# The Path Towards a New Paradigm: Sustainability as the Transformative Axis in Contemporary Law

**How to cite this article [Chicago]:** Becerra, Dayana, y Fabián Cárdenas. "The Path Towards a New Paradigm: Sustainability as the Transformative Axis in Contemporary Law." *Novum Jus* 19, no. 1 (2025): 267-291. https://doi.org/10.14718/NovumJus.2025.19.1.10.

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Código: 899906782 • Autor: istockphoto.com

https://doi.org/10.14718/NovumJus.2025.19.1.10

# The Path Towards a New Paradigm: Sustainability as the Transformative Axis in Contemporary Law*

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**Received:** July 3, 2024 | **Evaluated:** October 7, 2024 | **Accepted:** October 10, 2024

## Abstract

This paper analizes both the role and the transformative process of the two dominant paradigms of juridical sciences. Initially, the insufficiency of the paradigm of formal-bourgeois Law, generated in a context of crisis that led to its gradual displacement by the paradigm of the social rule of law, is addressed. Subsequently, the study focuses on the paradigm of the social rule of law, which happens to be inadequate to face contemporary environmental challenges, particularly in the context of climate change. To that end, it is reflected on the environmental crisis and its effects on juridical paradigms, highlighting the incapability of the current paradigm to offer effective solutions. Because of this lack of capacity, the notion of sustainability is introduced as a possible paradigm that has its foundation in the satisfaction of the needs of present generations without compromising the needs of future generations, as well as the issue of its specific legal role. Ultimately, this paper explores the potential of sustainability to transform juridical sciences, suggesting the existence of an inherent, sustainable law as the appropriate response to the environmental crisis demanding a shift of paradigms. This study is based on Kuhn's theory of paradigms, which is applied to law to demonstrate how historical crises have boosted paradigm changes.

**Keywords**: Sustainability; juridical paradigms; environmental law; environmental crisis; legal theory; paradigms shifting.

* This paper presents the results of the research project: A View to Law from Sustainability, developed by the research group on Economic Law from the Faculty of Law at Pontificia Universidad Javeriana (Bogota, Colombia).

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https://doi.org/10.14718/NovumJus.2025.19.1.10

# El camino hacia un nuevo paradigma: la sostenibilidad como eje transformador en el derecho contemporáneo

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**Recibido:** 3 de juliuo de 2024 **| Evaluado:** 7 de octubre de 2024 **| Aceptado**: 10 de octubre de 2024

**Resumen**

Este artículo analiza el rol y proceso de transformación de dos de los paradigmas predominantes en las ciencias jurídicas. Inicialmente se aborda la insuficiencia del paradigma del Derecho formal-burgués, generado en un contexto de crisis que llevó a su gradual desplazamiento por el paradigma de Estado Social. Posteriormente el estudio se enfoca en el paradigma del Estado Social, el cual resulta actualmente inadecuado para enfrentar los desafíos ambientales contemporáneos, especialmente en el contexto de cambio climático. Para tal efecto, se reflexiona en torno a la crisis ambiental y sus efectos en los paradigmas jurídicos, destacando la incapacidad actual de ofrecer soluciones a la crisis ambiental. Como consecuencia de esta insuficiencia, se introduce la noción de sostenibilidad como un posible paradigma que tiene su fundamento en la satisfacción de las necesidades de las generaciones presentes, sin comprometer los requerimientos de las generaciones futuras, así como el cuestionamiento de su rol en el derecho. Finalmente, el artículo explora la potencialidad de la sostenibilidad para transformar las ciencias jurídicas, sugiriendo un derecho inherentemente sostenible como respuesta a la crisis ambiental que exige un cambio de paradigma. Este estudio se fundamenta en la teoría de paradigmas de Kuhn, aplicada al derecho, mostrando cómo las crisis históricas han impulsado cambios paradigmáticos.

**Palabras clave**: sostenibilidad; paradigma jurídico; derecho ambiental; crisis ambiental; teoría del derecho; cambio paradigmático.

## Introduction

The modern legal tradition on which the current legal institutions are still largely based is intricate in the paradigm of the liberal state, which in turn is composed of different theories in various areas of legal knowledge, ranging from theories that employ diverse criteria in which rationality predominates and the development focused on the wealth of nations, economic freedoms or heterogeneous positions of a positivist, utilitarian, formalist, interpretive or sociological order, within a diverse range of theoretical proposals that permeate law.

This paradigm of a liberal state is based in a variety of ways on the ideals of the Rule of Law, as well as on the aspirations of freedom and equality. For their part, these legal ideals are developed within said paradigm based on the imperative of private property, development needs, the free market, the maximization of resources, and economic efficiency, among others. However, this paradigm of the liberal state has begun to show its insufficiency, particularly when we live in a contemporary historical context marked by a profound environmental crisis.

The magnitude of the crisis is such that it has surpassed the capacities of environmental law and environmentalists to become a matter of common ethics. The report of the Intergovernmental Panel on Climate Change (IPCC)[1] has concluded that there is no doubt about the adverse impact that humans have had on climate change. Humanity has it in its hands to reverse the harmful conditions that are leading to its extinction. The undesirable limit of an increase of 1.5C° in the global average temperature will be reached with current rates by the year 2040. Therefore, a 'net zero' must be achieved—that greenhouse gas (GHG) emissions do not exceed those collected—precisely by 2040. However, the current paradigms are not enough, it is necessary for science as a whole to organize itself in pursuit of this global problem.

