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ARTICLE

Future Generations in Climate Litigation: Early Whispers of an Intergenerational Law?

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Abstract

The "migration" of Future Generations from a moral to a judicial context represents a captivating development in contemporary legal discourse. Recent years have seen a surge in courts across various nations addressing the intersection of future generations and climate litigation. This nexus, far from being coincidental or sporadic, epitomizes a deeper societal and legal dilemma that necessitates a nuanced articulation for effective resolution. The main objective of this Article is to provide preliminary insights for contextualizing this legal evolution. Initially, the Article delineates the journey towards social legitimacy of climate science. Subsequently, it examines the impact of this social legitimation on judicial rulings, particularly observing an emerging trend in climate litigation to expand the temporal scope of legal relevance. The Article culminates in an exploration of the possible interplay between the legal significance of future generations and the extension of the law's temporal horizon. This conjectural postulation is substantiated through select historical precedents.

Keywords: Climate change; climate litigation; future generations; law and time

A. Introduction

I. What Sound Does a Clock Make in the Void?

In 1660, the Irish scientist Robert Boyle published a long series of scientific experiments he had performed.[1] Among them, one of the most relevant reported observations on the interaction between a mechanical pump, a receiver, and a clock.[2] In that experiment, by gradually sucking air out of the receiver via the pump, Boyle observed a significant decrease in the sound of the clock. The ticking sound became fainter and fainter until it disappeared altogether when all the air in the receiver was sucked out.

This milestone in physics helped to solve the long-standing question of sound propagation and, indeed, whether sound could be heard in a vacuum. Boyle's experiment showed that a mechanical wave like sound needed a medium, in this case air, to propagate and thus be received. The density of the medium was somehow related to the intensity of the sound, and the absence of the former

[1]Letter from Robert Boyle, to the Right Honorable Charles Lord Viscount of Dungarvan (1660) (detailing Boyle's forty-three experiments that were later published in a book of the same name: NEW EXPERIMENTS PHYSICO-MECHANICALL TOUCHING THE SPRING OF THE AIR, AND ITS EFFECTS (MADE, FOR THE MOST PART, IN A NEW PNEUMATICAL ENGINE) 1, 210 (1660)).

[2]*Id.*

determined the absence of the latter. In other words, hearing a clock, the sound of an instrument or a cry for help is impossible without a medium in which this vibration can propagate.

This relationship between medium and waves may help legal reflections to get a clearer framework on future generations. This Article argues that in some of the most relevant climate litigations, emerge an attempt to expand the temporal boundaries of the legally relevant. By dilating the legal contemporaneity to include also the future, legal reflection is trying to set the medium through which the demand for legal protection of future generations can be finally heard by the legal system. To support this thesis, the Article is divided into three distinct yet interconnected parts.

Part B examines the crucial role of climate litigation, clarifying its importance and legitimizing the discussions it generates. This Section discusses the historical inadequacies of political and legislative responses to climate challenges. It emphasizes that climate litigation should not be viewed as a result of subversive radical judicial activism, but rather as a necessary response to a demand for protection that has been consistently neglected. To demonstrate this point, Part B will offer a historical analysis showing how political and legislative attempts to tackle climate issues, despite longstanding scientific awareness, have been constantly thwarted by certain economic intrusions.

Part C explores the profound influence of climate science on legal frameworks, particularly through climate litigation. It examines the evolving legal perspectives on temporal structures, emphasizing the increasing recognition within societal and legal systems of the importance of incorporating future considerations into current frameworks. The Section concludes by highlighting how current legal challenges, driven by climate-related issues, are reshaping the way legal systems and societies conceptualize and manage time. By expanding the contemporaneity of law, legal thought is carving out a new operational perimeter that is open to new stimuli. Drawing on Boyle's experiment, these climate litigations are defining a new medium through which previously unheard requests for protection can now be addressed.

Both Part B and Part C fundamentally rely on Niklas Luhmann's Systems Theory. The first Section applies Luhmann's concept of society—defined as a network of autonomous subsystems, each differentiated by its function and lacking a centralized hierarchy—to analyze the development of the climate crisis which led to the rise of the climate litigation. This analysis explores the economic system's sabotage of the scientific and political ones as a clash of incompatible social rationalities, and it gains support by other historical examples of similar conflicts.

Additionally, Systems Theory provides tools to understand the sudden changes prompted by early signs of climate change. These signs have made climate knowledge indispensable, acknowledged across various systems, and introduced new challenges. In simpler terms, Part B constructs a coherent and plausible narrative about the crisis leading to climate litigation.

Part C reiterates the importance of Systems Theory, offering a unique perspective through its interpretation of time as a culturally produced tool by social systems to enhance their operations. This concept highlights the significance of problematizing the role of the future in social operations. Elena Esposito's application of the theory in an unrelated sector exemplifies this, demonstrating the profound impact of these changes on society's dynamics. Overall, Systems Theory offers a critical lens for interpreting the debate around climate litigation, framing time as a dynamic and flexible social construct, rather than a static chronological concept.

In summary, Systems Theory provides interpretive tools to grasp a socio-legal process that cannot be reduced to a mere proliferation of climate litigation.

Part D examines the impact of society's expanding temporal perspective on the legal significance of future generations. This Section highlights a significant shift: concern for future generations has moved from moral discourse to a legal and judicial one, particularly evident in climate litigation. Part D asks whether this shift and the expansion of social time are causally linked or merely parallel developments. To answer this question, one can either await future

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developments in this legal debate or apply the same theoretical framework to past phenomena. Here, the legal and philosophical elements of the transition from the Ancien Régime to the Modern Age prove decisive, particularly the rejection of intergenerational law and the reduction of the legally relevant actors.

In other words, Part D suggests that, just as Enlightenment ideas on time and relevant actors gradually undermined the Ancien Régime and ushered in Modernity, today's increasing focus on the rights of future generations may similarly revolutionize existing legal frameworks, paving the way for a new era of intergenerational law.

B. The Climate Boil

I. The Future Has Already Begun

On 29. April 2021, the German Bundesverfassungsgericht ruled the partial unconstitutionality of the Bundesklimaschutzgesetz of the Federal Republic of Germany.[3] Although the court did not question the emission reduction targets set in the long-term federal strategy—in particular the choice to achieve climate neutrality by 2050—it censured the unequal temporal distribution of this effort.

According to the judges in Karlsruhe, an inversely proportional relationship can be delineated between an inequitable temporal distribution of greenhouse gas emission allowances and a disproportionate restrictions on rights and freedoms.[4] In other words, if the legislator is free to determine the total amount of the carbon budget—which derives from the choice of whether to set the climate target at 1.5 degrees or 2 degrees—it cannot, however, plan an unequal distribution of the reduction effort. The court bases this conclusion on the interpretative solutions used in environmental matters, in particular by extending the state's duty to protect the environment, ex art. 2.2. German Constitution,[5] as well as the projection of this effort into the future, ex art. 20a German Constitution.[6] In this sense, article 20a plays a central role in balancing the interests, rights, and freedoms of today with those of tomorrow. The State, in fact, must also tailor its protective activity from an intergenerational perspective by considering—and protecting—those who are the youngest today and the future generations.[7]

According to the German Constitutional Court, in the climate emergency paradigm today's actions cannot be planned without taking the future into account. The interpretative horizon in which this decision is developed moves in a very special temporal dimension, a dilated contemporaneity beyond the mere present and which also includes the future,[8] whether it is

[3]Bundesverfassungsgericht [BVerfG] [Federal Constitutional Court], Mar. 24, 2021, Case No. BvR 2656/18/1, BvR 78/20/1, BvR 96/20/1, BvR 288/20. [hereinafter Neubauer et al. v Germany].

[4]*Id.* at ¶ 186 (explaining that this is something "which may even end up as an irreversible threat").

[5]Grundgesetz [GG] [Basic Law], art. 2, §2, translation at https://www.gesetze-im-internet.de/Teilliste_translations.html (Ger.) ("Every person shall have the right to life and physical integrity."); Please note that the term "ex art." in this context means "based on a specific article of a law". It's short for the Latin "ex articulo," where "ex" means "from" and "art." stands for "article."

[6]*Id.* at art. 20a ("Mindful also of its responsibility towards future generations, the state shall protect the natural foundations of life and animals by legislation and, in accordance with law and justice, by executive and judicial action, all within the framework of the constitutional order.").

[7]Although these two categories both fall within the Karlsruhe judges' reasoning, it is important to highlight a key difference between the two legal positions. The position of "non-actual" future generations is protected in a more general way because, according to the Court, it is not possible to identify them with certainty. *See* Neubauer et al. v Germany, *supra* note 3, at ¶ 146. The adults of tomorrow, however, are recognized as having fundamental rights, which are the main counterbalance in defining a fair distribution of emission quotas and thus the limits of their respective legal positions. *See* Francesco Gallarati, *The Future Rights of Present Generations: A New Paradigm of Intergenerational Justice?*, IACL-AIDC Blog (Jan. 19, 2023), https://blog-iacl-aidc.org/ .

[8]Please confront it with the thesis proposed in this Article.

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shaped in the form of the future rights of present generations or as the interests of future generations.

This decision is part of a broader trend of court cases that has been characterized by a considerable expansion in recent years. This third wave[9] of the so-called climate litigation, which started with the Urgenda[10] and Leghari[11] cases, can be considered as the judicial system's response to an ever-increasing number of requests for protection from the climate threat. In other words, in these cases emerges an increasingly widespread malaise towards political solutions that are not applied or are deemed insufficient with respect to climate change.[12]

Therefore, it can be argued that issues such as climate change and the protection of future generations are becoming an increasingly constant presence in the judicial (battle)ground.[13] The fact that the "greatest challenge human beings have ever faced"[14] is also becoming relevant in the courts, or the fact that there is increasing concern about the raising of "an irreversible legal threat to future freedom"[15] is not so far-fetched. However, these widespread social and legal concerns clash when set in a broader time perspective. From this view, in fact, it emerges that the near unanimity of the scientific community on climate theory can be traced back to the late 1980s, that the first attempts to address politically climate change date back to 1992 and that the debate on the protection of future generations began almost half a century ago.

II. Climate's Silent Drumbeat: Scientific Warnings Lost in Time

The consolidation of climate change theory within the scientific community primarily occurred between the post-World War II era and the late 1980s. Although rudimentary contemplations

[9]See Joana Setzer & Catherine Higham, Global trends in climate change litigation: 2021 snapshot, 23 (2021), https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2021/07/Global-trends-in-climate-change-litigation_2021-snapshot.pdf.:

> Previous analysis has identified three distinct waves of climate litigation: first-wave cases (pre-2007), which primarily consisted of administrative cases against government bodies aimed at raising environmental standards and occurred mainly in the US and Australia; second-wave cases (2007–15), which saw an expansion of climate litigation to European countries and a growing awareness of litigation as a 'gap-filler' in the absence of ambitious international action; and third-wave cases (2015 to present), which demonstrate a further expansion and diversification in terms of the type of claim, the volume of cases, the type of defendants, and the number of jurisdictions in which cases are being brought.

[10]Rechtbank Den Haag [The Hague District Court], Case No. C/09/456689, June 24, 2015, https://uitspraken.rechtspraak.nl/#!/details?id=ECLI:NL:RBDHA:2015:7196; Gerechtshof Den Haag [The Hague Court of appeal], Case No. 200.178.245/01, Oct. 09, 2018, https://uitspraken.rechtspraak.nl/#!/details?id=ECLI:NL:GHDHA:2018:2591; Hoge Raad der Nederlanden (HR) [Supreme Court of the Netherlands], Case No. 19/00135, Dec. 20 2019.

[11]Leghari v. Federation of Pakistan, (2018) PLD 2015 Lahore 25501 (Pak.).

[12]Lindsay Maizland, *Global Climate Agreements: Successes and Failures*, Council on Foreign Rels. (Sept. 15, 2023), https://www.cfr.org/backgrounder/paris-global-climate-change-agreements; Randall Abate, climate change and the voiceless: Protecting future generations, wildlife, and natural resources 6-10 (2020).

[13]The origin of the climate litigation can be traced back to the late 1980s. Since then, at least up to May 2023, there have been around 2,340 cases globally. However, over these 40 years, the distribution of cases is by no means balanced. In contrast to the first 25 years characterized by linear growth, one can point out a parabolic growth that has recently characterized the spread of climate litigations. Translated into numbers, this acceleration means that almost 89% of all the climate litigations have been filed in the last 15 years. But also, that more than 600 in the last 4 years and that in the last 12 months alone there have been 190 cases. *See* Joana Setzer & Catherine Hingham, *Global Trends in Climate Change Litigation: 2023 Snapshot*, London Sch. Econs. & Pol. Sci., (2023), https://www.lse.ac.uk/granthaminstitute/publication/global-trends-in-climate-change-litigation-2023-snapshot/.

