CATÓLICA Global School of Law

CATÓLICA RESEARCH CENTRE FOR THE FUTURE OF LAW
LISBOA · PORTO

CGSL WORKING PAPERS

No. 2/2023

Non-contractual liability applicable to artificial intelligence: towards a corrective reading of the European intervention

Henrique Sousa Antunes

Non-contractual liability applicable to artificial intelligence: towards a corrective reading of the European intervention

Henrique Sousa Antunes[*]

Abstract

The aim of this article is to demonstrate that the application of the principle of subsidiarity to European regulation of compensation for damage attributable to artificial intelligence requires more than adjustments to fault-based liability, with the necessary creation of compensation funds for injuries caused by high-risk artificial intelligence systems. The conclusion is supported by an analysis of the relationship between the innovation principle and the precautionary principle in the regulation of artificial intelligence and by the specific features of this emerging digital technology.

[*] Professor of Law, Universidade Católica Portuguesa. This paper will be published in the volume edited by Luisa Antoniolli and Paola Iamiceli, "The Making of European Private Law: Changes and Challenges", University of Trento (2023, forthcoming).

1. Background and sequence of arguments

On 28 September 2022, the European Commission published proposals for revision of the legal rules on product liability and regulation of non-contractual liability for damage caused by the use of artificial intelligence. The two texts have convergent purposes, but are structured around different types of liability.

In terms of the Proposal for a Directive of the European Parliament and of the Council on liability for defective products [COM(2022) 495 final - hereinafter, PLD], the reform seeks to respond to the challenges raised by emerging digital technologies, new circular economy business models, current networks of global product distribution and the shortcomings of the previous rules regarding product liability decisions. On this last point, one can highlight the difficulty the injured person has in satisfying the burden of proof regarding the defectiveness of the product and establishing the causal link between the defect and the damage suffered, particularly due to an increase in the technical and scientific complexity of products.

With the Proposal for a Directive of the European Parliament and of the Council on adapting non-contractual civil liability rules to artificial intelligence [COM(2022) 496 final – hereinafter, AILD], the European legislator hopes to overcome the adversities that the features of artificial intelligence systems bring in terms of the proof required of the injured party in order to obtain compensation for damage suffered. The rules seek to ensure that compensation for damage caused by artificial intelligence systems receives equivalent protection to harm not related to the intervention of artificial intelligence, whereby, for this purpose, fault is considered as a general criterion for attributing liability in several national legal systems.

In both cases, the legislator expresses the desire to accommodate the particularities of damage attributable to artificial intelligence systems in order to facilitate compensation for harm caused to victims. The routes adopted, however, are different. In the PLD, the legacy of strict liability is honoured, and built on, with the producer continuing to be liable for damage caused without fault to the injured person, and with the success of compensation claims based on those grounds being favoured. In the AILD, there is a move away from the approach agreed upon in the recommendations, proposals or reports submitted by the European Parliament and by the European Commission, as it rejects the immediate provision of strict liability as

the basis of the obligation to compensate damage caused by high-risk artificial intelligence systems. The European Commission opted for a staged approach, subjecting the adequacy of no-fault liability and the guarantee provided by mandatory insurance to an assessment of the application of the Directive five years after the end of its transposition period [1]. The significance of this choice is clear: in the current circumstances, the strict liability option is left up to the national legal systems. In the analysis now to be undertaken, we will begin by detailing the choices made in the PLD, and will attempt to demonstrate that the legislator replaces the previous regime without rejecting its legacy. In fact, it accommodates and enhances strict product liability.

The PLD proposes that the new rules should repeal Council Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products [2]. And yet the previous binding of the producer to no-fault liability is uncontested. Moreover, the considerations that have arisen on the impact of technological development on the applicable normative solutions, and the observations on the obstacles raised by innovation in terms of proving defectiveness and the causal link, justified extending the reach of strict liability.

The second part of our research studies the direction taken in the AILD. It does so from the essential perspective of whether it is legitimate to restrict the liability of the user, provider or person subject to the obligations of a provider to acts carried out with fault, knowing that laying down a duty to disclose evidence, establishing a rebuttable presumption of breach or fixing a rebuttable presumption of causality do not remove the scope for no-fault imputation of damage. This is clearly shown by the fact that equivalent solutions are accommodated in the product liability rules. Therefore, the current option of rejecting the adoption of a strict liability rule for operators of certain artificial intelligence systems, contrary to the position that has been defended in the European debate, is investigated. This examination calls for several considerations, essentially framed by the principle of subsidiarity applicable to European law.

[1] Page 9 of the explanatory memorandum and Article 5(1) and (2) of the Proposal.

[2] The Directive was published in the "Official Journal of the European Communities" L 210, of 7 August 1985, page 8 et seq.

It will be argued that the European Commission's proposal does not fulfil one of the criteria on which it is based: "subsidiarity is about identifying the best level of governance to make and implement policies. The Union should do so only where it is necessary and where it delivers clear benefits over and above measures taken at national, regional or local levels" [3]. Actually, the matter in question justifies the intervention of the Union, but, despite the proposal calling for legal certainty, it is, in fact, incapable of preventing the fragmentation of the rules applicable to damage caused by high-risk artificial intelligence systems, considering, first of all, the nature of the differences between the national legal systems in terms of the rules on civil liability for dangerous activities. Or the meaning of the legal provision of the strict liability rules. That is, between compensation based on fault or that can be separated from it.

The benefits of the AILD appear to be limited to medium- or low-risk artificial intelligence systems. In high-risk situations, the different legal orders have instruments capable of safeguarding the interests of injured persons. One can, even, legitimately note in the European Union's intervention an indifference towards to the protection of victims of artificial intelligence systems in comparison with the protection granted to other injured persons. In fact, where the activity is, by its nature, dangerous, and therefore subject to strict liability, the additional potential danger created by the features of artificial intelligence systems has not led to any particularities in the rules, since the proposal is limited to subjective liability.

At another moment in our reflection, the inadequacy of fault-based rules is also found in a reading of the principle of subsidiarity in the light of how the innovation principle interacts with the precautionary principle in artificial intelligence regulation (where,

[3] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions of 28 October 2018 [COM(2018) 703 final – The principles of subsidiarity and proportionality: Strengthening their role in the EU's policymaking], page 3. Similarly, we read in the 1997 Protocol on the application of the principles of subsidiarity and proportionality, annexed by the Treaty of Amsterdam to the Treaty establishing the European Community: "action at Community level would produce clear benefits by reason of its scale or effects compared with action at the level of the Member States". It is true that the 1997 Protocol was replaced by Protocol no. 2, introduced by the Treaty of Lisbon (2007) annexed to the Treaty of the European Union (TEU), and Protocol no. 2 does not contain the above citation. Nevertheless, Article 5(3) of the TEU refers to a requirement of added value. It appears, then, that the Union's action can be controlled by reference to the need to identify clear advantages associated with that intervention.

in particular, acceptable residual risks are accommodated). In this aspect, it is worth comparing the options taken by the European legislator regarding product safety and approximation of the national legal rules on the subject matter of product liability.

This brings us to the last part of this article. Ultimately, might the five years of reflection mentioned by the European Commission be justified rather to consider the space that can be afforded to civil liability, as a result of a paradigm change in the facts giving rise to liability?

2. Enhancement of the strict liability of the producer in the PLD

In Recital 2 of the PLD we read that "Liability without fault on the part of the relevant economic operator remains the sole means of adequately solving the problem of a fair apportionment of the risks inherent in modern technological production". Indeed, the protection granted to the injured person by strict liability for damage caused by defective products is enhanced in the above-mentioned document. This happens in two areas: by extending the rules to the implications of a society transformed by emerging digital technologies and by favouring the injured person with revision of some rules that are applicable to products in general.

In the first area, the following changes can be highlighted: expansion of the notion of product to digital manufacturing files and to software; extension of liability to related digital services; amplification of compensable damage to include lost or corrupted data; and maintenance of the manufacturer's liability after the product has been placed on the market or in service, where software or related services are within the manufacturer's control.

In the second sphere, we may note the following modifications: clarification of the relevance of damage to psychological health; inclusion of compensation for damage caused to property that is simultaneously used for private and professional purposes; expansion of the list of economic operators that can be held liable; provision of a duty of the defendant to disclose evidence; reversal of the burden of proof regarding defectiveness and the causal link to benefit the injured party for reasons of technical or scientific complexity; extension of the limitation period from 10 years to 15 years, if justified by the period of latency of a personal injury; and elimination of the maximum

limits for compensation applicable in the event of death or injury of several persons caused by identical products with the same defect.

This enhancement of the solutions afforded to the injured person through strict product liability makes the contrast with the AILD even more stark. Effectively, the operator's duty to compensate arises from the dependence on subjective liability, thereby distancing it further from the protection given by the original rules on no-fault product liability.

3. The gap between the liability of the artificial intelligence system operator and the liability of the producer

The AILD accommodates solutions that aim to facilitate satisfaction of a compensation claim based on the fault of the defendant. The European Commission proposes, in short, three key measures for the purpose: the obligation to disclose evidence, the rebuttable presumption of fault in a situation of non-compliance with a court order to disclose evidence and the rebuttable presumption of causality in the case of liability with fault.