One of the most pressing environmental issues is climate change, alongside the crucial protection of water resources. Addressing international watercourses reveals that states' sovereignty extends beyond borders as rivers traverse multiple states. This requires legal studies for shared environmental preservation and interstate water

[1] Intergovernmental Panel on Climate Change (IPCC), Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, eds. Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou, (Cambridge University Press, 2021).

management. Ecological protection aims to meet vital human needs and prevent political conflicts over shared resources, with recent advances in international law aiding protection and administration through soft law and treaties.[2] This situation demonstrates the challenges faced by the current paradigm of law, especially international environmental law.

The difficulty of the prevailing paradigm in confronting the serious planetary environmental crisis has contributed to the emergence of the dominant discourse of sustainability that seeks to provide solutions to environmental challenges.[3] This notion seeks to ensure that present generations satisfy their needs, without future generations being impeded from the possibility of also satisfying theirs.[4] However, its nature as a concept, approach, perspective, criterion, principle, rule, or obligation is still being discussed,[5] as well as the place it occupies in legal sciences.[6]

Therefore, it is necessary to analyze its implications, the way in which it has permeated law and the impact on the paradigm of the liberal state. The aim of this paper is to establish whether sustainability has ceased to be a concept with intrinsic value within environmental law, to achieve transformative effects in legal science. Taking as a perspective that this research invites to no longer refer to sustainability in law but to a law that seeks to be inherently sustainable, the following research question was proposed: How could the discourse of sustainability be transformed and consolidated in the emerging paradigm of juridical sciences?

2 Dayana Becerra, "International Watercourses: Between the Division and the Border Unit," in *Frontiers – Law, Theory and Cases*, ed. Dimitri Endrizzi et al. (Springer International Publishing, 2023).

3 A detailed genesis of sustainability as a concept can be found in Fabián Cárdenas and Valeria Nieto, "La sostenibilidad en el derecho internacional y las relaciones internacionales: lectura crítica desde el Tercer Mundo a la naturaleza y contenido intencionalmente indeterminados del desarrollo sostenible," in *Sostenibilidad y Derecho: Discursos de protección ambiental desde el derecho internacional para la transformación de las ciencias jurídicas*, ed. Fabián Cárdenas and Dayana Becerra (Tirant lo Blanch, Pontificia Universidad Javeriana, 2025).

4 United Nations, "Report of the World Commission on Environment and Development: Our Common Future (Brundtland Report)," in *A/42/427* (UN General Assembly, 1987). https://undocs.org/es/A/42/427

5 Hernando Gutiérrez Prieto, Idilkó Szegedy-Maszák, and Francisco José González, "Law and sustainable development a preliminary approach," in *Rethinking the Colombian Path to sustainable development: Anthology of essays dedicated to discuss new tendencies of Theory and practice regarding sustainable development in Colombia* (Pontificia Universidad Javeriana, 2008); Diego Uribe Vargas and Fabían Augusto Cárdenas Castañeda, *Derecho Internacional Ambiental*, 1st ed. (Universidad Jorge Tadeo Lozano, 2010).

6 A complete discussion on the impact of sustainability in law can be found in Fabián Cárdenas and Dayana Becerra, *Sostenibilidad y Derecho: Discursos de protección ambiental desde el derecho internacional para la transformación de las ciencias jurídicas*, ed. Fabián Cárdenas and Dayana Becerra (Tirant lo Blanch, Pontificia Universidad Javeriana, 2025).

This research is theoretical-conceptual since it addresses the conceptualization and theoretical positions of sustainable development, with the purpose of defining through analysis the role it has in legal science and its classification in the theory of law, whether as a principle, customary rule,[7] or legal paradigm.

This research uses the analytical method to separate the parts or elements of the compiled and observed data, to understand its nature, causes, and effects. Qualitative data on documentary sources (analysis of written records, such as doctrine, regulations, and legal instruments) are oriented to obtain information through the selective, illustrated, and interpretive perception of sustainable development and its impact as a paradigm. The modality of the method is "direct documentary observation," compiling data directly through systematized collection records.

Regarding the research phases, this project is firstly exploratory, and secondly explanatory. Exploratory since it develops a research problem that has been little addressed from the perspective that is proposed, especially in terms of the characteristics, components, and transformations of sustainable development today and complying with the closest environmental challenges. The explanatory nature of the research seeks to achieve an understanding of the phenomenon studied, from the possibility that sustainable development is structured as a paradigm of law.

## The Notion of Paradigm

The notion of paradigm has been developed from epistemology and has had undoubted applicability in legal sciences. Therefore, the analysis advanced here begins with what is stated by Kuhn who argues that paradigms are "universally accepted scientific achievements that for some time provide models of problems and solutions to a community of professionals."[8] In this sense, paradigms achieve their position because they are successful in solving the problems scientists consider urgent.[9]

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7 On the complexities of customary law vs. other legal sources for the sake of the understanding of sustainability's legal nature see, Fabián Cárdenas, "¿Un caso de "volver al futuro"?: Las Conclusiones sobre la Identificación del Derecho Internacional consuetudinario de la Comisión de Derecho Internacional de la ONU," *Vniversitas* 69 (2020), https://doi.org/10.11144/Javeriana.vj69.cvfc; Fabian Cárdenas and Oscar Casallas, "Una gran medida de 'opinio juris' y práctica estatal al gusto: ¿la receta de la costumbre internacional contemporánea?" *Anuario Colombiano de Derecho Internacional* 8, (2015), https://doi.org/10.12804/acdi8.1.2015.03

8 Thomas Kuhn, *La estructura de las revoluciones científicas*, trans. Carlos Solís, 2nd ed. (Fondo de Cultura Económica, 2004), 14-15.

