le cas par exemple de Hans Jonas –, ou, au mieux, des scénarios qui appauvrissent la démocratie en donnant davantage de poids aux experts ou aux technocrates éclairés. Dominique Bourg et Terry Whiteside remettent ainsi à l'ordre du jour l'idée d'une démocratie bridée, par l'instauration d'une « chambre haute » chargée spécifiquement d'avoir égard aux intérêts des générations futures”

⁵⁹ Free translation, *ibidem* p. 121 : “Non pas un évidement de la démocratie au nom de l'urgence et de la « fausse conscience » dont la masse serait victime, tant l'idéologie dominante de la croissance a colonisé les esprits – mais au contraire, une radicalisation de la démocratie, afin que chacun puisse mieux exercer son rôle instituant : son rôle de créateur de normes, par l'exercice par chacun de son autonomie”

⁶⁰ Free translation, *ibidem* p. 122: “[au] fantasme de la solution Une, il faut substituer l'idée expérimentaliste de la recherche en de multiples directions à la fois”

As mentioned above, the transition to a circular economy requires that economic agents act synchronously in order to maximize the use of available resources. The possibility of acting in this way is plausible if the experiments take place as close as possible to local realities and reflect the uniqueness of each situation. This does not mean that the public authorities withdraw from this process in development, but it implies that they provide their support so that local experiments can be effective. As we have tried to prove, the principle of interoperability irrigating the circular economy can only be fully applied thanks to the action of the public authorities: either by encouraging economic operators to cooperate in this sense or by using legitimate violence to force economic operators to act in this sense. Olivier De Schutter also believes that: "Emerging local alternatives can only have lasting impacts, and gradually make a difference, if they are relayed to levels of governance that are not only local⁶¹." For the legal researcher, the "political task" is disrupted since it is not a question of imposing from above but of "putting oneself at the service of local initiatives⁶²".

Also: "The task of higher levels of governance must be, to this extent, to manage externalities; to adjust the framework within which local initiative is placed in such a way as to foster its development, through what could be called "hospitality facilities" - i. e. facilities that make it possible to foster the diversity of social innovations by adapting the legal and economic institutions that make them possible and promote development[...]⁶³". The principle of interoperability will be a useful legal instrument to support in practice the work of all citizens in the territories where they live. In addition, the increased research into environmentally sustainable solutions for the future will foster the emergence of positive synergies, the most valuable of which can be generalized on a larger

⁶¹ Free translation, *ibidem* p. 125: "les alternatives locales émergentes ne pourront avoir des impacts durables, et faire progressivement école, que si elles bénéficient de relais à des niveaux de gouvernance qui ne sont pas uniquement locaux."

⁶² Free translation, *ibidem* p. 125: "se mettre au service des initiatives locales"

⁶³ Free translation, *ibidem* p. 125: "La tâche des niveaux plus élevés de gouvernance doit être, dans cette mesure, de gérer les externalités ; d'aménager le cadre au sein duquel se place l'initiative locale de manière à favoriser son épanouissement, par ce que l'on pourrait appeler des « dispositifs d'accueil » – c'est-à-dire des dispositifs qui permettent de favoriser la diversité des innovations sociales en adaptant les institutions juridiques et économiques qui les rendent possibles et en favorisent le développement [...]"

scale⁶⁴. The principle of interoperability will promote the large-scale deployment of the most efficient solutions and therefore the transition of the European Union to a neutral circular economy regime for greenhouse gas emissions into the atmosphere.

Olivier De Schutter discusses autonomy, i.e. "at the level of the individual, the definition by himself of his own conception of happiness, independent of the injunctions of the consumer society" and at the "level of society, it is the definition by itself of its historical trajectory⁶⁵". This autonomy must be achieved, inter alia, in the new quest for environmentally sustainable solutions within the circular economy and through the principle of interoperability.

While it has been understood that every citizen is necessarily involved in the transition process, the question of the quality and organisation of work of economic agents must now be addressed. We will use Alain Supiot's research on social justice to identify the three dimensions of quality of work: being, having and acting⁶⁶.