What meaning should we give to these proposals in comparison with the strict liability of the producer? In our opinion, we are far from accepting a rule of compromise which, while rejecting no-fault liability, would bring the efficiency of subjective liability closer to the regime for attributing damage to the producer. In fact, its seems to us that the options in the AILD are, above all, an irrepressible effect of some of the changes introduced in the PLD, i.e. the provision of a duty to disclose evidence and the reversal of the burden of proving the defectiveness and causality. They only serve, in this way, to prevent any widening of the gap between the levels of protection provided by subjective liability and by no-fault liability. Indeed, the enshrining of a presumption of fault is expressly rejected[4].

In the PLD, the level of protection of the injured person is enhanced, altering the apportionment of risk in the law currently in force. Regarding the disclosure of evidence, the text reads: "In light of the imposition on economic operators of liability irrespective of fault, and with a view to achieving a fair apportionment of

[4] AILD, page 6.

risk, the injured person claiming compensation for damage caused by a defective product should bear the burden of proving the damage, the defectiveness of a product and the causal link between the two. Injured persons, are, however, often at a significant disadvantage compared to manufacturers in terms of access to, and understanding of, information on how a product was produced and how it operates. This asymmetry of information can undermine the fair apportionment of risk, in particular in cases involving technical or scientific complexity" (Recital 30). Failure to comply with the obligation to disclose information gives rise to a presumption of defectiveness [Recital 33 and Article 9(2) a)]. It may also be seen that, aside from the omission of the duty to disclose evidence, there is the possibility of a presumption of defectiveness and of the causal link in certain circumstances. Regarding defectiveness, this is the case when there is non-compliance with product safety rules or when there is an obvious malfunction of the product [a glass bottle explodes in the course of normal use – Recital 33 and Article 9(2) b) and c)]. There will also be a presumption of defectiveness and, also, of the causal link based on the technical or scientific complexity of proving this, when the claimant demonstrates that the product contributed to the damage and that the defectiveness or causality was likely [Recital 34 et seq., and Article 9(4)]. Artificial intelligence systems serve to illustrate these rules: "Technical or scientific complexity should be determined by national courts on a case-by-case basis, taking into account various factors. Those factors should include (…) the complex nature of the technology used, such as machine learning (…) and the complex nature of the causal link, such as (…) a link that, in order to be proven, would require the claimant to explain the inner workings of an AI system" (Recital 34). Lastly, a causal link is presumed to exist if the damage suffered is of a kind typically consistent with the defect in question (Article 9(3)).

The solutions are replicated in the AILD, in relation to subjective liability: non-compliance with the duty of disclosure gives rise to a presumption of fault [Recital 21 and Articles 3(5) and 4(1) a)]; if the claim for damages relates to an AI system other than high-risk, the presumption of causality only applies if the court considers that proving that connection is excessively difficult for the claimant [Recital 28 ("(…) such difficulties could be assessed in light of the characteristics of certain AI systems, such as autonomy and opacity, which render the explanation of the inner functioning of the AI system very difficult in practice, negatively affecting the ability of the claimant to prove the causal link between the fault of the defendant and the AI output"), and Article 4(5)]; even in claims for damages relating to a high-risk artificial intelligence system, the presumption of causality may be rebutted if the defendant proves that the

claimant can reasonably gain access to evidence and specialist knowledge sufficient to prove the causality (Recital 27 and Article 4(4)); for the presumption of causality to operate it must be demonstrated that it is reasonably likely that the fault gave rise to the damage [Recitals 22 and 25, and Article 4(1) b) and c). Recital 25 states: "(…) a breach of a requirement to file certain documents or to register with a given authority, even though this might be foreseen for that particular activity or even be applicable expressly to the operation of an AI system, could not be considered as reasonably likely to have influenced the output produced by the AI system or the failure of the AI system to produce an output"].

4. The ground gained by strict liability of the operator of artificial intelligence systems in the European debate

The AILD contains an overview of the most important moments in identifying the option for and content of a regulation on non-contractual liability applicable to damage attributable to artificial intelligence systems. Tracing these steps, the conclusion reached is that harmonisation or unification of the rules on liability is essential for the development of artificial intelligence in Europe. Moreover, it is accepted that there is scope for no-fault liability in relation to injuries caused by the operation of high-risk systems, in order to guarantee citizens' confidence in the use of artificial intelligence.

Following the route taken by the European Commission in the AILD, our findings are confirmed. And these are supported by other documents. The issue of the relevance of strict liability prevails.

One may read in the *European enterprise survey on the use of technologies based on artificial intelligence (A study prepared for the European Commission by Ipsos Belgium and iCite*, 2020) that liability for damage constitutes a particularly significant external obstacle to investment in artificial intelligence [5]. Uncertainty regarding the applicable legal framework clearly contributes to increasing this fear. The other key pillar of legislative intervention in the area of civil liability is citizens' trust. And therein lies the motivation for no-fault liability.

[5] See page 55 et seq.

In a Communication of 25 April 2018, the European Commission noted: "The emergence of AI, in particular the complex enabling ecosystem and the feature of autonomous decision-making, requires a reflection about the suitability of some established rules on safety and civil law questions on liability. (…) A high level of safety and an efficient redress mechanism for victims in case of damages helps to build user trust and social acceptance of these technologies" [6]. Indeed, in a working document that accompanied the aforementioned Communication, on liability for damage caused by emerging digital technologies, the Commission accepted that the autonomy of the technologies in question would undermine the importance of the duty of care with regard to the principle of liability based on the creation of a risk [7]. Accordingly, it stated that no-fault liability was suited to the inevitability of risks and, consequently, to protecting injured persons: "Conceptually speaking, a strict liability approach to AI powered devices would acknowledge that damages resulting from the use of these devices cannot entirely be avoided. At the same time, it would ensure that potential victims are compensated by the liable person" [8].

In the White Paper on artificial intelligence, the European Commission pointed to the regulatory requirements particularly necessary for high-risk systems [9]. The challenge for liability is clear. If there is a significant threat to important assets protected by law, such as life, health or property, and to the public in general, "the challenges of autonomy and opacity to national tort laws could be addressed following a risk-based approach. Strict liability schemes could ensure that whenever that risk materialises, the victim is compensated regardless of fault." [10].

---

[6] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee Of The Regions *Artificial Intelligence for Europe* {SWD(2018) 137 final}, COM(2018) 237 final of 25 April 2018, page 15 et seq.

[7] Commission Staff Working Document, *Liability for emerging digital technologies (Accompanying the document Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions Artificial intelligence for Europe {COM(2018) 237 final})*, SWD(2018) 137 final of 25 April 2018, page 19.

[8] Page 21.

[9] White Paper on Artificial Intelligence – A European approach to excellence and trust, COM(2020) 65 final of 19 February 2020, page 18 et seq.

[10] Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee – *Report on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics*, COM(2020) 64 final of 19 February 2020, page 16.

The European Commission raised the question of the relevance of a specific strict liability, and a corresponding mandatory insurance, in the public consultation that took place between 18 October 2021 and 10 January 2022. 233 entities answered the question, among them business associations (63), individual companies (29), including small and medium enterprises (9) among them, consumer associations (7), citizens (95), non-governmental organisations (10), research centres (14) and national public authorities (5). The convenience of a European framework law for no-fault liability for damage caused by artificial intelligence systems was favoured by most of the entities considered, with the exception of the majority of the business associations and large corporations. We may note, even, that almost all of the small and medium enterprises supported harmonisation of the strict liability in question[11].

And yet, in the AILD, the European Commission explains that the sacrificing of no-fault liability seeks "to strike a balance between the needs expressed and concerns raised by all relevant stakeholder groups" [12]. In short, it appears that the larger corporate entities had a decisive impact in terms of delaying no-fault liability, giving legitimacy to the legislators or judges of each Member State to configure it. The same entities that, in the said consultation, expressed concerns about the negative impacts of legal fragmentation contributed, ultimately, to subjecting compensation claims for damage caused by high-risk artificial intelligence systems to variable solutions in line with the applicable national laws [13].

The European Commission favoured a fuzzy approach, contradictory in its reasons, in abandoning the proposals it had welcomed in earlier documents. More than that, it also rejected the position that the European Parliament had clearly assumed on different occasions.

In its Resolution of 2017, the European Parliament positioned compensation for damage caused by robots between strict liability, possibly accompanied by mandatory

[11] *Adapting Civil Liability Rules to the Digital Age and Artificial Intelligence. Factual summary report on public consultation* (available online – portal "Have Your Say).

[12] Page 8.

[13] The concern regarding legal fragmentation demonstrated by the majority of the companies was expressed in defence of European legislative intervention on the matter of civil liability and artificial intelligence (*Adapting Civil Liability Rules to the Digital Age and Artificial Intelligence. Factual summary report on public consultation*, cit., page 9). Rejection of harmonised strict liability clearly contradicts the direction of that position.

insurance, and the intervention of compensation funds [14]. It also considered, "creating a specific legal status for robots in the long run, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently" [15].