9 Kuhn, *La estructura de las revoluciones científicas*, 58.

Kuhn's theory is based on the figure of the scientific paradigm, indicating science is not the constant and cumulative acquisition of knowledge, but rather a series of peaceful interludes punctuated by intellectually violent revolutions.[10] A paradigm is then a sum of theories, standards, and methods that guide scientists during interludes.[11] This theory generates a different way of seeing the history of science, not in a cumulative or positivist way because a theory is never purely and simply 'wrong.' It is replaced, many times, not because it is false, but because a better one emerges, with optimal explanatory power. Furthermore, the paradigms cannot be compared, since they are different and 'incommensurable' worldviews.[12]

Kuhn's model can be understood as a cycle of construction of new knowledge, composed of three stages. The first, 'immature science,' is a series of schools of thought that do not become science because they do not have an accepted paradigm. The second stage, 'normal science,' ensures that scientists solve problems in response to which devices are developed to exhaust the field of research. It is at this stage that we can talk about the existence of paradigms. In the third stage, 'extraordinary science' accumulates anomalies or problems that have no solution considering the accepted paradigm. Therefore, dissatisfaction spreads and gives rise to a crisis, which leads research to reorganize new concepts and methods. Thus, a revolution occurs with alternative paradigms, and when a resolution is generated, a new paradigm emerges.[13]

[10] Thomas S Kuhn, "Second thoughts on paradigms," *The structure of scientific theories* 2 (1974). Thomas Nickles et al., *Thomas Kuhn*, ed. Thomas Nickles (Cambridge University Press, 2003).

[11] Nicholas Wade, "Thomas S. Kuhn: Revolutionary Theorist of Science," *Science* 197, no. 4299 (1977): 144, http://www.jstor.org/stable/1744812

[12] Luiz Paulo Rouanet, "El paradigma Rawls-Habermas: una defensa," *Politeia* 35, no. 49 (2012): 162, https://www.redalyc.org/articulo.oa?id=170029498006.
Central to the theory is identifying paradigms and their recognition criteria, Montgomery highlights Kuhn's view on paradigm incommensurability, suggesting that paradigm battles are not won with evidence alone. Competing paradigm proponents operate in different realms, reflecting divergent worldviews rather than empirical superiority. Tom Montgomery, "Are Social Innovation Paradigms Incommensurable?," *Voluntas: International Journal of Voluntary and Nonprofit Organizations* 27, no. 4 (2016): 1983, http://www.jstor.org/stable/43923264

[13] Juan Manuel Jaramillo, Luz Adriana Duque, and Omar Díaz Saldaña, *Thomas Kuhn* (Universidad del Valle, 1997), 20-ss.

For Percival,[14] Kuhn's theory of paradigms[15] has been widely used by social scientists,[16] based on the historical conception of science as an alternation of periods with revolutionary ruptures. The originality of the approach consists in the revolutionary upheavals that occur in the sciences. In line with the above, in the field of the science of knowledge, it is Popper[17] who develops his theory of progress in human knowledge, which consists of clearly stating the problems, always venturing new hypotheses, and consciously subjecting them to criticism through examination of critic solutions.[18]

Popper, from a critical perspective of Kuhn's scheme, considers that scientific rationality is reduced to normal science, to the extent that conventions supported by consensus prevail, so there is no rational argumentation due to the absence of criticism. Kuhn at the same time denies that rational argumentation is possible in that sector in which for Popper the idea of critical rationality should be feasible, that is, in periods of paradigm crisis. This is a confrontation of two different criteria in their scientific rationality: One logical, based on methodological rules, and the other historical-sociological, based on consensus. Popper believes that scientists are not prisoners of the paradigmatic framework since they can leave it whenever they want.[19]

In line with this, Jalladeau[20] affirms that in Anglo-Saxon literature, Kuhn's work appears as a revelation, in which contemporary scientists frame the analysis in

14 W. Keith Percival, "The Applicability of Kuhn's Paradigms to the Social Sciences," *The American Sociologist* 14, no. 1 (1979): 28-31, http://www.jstor.org/stable/27702355

15 Thomas Kuhn, *The structure of scientific revolutions: with an introductory essay by Ian Hacking*, 4th ed. (The University of Chicago Press, 2012).

16 Stephen G. Brush, "Thomas Kuhn as a Historian of Science," *Science & Education* 9, no. 1 (2000), https://doi.org/10.1023/A:1008761217221; James A Marcum, *Thomas Kuhn's revolution: An Historical Philosophy of Science* (University Chicago Press, 2005); N. Sidorova, A. Zeldner, and V. Osipov, "The Paradigm of Law: In Honor of Thomas Kuhn," *Advances in Economics, Business and Management Research, International Scientific Conference "Far East Con"* (ISCFEC), (2020), https://doi.org/10.2991/aebmr.k.200312.090; Cathleen Loving and William Cobern, "Invoking Thomas Kuhn: What Citation Analysis Reveals about Science Education," *Science & Education* 9, no. 1 (2000), https://doi.org/10.1023/A:1008716514576; Joseph Rouse, "Recovering Thomas Kuhn," *Topoi* 32, no. 1 (2013), https://doi.org/10.1007/s11245-012-9143-x

17 Karl Popper, *La lógica de la investigación científica* (Tecnos, 1980).

18 Gregorio Delgado, "Reseña de Karl Popper, La lógica de la investigación científica, 2ª reimpresión, trad. de Víctor Sánchez de Zavala, 1 vol. de 451 págs., Ed. Tecnos, Madrid, 1971," *Ius Canonicum* 12, no. 24 (1972): 341, https://doi.org/10.15581/016.12.22051

19 Carlos B. Gutiérrez, "La historicidad de la ciencia a propósito de la controversia de Thomas Kuhn y Karl Popper (1978)," in *Obras reunidas. Ensayos en clave hermenéutica*, ed. Santiago Rey Salamanca (Universidad de los Andes, 2019), 115.