The first qualitative dimension of the individual's work in the circular economy is "being", or "the fair recognition of people⁶⁷". Indeed, the dignity of the human person is not limited to the satisfaction of the material needs of the human being or respect for the civil and political rights of the latter, but also includes the just satisfaction of the symbolic needs of women and men. Alain Supiot finds that in "traditional societies, this recognition is inherent in the existence of a hierarchical order, which recognizes each person's place, even if it is subordinate. This is not the case in formally egalitarian societies where recognition can become, like the distribution of wealth, the challenge of a

⁶⁴ Ibidem p. 126 : « la recherche par chacun, dans son entourage immédiat, des solutions qui paraissent pouvoir constituer une réponse à la crise écologique, débouche sur un expérimentalisme démocratique, qui permet de démultiplier les chances d'identifier des solutions susceptibles de se diffuser de proche en proche, avant d'être généralisées à l'ensemble de la société. » Free translation: "the research by everyone, in their immediate environment, of solutions that seem to be able to constitute a response to the ecological crisis, leads to democratic experimentation, which makes it possible to multiply the chances of identifying solutions that are likely to spread from one person to another, before being generalised to the whole of society."

⁶⁵ Free translation, ibidem p. 129: "au niveau de l'individu, la définition par lui-même de sa propre conception du bonheur, indépendante des injonctions de la société de consommation" et au « niveau de la société, c'est la définition par elle-même de sa trajectoire historique"

⁶⁶ Alain Supiot, « L'idée de justice sociale », in *La justice sociale saisie par les juges en Europe, Cahiers Européen n°4*, Dir. Laurence Burgorgue Larsen, Pedone, 2013, p. 6-30

⁶⁷ Free translation, ibidem p. 18-24: "être : la juste reconnaissance des personnes"

struggle of all against all. The preservation of such a society therefore depends on the fair recognition of individuals⁶⁸.

The European Union is at the forefront of the recognition and protection of the right to non-discrimination of working citizens. As the author points out, one of the most comprehensive provisions is Article 21 of the Charter of Fundamental Rights of the European Union, which prohibits “Any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation⁶⁹.”

The case law of the Court of Justice⁷⁰ and the political action of the European institutions⁷¹ are proof that the fundamental provision of Article 21 of the Charter is acted upon⁷². We therefore make a simple reminder that all individuals without exception living on the territory of the European Union are encouraged to participate in the project to implement the circular economy without any discrimination. Consequently, all can expect to be recognized as having a fair place in the society that will be able to judiciously implement the model of a circular economy that is expensive in terms of jobs. The second dimension should be analysed.

⁶⁸ Free translation, *ibidem* p. 18-19: “[dans] les sociétés traditionnelles, cette reconnaissance est inhérente à l’existence d’un ordre hiérarchique, qui reconnaît à chacun une place, fut-elle subordonnée. Il n’en va pas de même dans les sociétés formellement égalitaires où la reconnaissance peut devenir, à l’instar de la distribution des richesses, l’enjeu d’une lutte de tous contre tous. Le maintien d’une telle société dépend dès lors d’une juste reconnaissance des personnes”

⁶⁹ *Ibidem*, p. 21-22

⁷⁰ See for exemple: Judgment of the Court (Fourth Chamber) of 13 July 1995, Jennifer Meyers v Adjudication Officer, Case C-116/94 ; Judgment of the Court (Sixth Chamber) of 7 December 2000, Julia Schnorbus v Land Hessen, Case C-79/99 ; Judgment of the Court (Fourth Chamber), 20 June 2013, Nadežda Riežniece v Zemkopības ministrija and Lauku atbalsta dienests, Case C7/12

⁷¹ Directive 2006/54/EC of the European Parliament and of the Council of 5 July 2006 on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation (recast), *OJ L 204*, 26.7.2006, p. 23–36 ; Directive (EU) 2019/1158 of the European Parliament and of the Council of 20 June 2019 on work-life balance for parents and carers and repealing Council Directive 2010/18/EU, *OJ L 188*, 12.7.2019, p. 79–93

⁷² European Union Agency for Fundamental Rights, Handbook on European non-discrimination law – 2018 edition, p. 113-121

Alain Supiot summarizes the dimension of "having" as "the fair distribution of wealth"⁷³. The 20th century established in Europe the social state that looked after the well-being of citizens through several instruments: the rights of individual workers, the protection of collective freedoms, the establishment of social security and the establishment of public services. This social right has made it possible "to convert power relations into legal relations" and "to reconcile individual freedom and collective security"⁷⁴. We now know that the model of the social state is plunged into a long crisis due to several decades of hegemony of neoliberal ideology⁷⁵, one of the leading figures of which was Friedrich August von Hayek⁷⁶. Alain Supiot pointed out that "the dismantling of institutions based on the idea of social justice has become a priority for many political and economic leaders, first in the United States and the United Kingdom, and now in the European Union"⁷⁷.