Three years later, the European Parliament abandoned the electronic person status, although defending strict liability for high-risk artificial intelligence systems [16]. That option was kept in 2022 [17]. While respecting a general framework of subjective liability, the European Parliament stresses the importance of liability without fault, accompanied by mandatory insurance, for high-risk artificial intelligence systems and, in general, a presumption of fault. It does so, highlighting that, "due to the characteristics of AI systems, such as their complexity, connectivity, opacity, vulnerability, capacity of being modified through updates, capacity for self-learning and potential autonomy, as well as the multitude of actors involved in their development, deployment and use, there are significant challenges to the effectiveness of Union and national liability framework provisions" [18].

The issue appears inextricably linked to the importance that the precautionary principle plays in the regulation of artificial intelligence. The 2022 European Parliament Resolution notes: "(…) the level of risk of a particular AI application varies significantly depending on the likelihood and severity of harm; (…) therefore, (…) legal requirements should be adjusted to this, in line with a risk-based approach and taking into due account, when justified, the precautionary principle (…)" [19].

Lastly, it should be noted that no-fault liability of the operator is considered to be an appropriate response to certain risks caused by emerging digital technologies, in the

[14] European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics [2015/2103(INL)], point 49 et seq.
[15] Point 59 f).
[16] European Parliament resolution of 20 October 2020 with recommendations to the Commission on a civil liability regime for artificial intelligence [2020/2014(INL)].
[17] European Parliament resolution of 3 May 2022 on artificial intelligence in a digital age [2020/2266(INI)].
[18] Point 146.
[19] Point 19.

important experts report published at the end of 2019 on the transformation of civil liability in the digital age (*Liability for Artificial Intelligence and other emerging digital technologies*, of the Expert Group on Liability and New Technologies – New Technologies Formation, appointed by the European Commission] [20]. This is the case, for example, when those technologies act in public access environments and may frequently cause significant damage ("Strict liability is an appropriate response to the risks posed by emerging digital technologies, if, for example, they are operated in non-private environments and may typically cause significant harm"[21]) [22].

What must one say in the light of all of the above? This is the reflection that we propose in the pages that follow.

5. Breach of subsidiarity

The European Union's intervention in areas that are not within its exclusive competence requires the inclusion of added value in its actions. In other words, the Member States are unable to meet the desired aims and the European Union offers evident benefits, in that respect. Pursuant to the first paragraph of Article 5(3) of the TEU, "Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level". It would appear, then, that the added value requires, in short, that the European Union's action be adjusted to the aims of the action considered. In this context, it is necessary to identify the objectives

[20] An extended dialogue with this text is provided by Mafalda Miranda Barbosa, *O futuro da responsabilidade civil desafiada pela inteligência artificial: as dificuldades dos modelos tradicionais e caminhos de solução*, in "Revista de Direito da Responsabilidade", year 2 (2020), page 280 et seq..

[21] Page 39 (et seq.).

[22] Strict liability in situations of high-risk systems has also been accepted in academic writing. See, for example, Ernst Karner, *Liability for Robotics: Current Rules, Challenges, and the Need for Innovative Concepts*, in "Liability for Artificial Intelligence and the Internet of Things – Münster Colloquia on EU Law and the Digital Economy IV" (Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer – eds.), Baden-Baden, Hart Publishing/Nomos, 2019, page 122 et seq., and Gerald Spindler, *User Liability and Strict Liability in the Internet of Things and for Robots*, in "Liability for Artificial Intelligence and the Internet of Things – Münster Colloquia on EU Law and the Digital Economy IV" (Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer – eds.), cit., page 136 et seq..

pursued by the AILD. These are framed within the legal basis of the proposal, the adoption of measures intended to ensure the establishment and functioning of the internal market (Article 114 of the Treaty on the Functioning of the European Union – TFEU) [23].

With that aim, the objectives of the proposal are to increase legal certainty and prevent the fragmentation of rules on non-contractual liability applicable to artificial intelligence. Harmonisation seeks, therefore, to reduce the existing differences in the rules and prevent further heterogeneity: "Given the large divergence between Member States' existing civil liability rules, it is likely that any national AI-specific measure on liability would follow existing different national approaches and therefore increase fragmentation" [24].

Harmonisation aims to provide legal certainty for companies operating across borders, reducing the financial costs associated with a lack of knowledge of civil liability rules and guarding against distortion of competition between companies in the internal market. It protects, in particular, the position of start-ups and small and medium enterprises, "which account for most companies and the major share of investments in the relevant markets" [25].

According to the European Commission, the requirement that the Union's intervention have obvious benefits is met: "Harmonised measures at EU level would significantly improve conditions for the rollout and development of AI-technologies in the internal market by preventing fragmentation and increasing legal certainty. This added value would be generated notably through reduced fragmentation and increased legal certainty regarding stakeholders' liability exposure" [26].

Given that increased legal certainty is dependent on reducing current legal fragmentation and preventing future fragmentation, the root of the subsidiarity lies in the effectiveness of the proposal with regard to fragmentation. In our opinion, the terms of the AILD do not contribute significantly to approximation of the different legislations and, thus, to increasing legal certainty.

[23] Page 5.
[24] Page 6.
[25] Page 6.
[26] Page 6 et seq..

Analysis must be limited to the first stage of the AILD, on the fault-based imputation of damage. The second stage is based only on a re-examination mechanism, and in no way binds the legislator to provide for strict liability. There is not even a conditional relationship between the two moments. In fact, the report of the evaluation provided for in Article 5 could take as a reference the application of the different national laws, without any prior harmonisation.

With this caveat, it is our understanding that the proposal is largely ineffective. The usefulness of disclosing evidence or of a presumption of causality is inextricably linked with situations of subjective liability where the injured party has the burden of proving fault. Where there is a reversal of the burden of proof of fault, the protection granted by the AILD is irrelevant: the information on compliance with due diligence must be provided by the defendant and the presumption of fault typically covers a presumption of abstract causality [it will be recalled that, in line with Article 4(1) c) of the AILD, the injured party must prove the relationship of conditionality].

Well then, fragmentation of the liability rules that may be applicable to high-risk artificial intelligence systems does not lie in the reversal of the burden of proof of fault or not, but, in general, between civil liability with presumed fault and strict civil liability. We are thinking, in particular, of the rules on dangerous activities [27]. Other rules that we might bring to the discussion give rise to the same reflection, e.g., damage caused by things or animals, liability for the acts of another person or accidents involving land vehicles [28].

In short, the existing fragmentation remains untouched. The contribution of the proposal regarding damage caused by medium- or low-risk artificial intelligence systems is certainly not unknown. Subject, in principle, to fault, the presumption of causality reduces the evidence required by the general regime of liability with fault. We are, therefore, in an area where the relevance of protecting the injured party is less, due to the lesser degree of potential danger of the systems covered. It should be added that the presumption "shall only apply where the national court considers it excessively difficult for the claimant to prove the causal link (…)" (Article 4(5)).

[27] See Rui Paulo Coutinho de Mascarenhas Ataíde, *Responsabilidade Civil por Violação de Deveres no Tráfego*, Coimbra, Almedina, 2015, page 443 et seq..

[28] See Ernst Karner/Barnhard A. Koch, *Civil Liability for Artificial Intelligence. A Comparative Overview of Current Tort Laws in Europe*, in "Comparative Law Study on Civil Liability for Artificial Intelligence", European Commission (Justice and Consumers), 2020, page 41 et seq..

Furthermore, the AILD is a Directive of minimal harmonisation: "(...) Such an approach allows claimants in cases of damage caused by AI systems to invoke more favourable rules of national law. Thus, national laws could, for example, maintain reversals of the burden of proof under national fault-based regimes, or national no-fault liability (referred to as 'strict liability') regimes of which there are already a large variety in national laws, possibly applying to damage caused by AI systems" (Recital 14). Member States are even free to adopt rules that are more favourable for claimants (Article 1(4)).

Lastly, it should be acknowledged that the ineffectiveness of the proposal may also mean disregard for the specific nature of the injury attributable to artificial intelligence systems. Under the principle of proportionality (Article 5(4) 1st paragraph of the TEU), the action must guarantee "that victims have the same level of protection as in cases not involving AI systems" [29]. The intervention may thus prove to be unfair. In fact, equating the protection to that granted to other victims ignores the fact that, when faced with equally dangerous activities, the additional potential danger brought about by the use of artificial intelligence may justify positive discrimination.

We may consider the case of certain medical activities that are considered dangerous. In the legal systems where the potential danger of an activity has justified strict liability, the characteristics of artificial intelligence will not lead to a presumption of causality. The proposal restricts this to liability with fault. And, yet, the European Commission accepts the normative relevance of the specific potential danger of artificial intelligence in relation to medium- or low-risk artificial intelligence systems: "The presumption of causality could also apply to AI systems that are not high-risk AI systems because there could be excessive difficulties of proof for the claimant. For example, such difficulties could be assessed in light of the characteristics of certain AI systems, such as autonomy and opacity, which render the explanation of the inner functioning of the AI system very difficult in practice, negatively affecting the ability of the claimant to prove the causal link between the fault of the defendant and the AI output" (Recital 28).