[14]*See generally* Aurelien Barrau, Le plus grand défi de l'historie de l'humanité: Face à la catastrophe écologique et sociale (2020); Andrea Federica De Cesco, *Cingolani e la transizione ecologica: "Dobbiamo pensare ai nostri figli non alle ideologie"*, Corriere della Sera: Pianeta 2030 (June 4, 2020), https://www.corriere.it/pianeta2020/21_giugno_04/cingolani-la-transizione-ecologica-piu-grande-sfida-che-l-umanita-dovra-affrontare-bd9b8490-c51b-11eb-86af-ac042f3197d2.shtml; Malte C. Gruber, *The Anthropocenic Cupola: On Future Models of Climate Change Liability*, 44 Zeitschrift für Rechtssoziologie 1, 24 (2024).

[15]Neubauer et al. v Germany, *supra* note 3, at ¶ 186.

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regarding the greenhouse effect can be traced back to the 19th century,[16] it was during the early 1950s that the methodical exploration and analysis of this phenomenon and its ramifications truly commenced.[17] Throughout this period, an increasingly robust consensus emerged among scientists concerning the correlation between greenhouse gas emissions and rising global temperatures, as corroborated by extant records from the fossil fuel industry.[18] Notably, this consensus materialized well before international climate accords such as the Kyoto Protocol or the Paris Agreement,[19] with the acknowledgement that anthropogenic activities have significantly impacted the global atmospheric composition through the pervasive use of fossil fuels.[20]

This burgeoning scientific consensus on climate change-associated hazards ultimately led to a substantial turning point in the late '80s with increasingly significant consequences. Starting with the creation of the Intergovernmental Panel on Climate Change (IPCC) in 1988, emerged a growing synergy between scientific and political systems. This latter led to a growing number of international agreements and conventions such as the 1992 Rio Conference[21] and the 1994 Framework Convention on Climate Change.[22]Despite this increased awareness and political engagement, substantive efforts to combat climate change have been evaluated insufficiently from the beginning, often hindered by various challenges. The "Rio+5" resolution[23] and the Kyoto Protocol Agreement[24] are emblematic in this sense.

In the first document there is a robust reaffirmation of the need for stabilization of greenhouse gas emissions and the identification of climate change as the primary challenge of the coming century, but there is also an acknowledgement of the limited results achieved thus far.[25]

The second document can be regarded as a significant advancement in the fight against climate change. At the same time, it represents an illustrative example of the challenges and failures faced in these issues. This includes the—induced[26]—refusal of one major emitter of greenhouse gases, the United States, to sign the agreement and the substantial time gap between the drafting of the document—1997 and its implementation—2005. The latter issue resurfaced with the Doha Amendment of 2012,[27] which only entered into force in 2020.

[16]Spencer R. Weart, The Discovery of Global Warming 2 (2008).

[17]*Id.* at 19-85.

[18]James R. Garvey, *Air Pollution and the Coal Industry*, 8 Mining Cong. J. 25, 56 (1966). *See* GreenPeace, *Exxon's Climate Denial History: A Timeline, A Review of Exxon's Knowledge and Subsequent Denial of Climate Change*, https://www.greenpeace.org/usa/fighting-climate-chaos/exxon-and-the-oil-industry-knew-about-climate-crisis/exxons-climate-denial-history-a-timeline/ (last visited Aug. 7, 2024) (confirming early awareness by fossil fuel companies).

[19]Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 2303 U.N.T.S. 162 [hereinafter Kyoto Potocol]; Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104.

[20]Naomi Oreskes & Erik M. Conway, Mercanti di dubbi: Come un manipolo di scienziati ha oscurato la verità, dal fumo al riscaldamento globale 196-197 (2019) ("Our generation has changed the composition of the atmosphere on a global scale through [. . .] the continuous increase of carbon dioxide caused by the use of fossil fuels.").

[21]United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, U.N. Doc. A/CONF.151/26 (Vol. I), (June 13, 1992), reprinted in 31 I.L.M. 874 (1992).

[22]United Nations Framework Convention on Climate Change (UNFCCC), adopted 9 May 1992, entered into force 21 March 1994, 1771 UNTS 107

[23]G.A. Res. 19/2, Nineteenth Special Session on Progress Achieved Towards Meeting Objectives of the Earth Summit with Annex on a Programme for the Further Implementation of Agenda 21 (June 1997).

[24]Kyoto Protocol, *supra* note 19.

[25]Attilio Pisanò, Il diritto al clima: Il ruolo dei diritti nei contenziosi europei 119 (2022).

[26]Oreskes & Conway, *supra* note 20, at 212-241, 271-272; Greenpeace, Denial and Deception: A Chronicle of ExxonMobil's Efforts to Corrupt the Debate on Global Warming 15-16 (2002), https://www.greenpeace.org/usa/wp-content/uploads/2015/11/exxon-denial-and-deception.pdf.

[27]Kyoto Protocol to the United Nations Framework Convention on Climate Change, Doha Amendment, Dec. 8, 2012, Decision 1/CMP.8.

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The blunt recognition of climate change persisted with key documents like the Millennium Report[28] in 2000 and the Johannesburg Declaration[29] in 2002. Although these texts highlighted the essential role of the UN Framework Convention and the commitment to stabilize greenhouse gas concentrations, they offered little in the way of specific mitigation actions.

These difficulties, however, cannot be traced back to a fully and autonomous failure of this scientific-political synergy. On the contrary, the influence of the economic system on this systematic failure is significant. Specifically, the encroachment of certain economic interests into the scientific domain is crucial for understanding the current climate crisis, justifying the vital and necessary role of the judiciary in climate protection, and explaining the parabolic rise in climate litigation in recent years.

1. Genesis and Explosion of the Climate Boil

Niklas Luhmann's Systems Theory, in its concise version suitable for this context, portrays modern society as lacking a central authority capable of imposing a universal perspective across all social levels.[30] Instead, this functionally differentiated society[31] comprises various functional systems, each characterized by its specific function, which process problems, sometimes simultaneously, according to their own operational logic.[32] In other words, there is no single center that processes problem Y according to a single and universal code A/-A applicable to the entire society. Rather, problem Y will be viewed differently by each system: The legal system interprets it as a matter of legal and illegal,[33] while the scientific system sees it in terms of true or false.[34] This applies equally to the economic system,[35] political system,[36] art,[37] religion,[38] and other systems.

[28]G.A. Res. 55/2, United Nations Millennium Declaration (Sept. 18, 2000).

[29]UN World Summit on Sustainable Development, *Johannesburg Declaration on Sustainable Development*, A/CONF.199/20 (Sept. 4, 2002).

[30]See Niklas Luhmann, Protest: Systemtheorie und soziale Bewegungen Herausgegeben und eingeleitet 22 (1996).

> "There is no primus inter pares, no control or steering center for functional differentiation and thus for modern society; there is only the plurality of functional systems that, in the unity of their differentiation, represent modern society. There is no unified self-description of modern society. 'Society has no address.'" (author's translation)

[31]Luhmann, through history, identifies three types of social differentiation: Segmentary, stratified, and functional. Segmentary differentiation organizes society into similar, autonomous units; stratified differentiation arranges society into hierarchical layers; and functional differentiation, typical of modern societies, structures society into specialized subsystems. *See* Niklas Luhmann, *Differentiation of Society*, 2 Can. J. Soc. 29, 33-36 (1977); Claudio Baraldi, *Differentiation of Society (Differenzierung der Gesellschaft)*, *in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 65, 65–70 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

[32]See Baraldi, *supra* note 31, at 67

> The functionally differentiated society argues that society is divided into subsystems differentiated by the function performed without a centrali[z]ed hierarchy. This means that every subsystem observes society from the perspective of its own function and that '(t)he problems of society as a whole are processed in every subsystem, each of which produces its own typologies and solutions. Thus, in the different functional systems, the most important problems of society are processed simultaneously.'

[33]Giancarlo Corsi, *Legal System (Rechtssystem)*, *in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 125, 125–28 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

[34]Giancarlo Corsi, *Scientific System (Wissenschaftssystem)*, *in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 205, 205–04 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

[35]Elena Esposito, *Economic System (Wirtschaftssystem), in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 79, 79–82 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

[36]Claudio Baraldi, *Political System (Politisches System), in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 171, 171–74 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

[37]Elena Esposito, *Art System (Kunstsystem)*, *in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 27, 27–30 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

[38]Giancarlo Corsi, *Religious System (Religionssystem), in* Unlocking Luhmann: A Keyword Introduction to Systems Theory 197, 197–200 (Claudio Baraldi, Giancarlo Corsi and Elena Esposito eds., 2021).

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This hyper-specialization boosts effectiveness and efficiency by taming environmental complexity, which in its raw form would be unmanageable for any system.[39] However, issues that aren't selected and framed within the logic of a functional system remain unrecognizable and invisible to the system itself. For example, environmental damage will not register as relevant to the economic system unless it is selected and translated into that system's terms—until such damage has a price tag.[40] This selective prowess allows systems to function smoothly and efficiently, but it also carries the risk that significant problems might be overlooked if they can't be converted into the system's logic.

At the same time, this framework should not be seen as precluding interaction between these subsystems. Indeed, despite the operational closure of systems, they are still able to perceive and respond to external influences. These influences, however, should not alter the autonomous way these systems operate. Without improper interference, the interaction is "healthy" and physiological. Conversely, if a system begins to sabotage or replace the internal mechanisms of another, it clearly constitutes a pathological interaction;[41] a true invasion made by one system to another. In summary, Niklas Luhmann's theory provides the conceptual tools to analyze and explain the underlying mechanisms and reasons behind the emergence and eruption of climate crisis and climate litigation.

The "climatic" invasion can be interpreted as yet another manifestation of a deep-rooted, totalizing tendency that characterizes the functionally differentiated society. A clash of incompatible rationalities[42] which, in addition to causing significant interference in the functioning of one of the two systems, often ends up creating significant "collateral damage" as well.[43] Although the examples of interference by the economic system are numerous,[44] they are not the only ones. The totalitarian experiences of the 20th century, for instance, provide clear examples of a damaging expansive tendency of the political system.[45] Therefore, the invasion of the scientific system for climate issues would not represent an isolated case, but yet another example of an endogenous and perverse tendency of the system to functional differentiation.[46]

Here, the fossil company network, by violating the integrity and functioning of the scientific system, tried to sabotage an existential threat to its business model.[47] In an attempt to expand its lebensraum, the fossil network gave rise to an invasion of the scientific system. A climate war[48], planned meticulously and strategically, aimed at preventing the spread of "ineffective" information for the maintenance and development of that type of business.[49]

[39]Luhmann, *supra* note 31, at 31-32.

[40]LUHMANN, *supra* note 30, at 23.

[41]Isabell Hensel & Gunther Teubner, *Horizontal Constitutional Rights as Conflict-of-laws Rules: How Transnational Pharmaceutical Groups Manipulate Scientific Publications*, *in* CRITICAL THEORY AND LEGAL AUTOPOIESIS: THE CASE FOR SOCIETAL CONSTITUTIONALISM 278, 290–301 (Gunther Teubner & Diana Göbel eds., 2019).

[42]Hensel & Teubner, *supra* note 41, at 279–90. *See also* MICHAEL E. MANN, THE HOCKEY STICK AND THE CLIMATE WARS: DISPATCHES FROM THE FRONT LINES 61 (2012).

[43]*See* Hensel & Teubner, *supra* note 41, at 287–90 (outlining another example, concerning the interference of the pharmaceutical network in the scientific network).

[44]*See generally* ORESKES & CONWAY, *supra* note 20.

[45]The occupation of biology – that is science– by Soviet politics, the so called 'lysenkoism', caused very serious damage. This political overreach, in addition to the purges of 'non-aligned' scientists, led to devastating famines throughout Soviet territory. *See* Hensel & Teubner, *supra* note 41, at 287. Also, well expressed by the Jewish humor joke: 'What are the four catastrophes of Soviet agriculture? Summer, autumn, winter and spring.' MONI OVADIA, L'EBREO CHE RIDE: L'UMORISMO EBRAICO IN OTTO LEZIONI E DUECENTO STORIELLE 176 (2008) (author's translation).

[46]A possible and authoritative reconstruction of the origin of this 'strategy' is traced back to the tobacco lobby. *See* ORESKES & CONWAY, *supra* note 20, at 35-62.

[47]ORESKES & CONWAY, *supra* note 20, at 273-274.

[48]MANN, *supra* note 42, at 63-78.

[49]*See* Complaint for Damages & Demand for Jury Trial at ¶ 189, Native Vill. Kivalina et al. v. ExxonMobil Corp. et al., No. C 08-01138, 2008 LEXIS 94100 (N.D. Cal. Feb. 26, 2008).

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Clearly this invasion did not manifest itself in military guise. The Manua Loa Observatory, the Jungfraujoch, the Sonnblick observatorium, or the offices of the Environmental Protection Agency (E.P.A.)[50] have not been invaded by tanks or special forces.