20 Jalladeau Joël and W. E. Kuhn, "Research Program versus Paradigm in the Development of Economics," *Journal of Economic Issues* 12, no. 3 (1978): 583-608, http://www.jstor.org/stable/4224719

terms of 'paradigm' and 'scientific revolution,' to illuminate the historical development of their sciences. However, under the impact of Popperian and Kuhnian interpretations, an intermediate thesis has been generated: the so-called 'scientific research programs' suggested by Imre Lakatos.[21]

## Paradigms in Juridical Sciences

The previous references on the notion of paradigm are conducive to the analysis of legal reality, which comes from different historical contexts, that is, from the affirmation of various scenarios of "normal science" or paradigms, which are reevaluated, giving scope to the formation of "extraordinary science." The most relevant paradigms of legal science are referenced below, generated in crisis scenarios, in which the previous paradigm failed to resolve, or resolved insufficiently.

### Paradigm of Formal Law-Bourgeois

In the field of juridical sciences there have been different paradigms, among them is that of formal-bourgeois law,[22] which "presents us with a society structured in terms of private law. Starting from the assumption of the autonomy of the subjects, the law comes to delimit and protect spheres of freedom."[23] Kant structures this paradigm around will, as "a kind of causality of living beings insofar as they are rational, and freedom would be the property of this causality by which it can be efficient independently of external causes that determine it."[24] This paradigm rests on the formalism of the rationality of law. This corpus allows us to see the law as an orderly, unitary, and predictable set of rules that translate into legal security.[25]

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21 On this regard, Mark Blaug, "Kuhn versus Lakatos, or Paradigms versus Research Programmes in the History of Economics," *History of Political Economy* 7, no. 4 (1975): 399-433, https://doi.org/10.1215/00182702-7-4-399; Imre Lakatos, "History of science and its rational reconstructions," in *PSA: Proceedings of the biennial meeting of the philosophy of science association* (D. Reidel Publishing, 1970).

22 The bourgeois-formal law is built upon the defense of private autonomy, civil rights or subjective freedoms of action, and public autonomy, political rights or public freedoms. José J Jiménez Sánchez, "Una genealogía de los derechos humanos," *Derechos y libertades: Revista del Instituto Bartolomé de las Casas* 8, no. 12 (2003), http://hdl.handle.net/10481/30749
Carl Schmitt's legal theory contrasts decisionism and normativism. Normativism prioritizes abstract, general rules over specific circumstances and intentions, emphasizing rationality and generality in law. Renato Cristi, "Hayek, Schmitt y el Estado de Derecho," *Revista Chilena de Derecho* 18, no. 2 (1991): 189-201, http://www.jstor.org/stable/41608878

23 Danie Dodds Berger, "Paradigmas del derecho, reflexión y ciencias sociales," *Derecho y Humanidades*, no. 18 (2011), https://derechoyhumanidades.uchile.cl/index.php/RDH/article/view/19466

24 Immanuel Kant, *Fundamentación de la metafísica de las costumbres* (Greenbooks, 2021), 26.

25 Berger, "Paradigmas del derecho, reflexión y ciencias sociales," 103.

Closely linked to the law is the position of Adam Smith, who based this paradigm on economics, which revolves around market freedom.[26] Presented as the father of modern economics, Smith is the emblematic author of liberal economic theory or economic liberalism, placing the market at the center of his analysis, but without excluding obstacles to free trade, the intervention of the State to ensure justice and social well-being. His crowning work, the Wealth of Nations, marks a rupture in the economy, said wealth is at its origin, the work of every nation, the fund that provides it with all the needs and comforts of life.[27]

Within the framework of this paradigm, there are theories of normal science; among them, the formulation that Hans Kelsen presents in the pure theory of law stands out:

> [This] is a theory of positive law in general and not of a particular law. It is a general theory of law and not an interpretation of this or that legal order, national or international. It wants to remain a theory and limit itself to knowing its object in a unique and exclusive way. It seeks to determine what law is and how it is formed without asking what it should be or how it should be formed. It is a science of law and not a legal policy.[28]

By structuring his theory as a paradigm, this author attempts to separate law from other sciences, especially politics. But also, sociology, and other normative orders such as morality.[29] The most repeated criticisms of Kelsen are based on his obsession with theoretical purity, which he supports in radical statements and theses with justification difficulties.

Later, contemporary legal philosophy is represented to this day as a controversy between a legal positivism ascribed to Hart's doctrine and a 'non-positivism' led by Hart's successor in his Oxford chair, Ronald Dworkin.[30] The controversy between Hart and Dworkin is observed as a transformation of the prevailing paradigm proposed

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26 Adam Smith, *La riqueza de las naciones* (Editorial Verbum, 2020).

27 Roland Pfefferkorn, "Adam Smith, un liberalismo bien temperado," *Sociedad y economía*, no. 14 (2008): 228, 31.

28 Hans Kelsen, *Teoría pura del derecho*, 3 ed. (Eudeba, 2020), 17-ss.

29 From 1911 to 1960, Kelsen focused on distinguishing legal norms from moral norms, emphasizing normative individualization. He proposed a radical theory in the late 1930s, asserting that ideal legal norms confer powers. In the 1940s and 1950s, he further argued that obligations derive from norms granting powers within the hierarchical structure of the legal order. Paulson Stanley, "La reconstrucción radical kelseniana de la norma jurídica," in *La teoría del derecho de Hans Kelsen* (Universidad Externado de Colombia, 2011).