Having said this, it seems clear to us that the breach of subsidiarity, in the terms indicated, arises as a result of an unfortunate response to the tension between

[29] Page 6.

precaution and innovation in the regulation of artificial intelligence. We must, therefore, revisit the issue of subsidiarity from this perspective.

6. Subsidiarity in the light of the principles of precaution and innovation

In the AILD, protecting innovation appears as a limit to adjusting liability, excluding, for that reason, strict liability or even liability based on a presumption of fault: "The proposal does not lead to a reversal of the burden of proof, to avoid exposing providers, operators and users of AI systems to higher liability risks, which may hamper innovation and reduce the uptake of AI-enabled products and services" [30].

The contrast with what happened when the product liability rules were approved is significant. In Directive 85/374/CEE, cited above, it is understood that the acceptance of innovation forms the basis for the provision of compensation rules that are particularly favourable to consumers: "(…) liability without fault on the part of the producer is the sole means of adequately solving the problem, peculiar to our age of increasing technicality, of a fair apportionment of the risks inherent in modern technological production".

Some years later, when the application of the product liability rules was well established, the legislator once again stated that strict liability was consistent with the challenges raised by innovation. In Directive 1999/34/EC of the European Parliament and of the Council, of 10 May 1999, amending Council Directive 85/374/EEC on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products, we read: "(…) Directive 85/374/EEC established a fair apportionment of the risks inherent in a modern society in which there is a high degree of technicality; (…) struck a reasonable balance between the interests involved, in particular the protection of consumer health, encouraging innovation and scientific and technological development, guaranteeing undistorted competition and facilitating trade under a harmonised system of civil liability; (…) thus helped to raise awareness among traders of the issue of product safety and the importance accorded to it" (Recital 2) [31].

[30] Page 6.

[31] In "Official Journal of the European Communities" L 141, of 4 June 1999, page 20 et seq..

In our opinion, the European Commission's analysis in the AILD fails for three fundamental reasons: firstly, it forgets that innovation, although established as a principle, cannot generally be separated from the precautionary principle; next, it forgets that the combination of these two principles in the regulation of artificial intelligence is required upstream, when identifying the compliance requirements of the systems concerned; lastly, it disregards the fact that articulation between the regulation upstream of safety and the regulation downstream of damage makes it possible to provide a degree of flexibility when applying the innovation and precautionary principles, by balancing the protection of innovation with the call for precaution in the definition of an effective compensation regime.

These reflections require us to provide some brief notes on the innovation principle and the precautionary principle and, in particular, on the role of precaution in civil liability.

Once this background has been provided, we will consider the legitimacy of giving different prevalence to each of the two principles at different times in the regulation. We are thinking, in particular, of the articulation between product safety legislation and the product liability rules. This is what we will now set out to do.

6.1. The innovation principle and the precautionary principle: basis and reach

In European law, innovation and precaution emerge as principles structured on foundations of a different nature. Let us begin with innovation.

The root of a principle of innovation in European public policies can be found in a letter sent in October 2013 by 12 executive directors of multinational corporations to the presidents of the three European institutions, and which was strengthened by a second letter (in November 2014), then signed by 22 executive directors and sent to the then President of the European Commission, Jean-Claude Juncker [32]. The documents were based on a report of the European Risk Forum [33].

[32] See *Study supporting the interim evaluation of the innovation principle (Final report)*, European Commission (November 2019), page 8.

[33] European Risk Forum – Communication 12, *The Innovation Principle – Letter to the Presidents of the European Commission, the European Council, and the European Parliament* (October 2013).

Since then, the innovation principle has been mentioned in various communications of the European Commission. Among other texts, of particular note is the "renewed European Agenda for Research and Innovation - Europe's chance to shape its future" [COM(2018) 306 final], and the communications "Artificial Intelligence for Europe" [COM(2018) 237] and "The Single Market in a changing world - A unique asset in need of renewed political commitment" [COM(2018) 772]. The principle also appears in the recitals of the Horizon Europe Regulation [34].

What do we mean by the innovation principle? Its origins can be traced back to the desire to counterbalance the effects of precaution. In the letter of October 2013, the signatories referred to the need to balance the risk created by new technologies against the social and economic benefits associated with technological innovation, thus limiting the effects of the precautionary principle: "Our concern is that the necessary balance of precaution and proportion is increasingly being replaced by a simple reliance on the precautionary principle and the avoidance of technological risk. We see numerous practical examples across a range of technologies, from engineering to chemicals and agricultural to medical sciences. The potential for all these technologies to advance social and economic welfare is undisputed but is being put at risk by an increasing preference for risk avoidance and the loss of scientific methodology from the regulatory process" [35].

Accordingly, the innovation principle determines that, where legislation motivated by the precautionary principle is being analysed, the impact of innovation should be duly considered in the political process and in the legislative activity in question[36]. Precaution should prevail only in situations where there is a real threat of an unacceptable risk: "Where there is real danger and unacceptable risk, precautionary considerations should be uppermost" [37]. Otherwise, society must accept, understand

[34] Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013.

[35] European Risk Forum – Communication 12, cit., page 3.

[36] European Risk Forum – Communication 12, cit., page 4: "*The principle is simple – that whenever precautionary legislation is under consideration, the impact on innovation should also be taken into full account in the policy and legislative process*".

[37] European Risk Forum – Communication 12, cit., page 10.

and manage the risk created by technological innovation, benefiting from the advantages of that process and enabling Europe to become more competitive in scientific development [38].

While recognising that the use of the precautionary principle in European legislation does not impose a prohibition on products or processes carrying potential risk, supporters of the innovation principle consider that a failure to determine the criteria for applying precaution leads to a lack of political and regulatory predictability of the competent bodies. This is the case, particularly, with risk management measures. Hence, even the "weak" version of the precautionary principle impacts the confidence of companies and investors [39].

The precautionary principle is mentioned in Article 191(2) of the TFEU. It was introduced by the Maastricht Treaty of 1992, as a fundamental principle of European environmental policy, learning from the teachings of earlier international conventions. The movement has been particularly significant since the 1980s. An important illustration of the precautionary principle is contained in the Rio Declaration on Environment and Development of 1992 (United Nations Conference). Principle 15 reads: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

Over time, precaution gained the dimension of a general principle of European law [40]. In this context, the impact of new technologies or human health products can be highlighted. Debate continues, however, as to the meaning of the principle and its implications.

Article 191(2) of the TFEU does not define precaution. According to the Treaty, "Union policy on the environment shall aim at a high level of protection taking into account

[38] See European Risk Forum – Communication 12, cit., page 9.

[39] European Risk Forum, *Monograph – Fostering Innovation. Better Management of Risk* (March 2015), page 23 et seq..

[40] See, for example, Kristel De Smedt/Ellen Vos, *The Application of the Precautionary Principle in the EU*, in "The Responsibility of Science" (Harald A. Mieg – editor), Studies in History and Philosophy of Science 57, Cham, Springer, 2022, page 166 (163-186).

the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay".

The Commission issued some guidelines with its Communication on the precautionary principle [41]. This provides an initial framework for use of the principle. It remains to be seen how it is being applied in practice.

According to the Communication, essential features of the content of precaution are the existence of a preliminary objective evaluation and identification of reasonable grounds for concern that there will be potentially dangerous effects on the environment, human, animal and plant health. [42]. The interests protected are, however, broader: "The search for a high level of health and safety and environmental and consumer protection belongs in the framework of the single market, which is a cornerstone of the Community" [43]. Articles 11, 114, 168, 169 and 191 of the TFEU serve as a basis for the argument.

We are in the domain of scientific uncertainty. Scientific evaluation is unable to determine, with sufficient certainty, the risk of potential danger of a phenomenon, product or process [44]. In fact, "Whether or not to invoke the Precautionary Principle is a decision exercised where scientific information is insufficient, inconclusive, or uncertain (…)" [45]. On the other hand, we would be within the scope of prevention if there were scientific evidence of the existence of the danger.

It is important to stress that the risk goes beyond the timeframe of a short or medium-term deadline. Considering the well-being of future generations, potential long-term dangers are relevant [46].

[41] COM(2000) 1 final.
[42] Page 3.
[43] Page 8. See also page 9 et seq..
[44] Page 3.
[45] Page 7.
[46] Page 17 et seq..

The precautionary principle operates at three different levels: risk assessment, risk management and risk communication. The precautionary principle gains particular relevance within the scope of risk management [47].

In that context, the Commission states the need to "clarify a misunderstanding as regards the distinction between reliance on the precautionary principle and the search for zero risk, which in reality is rarely to be found" [48]. It is up to political decision-makers to define the level of "acceptable" risk for society. The nature of the risk, scientific uncertainty and public concerns are indispensable factors when taking decisions: "In some cases, the right answer may be not to act or at least not to introduce a binding legal measure. A wide range of initiatives is available in the case of action, going from a legally binding measure to a research project or a recommendation" [49].