The infiltration techniques were different and, in some ways, more subtle. One can just think of the large-scale, systematic effort to cast doubt on climate science, spearheaded by fossil fuel companies, despite their internal acknowledgement of climate change risks,[51] like the ones profused by the American Petroleum Institute[52] and the George C. Marshall Institute.[53]

However, the spectrum of aggressive actions used in this climate war is much broader. Years before the "mud machine"[54] became a widespread phenomenon, the fuel industry employed large-scale delegitimization tactics against climate scientists.[55] The goals were to undermine scientific findings by discrediting their authors and creating a climate of intimidation. This strategy targeted the crucial role of reputation in academia,[56] effectively creating a deterrent within the scientific community.[57] The attacks against Ben Santer,[58] James Hansen,[59] Stephen Schneider,[60] Roger Revelle,[61] and Justin Lancaster[62] are clear examples of this modus operandi.

Despite these significant, and costly, efforts, the sabotage of climate theory began to falter significantly in the first decade of the 2000s. Climate change, in fact, had already arrived and had done so in a brutal manner, as demonstrated by the anomalous European heat wave of 2003,[63]

[50]These are three major scientific laboratories located in Hawaii, the Swiss Alps, and the Austrian Mountains, respectively. They are all part of an international network measuring greenhouse gases in the atmosphere. The E.P.A. is a federal agency in the U.S. which deals with environmental problem. It has played, and still plays, a significant role in climate issues.

[51]This awareness is confirmed both by two main sources. *See* JAMES F. BLACK, THE GREENHOUSE EFFECT (1978), https://insideclimatenews.org/wp-content/uploads/2015/09/James-Black-1977-Presentation.pdf; M. B. GLASER, CO2 "GREENHOUSE" EFFECT (1982), https://insideclimatenews.org/wp-content/uploads/2015/09/1982-Exxon-Primer-on-CO2-Greenhouse-Effect.pdf (describing various internal reports showing an awareness of the global warming phenomenon and its risk). *But see Greenhouse Effect: Shell Anticipates A Sea Change,* N.Y. TIMES (Dec. 20, 1989), https://www.nytimes.com/1989/12/20/business/greenhouse-effect-shell-anticipates-a-sea-change.html (describing the operational choices oil and gas companies have taken to adapt certain plants to possible risks associated with climate change). *See also Examining the Oil Industry's Efforts to Suppress the Truth about Climate Change: Hearing Before the Subcomm. On Civil Rights and Civil Liberties of the Comm. on Oversight and Reform,* 116th Cong. 116–67 (2019).

[52]John H. Cushman Jr., *Industrial Group plans to battle Climate Treaty,* N.Y. TIMES (Apr. 26, 1998), https://www.nytimes.com/1998/04/26/us/industrial-group-plans-to-battle-climate-treaty.html. ; GREENPEACE, *supra* note 26, at 4-5.

[53]*See* ORESKES & CONWAY, *supra* note 20, at 79-84, 212-216; Lawrence Carter et al., *Revealed: BP and Shell Back Anti-Climate Lobby Groups Despite Pledges*, HUFFPOST, (Sept. 28, 2020), https://www.huffingtonpost.co.uk/entry/bp-shell-climate_n_5f6e3120c5b64deddeed6762 (discussing the plausible systemic size of this delegitimization of climate science by Fossil Fuels Company); *See generally* Jessica Wentz & Benjamin Franta, *Liability for Public Deception: Linking Fossil Fuel Disinformation to Climate Damages*, 52 ENVTL. L. REP. 10995,(2022) (explaining the legal response in the US Courts to this "doubts spreading" strategy).

[54]*Macchina del fango*, ENCICLOPEDIA TRECCANI, https://www.treccani.it/vocabolario/macchina-del-fango_res-af7fd900-89d9-11e8-a7cb-00271042e8d9_%28Neologismi%29/ ("[A] [s]et of slanderous news stories orchestrated with the aim of ruining someone's reputation."). Essentially slander or character assassination.

[55]PISANÒ, *supra* note 25, at 49–50.

[56]*See generally* Gunther Teubner, *The Constitution of Non-Monetary Surplus Values,* 30 SOC. & LEGAL STUD. 1, 4, 5, 7, 12 (2021).

[57]Michael E. Mann, *I'm a Scientist Who Has Gotten Death Threats. I Fear What May Happen Under Trump.*, WASH. POST (Dec. 16, 2016), https://www.washingtonpost.com/opinions/. *See* ORESKES & CONWAY, *supra* note 20, at 35-60 (describing how this methodology had already been used for the same purposes by the tobacco industry).

[58]MANN, *supra* note 42, at 3-5, 77.

[59]MANN, *supra* note 42, at 73, 77. *See generally* MARK BOWEN, CENSORING SCIENCE: INSIDE THE POLITICAL ATTACK ON DR. JAMES HANSEN AND THE TRUTH OF GLOBAL WARMING (2008).

[60]MANN, *supra* note 42, at 75-76.

[61]Revelle, a climate science pioneer, was falsely listed as a co-author on a paper attacking climate change. Fred Singer, the paper's actual author, exploited Revelle's illness and death to inappropriately shape the paper, creating the impression that Revelle had renounced his previous stance.

[62]ORESKES & CONWAY, *supra* note 20, at 222.

[63]WEART, *supra* note 16, at 184.

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Hurricane Katrina,[64] and Tropical Cyclone Nargis.[65] Moreover, it had done so at an alarming rate, so much so that in 2009 a large and important group of experts concluded that the IPCC's worst projections were coming true.[66]

2. Social Climate Awakening

However, as climate change effects became more severe and evident climate science's explanatory and predictive capabilities acquire social recognition and "legitimation."[67] In other words, at least for a part of society, "the king was finally naked!"[68]

This shift has prompted the development of more flexible and collaborative approaches to climate policy and, overall, to many more numerous political efforts to fight climate change, which can also be confirmed by the parallel chronological path between serious climate change events and climate legislation.[69]

However, despite the formal recognition of climate change and the commitment to stabilize greenhouse gas concentrations, specific mitigation actions have been limited and the progress in addressing the issue remains slow. This has encouraged the search for alternatives to legislative solutions, widely considered ineffective or insufficient.

C. The Present is not Enough

I. The Vibrant Temporal Structures of Society

To sum up what has been said so far, the early attempts of climate science to address the problem of global warming went largely unheeded at the beginning. Promising synergy with international cooperation mechanisms were repeatedly and systematically sabotaged by part of the economic system. Only the brutal arrival of climate change has succeeded in socially legitimizing the global warming theory with disruptive effects still acting. The ability of climate science to explain the origins of the phenomenon, its manifestations, but also to propose refined projections and forecasts for possible future developments has assumed the role of game-changer in many social dynamics.

From a legal perspective, this has resulted in a problematization of the delicate interconnection between the present and the future. In short, our society's temporal structures have undergone a process of substantial problematization. However, it is important to assess the feasibility of this option before entering into a specific examination of the implications of this problematization. In other words, can society's temporal structures be changed?

[64]*Id.* at 212.

[65]World Meteorological Organization, The global climate 2001-2010: A decade of climate extremes: summary report 65 (2013), https://library.wmo.int/viewer/49934/download?file=wmo_1103_en.pdf&type=pdf&navigator=1.

[66]*See generally* Weart, *supra* note 16.

[67]In other words, functional systems (or parts of them) can no longer overlook the knowledge about global warming once it becomes relevant in their context. *See* Niklas Luhmann, Risk: A Sociological Theory 203 (2008) (discussing the relationship between relevant knowledge and functional systems).

[68]This expression is used in a fairy tale by Andersen to indicate the moment of collective "awakening" from a state of induced denial of reality. In short, two swindlers present themselves at the court of a king renowned for his generous spending on clothes, promising him the most elegant and sumptuous dress in the world. Furthermore, that suit would be invisible to all intelligent people. Thus, in order to avoid being thought stupid, the king, his court and the entire population continue to extol the praises of the king's non-existent robes. In the end, only a child in all his innocence will cry out the truth, awakening everyone from this collective hallucination. *See generally* Hans Christian Andersen, The emperor's new clothes (2004).

[69]Jan McDonald & Philippa C. McCormack, *Rethinking the Role of Law in Adapting to Climate Change*, 12 WIREs Climate Change 1, 1–2 (2021) ("we claim that developments in adaptation law(s) have at least coincided with, if not resulted from, mounting evidence and experience of climate change impacts.").

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According to Niklas Luhmann and Elena Esposito, they can. In their perspective, time should not be intended as an independent and autonomous element,[70] but as a tool culturally produced by the social system and functional systems to organize their operations and make them more complex and efficient.[71] Depending on the case, time can be shaped in a cyclical and, or, linear way,[72] can be fixed or dynamic[73] and past and future can coexist with the present or represent mere dynamic projections created by each present.[74] These temporal structure can be considered as social architectures of utmost importance in the development of social and functional systems.

Modernity, for instance, has been nurtured and forged by a different conception of time, more precisely of the future. Unlike the previous period, in which time was considered fixed, predetermined, and limited,[75] albeit uncertain in the eyes of men due to their nature,[76] in modernity this "ignorance" of the future is generalized and systematized.[77] It is not possible to know the future because it simply does not exist.[78] This radical change in perspective has fueled a previously unthinkable possibility of change and evolution. An open, unknown, and unknowable future opened the door to limitless projects. The idea of an open future fueled economic growth and, arguably, fostered disruptive social phenomena such as, for example, the French Revolution.[79]

However, it is useful to start with a more specific application. In fact, the close connection between temporal structures and practical functioning emerges from an analysis of the recent, and discussed, evolution process of the insurance industry. This is a seemingly off topic digression, but it will prove useful in the following pages.[80]

The insurance industry has made the generalized uncertainty about the future the cornerstone around which it has developed and shaped its models, functions, and social significance. And it has done so by relying on one of the most formidable tools developed to relate to, and manage, the uncertainty arising from modernity's idea of an open future. From the 17th century onwards, the rise of probabilistic calculus created the conditions for a systematic and comprehensive approach to the future. If, in fact, the individual case continues to remain uncertain, statistics show that by collecting data from many cases and contextualizing them over a sufficiently long period of time, some sort of order can be extracted. The combined effort of more data, sampling, generalization, and probability calculus made it possible to cope with the impossibility of knowing the future, socially legitimizing the insurance industry.

This paradigm develops on two conditions of "ignorance". On the one hand, the idea that the future is unknown and unknowable. On the other hand, "on a chronic condition of information asymmetry (the customers do not reveal to the insurer all information they possess)."

[70]Elena Esposito, Il futuro dei futures: Il tempo del denaro nella finanza e nella società 29 (2009).

[71]*Id.* at 30.

[72]Luhmann, *supra* note 67, at 33; Esposito, *supra* note 70, at 15.

[73]On the concept of a time that undergoes perpetual regeneration in each single present, *see* Luhmann, *supra* note 67, at 40; Esposito, *supra* note 70, at 28.

[74]Esposito, *supra* note 70, at 20–21, 26.

[75]Esposito, *supra* note 70, at 28. *See also* Luhmann, *supra* note 67, at 40.

[76]Luhmann, *supra* note 67, at 8.

[77]Esposito, *supra* note 70, at 40; Niklas Luhmann, *The Future Cannot Begin: Temporal Structures in Modern Society*, 43 Soc. Rsch. 130, 132 (1976).

[78]*See generally* Luhmann, *supra* note 67; Esposito, *supra* note 70, at 20, 33, 35; Alberto Cevolini & Elena Esposito, *From Pool to Profile: Social Consequences of Algorithmic Prediction in Insurance*, 7 Big Data & Soc'y 1, 2 (2020).

[79]For instance, the logic underlying the proposal of the post-French Revolution social project, particularly the idea of building the future based on the radical negation of the past, would be difficult to understand without the radical overcoming of the temporal structures characterizing the ancient regime. *See generally* Luhmann, *supra* note 77. The role of the temporal structures, particularly the relationship between the hypothesized future –present-future– and realized future –future-present– is equally significant for understanding the birth, development, but also the limits of the financial system. *See generally* Esposito, *supra* note 70.

[80]*See generally* Cevolini & Esposito, *supra* note 78.

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Despite these limitations, the mechanism identifies collective patterns, allowing for the mutualization of risks and spreading costs to make potential damages financially bearable for everyone. Thanks to these tools, notwithstanding an uncertain future, individuals and companies can engage in risk-taking and planning with a sense of control and protection.[81]

In the last ten years, however, this system has been confronted with disruptive new technological changes. Growing computational power and the flood of data have allowed machine learning algorithms to be fed and perfected, increasingly developing their capabilities. In the insurance sector this means challenging traditional probabilistic models of calculating risk and its distribution. Predictive Analytics promises to personalize insurance policies and premiums based on individual behavior and risk levels. This departs from the traditional model, which relies on the calculated uncertainty of a pool of policyholders and means everyone would pay only for their real exposure to risk. These techniques offer individualized risk forecasts, contrasting with probabilistic calculations that consider a larger population.

This development has the potential to radically change the insurance industry's model, function, and social meaning, as it challenges the current management of uncertainty based on an open future concept. In fact, it challenges the basic logic of the insurance industry, that it is impossible to predict who will be hit by misfortune and when, prompting people to pool their risks.

What the insurance industry highlights is a possible correlation between knowledge, temporal structures, social legitimation, and social operation. That the cultural, scientific, and technological tools available, after having received social legitimation, can produce disruptive effects on the temporal structures used to organize the operations of the functional systems themselves.