30 Juan Manuel Pérez Bermejo, "La filosofía moral de Hans Kelsen," *Revista de estudios políticos*, no. 181 (2018), https://recyt.fecyt.es/index.php/RevEsPol/article/view/67579

by Kelsen, which is moderately modified by Hart, but opposite to that proposed by Dworkin,[31] in which the cycle of paradigm formulated by Kuhn can be seen.

The debate between Hart and Dworkin[32] questions whether there should be moral criteria within the process of interpretation of the law that accompanies a fundamental norm or rule of recognition. Dworkin criticizes the theoretical development of Hart's rule of recognition,[33] indicating that theoretical errors can be overcome by proposing possible solutions with the application of interpretive models and basing them on principles.[34]

Hart states in The Concept of Law that his purpose is not to define law, as a rule, according to which the correctness of the use of the word can be tested. Its purpose is to advance legal theory by providing an elaborate analysis of the distinctive structure of a legal system, and a better understanding of the similarities and differences between law, coercion, and morality, as social phenomena.[35]

Subsequently, it can be understood that as a product of normal science that begins to accumulate anomalies, the emergence of critical perspectives begins. Criticisms of Hartian positivism show the presence of moral principles and values in the creation

[31] Dworkin's criticisms of positivist and utilitarian schools serve as a starting point for critiquing legal positivism and liberal political philosophy, advocating a theory that aims not to exclude moral or philosophical reasoning. Ronald Dworkin, *Los derechos en serio*, trans. Marta Isabel Guastavino (Ariel, 2012). See, Ronald Dworkin, "The model of rules," *The University of Chicago Law Review* 35, no. 1 (1967), https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=3553&context=uclrev

[32] Dworkin asserts that the legal system is composed of a type of standard that does not present ideals of social, economic, or political reform, but rather is a requirement of justice, fairness, and another dimension of morality. Manuel Jesús Rodríguez, "Ronald Dworkin y la creación judicial del Derecho," *Anuario de Filosofía del Derecho* (1999): 125, https://revistas.mjusticia.gob.es/index.php/AFD/article/view/1647. See, Claudina Orunesu, "Notas sobre "Dworkin y el positivismo jurídico" de Genaro Carrió," in *Homenaje a Genaro Carrió* (Universidad Externado de Colombia, 2017), 556.

[33] Hart argues that law isn't neutral due to its practical consequences, leading to a methodological approach that undermines positivism, potentially causing its abandonment or self-destruction. María Cristina Redondo, "The Concept of Law. Cincuenta años," Hart; Positivismo jurídico; Relación derecho-moral, *2014*, no. 37 (2014): 123, https://doi.org/10.14198/doxa2014.37.07. See, Jeffrey Goldsworthy, "The Self-Destruction of Legal Positivism," *Oxford Journal of Legal Studies* 10, no. 4 (1990), https://heinonline.org/HOL/LandingPage?handle=hein.journals/oxfjls10&div=32&id=&page=

[34] Julián Darío Bonilla, "Los paradigmas en la teoría jurídica: transformaciones acerca de la interpretación sobre qué es el derecho," *Misión Jurídica* 3, no. 3 (2010): 106, https://doi.org/https://doi.org/10.25058/1794600X.24

[35] Herbert Hart, *El concepto de derecho (1961)*, ed. G. Carrió (trad.) (Abeledo-Perrot, 1998), 13 y 21. Hart's legal theory includes law as a system of primary and secondary rules and inevitable judicial discretion due to law's open textura. María Dolores Pérez Jaraba, "Principios y reglas: examen del debate entre R. Dworkin y H.L.A. Hart," *Revista Estudios Jurídicos. Segunda Época*, no. 10 (2010), https://revistaselectronicas.ujaen.es/index.php/rej/article/view/543

and application of current law.[36] This involves the impossibility of finding in the law characters such as the radical separation between law and morality, the absence of discretion in the actions of the judge, and the law as the only source of law.[37]

Paradigm changes move from positivism to moderate versions of it, and then to the generation of a paradigm based on theories of argumentation. The emergence of these interpretive theories revalues positivism, they turn to the problem of principles thereby generating the confrontation between Hart[38] and Dworkin.[39]

## Paradigm of the Social Rule of Law

Subsequently, with the cycle of decline of the theories that underpin the paradigm of the formal-bourgeois law, the paradigm of the law of the social rule of law came to be formed. This is based on the study of inequality in the enjoyment of rights, since the previous paradigm enabled the right of each person to be able to do or omit whatever they want within the framework of compliance with the laws, under the condition that those laws guarantee equal treatment in the legal-material sense.[40]

At this historical moment, Habermas establishes his theory, under the social demands for transformation, due to the crisis generated by the Second World War, and its implications for humanity and reason. Its purpose is to redefine philosophical and moral traditions, due to the crisis of existing legal paradigms.

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36 José Quirós-Megías, "Analisis de Pedro Serna: Filosofía del derecho y paradigmas epistemológicos. De la crisis del positivismo a las teorías de la argumentación jurídica y sus problemas," *Díkaion* 17, no. 22 (2008): 344, https://dikaion.unisabana.edu.co/index.php/dikaion/article/view/1410/1546

37 Joseph Raz defends central elements of positivist theory, asserting that for conceptual reasons, law should not conceive moral reasoning. Seen: Joseph Raz, *The authority of Law* (Clarendon, 1979); Joseph Raz, *Ethics in the Public Domain: Essays in the Morality of Law and Politics* (Clarendon Press, 1994); Joseph Raz, "Incorporation by Law," *Legal Theory* 10, no. 1 (2004), https://doi.org/10.1017/S135232520400014X Waluchow supports Hart's positivist theories against Dworkin's criticisms by developing inclusive positivism. In this regard, Wil Waluchow, *Inclusive legal positivism* (Clarendon, 1994). Wil Waluchow, "Authority and the practical difference thesis: A defense of inclusive legal positivism," *Legal Theory* 6, no. 1 (2000), https://www.cambridge.org/core/journals/legal-theory/article/abs/authority-and-the-practical-difference-thesis/034F507ECC20FF415AF6AAF2D461CF56

38 Herbert Hart and Tony Honoré, *Causation in the Law*, 2nd ed. (Clarendon, 1985).

39 Ronald Dworkin, *Taking Rights Seriously* (Harvard University Press, 1978); Ronald Dworkin, *A Matter of Principle* (Harvard University Press, 1985).