This crisis destabilizing the old model of wealth distribution and deepening it as never before⁷⁸ raises new theoretical questions and strategic and practical considerations on the fair distribution of wealth. The implementation of the circular economy model allows for the reflection and invention of new forms of human organizations that have at heart the equitable distribution of the fruits of ecologically sustainable activities. Indeed, it is possible to think about the future social model with the organisation of human economic activities without totally including or excluding nation states and the European Union from the definition of the balances to be expected from a fair distribution of wealth.

⁷³ Free translation, Alain Supiot, « L'idée de justice sociale », in *La justice sociale saisie par les juges en Europe, Cahiers Européen n°4*, Dir. Laurence Burgorgue Larsen, Pedone, 2013, p. 11-17: "avoir: la juste répartition des richesses"

⁷⁴ Free translation, *ibidem* p. 13

⁷⁵ Grégoire Chamayou, *La société ingouvernable. Une généalogie du libéralisme autoritaire*, La Fabrique, 2018, 326 p.

⁷⁶ Friedrich August von Hayek, *Law, Legislation and Liberty, A New Statement of the Liberal Principles of Justice and Political Economy*, Routledge, 1973, 1976, 1979

⁷⁷ Free translation, Alain Supiot, « L'idée de justice sociale », in *La justice sociale saisie par les juges en Europe, Cahiers Européen n°4*, Dir. Laurence Burgorgue Larsen, Pedone, 2013, p. 10: "le démantèlement des institutions fondées sur l'idée de justice sociale est devenue la priorité de nombreux dirigeants politiques et économiques, d'abord aux États-Unis et au Royaume-Uni, puis aujourd'hui dans l'Union européenne"

⁷⁸ Thomas Piketty, *Capital in the 21st century*, Harvard University Press, 2014, 698p and *Capital and ideology*, Harvard University Press, forthcoming, march 2020 ; World Inequality Report 2018, co-edited with F. Alvaredo, L. Chancel, E. Saez, G. Zucman, WIL, 2017, 300p.

On the theoretical⁷⁹ and practical⁸⁰ levels, the research in law and political science that exists around the notion of "commons⁸¹" seems one of the most promising ways to develop human organizations that drastically renew the question of the fair distribution of wealth while ensuring its sustainability in the future. This positioning is articulated with the third dimension of social justice, which according to Alain Supiot is the dimension of "acting"⁸².

The "acting" dimension corresponds to the "just division of labour⁸³". Alain Supiot notes that the question of justice "implies the possibility for everyone to realize what they are in what they do, to forge their person in the ordeal of work⁸⁴". However, according to the author, this question has been excluded from the political perimeter of the social state and is solely a matter of science and technology, of which Taylorism was one of the most successful achievements. The reification of work has mainly been the result of technological progress in the field of industry, but it has not ceased and has deepened with the digital revolution and the advent of the information society mentioned above.

As Alain Supiot notes, our "world is populated, not by beings subordinated to forces that dictate their movements, but by programmed beings capable of reacting to the signals (preferably encrypted) they receive⁸⁵". This "cybernetic" model is the bearer of new means of subjection (and oppression) of workers to the organization of work. Workers whose obedience is "required less than reactivity. Employees are no longer asked not to use their mental faculties, but to put them at the service

⁷⁹ Elinor Ostrom, *Governing the commons: the evolution of institutions for collective action*, Cambridge University Press, 1990

⁸⁰ One example among many others of the implementation of a life project largely inspired by Commons theory in the Andhra Pradesh region of India by the Timbaktu collective: <http://www.timbaktu.org/>

⁸¹ Serge Gutwirth, Isabelle Stengers, « Théorie du droit. Le droit à l'épreuve de la résurgence des commons », *Revue juridique de l'environnement*, 2016/2 (Volume 41), p. 306-343 ; Serge Gutwirth, « Quel(s) droit(s) pour quel(s) commun(s) ? », *Revue interdisciplinaire d'études juridiques*, 2018/2 (Volume 81), p. 83-107.