Once the decision to act is taken, it is proposed, non-exhaustively, that the measures should be proportional to the intended aim of the protection, non-discriminatory, consistent with previous measures, based on a cost/benefit analysis, capable of being reviewed and catalysts for the production of more consistent scientific data [50].

6.2. Application of the innovation principle and the precautionary principle in the regulation of artificial intelligence

When describing the precautionary principle, we highlighted the link that the European Commission established between that principle and the achievement of a high level of protection of interests that must be safeguarded: "The Community has consistently endeavoured to achieve a high level of protection, among others in environment and human, animal or plant health. In most cases, measures making it possible to achieve this high level of protection can be determined on a satisfactory scientific basis. However, when there are reasonable grounds for concern that potential hazards may affect the environment or human, animal or plant health, and when at the same time the available data preclude a detailed risk evaluation, the precautionary principle has been politically accepted as a risk management strategy in several fields" [51].

[47] Page 2.
[48] Page 8.
[49] Page 3.
[50] Page 3 et seq. and 17 et seq..
[51] Communication from the Commission on the precautionary principle, cit., page 8.

Achieving "a high level of protection of health, safety and fundamental rights" is one of the aims expressly set out in the Proposal for a Regulation of the European Parliament and of the Council, of 21 April 2021, laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts [COM(2021) 206 final – hereinafter the AI Act] [52]. It is a matter of protecting the Internal Market, ensuring a high level of protection of regulated interests: "A consistent and high level of protection throughout the Union should (…) be ensured, while divergences hampering the free circulation of AI systems and related products and services within the internal market should be prevented, by laying down uniform obligations for operators and guaranteeing the uniform protection of overriding reasons of public interest and of rights of persons throughout the internal market based on Article 114 of the Treaty on the Functioning of the European Union (TFEU)" [53].

In the European Union's Charter of Fundamental Rights, a high level of protection is referred to in Articles 35, 37 and 38, on, respectively, health protection, environmental protection and consumer protection. Article 114(3) of the TFEU, in particular, is in harmony with these rules. Here we read, on the issue of the approximation of laws affecting the establishment and functioning of the internal market, "The Commission, in its proposals envisaged in paragraph 1 concerning health, safety, environmental protection and consumer protection, will take as a base a high level of protection, taking account in particular of any new development based on scientific facts. Within their respective powers, the European Parliament and the Council will also seek to achieve this objective". And so, the Artificial Intelligence Act accommodates and possibly extends the high level of protection provided for in Article 114(3) of the TFEU. To that extent, it accepts the precautionary principle.

The requirement that measures used to apply the precautionary principle be proportionate opens the door, however, to the innovation principle. Indeed, in its Communication "Artificial Intelligence for Europe", cited above, the European Commission only referred to the innovation principle: "For any new regulatory proposals that shall be needed to address emerging issues resulting from AI and related technologies, the Commission applies the Innovation Principle, a set of tools

[52] Recital 1.

[53] Recital 2.

and guidelines that was developed to ensure that all Commission initiatives are innovation friendly" [54].

This ambivalence perhaps explains why, in the same document in which it commits itself to achieving a high level of protection of the above-mentioned interests, the European Commission accepts the concept of responsible innovation in the explanatory memorandum, and limits proportionality to the minimum necessary action: "This proposal imposes some restrictions on the freedom to conduct business (Article 16) and the freedom of art and science (Article 13) to ensure compliance with overriding reasons of public interest such as health, safety, consumer protection and the protection of other fundamental rights ('responsible innovation') when high-risk AI technology is developed and used. Those restrictions are proportionate and limited to the minimum necessary to prevent and mitigate serious safety risks and likely infringements of fundamental rights" [55].

There appears to be a sacrificing of the precautionary principle. Although the European Commission does not define a level of acceptable risk, a high level of protection would suggest favouring more restrictive measures than the minimum necessary for the protection of fundamental rights.

A clear example of the sacrificing of the precautionary principle in the regulation of high-risk artificial intelligence systems can be found in Article 9 of the AI Act proposal, on risk management. This contrasts with the rules on prohibited artificial intelligence systems.

High-risk artificial intelligence systems are required to establish, implement, document and maintain a risk management system [Article 9(1)]. The proposed act requires identification, analysis and management of the risks associated with the artificial intelligence system in question, taking known and foreseeable risks as its reference, however [Article 9(2) a)]. Knowledge of the dangers is key, since foreseeable risks are also known risks. In fact, foreseeability requires more than scientific uncertainty.

[54] COM(2018) 237 final, page 15, note 56.
[55] AI Act Proposal, cit., page 11.

Actually, knowledge seems to be exhausted in foreseeability, since, in the case of risks, the certainty of their occurrence is excluded. This framing conditions the interpretation of points b) and c) of Article 9(2), which, in fact, only specify the circumstances for the identification of risks, rather than characterising them. In this sense, there is a requirement for "estimation and evaluation of the risks that may emerge when the high-risk AI system is used in accordance with its intended purpose and under conditions of reasonably foreseeable misuse" [point b)]. A further obligation is "evaluation of other possibly arising risks based on the analysis of data gathered from the post-market monitoring system referred to in Article 61" [point c)]. The risk management system is dependent, therefore, on scientific certainty regarding the dangers identified. The risk management measures will therefore be preventive in nature rather than precautionary. And even based on the foreseeability provided by scientific knowledge, the proposal for the AI Act allows acceptable risks to remain: "The risk management measures referred to in paragraph 2, point (d) shall be such that any residual risk associated with each hazard as well as the overall residual risk of the high-risk AI systems is judged acceptable, provided that the high-risk AI system is used in accordance with its intended purpose or under conditions of reasonably foreseeable misuse. Those residual risks shall be communicated to the user" (Article 9(4)) [56].

On the other hand, prohibited artificial intelligence systems cannot escape prohibition in view of the identified risks. And, in this case, even when there is scientific uncertainty. The mere possibility of damage is, in the light of precaution, sufficient to provide the grounds for prohibition. One example is the category of subliminal techniques that aim to influence human behaviour. For prohibition it is sufficient the likelihood of physical or psychological harm attributable to the material distortion of the behaviour of the injured person or of a third party [Article 5(1) a)]. The same happens with artificial intelligence systems that exploit any vulnerabilities of a specific group of persons due to their age or physical or mental disability. The prohibition is based on actions that materially distort the behaviour of the vulnerable person "in a manner that causes or is likely to cause that person or another person physical or psychological harm" [Article 5(1) b)].

[56] On the ambiguity of the concept of residual risks, see the relevant study by Henry Fraser/José-Miguel Bello y Villarino, *Where Residual Risks Reside. A Comparative Approach to Art 9 (4) of the European Union's Proposed AI Regulation* (Global AI+Regulation Emerging Scholars Workshop – Ottawa, Canada – 2021), in Queensland University of Technology (Brisbane, Australia - https://eprints.qut.edu.au/233179/).

Were there any doubt as to the prevalence of innovation in the regulation of high-risk artificial intelligence systems, this is dispelled by the amendments suggested for these regimes in the Council of the European Union's appreciation of the AI Act proposal. Article 9(2) a) is modified so as to refer to known and foreseeable risks most likely to affect health, safety and fundamental rights, in view of the intended purpose of the high-risk artificial intelligence system. The possibility of misuse of the system is also discarded [Article 9(2) b) and (4)].

It will also be noted that the preference for precaution in the prohibited use of artificial intelligence is diluted by the Council with the introduction of an assessment of reasonableness. In fact, the relevance of the likelihood of damage as grounds for prohibiting the identified artificial intelligence systems depends, in that perspective, on a judgement of reasonable prediction, which is certainly closer to scientific certainty [Article 5(1) a) and b)].

The choice of innovation as a guiding principle in the regulation of artificial intelligence would be acceptable if liability functioned as a counterbalance, giving precaution the possibility of correcting the excesses of technological development. While making room for new technologies due to the over-riding benefits of innovation in the face of scientific uncertainty surrounding the risks, the legislator cannot disregard reasonable suggestions of potentially dangerous effects on citizens' fundamental rights, observed in an objective preliminary scientific assessment. This is what is required by a high level of protection.

This means recognising the additional role to be played by the liability regime in relation to safety rules [57]. And this is accepted by the European Commission: "In the AI Act proposal, the Commission has proposed rules that seek to reduce risks for safety and protect fundamental rights. Safety and liability are two sides of the same coin: they apply at different moments and reinforce each other. While rules to ensure safety and protect fundamental rights will reduce risks, they do not eliminate those risks entirely. Where such a risk materialises, damage may still occur. In such instances, the liability rules of this proposal will apply." [58].

[57] See, for example, Herbert Zech, "Liability for AI: public policy considerations", (2021) 22 Era Fórum, page 153.
[58] AILD, page 2.

In this sense, relaxation of regulatory measures for high-risk artificial intelligence systems would be understandable if, as a precaution, the rules on victim compensation were effective. The innovation principle would prevail *ex ante* and the precautionary principle would prevail *ex post*. However, this is not what happens.