40 Jürgen Habermas, *Historia y crítica de la opinión pública: la transformación estructural de la vida pública*, 2nd ed. (Gustavo Gili, 1981), 484, cited by: Dodds Berger, "Paradigmas del derecho, reflexión y ciencias sociales," 103.

The study that Habermas conducted in his work: Paradigms of Law,[41] analyzes the social transformation of law.

In this work, Habermas initially establishes the need for a new process of instrumental understanding of law. This is related to the conceptions of social welfare justice, overlapping the liberal model of law. He raises questions regarding the background assumptions that guide the application of law about real and normatively correct society. Habermas notes a transition from the paradigm of bourgeois-liberal and legal-formal law towards the paradigm of the social rule of law.[42]

Therefore, Habermas looks for the potential for rationality in everyday practices and the communicative practice of language and calls it 'communicative rationality.' With this concept, he seeks to reconstruct and explain the processes of social rationalization.[43] Habermas's thought has a practical-political approach. Its practical intentionality is an attempt to guide the path of praxis with an emancipatory purpose, and to rationally guide political action in contemporary societies.[44]

In line with this paradigm, John Rawls formulates his theory of justice as an alternative to utilitarian thinking. Pointing to the moral foundations of economic theory and development economics and laying the foundations for a new vision.[45] In this paradigm, the positions of Rawls and Habermas are associated,[46] which focus on the analysis of central elements of the previous paradigms, such as individual and state autonomy, freedoms, equality, and other individual rights.

41 Habermas, *Historia y crítica de la opinión pública: la transformación estructural de la vida pública*, 771. Arato explains that Habermas's, paradigm concept is understandable within critical theory. It serves as a diagnostic form, involving the rational reconstruction of consciousness to guide action through synthesized theoretical frameworks. Andrew Arato, "Reflexive Law, Civil Society, and Negative Rights," *Cardozo Law Review* 17, no. 4-5 (1996), https://heinonline.org/HOL/LandingPage?handle=hein.journals/cdozo17&div=37&id=&page=

42 Jürgen Habermas, *Facticidad y validez: sobre el derecho y el Estado democrático de derecho en términos de teoría del discurso*, 6th ed. (Trotta, 2010), 469.

43 Pere Fabra, *Habermas: lenguaje, razón y verdad: Los fundamentos del cognitivismo en Jürgen Habermas* (Marcial Pons, 2008), 25.

44 Juan Carlos Velasco Arroyo, *Habermas: El uso público de la razón* (Alianza, 2013), 13.

45 Mauricio Uribe López, "John Rawls y el Paradigma del Desarrollo Humano," in *Pluralismo, Legitimidad y Economía Política. Ensayos Críticos sobre la Obra de John Rawls*, eds. Jorge Iván González and Mauricio Pérez Salazar (Universidad Externado, 2008), 189.

46 There are eclectic views where some of the paradigmatic theories can be considered together as a new paradigm. Rouanet, "El paradigma Rawls-Habermas: una defensa," 172.
He asserts that the combined theory of Habermas and Rawls is a strong candidate to be a paradigmatic theory.

Subsequently, Bobbio,[47] reevaluating previous paradigms, argues against liberalism,[48] as a philosophy of change, as a type of thought that provokes—or potentiates—transformations, that adopts progressive positions capable of breaking with all those factors that tend to immobilize thought and society.[49]

As a transformation of Bobbio's theory, Ferrajoli considers that democracy and legal science have become unsustainable by changing the paradigm of law.[50] Therefore, this transformation, misunderstood by Bobbio and Kelsen, as a result of the post-war, affirms the paradigm of rigid constitutionalism. This paradigm was anchored in the old model of the legislative rule of law, poorly suited to account for the change that the paradigm of the constitutional rule of law entailed. More recently, the concept of the ecological rule of law has taken a step forward in the constitutionalist paradigm shift, from anthropocentrism to ecocentrism. This type of state denotes a broader vision, which encompasses nature and non-human living beings.[51]

An example of the evolution of this paradigm in law is the legal prohibition of aggression as an essential element of the sovereignty of a state,[52] which was the beginning of a new paradigm, the core of which is the peaceful solution of conflicts

47 Bobbio examines the validity of norms, which includes studying the problem of the rule's existence. To judge this validity, a legal examination is necessary, involving the analysis of its legitimacy, effectiveness, and conformity to the appropriate normative hierarchy. Norberto Bobbio, *Teoría general del Derecho* (Temis, 1992), 22; Norberto Bobbio, *Contribución a la teoría del derecho* (Debate, 1990), 315.

48 For Bobbio, liberalism and democracy are the central axis of his theory, from which we can understand the interest in defining it as a reference point for legal science. In this regard: Norberto Bobbio, *Liberalism and Democracy*, ed. Kate Soper (Verso, 2005); Norberto Bobbio, *El futuro de la democracia* (Fondo de Cultura Económica, 1986); Norberto Bobbio, *Estado, gobierno y sociedad: por una teoría general de la política* (Fondo de Cultura Económica, 1989).