⁸² Alain Supiot, « L'idée de justice sociale », in *La justice sociale saisie par les juges en Europe, Cahiers Européen n°4*, Dir. Laurence Burgorgue Larsen, Pedone, 2013, p. 25-30

⁸³ Free translation, *ibidem* p. 25: "agir: la juste division du travail"

⁸⁴ Free translation, *ibidem* p. 25: "[cela] implique la possibilité pour chacun de réaliser ce qu'il est dans ce qu'il fait, de forger sa personne dans l'épreuve du travail"

⁸⁵ Free translation, *ibidem* p. 26: "[notre] monde est peuplé, non pas d'êtres subordonnés à des forces qui dictent leurs mouvements, mais d'êtres programmés, capables de rétroagir aux signaux (de préférence chiffrés) qu'ils reçoivent"

of a system over which they have no control⁸⁶.” Faced with this observation, the dimension of action or the fair division of labour should be irrigated by the democratic principle, i.e. offer everyone, citizens, companies and even governments "the possibility to think and act and not only to calculate and react⁸⁷."

The theory of commons aims precisely at the dimension of action in human work, the ways in which commoners organize themselves for the cause or thing they protect and the ways they mutually commit themselves to ensuring sustainability in the long term for the cause or the thing. In this process, both the objective and the way to achieve the objective are important. The direct and collective participation of workers is essential, the term self-organization is often used to reflect the democratic principle that infiltrates the practice of "commons". Also, "no commons without commoning⁸⁸", it is a matter of doing together in which each worker thinks and acts much more than he/she calculates and reacts.

A circular economy based on the principle of interoperability will be supported by everyone. The stakeholders of ecologically viable solutions that will transform the linear economy, including current economic agents whose activities are far too expensive in terms of greenhouse gas emissions into the atmosphere, will be able to organize themselves by referring to the theory of commons. Indeed, acting in favour of the metamorphosis of human activities to make them harmonious with the limits of global metabolism is also and inherently an action in favour of the evolution of the organisation of work towards the ideal of social justice. The dimensions of being, having and acting could evolve in favour of the empowerment of workers, without refraining from using the tools of the information society, but taking care not to be subjected to them. The equitable distribution of the fruits of new wealth, a wealth that reflects the protection of life in its globality and multiplicity, can be considered in a renewed way. The stakeholders of the circular economy will join forces with the

⁸⁶ Free translation, *ibidem* p. 27: “[on] exige moins l’obéissance que la réactivité. On ne demande plus aux salariés de ne pas user de leurs facultés mentales, mais de les mettre au service d’un système sur la conception duquel ils n’ont aucune prise”

⁸⁷ Free translation, *ibidem* p. 30: “la possibilité de penser et d’agir et non pas seulement de calculer et de réagir”

⁸⁸ Serge Gutwirth, Isabelle Stengers, « Théorie du droit. Le droit à l’épreuve de la résurgence des commons », *Revue juridique de l’environnement*, 2016/2 (Volume 41), p. 319

traditional agents of the linear economy and lead to the metamorphosis not only of production processes but also of workers' modes of organization in the direction of their emancipation.

Conclusion

Here are in essence the concrete policy recommendations I suggest:

- Implement the principle of interoperability at the level of policies relating to the circular economy:
 - i.e. either by obliging economic operators to communicate information relating to the interface of their industry to facilitate the creation of the virtuous synergies necessary for a sustainable economy;
 - or by encouraging economic operators to collaborate with each other to create intra- and cross-sectoral standards that are useful in a sustainable economy;
- To put in place policies that encourage European citizens, without any discrimination, to regroup and organise themselves under the ideal of social justice:
 - i. e. by taking care to ensure a fair distribution of wealth;
 - and a democratic organisation where everyone participates in the development of long-term sustainable economic solutions;

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