1. Climate Science Legitimation and Temporal Structures

This "problematization" is also emerging in the climate issue. It stems from the social legitimization that climate theory began to receive after the first serious symptoms of climate change. This social legitimization relied on both the ability of climate science to describe and explain phenomena but also on its future projections. As in the insurance case, this interplay between knowledge, temporal structures, social legitimation, and social operation has also manifested itself in the climate case.

The evolution of early climate scenario projections, associated with diverse greenhouse gas concentrations and tracing back to the 19th century, has been significantly influenced by technological advancements. Initial models were limited by the lack of computational power and knowledge, impeding accurate calculations. However, the introduction of computers in the 1950s facilitated more complex calculations, leading to sophisticated and precise models. These "General Circulation Models" began addressing the greenhouse effect issue in 1969 and have since become integral to climate science, culminating in today's cutting-edge tools.[82]

The refinement of the climate theory has been driven by the synergy of improved computational power, increased data availability and scientific advancements.[83] Also in this case the magnitude of future uncertainty has been substantially altered, leading to considerable challenges. In other words, society started a spasmodic path, knowing that rethinking "the temporal (structures) on which the Global North has relied since the nineteenth century"[84] would constitute the necessary starting point for appropriately framing the climate challenge.

[81]*Id.* at 2.

[82]Weart, *supra* note 16, at 91-96, 131-136, 171.

[83]*See infra* note 178.

[84]*See generally* Barbara Leckie, Climate Change, interrupted: Representation and the remarking of time (2022) X.

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II. Unpacking the Temporal Structure Problem in Climate Litigations: A few examples

This recalibration of temporal frameworks is most prominently exemplified within the legal system. Specifically, climate litigations provide valuable insights into the intricate and demanding endeavor of adjusting the legal system to accommodate these novel stimuli.

In certain instances, the intricate nature of temporal structures becomes apparent in the interplay between time and action, particularly regarding the necessity to execute specific actions within a designated time frame. Once this temporal window has elapsed, the relevance of such actions vanishes, as the intended objectives become unattainable.

Emblematic of this attempt is the Italian case "Giudizio Universale."[85] This legal dispute involves the Non-Governmental Organization (NGO) "A Sud," which sued the Italian state for its inaction on climate change, endangering the plaintiffs' fundamental rights. According to the plaintiffs, the Italian state's actions to combat climate change are considered insufficient and inadequate. In particular, the actual reduction in emissions has been limited to about one third of the optimal scenario—that is a 92% emissions cut compared to 1990 levels.[86] The breach of Italy's climate obligation would result in a series of violations of fundamental rights.[87] Indeed, according to the applicants, this inaction would risk undermining what could be considered the original "fundamental right": The human right to a stable climate.[88] In other words, the plaintiffs adopt the perspective that "[. . .]a stable climate system is literally the foundation of society, without which there would be neither civilization nor progress."[89]

According to the applicants, this framework would justify a limitation of the discretion of the State,[90] the necessary corollary of which would be the emergence of specific obligations on the part of the Italian State[91] as member of a much broader and global effort. In a nutshell, the plaintiffs - relying on the most authoritative climate science[92] - point out that this effort is part of a more general objective of cutting global emissions in order to keep the temperature increase below 1.5 degrees Celsius.[93] Exceeding this tipping point,[94] in fact, would trigger irreversible and degenerative climate change.

However, this substantial reduction effort has also a clear boundary of execution, namely 2030.[95] In "Giudizio Universale" the qualitative assessment of the period of action takes on very particular contours: the reciprocal relationship between action and time outlined does not allow for alternatives. The same action, for example, the 92% reduction in Italian emissions, will no longer have the same effect if implemented after the time threshold of 2030. It is this countdown that acquires significance in the overall organization of the operation: the "right time" to act becomes relevant and decisive in the organization of climate change mitigation efforts.

In a way, it can be argued that this legal demand also clearly expresses a different temporal structure. This qualitative conception of time may be reminiscent of the Greek idea of

[85]*See* PISANÒ, *supra* note 25, at 273-284. On February 26, 2024, the court decided the case, siding with the Italian state against the plaintiffs' demands. In brief, meddling in legislative matters would be a step too far, signaling a staunch stance against judicial overreach. Moreover, the court acknowledged its limited jurisdiction over certain aspects of the claim, deferring to the administrative judiciary. *See* Cass. civ., sez. un., 13 settembre 2021, n. 39415, Foro.it, 2023, I, 1–14 (It.). *See also* Verein KlimaSeniorinnen Schweiz et al. v. Switzerland, 087 Eur. Ct. H.R. 412–21, 450–57, 550–88, 627–54 (2024).

[86]PISANÒ, *supra* note 25, at 275.

[87]*Id.*

[88]*Id.* at 282, 279-283 (defining the human right to climate as "the right to live in a stable and secure climate system, not artificially altered by anthropogenic climate-influencing emissions") (author's translation).

[89]Juliana v. United States, No. 6:15-cv-01517-TC, Document 83, at 32 (D. Or. Nov. 10, 2016); ABATE, *supra* note 12, at 66 (recalling the origin of this argumentation).

[90]PISANÒ, *supra* note 25, at 279.

[91]*Id.* at 273, 282.

[92]*Id.* at 277.

[93]*Id.* at 276.

[94]*Id.* at 280.

[95]*Id.* at 144, 277-284.

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kairos.[96] The latter is described by the ancient Greeks as a child-like god with "curls floating in front of his temples, so that those who meet him may lash out at them; the nape of his neck is only sparsely furnished with hair: in fact [. . .] he cannot be caught after his passage however much one may wish him to."[97] This visual representation perfectly captures the idea of the "right moment"[98] to do something—a brief glimpse of time that, once passed, is no longer retrievable.

The analogies with the subject of the "Giudizio Universale" are significant. To avert the worst and degenerative effects of climate change, our society must "grab the hair" of Kairos by 2030. Beyond this threshold, no matter how hard we try to fix it, we are doomed because the right "time" has passed and cannot return.[99] In other words, the qualitative assessment of the period of action is crucial, and the "right time" to act is akin to the ancient Greek idea of kairos, which represents a "brief" window of opportunity that, once lost, cannot be regained.

Paraphrasing a consideration on the relationship between time and evil, one could say that according to the plaintiffs:

> [Unlawfulness or injustice], then, in a certain sense, means precisely not grasping the right time, not knowing how to see and also not knowing how to foresee, that is, not being wise and "prudent" in the etymological sense [. . .] that is, [. . .] he who sees beyond [. . . .] There is, therefore, a very close link between wisdom and the question of time and, more specifically, the opportune moment. For 'if to be [lawful or just] is not only to act as one should, but also with whom one should and where one should' and, indeed, when one should, to be vicious is to fail in each of these directions.[100]

The attempt to shape, and use, alternative time structures emerges also in other climate-litigation cases. Emblematic in this sense are two Dutch court decisions that have taken a leading role in the legal debate. In the Urgenda case,[101] the decision of the Dutch courts played the role of the forerunner of the third wave[102] of climate-litigation. In fact, the successful approach adopted in Urgenda against the Dutch State outlined the legal strategy that would later be used in almost all subsequent European claims.[103]

The Milieudefensie case,[104] however represented a turning point with respect to the spectrum of actors obliged to participate in the "front line" of global warming mitigation efforts.[105] In addition to

[96]*See* Paula Philippson, *Il Concetto Greco di Tempo Nelle Parole Aion, Chronos, Kairos, Eniautos*, 4 Rivista di Storia della Filosofia 81, 81–97 (1949) (giving a broader introduction to the Greek concepts of time).

[97]*Id.* at 92 (author's translation).

[98]Arianna Fermani, Aristotele e l'infinità del male: Patimenti, vizi e debolezze degli esseri umani 58 (Alessandro Drigo trans., 2024) (2019) ("The fundamental notion of Kairos [. . .] has a remarkable breadth and scope, incorporating in its semantic framework such meanings as 'moderation, right measure, occasion, decisive point, right moment, favorable season'.") (author's translation).

[99]*Id.* at 57–58.

[100]*Id.* at 58–59 (author's translation). This perspective can be understood by analyzing the notion of sin, oscillating between the classical Christian interpretation of this concept and the specific interpretation of the word "sin" in Greek, that is "hamartia" (ἁμαρτία). This word, in its literal translation, means a failure or unmet goal, which can be amended by another attempt. However, according to the plaintiff of "Giudizio Universale," this failure, although not sentencing humanity to eternal damnation, still leads to the forfeiture of the human right to enjoy a stable climate. Vagias Karavas, *Die Beste aller möglichen Welten: Gunther Teubners Theodizee*, 42 Zeitschrift für Rechtssoziologie 212, 212–42 (2022) (discussing the relationship between these two interpretations of the concept of sin).

[101]Rechtbank Den Haag [The Hague District Court], Case No. C/09/456689, June 24, 2015, https://uitspraken.rechtspraak.nl/#!/details?id=ECLI:NL:RBDHA:2015:7196.

[102]Setzer & Higham, *supra* note 9.

[103]Otto Spijkers, *Friends of the Earth Netherlands (Milieudefensie) v. Royal Dutch Shell*, 244, 5 Chinese J. Env't. L. 237, 244 (2021) ("Friends of the Earth Netherlands was thus following the legal strategy used in Urgenda discussed above. This was no coincidence, as the lead counsel – Roger Cox – was the same person in both cases.").

[104]Rechtbank Den Haag [The Hague District Court], May 26, 2021, C/09/571932, https://uitspraken.rechtspraak.nl/#!/details?id=ECLI:NL:RBDHA:2021:5339 [hereinafter Milieudefensie District Court].

[105]*Id.* at ¶¶ 4.4.13–15.

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the nation states, the Dutch courts held that a private company, namely Royal Dutch Shell, is also obliged to participate in this overall effort to reduce emissions. A burden, according to the ruling, that would—potentially—also fall on other large private emitters.[106]

The Dutch courts showed a remarkable sensitivity to the threats of climate change. This is evidenced by the fact that, in both the Urgenda and Milieudefensie cases, neither the lack of a current damage nor the fact that these are wide and far future risks have precluded the courts from ruling in favor of the plaintiffs.[107] This may be connected to the particular exposure of Dutch citizens to these dangers.[108] In particular, the future risks would pose a serious threat to the human rights of the Dutch citizens.[109] However, the reasoning of the Dutch judges could also be read as a successful attempt to contemporize these future risks.[110]To expand contemporaneity to include not only the present, but also "glimpses" of the future.

Another emblematic example in this sense is the Holcim Case, an ongoing climate case brought before the Court of Zug (Switzerland) by four residents of the Indonesian island of Pulau Pari against the Swiss cement corporation, Holcim.[111] Here the plaintiffs assert that Holcim should bear responsibility for its role in causing climate change, specifically the impact on sea levels and the resulting floods that have affected the island of Pulau Pari and its inhabitants. The floods have had severe consequences on the island's activities and the livelihoods of its people. The plaintiffs accuse Holcim of contributing to the systemic conditions that led to these damages and seek compensation proportional to the harm they have suffered due to global warming.

However, their demands exceed a mere compensation of $3,600 per person.[112] The lawsuit against Holcim, based on IPCC studies, extends its time horizon to include the future, as the plaintiffs argue that without sufficient emissions mitigation, global temperatures could rise significantly with disastrous consequences for their lives. The islanders claim that if emissions remain at current levels, future projections could manifest in a problematic way, leading to the loss of the majority of the small island's habitable area due to a one-meter rise in sea level by 2100. This scenario, in their view, would endanger their human rights and ability to live on the island. To address these issues, the plaintiffs demand that Holcim reduces its emissions more substantially than their proposed reduction plan and contribute to the adaptation costs they will incur, including measures such as planting mangroves or building dikes and breakwaters.[113]

In other words, the Plaintiffs are demanding compensation for actual damages, reduction of emissions, and assistance in protecting the island from future rising sea levels. The Holcim case is yet another manifestation of a temporal organizational dimension that expands contemporaneity to include not only the present—with the damage they are already suffering—but also various fragments of the future.

[106]*Id.* at ¶ 4.4.49–50. Spijkers, *supra* note 103, at 248-252 (discussing an overview of Shell's objections and defenses, which were rejected by the Court).

[107]Christine Bakker, *Climate Change Litigation in the Netherlands: The Urgenda Case and Beyond*, *in* CLIMATE CHANGE LITIGATION: GLOBAL PERSPECTIVES 199, 199-224. (Ivano Alogna, Christine Bakker and Jean-Pierre Gauci eds., 2021); Friends of the Earth Netherlands (Milieudefensie) v. Royal Dutch Shell, ECLI:NL:RBDHA:2021:5339 (The Hague District Court 2021), para 4.5.8.

[108]Rechtbank Den Haag [The Hague District Court], Case No. C/09/456689, June 24, 2015, https://uitspraken.rechtspraak.nl/#!/details?id=ECLI:NL:RBDHA:2015:7196 at ¶ 2.8 ff, 4.64 ff; Rechtbank Den Haag [The Hague District Court], May 26, 2021, C/09/571932, https://uitspraken.rechtspraak.nl/#!/details?id=ECLI:NL:RBDHA:2021:5339 at ¶ 2.3.9, 4.2.1-4.2.6, 4.46, 4.4.36. *See* Spijkers, *supra* note 103, at 244 (showing that the "national" focus is also confirmed by the unwillingness to take a global protection stance).