49 Luis Antonio Córdoba Gómez, "Liberalismo y democracia en la perspectiva de Norberto Bobbio," *Convergencia* 15, no. 48 (2008): 34, http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1405-14352008000300002&nrm=iso

50 The paradigm established by Ferrajoli stems from a divergence with the prevailing positive law: a divergence that can be reduced but not abolished, allowing us to speak not of a "perfect democracy" but rather of a degree of democracy. Luigi Ferrajoli, "Teórico del derecho y de la democracia," *Revista de la Facultad de Derecho de México de la Universidad Nacional Autónoma de México* 60, no. 253 (2010): 38, https://doi.org/10.22201/fder.24488933e.2010.253.60771. See, Luigi Ferrajoli, *Democracia y garantismo*, Democracia y garantismo, (Trotta, 2013).

51 Gonzalo Aguilar Cavallo, "El Estado ecológico de derecho y el acceso a la información en el Acuerdo de Escazú," *Novum Jus* 18, no. 1 (2024), 360, https://doi.org/10.14718/NovumJus.2024.18.1.12

52 Environmental protection needs also demand transformations in another essential element of state structure: sovereignty. New forms of shared sovereignty over shared water resources develop a new understanding of sovereignty, addressing their shared nature, social dynamics, current resource degradation, and future water conflict challenges. The theories on sovereignty over these resources impact the principles and norms governing their management throughout history. Dayana Becerra, "Teorías aplicables a la protección ambiental de los recursos hídricos compartidos internacionalmente," *Via Inveniendi Et Iudicandi* 17, no. 1 (2022), 144, https://doi.org/10.15332/19090528

between states. Despite this, new armed confrontations arose in the world, which caused the international community to understand the need to regulate to avoid repeating the atrocities seen in the past.[53]

From the previous not exhaustive tour of the main paradigms of legal science and the theories of the most prominent authors who developed them, the historical nature of legal transformations driven by crisis situations can be observed, this is an example to identify the transformative potential that the current environmental crisis represents for law.

## The Environmental Crisis and Its Effects on Paradigms

The previous paradigms have in common that in crisis situations the anomalies in the legal postulates are palpable, which requires solutions to new problems. The current environmental crisis can be understood as an unprecedented problem.[54] The implications of environmental breakdown, despite the multiple political debates about the negative impact of human activity on the environment, focus on a limited understanding of the consequences for societies and economies.[55]

In the face of the environmental crisis, Douglas asserts that the survival of our species requires a transformative change in the way we relate to and care for the ecosystems on which survival and well-being depend. We are going backward, entering an eco-catastrophe, and we have succumbed to the psychological defense of denial. A change in mentality and the governance of the human economy will be necessary to rescue us.[56] Ecosystem services, emerging with environmentalism and concern for finite natural resources, have always benefited individuals and ecosystems. As development strains natural resources, protection and preservation gain importance through technological, scientific, social, anthropological, and

53 Manuel Francisco Pardo Ballesteros, "Cláusula Martens: una oportunidad para la protección del ambiente en los conflictos armados," *Novum Jus* 15, no. Especial (2021): 167, https://doi.org/10.14718/NovumJus.2021.15.E.4

54 Current environmental issues are diverse, with climate change being the most serious challenge. Despite over 20 years of multilateral negotiations and numerous warnings, global leadership has failed to develop solutions to resolve the climate crisis. Vishwas Satgar, "The climate crisis and systemic alternatives," in *The Climate Crisis*, ed. Vishwas Satgar, South African and Global Democratic Eco-Socialist Alternatives (Wits University Press, 2018).

55 Laurie Laybourn-Langton, Lesley Rankin, and Darren Baxter, "The implications of environmental breakdown," in *This is a crisis* (Institute for Public Policy Research (IPPR), 2019), 16.

56 Bob Douglas, "Transforming human society from anthropocentrism to ecocentrism: Can We Make It Happen in Time?," in *Health of People, Places and Planet*, ed. Colin Butler, Jane Dixon, and Anthony Capon, Reflections based on Tony McMichael's four decades of contribution to epidemiological understanding (Australian National University Press, 2015), 607.

economic solutions. Effective ecosystem service strategies must transcend economic behavior, emphasizing sustainability and inclusive approaches involving the state, citizens, and private sectors in education, social awareness, legal strategies, and public policies.[57]

An example of the evolution of paradigms in different areas of law around the environmental crisis is presented by Silva[58] when he states that from a fairly critical perspective, novel theoretical bets have been postulated, for example from the criminology of the Global South, referring to the classification of the subjects and actions that can be reported and intervened as a crime, among them, and recently there has been an attempt to develop a green criminology, committed to the environment.

Another exemplary case of the impact of the environmental crisis in the field of human rights is the notion of environmentally displaced persons that has been generated by the increase in adverse environmental conditions in recent years.[59] Even in the Andean Charter for the Promotion and Protection of Human Rights, there are three migration situations. Among these is migration due to internal displacement, in which people have to leave their homes without crossing the border to another country, for different reasons, including natural disasters.[60]

In the same illustrative manner, citizenship, a key concept in the current legal paradigm, is evolving due to the environmental crisis. Becerra[61] highlights that ecological citizenship, impacting globally, transcends national boundaries. Historically dynamic, modern citizenship evolved from medieval bourgeois to inclusive forms in the nineteenth and twentieth centuries. Today, globalization fosters post-national and global citizenship, addressing transnational environmental issues like climate

57 Dayana Becerra, "Los recursos hídricos compartidos internacionalmente desde la óptica de los servicios ecosistémicos," in *Menciones legales de los servicios ecosistemicos: en el ámbito nacional e internacional*, ed. Clara Minaverry (Editorial Universidad nacional de Luján, 2022), 143-145.