6.3. Precaution in civil liability

The compensatory aim of civil liability presupposes the existence of damage and, to that extent, appears to be in conflict with the nature of the precautionary principle. After all, the application of that principle seeks to avoid the occurrence of the feared dangerous effects. However, there are several noteworthy proposals for converging the two realities [59]. We would highlight two different approaches.

In legal theory, a direction is emerging that favours increasing the compatibility between civil liability and the precautionary principle by identifying damage prevention as an autonomous area within the liability judgment. The preventive effect associated with imputation of damage would work alongside prevention of harm by using liability as a tool to inhibit potentially harmful practices.

We believe that this understanding distorts the meaning of liability, without demonstrating a practical need that supports it. The space for prevention is not disputed; what is questioned is the dogmatic framework.

Reaction to the risk of an offence certainly has a place in private law. Moreover, the existence of reasonable scientific grounds to forecast the severity or irreversibility of certain risks may legitimise a prohibitive judicial reaction.

Similarly to what happens with abstract options taken in legislative policy, the interests in conflict in a specific dispute may imply a requirement of precaution. The grounds for the courts' application of the said principle lie in the general instruments of civil procedure, these instruments being understood as a commitment to the constitutional right to effective legal protection. The vocation of civil liability is different. The decision on imputation is separate from the exercise of injunctive protection.

[59] See, in particular, Mathilde Boutonnet, *Le Principe de Précaution en Droit de la Responsabilité Civile*, Paris, L.G.D.J., 2005, page 297 et seq..

It is accepted, however, that the precautionary principle may have a role to play. In fact, it allows a basis for reconfiguring the methods for assessing the general conditions of liability, namely of fault and the causal link [60]. The utility of the principle in this sense is accepted.

The route followed allows us to demonstrate how the elements of liability may be made more flexible. In this context, will the choice of subjective liability for damage attributable to artificial intelligence systems be compatible with a high level of protection of persons? The answer, in our view, is no, if the safety standard of those systems reflects the requirements of the innovation principle, namely, with the use of an acceptable risk, the content of which is ambiguous. This assessment is guided by the rules on product liability.

6.4. The safety that can legitimately be expected

There are those who would like to see a concession to *culpa levissima* in the exclusion of producer's civil liability on the basis of development risks. This understanding would enable liability to be excluded on the grounds of lack of imputability of the agent or the existence of causes that excuse his behaviour.

In a very clear-cut manner, Article 1 of Decree-Law no. 383/89, of 6 November, which transposes the above-cited Directive no. 85/374/EEC into Portuguese law, attributes liability to the producer "regardless of fault". And although Article 1 of the Directive is silent on this matter, it appears possible to identify it in the restriction of the injured person's burden of proof to proof of damage, defect and the causal relationship between defect and damage, and in the fact that lack of fault is not listed among the reasons for excluding liability (Articles 4 and 7 of the Directive). We might add that, according to the Directive's preamble, "liability without fault on the part of the producer is the sole means of adequately solving the problem, peculiar to our age of increasing technicality, of a fair apportionment of the risks inherent in modern technological production" [61].

[60] Again, Mathilde Boutonnet, *Le Principe de Précaution en Droit de la Responsabilité Civile*, cit., page 431 et seq..

[61] In this direction, see the reflections of João Calvão da Silva, *Responsabilidade Civil do Produtor*, Coimbra, Almedina, 1990, page 489 et seq..

It is not, therefore, possible to base the subjective liability of the producer on the standard of exceptional diligence, based in particular on an assessment of the risks of development. "Cryptoblame" is avoided [62]. "Excessive objectification of fault, abandoning fault without culpability so to speak." is prevented [63]. The "psychological link between the product's defect and the will of the manufacturer" becomes "irrelevant" [64]. This naturally influences the interpretation of the reason for excluding liability based on development risks.

The Portuguese legislator accepted that "the producer is not liable if he proves that the state of scientific and technical knowledge, at the time when he put the product into circulation, would not enable the existence of the defect to be detected" [Article 5 e) of Decree-Law no. 383/89, cited above] [65]. The foregoing highlights rejection of the notion that average diligence of the producer is sufficient. This is commonly understood.

Within the dominant position, however, there are differences of opinion on the content of the above-mentioned reason for exclusion. The options taken reflect differences regarding the scope of precaution in the imputation of damage.

For some, affirmation of liability is dependent on the knowability or foreseeability of the defect [66]. The relevance of scientific uncertainty thus appears to be set aside, while it remains as an expression of a dissenting trend of thought: "given that the state of the art is not a decided and closed concept, but rather a fluid concept that needs to be judged in the circumstances of the case, its framework must be the scientific and technical possibility that has been imposed in the respective field (…), even if it is not yet that which is practised in the respective industrial segment" [67].

[62] João Calvão da Silva, *Responsabilidade Civil do Produtor*, cit., page 515, note 1.
[63] João Calvão da Silva, *Responsabilidade Civil do Produtor*, cit., page 516.
[64] João Calvão da Silva, *Responsabilidade Civil do Produtor*, cit., page 516.
[65] Directive no. 85/374, cit., allowed a derogation from that ground for exemption from liability [Article 15(1) b)].
[66] See João Calvão da Silva, *Responsabilidade Civil do Produtor*, cit., page 516.
[67] João Calvão da Silva, *Responsabilidade Civil do Produtor*, cit., page 512.

For others, precaution justifies restricting exclusion of liability due to development risks to absolute ignorance of legitimate scientific data [68]. The existence of minority opinions, provided they are duly substantiated in scientific terms, prevents exoneration due to development risks. Some even consider that the state of the art includes the sum of all scientific and technical knowledge at the global level, including isolated opinions, if these are duly substantiated [69].

This broad approach is also our understanding. The influence of precaution is therefore legitimised, without this affecting the requirement of substantiation. In relation to this, we may consider the European Commission's requirement: "An assessment of risk should be considered where feasible when deciding whether or not to invoke the precautionary principle. This requires reliable scientific data and logical reasoning, leading to a conclusion which expresses the possibility of occurrence and the severity of a hazard's impact (…)"[70]. Even in the face of scientific uncertainty, this is sufficient to distance absolute ignorance[71].

It should be added that strict liability allows precaution to be immune to the existence of reasons for excuse. This further broadens the meaning of precaution.

It can be seen, therefore, that despite the regulations approved on product safety, the legislator did not refrain from making liability operate subject to precaution. And it was this choice that determined the reach of the protection granted, by means of a convergent reading of the notion of defect, linked to the lack of safety that can legitimately be expected (Article 6(1) of Directive no. 85/374/CEE, cited above), with the demands placed by development risks as a reason for excluding liability. To put it more simply, the omission of conduct which would have been required of the producer to exclude his liability on the basis of the state of scientific and technical knowledge at the time when the product was put into circulation fulfils the notion of defect and, accordingly, the finding of liability.

---

[68] See the claim of prevalence of this theory in Italian law in Roberta Montinaro, *Dubbio Scientifico e Responsabilità Civile*, Milano, Giuffrè Editore, 2012, page 110 et seq..

[69] See Olivier Berg, *La notion de risque de développement en matière de responsabilité du fait des produits défectueux*, in "La Semaine Juridique - Édition Générale" 1996, I-3945, page 271 et seq. (271-278).

[70] Communication from the Commission on the precautionary principle, cit., page 14.

[71] See, for example, Roberta Montinaro, *Dubbio Scientifico e Responsabilità Civile*, cit., page 113.

In this context, it does not appear legitimate to attain the high level of protection of fundamental rights required by the AI Act proposal with a level that is different from the safety that can legitimately be expected when implementing the notion of a defective product. Even more so because product liability, as we have seen, is an instrument used to defend citizens in the light of harm caused by artificial intelligence systems.

Moreover, one cannot accept the possibility of having different rules for producer's liability and for operator's liability in the event of a third party being exposed to the same danger. In other words, the risk is not determined by the agent, but by the purpose of the artificial intelligence system. Indeed, certain statements from European institutions have unequivocally expressed that there must be equivalence of liabilities. See, for example, the European Parliament: "The introduction of a new liability regime for the operator of AI-systems requires that the provisions of this Regulation and the review of the Product Liability Directive be closely coordinated in terms of substance as well as approach so that they together constitute a consistent liability framework for AI-systems, balancing the interests of producer, operator, consumer and the affected person, as regards the liability risk and the relevant compensation arrangements." [72].

Lastly, it should be stressed that delaying the European rule of strict liability for damage caused by high-risk artificial intelligence systems does not exclude equivalence between the operator and the no-fault obligation of the producer. This is, in fact, the case.

We may consider corporate liability for risk, a construction that is broadly developed in Italian law. In this legal order, the rules providing for specific situations of strict liability have given rise to the development of a general principle, parallel to fault, based on the risk created by the carrying on of economic activities or, in a narrower sense, by companies. A bipolar system (between fault and risk) thus emerges [73].

In a similar way, transformation of the civil liability rules for dangerous activities into no-fault liability rules is also occurring. A prime example is what happens in Article

[72] European Parliament resolution of 20 October 2020 with recommendations to the Commission on a civil liability regime for artificial intelligence [2020/2014(INL)], cit., recital 23 of the Proposal.