[109]In particular Articles 2 and 8 of the European Convention on Human Rights, which respectively protect the right to life and respect for private and family life. Council of Europe, European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols No 15, Brussels 2021. *See also* Chiara Macchi & Josephine von Zeben, *Business and Human Rights Implications of Climate Change Litigation: Milieudefensie et al. v Royal Dutch Shell*, 30 REV. EUR. & INT'L ENV'T L 409, 409-410 (2021).

[110]PISANÒ, *supra* note 25, at 80–81.

[111]Hecks, *The case,* CALL FOR CLIMATE JUST. (2023), https://callforclimatejustice.org/en/the-case/.

[112]Hecks, *The demands,* CALL FOR CLIMATE JUST. (2023), https://callforclimatejustice.org/en/the-demands/.

[113]*See id.* (specifying that Holcim should reduce its GHG emissions by 43% by 2030 and by 69% by 2040 compared to 2019 levels).

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These are not isolated cases but express the attempt of the legal system to cope with this problematic transition. This structuring of the problem seems to be a common feature of many climate cases, so much so that "testing climate change claims before the court is thought to make climate change tangible and immediate [. . .]."[114] To put it another way, the future seems to have found its own space in the legal contemporary. A future that, although circumscribed and shaped in many different ways,[115] is nevertheless relevant in its interaction with the present for the organization of system operations.

D. Talking in the Void: Exploring the Impossibility of Contextless Demands

I. Whispers Arising from Silence: [116] The Future Generations from the 1970s

This pervasive turmoil over the temporal issue may also help to clarify the increasing legal relevance of future generations. Alongside the acknowledgement of this growing relevance, one cannot but ask: Why are future generations only now playing a central and effective role in the legal arena? Why are the demands of this voiceless[117] only now beginning to be heard?

The modern reflection on the intergenerational relationship goes back much further than one might expect, with some analysis dating back even to the 18th century. However, as relevant here, it can be emphasized that future generations have been trying to make their voices heard also in modern legal field for more than 70 years and the debate on their social and legal inclusion has been going on for decades.[118]

Yet, in a nutshell, this significant debate can be traced back to a pivotal question: "Should we believe that future persons not merely will have rights, but that they presently do have rights?"[119]

1. One, None, a Hundred Thousand Million: Searching for Future Generations

The answer to these questions is less simple than it may appear. The difficulty in defining the boundaries of the genus "future generations"[120] represents the first significant obstacle in this sense. This definition is only apparently clear and defined. In reality, it constitutes a genus encompassing very different species. Speaking of future generations, in fact, one can refer in general terms to all the people who will live in the future.[121] At the same time, future generations can also indicate specific groups delimited geographically or temporally.[122] But one also speaks of

[114]*See* Sanja Bogojević, *EU Climate Change Litigation, the Role of the European Courts, and the Importance of Legal Culture*, 35 L. & Pol'y 184, 188 (2013).

[115]Emilie Gaillard, Générations futures et droit privé: Vers un droit des générations futures, 386 (2011); *See also* Verein KlimaSeniorinnen Schweiz et al. v. Switzerland, 087 Eur. Ct. H.R. 421, 470, 484, 528, 556 (2024) (discussing the need for an intergenerational balance and the delineation of victim status).

[116]*See generally* Malte C. Gruber, *Escaping the Epistemic Trap*, 4 Envt'l L. & Econs. 107 (Klaus Mathis & Bruce R. Huber eds., 2017); Gruber, *supra* note 14, at 16–19.

[117]*See generally* Abate, *supra* note 12 (outlining the voiceless concept and on the need to widen the spectrum of legal protection); *See also generally* Malte C. Gruber, *Why Non-Human Rights?,* 32 L. & Literature 263, 263 (2020).

[118]*See* Edwin Delattre, *Rights, Responsibilities, and Future Persons*, 82 Ethics 254. (1972); *See* Matthew W. Wolfe, *The Shadows of Future Generations*, 57 Duke L. J. 1897 (2008); Jim Gardner, *Discrimination against Future Generations: The Possibility of Constitutional Limitation*, 9 Env't Law 29, 32 (1978); Ferdinando G. Menga, *Dare Voce Alle Generazioni Future. Riflessioni Filosofico-Giuridiche Su Rappresentanza E Riconoscimento a Margine Della Recente Modifica dell'articolo 9 Della Costituzione Italiana*, BioLaw Journal – Rivista di BioDiritto n. 2. 73,74-81 (2022); Gaillard, *supra* note 115, at 71-303.

[119]Annette Baier, *The Rights of Past and Future Persons*, *in* Responsibilities to Future Generations: Environmental Ethics 171, 171 (Ernest Partridge ed., 1981).

[120]*See* Ori J. Herstein, *The Identity and (Legal) Rights of Future Generations*, 77 Geo. Wash. L. Rev. 1173, 1174–75 (2009); See also Gaillard, *supra* note 115, at 154, 383-405, 422-423, 437-441 (arguing that a single definition would be counterproductive, given the different possible types of future generations); Ferdinando G. Menga, *When the Generational Overlap Is the Challenge Rather Than the Solution: On Some Problematic Versions of Transgenerational Justice*, 106 Monist 194, 198 (2023).

[121]Herstein, *supra* note 120, at 1174–75.

[122]*Id.*

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future generations when analyzing those who are young today and have a potential future.[123] In other words, the concept of future generations is less defined than it might appear prima facie.[124] This term presents far more nuances, potential application and problematics than expected.[125]

However, without an adequate recalibration of temporal structures, the problem of future generations takes on dynamic and hazy traits. As a result, like climate theory, this issue has struggled to escape its moral and philosophical jar. From a legal standpoint, the outcomes have been mostly limited to non-binding declarations in international agreements and generic constitutional recall, which have seldom been converted into effective actions. Examples of these documents that directly or indirectly affect future generations are not lacking, indeed they abound.[126] These include, just to mention a few, the "1946 International Whaling Convention(,) the Universal Declaration of Human Rights (1948), The Stockholm Declaration on the Human Environment (1972), the World Charter for Nature (1982), the Brundtland Report (1987), the United Nations Declaration on the Rights of Indigenous People (2007)"[127] and so on. Except for a few isolated cases,[128] this "moral imperative"[129] has only grazed the realm of law without really affecting it. As has been observed "[. . .] these references to future generations remain, for the most part, in preambles and not in the operative text of the instruments. There are no legally binding international law instruments specifically committing States to the protection of future generations."[130] Nor does the situation change when analyzing the numerous constitutional provisions that directly or indirectly affect future generations.[131]

Despite best intentions and significant attempts, future generations have only been considered "formally" relevant from a legal perspective without ever being able to materialize substantial protection. However, the recent emergence of climate litigation has begun to break down this "morality jar." Although future generations and climate change are not entirely superimposable, there is no denying that climate litigation has created a suitable environment for advancing these concerns from a legal perspective as well. [132]

2. Judicial Recognition of Future Generations

In addition to the already mentioned Neubauer case,[133] some relevant examples can be found around the world and in varying forms. The near-obligatory starting point is the groundbreaking Urgenda case in the Netherlands.[134]

[123] *Id.*

[124] *Id.*

[125] ABATE, *supra* note 12, at 44; GAILLARD, *supra* note 115, at 383–405; Menga, *supra* note 120, at 195–205.

[126] ABATE, *supra* note 12, at 50–65; *See generally* GAILLARD, *supra* note 115, at 72–106 (highlighting the exceptionality of the unborn in private law), 138–296 (noting that from the 1990s to the late 2000s a new legal era emerged, favoring the rise of future generations' rights, the author also traces their challenging journey, as these rights struggled to evolve into binding laws and remained largely confined to the realm of legal imagination).

[127] ABATE, *supra* note 12, at 53–55.

[128] *See* ABATE, *supra* note 12, at 54, 61 (describing two notable exceptions: Maritime Delimitation in the Area between Greenland and Jan Mayen (Den. v. Nor.), Judgment, 1993 I.C.J. 38 (June 14, 1993) and *Minors Oposa v. Factoran*, G.R.
No. 101083, 224 S.C.R.A. 792 (July 30, 1993) (Phil.)); GAILLARD, *supra* note 115, at 537.

[129] ABATE, *supra* note 12, at 45.

[130] *Id.* at 53.

[131] *See* Bradford C. Mank, *Standing and Future Generations: Does* Massachusetts v. EPA *Open Standing for Generations to Come?*, 34 COLUM. J. ENV'T. L. 1, 18, 72 (2008); Emilie Gaillard, *Legal Bases for Protecting Future Generations*, *in* LEGAL ACTIONS FOR FUTURE GENERATIONS 398, 416 (Emilie Gaillard & David M. Forman eds., 2022);

[132] *See* PISANÒ, *supra* note 25, at 80-85; *See* Menga, *supra* note 120, at 195.

[133] *See supra* the beginning of this Article at 3–4.

[134] Case C/09/456689/HA ZA 13-1396 (English translation), Urgenda Foundation v. Netherlands, ECLI:NL: RBDHA:2015:7145 (Jun. 24, 2015).

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Concisely, the Urgenda case can be summarized as a successful attempt to impose more ambitious Greenhouse Gas (GHG) emission reduction targets than those set by the State through a judicial decision. The reduction targets determined by the Dutch State were overturned based on the scientific knowledge of the IPCC reports, their projections on the Dutch population and the legal translation of this scientific knowledge. The Court also concluded the government had, through these limited reduction goals, breached a duty of care to the Dutch people to preserve the climate. This duty was identified through an examination of Dutch private law under the lens of constitutional interpretation, international law, and cases from the ECHR. Finally, the Supreme Court's decision in the Urgenda case confirmed the courts' authority to mandate such a reduction, dispelling doubts about a possible incompatibility with the separation of powers doctrine.

Urgenda also presents significant elements of interest in the reflection on future generations. Despite some clear discontinuity on the approach between the first decision and the latter two, the relevance of these rulings remains undisputed.

First, in the District Court decision, future generations are a constant leitmotif.[135] The reference to future generations emerges first with respect to the issue of standing. According to the Court, the social purpose of the Urgenda foundation, to pursue the creation of a sustainable society, is characterized by an intergenerational dimension. Consequently, interpreting the article of the Dutch Civil Code permitting organizations to defend the public interest in this light, the Court concluded that Urgenda also has standing on behalf of future generations.[136]

Second, this intergenerational dimension also emerges with respect to the assessment of State behavior. In fact, one of the main criticisms leveled at the Dutch State was that its climate goals disproportionately benefitted present generations at the expense of future generations.[137] It is precisely in the light of this principle of intergenerational equity that the State's discretion is limited.[138]

Finally, the intergenerational dimension of climate dynamics also emerges with respect to damages.[139] As has been noted, "[t]his is a clear example of a legal decision inclusive towards future generations; their rights are taken up in the balance to determine the climate-related obligations of the Dutch State."[140] In the appeal judgement, the reference to future generations occurs only indirectly. This occurs, first of all, with respect to the issue of standing. Although the court did not grant standing on behalf of future generations to Urgenda, it nevertheless rejected an objection raised by the State which, de facto, concerned that topic. In other words, the State, by objecting to the excessive breadth of interests and persons represented by Urgenda, invoked theoretical considerations developed against the representation of future generations. By rejecting this objection, the Court of Appeal kept the door open for future generations.[141]

Moreover, by accepting the climate framework of the IPCC reports—used by Urgenda and not contested by the State—the Court has projected itself into an operational dimension that recognizes the urgency of the issue and necessarily includes future repercussions and risks. Circumstances, the latter, that "[. . .] already the current generation of Dutch people, mostly but not exclusively the younger ones among them, will face during their lives the adverse effects of climate change [. . . .]"[142]

[135]Laura Burgers, Justitia, the People's Power and Mother Earth: Democratic Legitimacy of Judicial Law-Making in European Private Law Cases on Climate Change 207 (2020) ("The judgment rendered at first instance in 2015 received international attention *inter alia* for the role of future generations in the case.").

[136]*Id.* at 213.

[137]*Id.* at 215.

[138]*Id.* at 216.

[139]*Id.*

[140]*Id.* at 218.

[141]*Id.*

[142]Case 19/00135, Netherlands v. Stichting Urgenda, ECLI:NL:HR:2019:2006 (Dec. 20, 2019).

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This perspective of time dilation capable of indirectly recalling certain types of "future generations" is also confirmed and legitimized in the Supreme Court ruling. Of particular interest here are the interpretations of Articles 2 and 8 of the ECHR. In the first case, provided that the harm can directly affect the person involved, it can also materialize in a longer time perspective.[143] In the second case, the severity of the risk for the private and family lives of persons allows for the inclusion of risks that are not located in a short time horizon.[144] The indirect projection towards future generations emerges, then, from the regulatory references[145] and the observation of the directly proportional relationship between today's inaction and the magnitude of the burden of future protective actions.

Another relevant example comes from South America, specifically Colombia. The landmark case, Future Generations v. Ministry of the Environment and Others, saw twenty-five young plaintiffs sue the Colombian government. The case addressed conservation of the Amazon and the impact of climate change. The peculiarities and groundbreaking significance of this decision, despite the insufficient practical application of its precepts, call for a brief discussion of some of its most relevant aspects.[146]

The plaintiffs argued the government's inaction violated the constitutional rights of children to a healthy environment, life, health, nutrition, and water, as well as the rights of future generations. Colombia's Supreme Court ruled in favor of the plaintiffs, recognizing the rights of future generations and ordering the government to create and implement action plans to combat deforestation in the Amazon. Adopting an unusual solution—but certainly not unknown to the Colombian legal system[147]—the Court decided to implement these requirements by attributing a legal personality to the Colombian Amazon Rainforest. In other words, according to the Colombian Supreme Court, the best way to guarantee the protection of fundamental rights is to attribute legal personhood to the forest, thus reaffirming the need for a paradigm shift in the relationship between man and nature already recognized by the Colombian Constitutional Court a few years earlier.[148]

A third key example came, once again, from the Netherlands. The "revolutionary and groundbreaking"[149] Milieudefensie v. Shell case is another paradigmatic example in this regard. Indeed, it is still unclear whether this first instance ruling will be upheld on appeal or whether other courts outside Dutch borders will follow this line of argument. Nevertheless, the Dutch courts may have once again outlined a very important contribution to the whole topic of climate change and, more specifically, to the legal trend of climate litigations.

On May 26, 2021, the Dutch district judge in The Hague upheld the claims of environmental organizations—including Vereniging Milieudefensie, which gives its name to the case—and over 17,000 Dutch citizens against Royal Dutch Shell (henceforth "RDS"), the parent company of the Shell Group.[150] The court found the Anglo-Dutch oil giant's substantial contribution to climate change led to increased and related risks of a climate crisis. Accordingly, this lower court ruling required RDS to significantly increase its efforts to prevent climate change by reducing its emissions by 45% from 2019 levels by 2030. The court imposed two obligations, one of best efforts and one of results, with respect to the reduction of emissions caused by the Shell Group, its supply chain, and its consumers.[151]

[143]Burgers *supra* note 135, at 251.

[144]*Id.* at 251.

[145]*Id.*

[146]Abate, *supra* note 12, at 74-82 (providing a more detailed analysis).

[147]*See* Michael William Monterossi, L'orizzonte intergenerazionale del diritto civile: Tutela, soggettività, azione 264 (2020).

[148]Abate, *supra* note 12, at 77.

[149]Spijkers, *supra* note 103, at 242.

[150]*Milieudefensie* District Court, C/09/571932/HA ZA 19-379 (engelse versie), Vereniging Milieudefensie v. Royal Dutch Shell plc, ECLI:NL:RBDHA:2021:5339 (May 26, 2021).

[151]*Id.* at ¶ 5.3.

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According to this decision, the effort to mitigate the effects of climate change by reducing emissions resulting from the 2015 Paris Agreement affects both nation-states and private companies. In other words, the greatest challenge ever faced by human beings requires the commitment of all.[152] More than a year after the final judgment of Urgenda, and drawing on its legal strategy,[153] this duty has also been recognized in a private company, albeit only at the lowest judicial level. The salient features of this case are many: The recognition that the drafting of the Shell Group's corporate policy is an independent source of damage; the recognition of the global nature of the climate problem, and, accordingly, the irrelevance of the location of GHG emissions;[154] the balance between the time dilation of the relevant horizon and the reduction of the target group to Dutch inhabitants only.[155]

Other relevant elements of the Milieudefensie case are: The development of a legal argument setting out an obligation to reduce emissions[156] based on an unwritten standard of care[157] calibrated on the "traditional" ECHR[158] recall, and the innovative introduction of the UN Guiding Principles[159] as an interpretative criterion; the recognition of the existence of an obligation for private companies to respect human rights,[160] also emphasizing that the company itself declares this goal as an integral part of its actions;[161] and the recalibration of temporal structures, in particular with the observation that although there is no actual harm –to date–[162] the scientific evidence of climate change[163] outlines a proximate risk of breach of this obligation of duty of care.[164]

Finally, the extension to private actors of climate change mitigation obligations[165] acknowledges their key role[166] in achieving the targets set in international treaties, protected by human rights,[167] and based on widely accepted scientific conclusion.

Yet, in this case, too, future generations assume a relevant role. These emerge firstly in terms of admissibility of the class actions. Although the group of people who can be protected in this decision is purely reducible to inhabitants of the Netherlands,[168] this does not mean that just the present inhabitants are included.[169]

[152]*See generally* Barrau, *supra* note 14; Gruber, *supra* note 14, at 24.

[153]Spijkers, *supra* note 103, at 244 ("Friends of the Earth Netherlands was thus following the legal strategy used in *Urgenda* discussed above. This was no coincidence, as the lead counsel, Roger Cox, was the same person in both cases.").

[154]*Milieudefensie* District Court, C/09/571932/HA ZA 19-379 (engelse versie), Vereniging Milieudefensie v. Royal Dutch Shell plc, ECLI:NL:RBDHA:2021:5339, ¶¶ 4.3.5–4.3.7 (May 26, 2021).

[155]*Id.* at ¶¶ 2.3.9, 4.2.5, 4.4.6.

[156]*Id.* at ¶ 4.4.9.

[157]For example, *see* Art. 6:162 BW (Neth.). *See also* Spijkers, *supra* note 103, at 244.

[158]Eur. Comm'n H.R. Dec. & Rep. art. 2, 8. *See also* Macchi & von Zeben, *supra* note 109, at 412-413.

[159]*See* Macchi & von Zeben, *supra* note 109, at 413-414.

[160]*Milieudefensie* District Court, C/09/571932/HA ZA 19-379 (engelse versie), Vereniging Milieudefensie v. Royal Dutch Shell plc, ECLI:NL:RBDHA:2021:5339, ¶¶ 4.4.13–4.4.15 (May 26, 2021).

[161]*Id.*

[162]The court also reiterated that, to date, Royal Dutch Shell was not in breach of its emission reduction obligation. *Id.* at ¶ 4.5.8.

[163]*See* Macchi & von Zeben, *supra* note 109, at 411.

[164]*Milieudefensie* District Court, C/09/571932/HA ZA 19-379 (engelse versie), Vereniging Milieudefensie v. Royal Dutch Shell plc, ECLI:NL:RBDHA:2021:5339,. at ¶ 4.5.3 (May 26, 2021).

[165]Harro van Asselt, Kati Kulovesi, Mikko Rajavuori & Annalisa Savaresi, *Shell-Shocked: A Watershed Moment for Climate Litigation against Fossil Fuel Companies*, CCEEL Blog (May 28, 2021), https://sites.uef.fi/cceel/shell-shocked-a-watershed-moment-for-climate-litigation-against-fossil-fuel-companies/; Gruber, *supra* note 14, at 23–24.

[166]In particular, for private actors, such as Shell, that have a consistent capacity to influence also many other actors that orbit around it. For further considerations, *see* Macchi & von Zeben, *supra* note 109, at 414.

[167]The Dutch judges established founded the legal basis to impose two obligations to upon Shell, referring to the rights to life and private and family life. In fact, the Court noted that there is "the widespread international consensus that human rights offer protection against the impacts of dangerous climate change and that companies must respect human rights." *Milieudefensie* District Court, C/09/571932/HA ZA 19-379 (engelse versie), Vereniging Milieudefensie v. Royal Dutch Shell plc, ECLI:NL:RBDHA:2021:5339, ¶ 4.1.3 (May 26, 2021).

[168]*Id.* at ¶ 4.2.3.

[169]*Id.* at ¶ 4.2.4.

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The recall to future generations emerges also with respect to the general "RDS' reduction obligation" and its more specific, proportional reduction one. Specifically, in the first part, the court recalled the connection between environmental degradation, climate change, unsustainable development, and the risks to present and future generation's right to life.[170] In the second part the court balanced the interests of present and future generations against the commercial interests of RDS. The compelling, common interest served by complying with the reduction obligation outweighs RDS's potential negative consequences and the commercial interests of the Shell group.[171]

Synergy between climate change and future generations has not always gained legitimacy through court decisions. Inter alia, one can recall cases from Canada,[172] Scandinavia,[173] and India[174] where the claim for the protection of future generations—in an operational perimeter of climate crisis—has been rejected. The debated nature of this synergy is further confirmed by several examples of claims for judicial protection also for future generations still under examination by the courts.[175]

II. The End of the Legal Exile of Future Generations?

This judicial overview offers an extremely useful picture. First, the substantial balance in the outcomes, and the heterogeneity of the argumentative frameworks used, show we are still in the midst of the debate. Second, these examples of climate litigation highlight the increasingly central role of climate science in the legal system as well, resulting in both a total acceptance of the paradigm shift and a centrality of time dilation in the development of legal debate. Third, the concept of future generations has been interpreted in different ways.[176]

These differences do not hide the fact significant advancements have been realized and the legal rights and interests of future generations are being acknowledged and represented. This transition from a moral consideration of future generations to a legal (albeit intermittent) approach holds tremendous significance. Yet, despite these laudable advancements, these examples remain somewhat sporadic in the wider legal panorama; by uncovering the underlying dynamics that have brought the needs of future generations to the forefront, a shift towards a more systemic perspective can be achieved.

1. Temporal Structures and Future Generations: Connection or Mere Coincidence?

The new relevance of the future in society has been matched by a new interest in future generations. Just as the presence of air is crucial for the sound of a bell to spread and be heard, this brief digression has underscored a similar relationship in the legal field: Between the operational horizon of the law, the medium, and the hearable rights, the sound.[177] The dilatation of temporal structures and the relevance of future generations thus seem to coexist.

[170] *Id.* at ¶ 4.4.10.

[171] *Id.* at ¶ 4.4.54.

[172] *See generally* ENVironnement Jeunesse c. Procureur Général du Canada, [2019] QCCS 2885; ENVironnement JEUnesse c. Attorney General of Canada, [2021] QCCA 1871. For a wider resume summary *see ENVironnement JEUnesse v. Procureur General du Canada,* COLUMBIA CLIMATE SCHOOL SABIN CENTER FOR CLIMATE CHANGE LAW (2018–2021), https://climatecasechart.com/non-us-case/environnement-jeunesse-v-canadian-government/.

[173] BURGERS, *supra* note 135, at 171-177, 224-232, 253-255

[174] *See* Ridhima Pandey v. Union of India, (2019) MANU/ NGTA 187.

[175] *See, e.g.* Steinmetz, et al. v. Germany III, German Constitutional Court (filed July 16, 2024, pending decision); Youth Climate Litigation v. Power Companies, Nagoya District Court (filed August 6, 2024, pending decision); *Ali v. Federation of Pakistan*, Pakistan Constitutional Court, (filed April 1, 2016, pending decision).

[176] Interestingly, there are no climate litigation decisions using the concept of future generations referring to specific future individuals.

[177] *See generally* Aaron M. Griffith, *The Rights of Future Persons and the Ontology of Time*, 48 J. SOC. PHIL. 58, (2017) (supporting the idea of reorganizing temporal structures, albeit in a structurally different way); *See also* GAILLARD, *supra* note 115, at 221.

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Just because both trends are present does not mean they are directly related. This might be a correlation without connection. Historical knowledge is essential in unravelling this Gordian knot and testing theories against reality. This approach resembles that used in climate science to assess the accuracy of scientists' predictions of future climate. Because experiencing the future firsthand is impossible, scientists cannot directly prove future predictions created by their model. However, they can test these predictions' reliability in various ways, including by comparing simulations of the past with historical evidence.[178] If the former consistently matches with real historical data, the models are deemed more reliable also for predicting the future.

Similarly, exploring historical social and legal changes can also shed light on the relationships explored in this Article. Instead of relying on physical climate proxies such as ice cores or tree rings, it is essential to focus on two key features of the significant shift from the Ancien Régime to modernity.

The first key change involves the recalibration of temporal structures and its impact on law as society has moved towards modernity. The second point concerns the evolution of the spectrum of legally relevant actors in this transition to modernity.

Starting with the first, we can observe that before modern times, societies expanded the space of contemporaneity by encompassing and merging past, present, and future. These different temporal dimensions co-existed, but were not equally accessible to actual human beings, whose knowledge was limited to the present.[179] Despite this limitation, individuals sought to interact with other actors from different time horizons. They employed diverse methods, ranging from engaging with the divine wisdom encapsulated in sacred texts to participating in rituals such as entrail analysis (aruspicina) and interpreting the flight of birds (auspicia).[180] Similar interactions can also be observed with ancestors and, more broadly, with the deceased.[181] By interacting with these actors, society recognizes their existence and acknowledges the presence of a time horizon beyond human limitations.