[73] For a critique, see Cesare Salvi, *La Responsabilità Civile*, terza edizione, Milano, Giuffrè Francis Lefebvre, 2019, pages 155 and 158 et seq..

2050 of the Italian *Codice Civile* and, in particular, in the articulation with the imputation of damage caused by a defective product [74]. Civil liability for dangerous activities, although subject to demonstration of the likelihood of damage, has come to accept the relevance of supervening scientific knowledge about the activity's potential to cause damage. According to some legal theory, the solution enables relevance to be given to development risks [75].

In short, no-fault liability of the operator of high-risk artificial intelligence systems is believed to be substantiated. However, will it be enough to guarantee a high level of protection of the fundamental rights compromised by the injury? We think not.

7. A corrective reading of compensation for damage

Strict liability is no longer acceptable as a means of implementing precaution with the ongoing shift in the injury paradigm. Acts have changed from a human source to a machine origin. In addition, the progressive sophistication of the autonomy of artificial intelligence systems will inevitably lead to the opacity of certain procedures. At the same time, other features of artificial intelligence systems such as data dependency, vulnerability to cybersecurity breaches or interconnectivity explain the transition from a monocausal reality to a multicausal reality [76].

Pursuing the condition of identifying an agent of the harmful act and imputation of liability based on risk control would mean sacrificing the injured party to the innovation principle, which is accepted *ex ante*. This would harm an efficient and speedy response to compensation claims for damage arising from the use of high-risk artificial intelligence systems.

---

[74] In this respect, some have established a parallel with the opening of other laws to the objective liability, in particular with the development and the scope attributed to the *Verkehrspflichten* (duties of care) in German law. See, for all, Carlo Castronovo, *Responsabilità Civile*, Milano, Giuffrè Editore, 2018, page 465 et seq..

[75] See, in this respect, the exposition by Roberta Montinaro, *Dubbio Scientifico e Responsabilità Civile*, cit., page 121 et seq..

[76] Surpassing a human based and monocausal model is discovered as a unitary event in Expert Group on Liability and New Technologies – New Technologies Formation, *Liability for Artificial Intelligence and other emerging digital technologies*, cit., page 19.

The injured party would be, clearly and unjustly, unprotected. In the words of Anna Beckers and Gunther Teubner: "Suppose the law continues to react to the use of AI systems – robots, software agents, human-machine associations, or multi-agent systems – exclusively with traditional concepts tailored for human actors and thus leaves those responsibility gaps unresolved. In that case, it inevitably contributes to damage not being distributed collectively across society, but rather in a merciless *casum sentit dominus* fashion"[77].

Confidence of citizens implies protecting injured parties from lengthy, expensive and, oftentimes, unsuccessful litigation. One requirement of precaution, therefore, is the creation or extension of immediate collective redress mechanisms, such as social insurance or social security. This is about creating compensation funds aimed at compensating, in general, damage associated with the performance of artificial intelligence systems that present the greatest danger to fundamental rights [78].

The innovation principle has determined social acceptance of the risks posed to the community by artificial intelligence systems placed on the market, but it appears incapable of dictating individual acceptance of damage [79]. Compensation for damage is a steadfast dimension of the requirement for a high level of protection of fundamental rights. Community interests cannot take away those rights, and adequate compensation will always be due when powers recognised for or allocated to the individual by the legal order are affected.

This is the very idea that governs compensation for sacrifice. We may take the Portuguese law as an example. In Article 16 of Law no. 67/2007, of 31 December, approving the Rules on Non-Contractual Liability of the State and Other Public

---

[77] *Three Liability Regimes for Artificial Intelligence. Algorithmic Actants, Hybrids, Crowds*, Oxford/London/New York/New Delhi/Sydney, Hart, 2021, page 7.

[78] The provision is not linked to the assumptions of liability. See, namely, Jorge F. Sinde Monteiro, *Estudos sobre a Responsabilidade Civil*, Coimbra, s. n., 1983, page 74 et seq.., Georg Borges, *New Liability Concepts: the Potential of Insurance and Compensation Funds*, *in* Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer (eds.), *Liability for Artificial Intelligence and the Internet of Things – Münster Colloquia on EU Law and the Digital Economy IV*, cit., page 159 et seq., Thierry Vansweevelt/Britt Weyts/Larissa Vanhoof/Kim Watts, *Comparative Analysis of Compensation Funds. Differences, Common Characteristics and Suggestions for the Future*, in Thierry Vansweevelt/Britt Weyts (eds.) *Compensation Funds in Comparative Perspective*, Cambridge/Antwerp/Chicago, Intersentia, 2020, page 207 et seq..

[79] In favour of individual implications of an assessment of social acceptance of risks, see, however, Mathilde Boutonnet, *Le Principe de Précaution en Droit de la Responsabilité Civile*, cit., page 499 et seq..

Entities, we read: "The State and other public law legal persons shall compensate private persons on whom, for reasons of public interest, they impose burdens or to whom they cause special and abnormal damage, and, for the purposes of calculating the compensation, they shall take into account, namely, the degree to which the substantial content of the violated or sacrificed right is affected".

The purpose of the rules is to compensate losses caused by preference that is intentionally given to the public interest over defence of the integrity of individual rights or interests: "The primacy of the common good over private interests is a requirement of life in society: it often becomes necessary to sacrifice individual assets, in view of a greater good or the avoidance of a greater evil. In such cases, it is imperative, for reasons of justice, to provide redress or compensation for the holders of the sacrificed interests" [80].

One objection to the parallel drawn with applying the precautionary principle to compensation for damage resulting from the operation of artificial intelligence systems will be that the rules on compensation for sacrifice require unequal treatment of the rights or interests affected: "(…) Special harm is that which is not suffered by most persons, but by certain and specific persons as a result of a specific relative position. For damage to be regarded as special, it is necessary to prove that certain persons are injured in such a way that places them in an unequal situation in relation to most persons" [81].

Is this not the case, however, when consumers' interests are sacrificed for the benefit of the freedom to conduct business and the freedom of art and science? Or when a distinction is made between users of high-risk artificial intelligence systems and other members of the community, whether or not users of artificial intelligence systems? [82].

---

[80] Pedro Machete, *Anotação ao Artigo 16.º*, in "Comentário ao Regime da Responsabilidade Civil Extracontratual do Estado e demais Entidades Públicas" (Rui Medeiros – organisation), Lisbon, 2013, page 425 et seq..

[81] Pedro Machete, *Anotação ao Artigo 16.º*, cit., page 81.

[82] See, in parallel terms, the example cited by Pedro Machete: "(…) In the Supreme Court Judgment of 28.2.2012, Case 1077/11 – slaughter of birds for public health reasons – the court considered that the loss borne by the owner of the birds was special (since it does not apply to all citizens equally): "in the case at hand the damage borne by the claimant does not apply to all citizens equally, and is thus special damage. In fact, all citizens who are consumers benefit from the slaughter of the birds, for public health reasons, but only the owners of the birds suffer with their destruction"" (*Anotação ao Artigo 16.º*, cit., page 85).

Bearing in mind the features of artificial intelligence systems, the acceptable risk admitted by the law exposes the user of high-risk systems to a different level of danger. There appears to be a basis, then, for the theory of precaution as a counterbalance to the prevalence of innovation in the fulfilment of the requirements for placing and monitoring the system on the market. And there also appears to be a basis for the need for efficient and speedy management of any compensation claims submitted. In fact, it is necessary to free compensation from the assumptions and from the reasons for excluding strict liability.

This is the effect that is achieved with the stabilising mechanism of compensation for the sacrifice of individual interests or rights in defence of the public interest. We are on the side-lines of a situation of liability in the strict sense, considering rather the extent to which the contribution of an individual has exceeded the cooperation of others for the common good [83]. And when compensation for sacrifice is formatted by the general and abstract nature of approved laws, the extent of the universe of beneficiaries converts the benefit into an expense of a social nature [84].

Accordingly, and lastly, there appears to be a basis for the idea that compensation funds should be financed by European public funds, at least in part [85]. This is in exchange for regulation that guarantees Europe's position among the main competitors in artificial intelligence innovation projects.

Increased legal certainty would continue to be an objective of European regulation on compensation for damage attributable to high-risk artificial intelligence systems, thereby contributing to ensuring the establishment and functioning of the internal market. It should be noted, however, that this new perspective would not undermine the aim of solving the problem of fragmentation of national laws on liability.

Indeed, the solution of creating compensation funds to compensate for damage caused by high-risk artificial intelligence systems does not mean the advantages associated with liability judgements would be alienated. We may consider, in

[83] See Pedro Machete, *Anotação ao Artigo 16.º*, cit., page 438 et seq..

[84] See José Joaquim Gomes Canotilho, *O problema da responsabilidade do Estado por atos lícitos*, Coimbra, Almedina,1974, page 153.