This concept of time has also influenced societal and legal norms, not just religious practices. The pre-modern legal order provides several examples in this sense. For instance, medieval English law responded to certain severe crimes with the punishment of blood corruption. This sanction had consequences beyond the individual, as it prevented the transmission of property through the "tainted" bloodline,[182] affecting his or her descendants. It was not solely a sanction for a crime; it was a measure that bound future generations on the basis of an ancestor's actions. This expressed an intertemporal vocation for the deterrence of that criminal law.[183]

In the field of inheritance law, one notable example of expanded temporal structures is the fideicommissary substitution.[184] This legal tool allows a will-maker to name an heir under the condition that he must keep the estate intact and later pass it on to another beneficiary chosen

[178]David A. Randall & Richard A. Wood, *Climate Models and Their Evaluation*, *in* Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change 595 (Susan Solomon et al. eds., 2007).

[179]Esposito, *supra* note 70, at 30.

[180]Luhmann, *supra* note 67, at 8; Esposito, *supra* note 70, at 39.

[181]Andrej Kapcár, *The Origins of Necromancy or How We Learned to Speak to the Dead*, 33, 40-43 Sacra 13 (2015).

[182]Anne-Marie E. Rhodes, *Blood and Behavior*, 36 ACTEC J. 153, 154 (2010).

[183]*Id.* at 154–55.

[184]*See, e.g.,* Alfonso Longo, Osservazioni su i fedecommessi, *in* Il Caffè 1764–1766, 115–132 (Gianni Francioni & Sergio Romagnoli eds., 1993); Caterina Bonzo, «*Comandare oltre la morte*» *(L. A. Muratori): gli ultimi due secoli del fedecommesso in Italia* 275 (2016); Annamaria Monti, *Fedecommessi lombardi: profili giuridici e riflessi privati delle dispense senatorie*, 124 Mélanges de l'École française de Rome—Italie et Méditerranée modernes et contemporaines (2012); Paola Lanaro, *Fedecommessi, doti, famiglia: la trasmissione della ricchezza nella Repubblica di Venezia (XV-XVIII secolo); Un approccio economico*, 124 Mélanges de l'École française de Rome—Italie et Méditerranée modernes et contemporaines (2012); Giovanni Rossi, I fedecommessi nella dottrina e nella prassi giuridica di ius commune tra XVI e XVII secolo, in La Famiglia nell'economia europea secc. Xiii-XIV/The economic role of the Family in the European Economy from the 13th to the 18th Centuries (Simonetta Cavaciocchi ed., 2009).

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by the original drafter. This legal mechanism created an almost unalterable bond,[185] meant to preserve family wealth over generations, effectively becoming a command from the will-maker beyond his death.[186]

This law of the testator, voluntas testatoris est lex,[187] means that the will-maker can limit how future generations handle the estate, essentially making heirs just caretakers rather than proper owners.[188] This allows the deceased to "control" the family's wealth management and distribution long after their passing.

This dictatorship of the grave could span multiple time periods and generations, but it did not always require a temporal boundary. A striking example in this sense comes from the legal experience of the Venetian Republic, where testators could create fideicommissum that were perpetually binding. Through these "fideicommissary substitutions ad infinitum [. . .] the assets were indefinitely [blocked], strictly adhering to the will of the testator without any time limitations."[189]

This tension between the needs of the present and the desires of the deceased permeated all levels of society, becoming common even among the less wealthy.[190] It reflected not only a desire to protect family wealth, but also a deeper, somewhat irrational urge to control the destiny of one's possessions after death, showing a wish to influence from the grave.[191] In other words, the deceased could still play an active role in contemporary social dynamics despite their physical death.[192]

The intergenerational operational range of the law was recognized and justified during the Ancien Régime. However, the primacy of this approach was about to change. During the transition to modern society, all time has been reduced to the present, and as a result, the past and future have been expelled from contemporaneity.[193] This process has reduced them to mere projections of the present. In other words, this new perspective suggests the past and future do not exist independently but are constantly produced in every present.[194] This implies, for instance, that a non-existent future cannot be constrained by the remnants of an intangible past. Society is presented with an "open future," full of projects and ideas waiting to be realized in the only timeframe deemed existent and significant: The present.

The compression of time to the present has had significant consequences, triggering a chain reaction in social and legal spheres. It was during the Enlightenment opposition to the concept of blood corruption emerged. The concept of intergenerational punishment—that is, punishment that goes beyond individual accountability and affects the offender's descendants—was so strongly resisted that it was explicitly forbidden in the American Constitution.[195]

The Enlightenment's critique, however, extended beyond opposing intergenerational punishment. It engaged in a deep critique of the longstanding belief in the natural

[185]*See e.g.*, Bonzo, *supra* note 184, at 298-300 (giving examples and a general contextualization of expectations to the intangibility of *fideicommissum*); Rossi, *supra* note 184, at 181,182; *See generally*, Monti, *supra* note 184.

[186]Bonzo, *supra* note 184, at 282.

[187]*Id.* at 292.

[188]Bonzo, *supra* note 184, at 280; Rossi, *supra* note 184, at 181, 184-185, 191-192.

[189]Lanaro, *supra* note 184.

[190]Bonzo, *supra* note 184, at 299.

[191]Longo, *supra* note 184.

[192]Longo, *supra* note 184:

Finally, I dare say that the learned Leibnitz argued worse than the above-mentioned doctors when he said that 'by force of law alone, wills would have no effect if the soul were not immortal; but as the dead are actually still living, they are therefore always masters of their property, so that the heirs they leave must be regarded as agents for a business which interests them [. . . .]' *Id.* (author's translation).

[193]Luhmann, *supra* note 67, at 132; Esposito, *supra* note 70, at 30.

[194]Luhmann, *supra* note 67, at 40.

[195]Rhodes, *supra* note 182, at 155.

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and perpetual order of such legal constructs, questioning the very essence of intergenerational law itself.[196]

The French Revolution and the Napoleonic code stand out as pivotal examples that drastically altered France's societal and legal structures, marking a clear departure from the Ancien Régime. The execution of Louis XVI and the collapse of the old society catalyzed a fundamental transformation within French society, signaling a move away from laws that bound present, and future, generations with obligations forged in the past.[197]

For instance, this period championed the principle of equality, erasing the legal and social distinctions that had previously stratified the population.[198] The Revolutionary ethos questioned and ultimately dismantled the age-old belief in an immutable natural, and proper, order[199] that justified these distinctions through hereditary status.[200] This change represented a move away from the past's constraints, freeing current and future societies to shape their destinies without inherited obligations.[201]

The harnessing of law's intergenerationality also impacted private law legal institutions, notably through the Code Napoleon of 1804.[202] The Code's Article 896[203] starkly rejected the fidéicommis familial, underscoring a significant shift: The law now opposes the idea one can dictate the use of their estate for several generations.[204]

Echoing 18th-century critiques, French lawmakers have contested the grave's dominion over estates, emphasizing the modern values of autonomy, freedom, and the individual will of the living.[205] They view such posthumous control as a stark violation of the social contract,[206] arguing that the deceased, detached from the material world, should not impinge upon the living's autonomy over their property.

This emerges also by examining the nineteenth-century philosophical individualist's approach to a core concept like property, which reveals further evidence of these notable shifts. Jurists acknowledged property rights could extend across generations. Yet, philosophical individualism anchored these concepts squarely in the present. Direct and total control over property—its use, enjoyment, and disposal—was deemed incompatible with past or future actors exercising such right.[207]

[196]Gardner, *supra* note 118, at 56 n. 131 (showing that the debate between Thomas Paine and Edmund Burke on the possibility of precluding the availability of certain rights to future generations is emblematic). *See also* GAILLARD, *supra* note 115, at 66:

> This temporal limitation of the concept of law is partly rooted in the philosophical and constitutional thought of the 19th century. According to Professor Ost, it is clear the philosopher J-J. Rousseau had an 'instantaneous conception of social time'. According to Rousseau, 'a people can always change their laws, even the best ones.' This approach derives from the paradigm of legal reciprocity, whose normative force extends to the concept of law. *Id.* (author's translation).

[197]Gaillard, *supra* note 131, at 401, footnote 21.

[198]*Id.*

[199]GUIDO ALPA, STATUS E CAPACITÀ: LA COSTRUZIONE GIURIDICA DELLE DIFFERENZE INDIVIDUALI 12 (1993).

[200]*Inter alia* JEAN DOMAT, OEUVRES COMPLÈTES, 95 (1835). *See generally* ROBERT-JOSEPH POTHIER OEUVRES TOME 9 (1830).

[201]*See* DÉCLARATION DES DROITS DE L'HOMME ET DU CITOYEN du 26 août 1789, at art. 1; CODE NAPOLÉON 1804, at arts. 7, 8.

[202]GAILLARD, *supra* note 115, at 17–70 (providing these examples).

[203]By means of this legal instrument, the *de cuius* determined the occurrence of an intergenerational obligation concerning his inheritance and often bound the transmission of the estate to the eldest member of the family. The *fidéicommis familial* mechanism thus guaranteed the recognition of a legal continuity of the human will beyond death, outlining a real burden for future generations. This legal institution embodied two aspects of the *Ancien Régime*. First, it tackled the tradition of preserving family heritage by restricting the inheritance to the eldest son. Second, it rejected the practice due to its potential to bind future generations. GAILLARD, *supra* note 115, at 24.

[204]*Id.* at 25; Rossi, *supra* note 184, at 186 (stressing the rejection of the fidéicommis familial during the Enlightenment).

[205]GAILLARD, *supra* note 115, at 48-51.

[206]Longo, *supra* note 184.

[207]GAILLARD, supra note 115, at 33-34.

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Both Enlightenment observers and French legislators clearly expressed opposition to the "mad desire of individuals to control their possessions for a time when they no longer own them, having left this world,[208] "maintaining the idea of the total and free availability of assets for present generations."[209]

This new social project is also substantiated within the domain of contractual law. Explicitly, in the Code Napoleon the prohibition of perpetual commitments[210] was deemed indispensable to safeguard "the exercise of individual liberty over time, as perpetual commitments were perceived to perpetuate personal servitudes and feudal property."[211] A comparable initiative to realize the post-Ancien Régime social vision is discernible in the implicit prohibition of perpetual obligations.[212] In this context, a perpetual obligation was construed as synonymous with subjugation, contravening the foundational principles of freedom and autonomy of the will in the nascent society.[213]

In both instances, the framers of Napoleonic Code exercised meticulous care to preclude certain obligations from imposing unwarranted tyranny upon the future.

In essence, the dawn of the Enlightenment signified a pivotal shift towards a comprehensive reevaluation of intergenerational law, set against the backdrop of a broader recalibration of social temporal structures.[214] In Emilie Gaillard's words:

> The temporal legal framework of 19th century society [. . .] is based on and limited to the time of one human generation. The way law is conceived and how rights are generated leaves no room for [intergenerationality and] the concept of future generations. The written reason of the 19th century, in so far as it affirms and guarantees the preservation of individual freedom, is at odds with a long, eternal time, a time that binds future generations to violations of their free will.[215]

If the recalibration of Temporal Structures and its effects on the law represents the first key feature of the transition to modernity, the second concerns the spectrum of relevant actors. The pre-modern world featured a broader and more diverse array of actors deemed significant within social and legal contexts.

[208]Bonzo, *supra* note 184, at 283 (author's translation).

[209]Longo, *supra* note 184 (author's translation).

[210]Gaillard, *supra* note 115, at 42-47.

[211]*Id.* at 43, 44 ("In this respect, Professor Veaux argues that: 'everyone agrees that it is forbidden to make a commitment in perpetuity [in other words, to bind future generations through one's heirs], if only out of respect for individual freedom' [. . . .]") (author's translation).

[212]*Id.* at 44:

> These prohibitions on perpetual obligations are undoubtedly part of the "foundational function" [*function instituante*] of classical private law, i.e., the social project envisioned by the codifiers for the future. The right to property, the principles of free movement of goods and persons, and the doctrine of the autonomy of the will [the basis of modern contract law] break with the feudal system of servitude. What emerges is a coherent system of private law concerned with the preservation of future freedoms. *Id.* (author's translation).

[213]*Id.* at 48.

[214]It is crucial to clarify this Article does not aim to present a singular, exclusive explanation for the transition from the *Ancien Régime* to modernity. Other factors likely played an equally, if not more, significant role than the alteration of temporal structures in facilitating this change. Foremost among these factors were the encouragement of free trade to boost economic growth and the evolution of philosophical perspectives on the human condition—both acting as key drivers of change. Nevertheless, in the analysis of this complex phenomenon, it is important to remain open to the idea that a significant impact may also have stemmed from evolving perceptions of social organization and the role of time within it.

[215]Gaillard, *supra* note 115, at 67 (author's translation).

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A relevant first example concerns the animal's role in the social and legal landscapes before the modern era. Although typically classified as res—objects under the ownership of a legal entity—they could, in exceptional cases, own possessions[216] or even face legal action.[217] This is highlighted by the wide range of animal trials and excommunications across different regions, from Brazil to Switzerland, involving a diverse array of animals, including pigs, moles, locusts, dogs, rats, and more.[218] These instances reveal the varied ways in which historical societies recognized animals as legal and social agents.