[85] In our opinion, a financial contribution from operators of artificial intelligence systems seems to be justified.

particular, the prevention of damage associated with the allocation of risk or the basis of fault [86]. The application of decisions of liability would continue for compensation of damage attributed to artificial intelligence systems that are not high-risk and, in any case, for the exercise of the right of recourse by the compensation funds. In these situations, a proposal for harmonising the liability rules with the aim of eliminating or preventing fragmentation of the national laws could be based on breach of due diligence. This subject, however, requires a separate reflection.

Summary

1. Basing European intervention in the adaptation of non-contractual liability rules to artificial intelligence on fault breaches the principle of subsidiarity, due to the absence of obvious benefits;

2. Firstly, the usefulness of disclosing evidence or of a presumption of causality is inextricably linked with situations of subjective liability where the injured party has the burden of proving fault. Where there is a reversal of the burden of proof of fault, the protection granted by the European solutions seems irrelevant: the information on compliance with due diligence must be provided by the defendant and the presumption of fault typically covers a presumption of abstract causality;

3. Well, fragmentation of the liability rules that may be applicable to high-risk artificial intelligence systems does not lie in the reversal of the burden of proof of fault or not, but, in general, between civil liability with presumed fault and strict civil liability;

4. Then, the breach of subsidiarity, in the terms indicated, arises as a result of an unfortunate response to the tension between precaution and innovation in the regulation of artificial intelligence (AI Act);

[86] See, in particular, Herbert Zech, "Liability for AI: public policy considerations", cit., page 152 et seq., and Karni A. Chagal-Feferkorn, *The Reasonable Algorithm*, in "Journal of Law, Technology and Policy", 1 (2018), page 111 et seq., and *How Can I Tell If My Algorithm Was Reasonable?*, in "Michigan Technology Law Review", 27 (2021), page 213 et seq..

5. The choice of innovation as a guiding principle in the regulation of artificial intelligence would be acceptable if liability functioned as a counterbalance, giving precaution the possibility of correcting the excesses of technological development. While making room for new technologies due to the over-riding benefits of innovation in the face of scientific uncertainty surrounding the risks, the legislator cannot disregard reasonable suggestions of potentially dangerous effects on citizens' fundamental rights, observed in an objective preliminary scientific assessment. This is what is required by a high level of protection;

6. In this context, it does not appear legitimate to attain the high level of protection of fundamental rights required by the AI Act proposal with a level that is different from the safety that can legitimately be expected when implementing the notion of a defective product. Even more so because product liability is an instrument used to defend citizens in the light of harm caused by artificial intelligence systems;

7. Strict liability is no longer acceptable as a means of implementing precaution with the ongoing shift in the injury paradigm. Acts have changed from a human source to a machine origin. In addition, the progressive sophistication of the autonomy of artificial intelligence systems will inevitably lead to the opacity of certain procedures. At the same time, other features of artificial intelligence systems such as data dependency, vulnerability to cybersecurity breaches or interconnectivity explain the transition from a monocausal reality to a multicausal reality;

8. Confidence of citizens implies protecting injured parties from lengthy, expensive and, oftentimes, unsuccessful litigation. One requirement of precaution, therefore, is the creation or extension of immediate collective redress mechanisms, such as social insurance or social security. This is about creating compensation funds aimed at compensating, in general, damage associated with the performance of artificial intelligence systems that present the greatest danger to fundamental rights;

9. The innovation principle has determined social acceptance of the risks posed to the community by artificial intelligence systems placed on the market, but it appears incapable of dictating individual acceptance of damage. Compensation for damage is a steadfast dimension of the requirement for a

high level of protection of fundamental rights. Community interests cannot take away those rights, and adequate compensation will always be due when powers recognised for or allocated to the individual by the legal order are affected;

10. Accordingly, there appears to be a basis for the idea that compensation funds should be financed by European public funds, at least in part. This is in exchange for regulation that guarantees Europe's position among the main competitors in artificial intelligence innovation projects;

11. The application of decisions of liability would continue for compensation of damage attributed to artificial intelligence systems that are not high-risk and, in any case, for the exercise of the right of recourse by the compensation funds. In these situations, a proposal for harmonising the liability rules with the aim of eliminating or preventing fragmentation of the national laws could be based on breach of due diligence. This subject, however, requires a separate reflection.

References

Ataíde, Rui Paulo Coutinho de Mascarenhas, *Responsabilidade Civil por Violação de Deveres no Tráfego*, Coimbra, Almedina, 2015;

Barbosa, Mafalda Miranda, *O futuro da responsabilidade civil desafiada pela inteligência artificial: as dificuldades dos modelos tradicionais e caminhos de solução*, in "Revista de Direito da Responsabilidade", year 2 (2020), pages 280-326;

Beckers, Anna/Gunther Teubner, *Three Liability Regimes for Artificial Intelligence. Algorithmic Actants, Hybrids, Crowds*, Oxford/London/New York/New Delhi/Sydney, Hart, 2021;

Berg, Olivier, *La notion de risque de développement en matière de responsabilité du fait des produits défectueux*, in "La Semaine Juridique - Édition Générale" 1996, I-3945, pages 271-278;

Borges, Georg, *New Liability Concepts: the Potential of Insurance and Compensation Funds*, *in* Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer (eds.), *Liability for Artificial Intelligence and the Internet of Things – Münster Colloquia on EU Law and the Digital Economy IV*, (Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer – eds.), Baden-Baden, Hart Publishing/Nomos, 2019, pages 145-163;

Boutonnet, Mathilde *Le Principe de Précaution en Droit de la Responsabilité Civile*, Paris, L.G.D.J., 2005;

Canotilho, José Joaquim Gomes, *O problema da responsabilidade do Estado por atos lícitos*, Coimbra, Almedina,1974;

Castronovo, Carlo, *Responsabilità Civile*, Milano, Giuffrè Editore, 2018;

Chagal-Feferkorn, Karni A., *The Reasonable Algorithm*, in "Journal of Law, Technology and Policy", 1 (2018), pages 111-147;

Chagal-Feferkorn, Karni A., *How Can I Tell If My Algorithm Was Reasonable?*, in "Michigan Technology Law Review" 27 (2021), pages 213-261;

Expert Group on Liability and New Technologies – New Technologies Formation (European Commission), *Liability for Artificial Intelligence and other emerging digital Technologies* (2019);

Fraser, Henry/José-Miguel Bello y Villarino, *Where Residual Risks Reside. A Comparative Approach to Art 9 (4) of the European Union's Proposed AI Regulation* (Global AI+Regulation Emerging Scholars Workshop – Ottawa, Canada – 2021), in Queensland University of Technology (Brisbane, Australia - https://eprints.qut.edu.au/233179/);

Karner, Ernst, *Liability for Robotics: Current Rules, Challenges, and the Need for Innovative Concepts*, in "Liability for Artificial Intelligence and the Internet of Things – Münster Colloquia on EU Law and the Digital Economy IV" (Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer – eds.), Baden-Baden, Hart Publishing/Nomos, 2019, pages 117-124;

Karner, Ernst/Barnhard A. Koch, *Civil Liability for Artificial Intelligence. A Comparative Overview of Current Tort Laws in Europe*, in "Comparative Law Study on Civil Liability for Artificial Intelligence", European Commission (Justice and Consumers), 2020, pages 19-109;

Machete, Pedro, *Anotação ao Artigo 16.º*, in "Comentário ao Regime da Responsabilidade Civil Extracontratual do Estado e demais Entidades Públicas" (Rui Medeiros – organisation), Lisboa, Universidade Católica Editora, 2013, pages 425-476;

Monteiro, Jorge F. Sinde, *Estudos sobre a Responsabilidade Civil*, Coimbra, s. n., 1983;

Montinaro, Roberta, *Dubbio Scientifico e Responsabilità Civile*, Milano, Giuffrè Editore, 2012;

Salvi, Cesare, *La Responsabilità Civile*, terza edizione, Milano, Giuffrè Francis Lefebvre, 2019;

Silva, João Calvão da, *Responsabilidade Civil do Produtor*, Coimbra, Almedina, 1990;

Smedt, Kristel De/Ellen Vos, *The Application of the Precautionary Principle in the EU*, in "The Responsibility of Science" (Harald A. Mieg – editor), Studies in History and Philosophy of Science 57, Cham, Springer, 2022, pages 163-186;

Spindler, Gerald, *User Liability and Strict Liability in the Internet of Things and for Robots*, in "Liability for Artificial Intelligence and the Internet of Things – Münster Colloquia on EU Law and the Digital Economy IV" (Sebastian Lohsse/Reiner Schulze/Dirk Staudenmayer – eds.), Baden-Baden, Hart Publishing/Nomos, 2019, pages 125-143;

Vansweevelt, Thierry /Britt Weyts/Larissa Vanhoof/Kim Watts, *Comparative Analysis of Compensation Funds. Differences, Common Characteristics and Suggestions for the Future*, in Thierry Vansweevelt/Britt Weyts (eds.) *Compensation Funds in Comparative Perspective*, Cambridge/Antwerp/Chicago, Intersentia, 2020, pages 189-213;

Zech, Herbert, "Liability for AI: public policy considerations", (2021) 22 Era Fórum, pages 147-158.