For example, in 1519 in West Tyrol, authorities initiated criminal proceedings against moles accused of crop damage.[219] The legal system's decision to appoint a defender for the accused animals stemmed from the belief that these creatures deserved a chance to defend their actions in court.[220] The verdict issued demanded the animals vacate the fields but made allowances for pregnant or young animals, who were given a grace period for departure without harm.[221]

Similarly, in 1659, the community of Chiavenna took legal action against caterpillars for crop destruction.[222] The caterpillars were officially summoned to court, with a defender appointed on their behalf; the summons was hung on a tree in the five woods of the territory, and the court's decision acknowledged the caterpillars' right to life and freedom, so long as they did not harm human well-being.[223]

Yet, in medieval trials, the animals were not the only "out-of-the-norm" defendants. Even the dead were occasionally—albeit rarely and with clear instrumental purposes—brought to trial. A notable instance of this occurred in 897 with the 'synodus horribilis,'[224] when Pope Stephen VI charged the deceased Pope Formosus, the former Bishop of Rome, with serious offenses. In an extraordinary event held in the Basilica of St. John Lateran, Formosus's exhumed body, dressed in papal attire, was put on trial. He was accused of perjury, violating church law, and unlawfully becoming pope.

Despite the clear political motives behind Stephen VI's actions, this trial underscores the extent to which the deceased were considered capable of participating in present reality. Formoso, in fact, was assisted and represented—albeit only by a young novice. The peculiar defendant was subjected to an intensive interrogation, which, for obvious reasons, was answered by his legal representative. All according to the rules.[225]

The court posthumously found Formosus guilty, annulled his papacy, and his body was then mistreated and thrown into the Tiber River.[226]

The practice of including deceased individuals in legal processes, given the context of the Ancien Régime's widespread intergenerational law, is not that surprising. Considering that a deceased person could still influence decisions much like a living owner, the idea of them being involved in trials should not be startling.

[216]Visa A. J. Kurki, *Animals, Slaves, and Corporations: Analyzing Legal Thinghood*, 18 GERMAN. L. J. 1070, 1075 (2017).

[217]*See* EDMUND P. EVANS, THE CRIMINAL PROSECUTION AND CAPITAL PUNISHMENT OF ANIMALS (1906) (giving an overview of the Middle Ages).

[218]EVANS, *supra* note 217, at 112.

[219]*Id.* at 112.

[220]*Id.* at 112 ("[. . .] so that they have nothing to complain of in these proceedings").

[221]EVANS, *supra* note 217, at 308 ("Upon complaint and response, claim and counterclaim, and upon the submitted evidence and all that may come for justice, it is judged and ruled that the harmful creatures, known as field mice, shall vacate the fields and meadows of Stilfs within fourteen days, as per the complaint. They shall depart and never return for eternity. However, if any of the creatures are pregnant or too young to move, they are granted safe conduct for fourteen days. Those that can leave must do so within the stipulated time.") (author's translation).

[222]*Id.* at 122–23.

[223]*Id.*

[224]Laura Jeffries, *Cadaver Synod (897)*, *in* GREAT EVENTS IN RELIGION: AN ENCYCLOPEDIA OF PIVOTAL EVENTS IN RELIGIOUS HISTORY 444 (Florin Curta & Andrew Holt eds., 2016).

[225]*Id.* at 445.

[226]*Id.*

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Such concepts may perplex modern observers. However, the example of legal trials involving animals clearly shows the legal and social practices of the pre-modern era often extended beyond what we currently consider conventional. This evolving dynamism in legal and social perspectives also affects intergenerational law. The modern reassessment of the "legal relationship across generations"[227] indirectly confirms that, prior to this transition, the influence of individuals from past generations on contemporary legal outcomes was broadly accepted. However, with the advent of modernity, this influence came to be viewed as increasingly inappropriate.

In other words, the transition to modernity also affected the range of actors in society. In the same years the temporal structures of society were being recalibrated, another radical and profound change took place, narrowing the range of socially significant actors to merely human beings of the present. The emergence of "the scientific revolution, the political Enlightenment, the dominance of methodological individualism, and psychological and sociological theories"[228] led to the exclusion of animals, plants, ancestors, spirits, gods, and other entities from the circle of recognized actors in society and law.

This Article has previously highlighted how the recalibration of temporal structures impacted law, notably rejecting any intergenerational constraints. This shift towards focusing solely on the present diminished the legal and social relevance of past and future dimension and individuals. Outside their own time—beyond the bounds of their existence—their legal and social significance faded and disappeared. [229]

However, the transition to modernity has further reduced the relevant actors, marginalizing others that used to coexist with humans in the present. This is best illustrated by cold numbers, as in the case of animal trials and excommunication. For instance, in the book The Criminal Prosecution and Capital Punishment of Animals, written by Edmund Evans in 1906,[230] one can observe a significant change in the distribution of cases considered by the author. Evans reported 191 cases of animal prosecution, with the first dating back to 824 and the last to 1906.[231] However, and this is the interesting point, only twelve cases occurred during and after the transition to modernity. In other words, just over six percent of the total number of relevant episodes took place between 1793 and 1906. The percentage climbs to nearly 12% when one account also for instances from the early 18th century.[232] This is a stark contrast to the 34.55% (sixty-six cases) from the 17th century, 26.17% (fifty cases) from the 16th century, and 17.27% (thirty-three cases) from the 15th century.

Summing up, one can say, with the transition to modernity, the once diverse choir of actors has been reduced to a soloist: The actual human being.[233]

[227]GAILLARD, *supra* note 115, at 17.

[228]Gunther Teubner, *Rights of Non-Humans? Electronic Agents and Animals as New Actors in Politics and Law*, 33 J. L. & SOC'Y. 497, 499-500 (2006).

[229]Menga, *supra* note 120, at 196–205 (stressing the pivotal role of presentism in contemporary debate on intergenerational responsibility).

[230]EVANS, *supra* note 217.

[231]*Id.* at 313-334.

[232]*Id.* Interestingly, this trend appears more aligned with the earlier period spanning from 824 A.D. to 1399 A.D., during which Evans identified nineteen examples, accounting for 9.94%. Nevertheless, the notable discrepancy in the availability of historical documents between these periods should not be overlooked. As such, this perceived similarity may also stem from a scarcity of surviving records over those 575 years, rather than a direct historical parallel.

[233]GAILLARD, *supra* note 115, at 408; MAX STIRNER, DER EINZIGE UND SEIN EINGENTUM 157 (2005) (emphasis in italics referring to the original German text added):

> the 'God-Man' stands at the gateway to modernity [*neuen Zeit*] [. . .] When the Enlightenment's mission to overcome God was triumphantly completed [. . .] it went unnoticed that man had eliminated God [and other actors] to ascend as the 'sole deity above'. The beyond us [*Das Jenseits außer uns*] has indeed been eradicated, fulfilling the Enlightenment's grand ambition; yet, the beyond within us has transformed into a new heaven, urging us toward further celestial achievements. God was compelled to yield, but not to us, rather to humanity itself. *Id.* (author's translation).

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2. Beyond Correlation: Acknowledging the Intrinsic Bond Between Future Generations and Temporal Structures.

From these brief insights, it can be assumed the existence of some sort of connection between the range of legally significant actors and the conformation of temporal structures.

At the same time, it seems difficult to distinguish the beginning of this relationship. In a modern version of the "Hamletic dilemma" of whether the chicken or the egg came first, one would have to ask whether the actors disappeared first and the temporal dimensions later, or whether the opposite happened. One might wonder whether the temporal structure that housed those actors disappeared, causing them to asphyxiate, or whether the disappearance of all non-present-human actors emptied them, rendering them "useless."

In any case, by assuming this connection as valid, it is possible to suggest an explanation for the "opposite" phenomenon that has been developing in recent years. Namely, that the expansion of contemporaneity towards the future created the space for future generations to become an effective, relevant actor in law, freeing them from the ether of morality in which they had hitherto been confined.[234]

Expanding on Boyle's initial experiment, it can be asserted that, before the tangible manifestation of the climate crisis, society predominantly focused on the present, leaving the future unheard and relegated to a void. However, since the early 2000s, the growing acceptance of climate science has metaphorically acted as a pump, infusing substance into the once-empty bell of the future. This expansion notably amplifies the voices of future generations, creating a crescendo of sound within it.

This substantial shift in society's relationship with the future is evident in the surge of climate litigation. The broadening of the medium has facilitated the acknowledgment and scrutiny of requests for protection for future generations. Over the years, discussions have emerged, delving into the rights, interests, and legal considerations relevant to these future generations, initiating a refinement of their legal position.

In essence, the climate crisis functions as a metaphorical pump, creating a distinct "context" where the claims of these "voiceless" can finally be heard by society.

E. Conclusion

The social legitimization of climate science has led to disruptive consequences. The ongoing recalibration of the social operating perimeter has also brought about significant changes in the legal world. Changes that can be read as different symptoms of related and connected processes. The centrality of climate science, the problematization of temporal structures and the widening of the spectrum of relevant actors all manifest a propulsive thrust towards different legal responses than in the past.

Navigating within an expanded contemporaneity gives rise to the contentious emergence of the legal relevance of the future, prompting a reassessment of traditional balances. This imperative is currently undergoing scrutiny, as evidenced by the ongoing discourse surrounding the renewed importance and operational vitality attributed to future generations. The gradual process of their legal personification stands as a symbolic marker in this direction.[235]

Yet, within the realm of legal reasoning, there remains a more speculative and hypothetical terrain—one that is nonetheless pivotal. Historical experiences suggest these substantial changes

[234]LUHMANN, *supra* note 67, at X-Xi ("Communication can nevertheless be moralized as long as victims can be identified. This has induced the opponents of such risks to bring the *topos* 'future generations' into play.").

[235]*See generally* MONTEROSSI, *supra* note 147; GAILLARD, *supra* note 115, at 419-423; Gruber, *supra* note 117, at 266–270; Gruber, *supra* note 14, at 32–35; *See* Monterossi, *Liability for the Fact of Autonomous Artificial Intelligence Agents. Things, Agencies and Legal Actors*, 20 GLOB. JURIST 1, 12 (2020) (stressing the instrumental role of legal subjectivity during disruptive transformations).

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might not only be surface level but could potentially result in profound structural and systemic shifts. This speculative notion holds particular significance in today's legal landscape, urging a judicious broadening of the analytical perspective on ecological transition and future generations. This expanded viewpoint lays the foundation for a more flexible and comprehensive systematization of legal debates in this context.

The trajectory toward recognizing an intergenerational law appears poised to become a persistent and somewhat contentious fixture in legal discourse. However, any enthusiasm stemming from this prospect must be judiciously tempered. The ongoing and impassioned debate on the subject underscores the yet undetermined final outcome of this transitional phase. Simultaneously, it is imperative to eschew the reassuring illusion that the mere adoption of new legal actors, temporal structures, and an intergenerational law could serve as a panacea for the entirety of legal challenges. Conversely, such decisions are likely to engender novel and thought-provoking issues.

In other words, should this transition be embraced, an array of challenges is likely to manifest. The envisaged profound paradigm shift carries the potential to set off a cascading impact, influencing virtually every level and facet of the legal system. The intricacies and ramifications of such a transformation necessitate meticulous consideration and nuanced navigation through the complex interplay of legal, social, and ethical dimensions.[236]

In light of these premises, the analysis proposed in this Article carries the potential for ambiguity, with outcomes that may lead to rejection or, in the event of adoption, possibly engender more intricate problems than it seeks to resolve. In essence, the speculative cure might prove worse than the disease itself.

Nevertheless, this speculative proposal could also serve as the inaugural step toward addressing a profound shift, offering initial support to alleviate the overarching embarrassment[237] characterizing the contemporary relationship between law and future generations. Perhaps, having overcome the initial shock resulting from the demolition of old certainties, the law will realize that only now that "[t]he roof has burnt down, [it will be possible] to see the moon."[238]

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[236]GAILLARD, *supra* note 115, at 416.

> When a new paradigm is emerging, there is a necessary reorganization of present normative forces. Whether or not the new paradigm replaces the former, a new expansion of dynamic and of normative creations is put into motion. The traditional concepts, notions and principles are renewed, and other, new ones become conceivable. New logics progress in turn, allowing new solutions to be designed and implemented by all legal players. *Id.* (author's translation).

[237]The concept of 'legal embarrassment', in its original context, is used by Malte-C. Gruber in describing the doctrine's efforts to define legal capacity, *see* Malte-C. Gruber, *Legal Subjects and Partial Legal Subjects in Electronic Commerce*, *in* NEW APPROACHES TO THE PERSONHOOD IN LAW ESSAYS IN LEGAL PHILOSOPHY 67, 68 (Tomasz Pietrzykowski and Brunello Stancioli eds., 2016).

[238]Misuta Masahide, LUCIEN STRYK & TAKASHI IKEMOTO, ZEN POETRY: LET THE SPRING BREEZE ENTER 104 (1995) (describing a Haiku, that is an unrhymed poem consisting of 17 syllables arranged in three lines of five, seven, and five syllables, respectively); *See generally* Gruber, *supra* note 14, at 32-39 (outline possible 'further advancements of law' in this new de-anthropocentralised context).

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