58 Germán Silva García et al., "Abrir la caja de Pandora: Retos y dilemas de la criminología Colombiana," *Novum Jus* 15, no. Especial (2021): 400, https://doi.org/10.14718/NovumJus.2021.15.E.15

59 Colombian Constitutional Court. T-123 of 2024. This case marks a milestone by recognizing internal displacement due to environmental causes, including those associated with climate change. It called on the State to fill legal gaps to protect victims of this form of displacement, which has been increasing recently.

60 Jorge Ricardo Palomares García et al., "Proteger a quien migra: la aplicación de la Carta Andina para la promoción y la protección de derechos humanos en caso de migración," *Novum Jus* 17, no. 3 (2023): 348, https://doi.org/10.14718/NovumJus.2023.17.3.12

61 Dayana Becerra, "Derecho Internacional para la Protección de los Recursos Hídricos Compartidos en el Amazonas: Nuevas Dinámicas de Ciudadanía Ecológica, Bienes Comunes, y Soberanía," *Fronteiras: Journal of Social, Technological and Environmental Science* 11, no. 1 (2022): 141-142, https://doi.org/10.21664/2238-8869.2022v11i1

change and pollution, driving citizen transformation towards sustainability, and giving rise to concepts such as ecological citizenship.

The ecological crisis that the world is currently facing forces us to generate a paradigm shift to seek a viable solution, that aims to guarantee the ownership and protection of rights to nature, from the conception that man is not apart from nature; on the contrary, he is one of the elements that makes it up.[62]

Although the identification of the various environmental problems is not recent, as is the search for their solution, and this has led to the creation of numerous theoretical proposals that aim to respond to the needs of environmental protection, these have not been able to gain a foothold even as a prevailing paradigm.

## Sustainable Development versus the Current Paradigm

The concept of sustainable development emerged with the report makes it up Our Common Future, prepared by the World Commission on Environment and Development.[63] The Report argues that boosting the economy, protecting natural resources, and guaranteeing social justice are not competing objectives, but rather interwoven and complementary. A healthy environment, provides the economy with essential natural resources.[64] Sustainability goes beyond the relationship between economy and nature, it enables a global communicative network of heterarchical solutions to conflicts, to maintain a global society with a healthy environment, based on the principle of justice-sustainability.[65]

Likewise, a prosperous economy, in turn, allows society to invest in protecting the environment and avoiding injustices such as poverty. Maintaining justice, by promoting freedom of opportunity and political participation, for example, ensures that natural resources are well managed, and economic gains are fairly allocated.[66]

[62] Valentina Guio Barreto and Laura Victoria Moreno González, "La Naturaleza como sujeto de derechos en el constitucionalismo democrático," *Novum Jus* 17, no. 3 (2023): 458, https://doi.org/10.14718/NovumJus.2023.17.3.16

[63] United Nations, "Report of the World Commission on Environment and Development: Our Common Future (Brundtland Report)."

[64] David Victor, "Recovering Sustainable Development," *Foreign Affairs* 85, no. 1 (2006): 91, https://doi.org/10.2307/20031845

[65] Germano Schwartz, Leonel Severo Rocha, and Bernardo Leandro Carvalho Costa, "Constitucionalismo intersistémico, Constitución y derechos fundamentales: entre teoría constitucional y sociología jurídica," *Novum Jus* 17, no. 3 (2023), 121, https://doi.org/10.14718/NovumJus.2023.17.3.4

[66] Victor, "Recovering Sustainable Development," 91.

Sustainable development has been the subject of multiple analyses, studies, and explanations that conceptualize it in various ways, as a principle, customary rule, economic strategy, and even as a discourse or paradigm.[67]

The concept of sustainable development, according to Barstow and Hawk,[68] has evolved considering the relationships between economic and social development and environmental protection—including human rights. Its adoption and central content evidence a profound change in society's relationship with the economy and the environment. Although the international community considers it the general framework for improving the quality of life, there are important disagreements about its meaning and implications.

Gutiérrez lists and compares sixty-two different concepts and definitions referring to sustainable development, looking for an area for its application, and finding that this could be useful to achieve an international consensus. But he still leaves urgent questions open such as whether it is a notion that allows us to successfully confront global problems, or whether it has enough force to move people to action.[69] The interpretation of the concept of sustainable development is multiple and this affects its high level of uncertainty.[70]

Faced with the environmental crisis, legal science must take on the challenge of providing solutions to the most complex problems. The Sustainable Development Solutions Network[71] affirms that a compelling framework is needed to mobilize

[67] Regarding its contradictory origin and purpose see, Fabián Cárdenas, Daniel Pardo, and Diego Barrera, "¿De dónde viene ese derecho internacional? La implantación de creencias de inversión extranjera y protección ambiental en Latinoamérica," *Vniversitas* 72 (2023), https://doi.org/10.11144/Javeriana.vj72.dvdi See also, Fabian Cárdenas, Estudio introductorio. ¿De dónde viene ese derecho internacional?, in *El Derecho Internacional como un sistema de creencias*, ed. Jean d'Aspremont (Ibañez, Pontificia Universidad Javeriana, 2024).

[68] Daniel Barstow Magraw and Lisa Hawk, "Sustainable Development," *The Oxford Handbook of International Environmental Law*, no. 6 (2008), https://doi.org/10.1093/oxfordhb/9780199552153.013.0026

[69] Gutiérrez Prieto, Szegedy-Maszák, and González, "Law and sustainable development a preliminary approach."

[70] Thomas Gladwin, James Kennelly, and Tara-Shelomith Krause, "Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research," *The Academy of Management Review* 20, no. 4 (1995), https://doi.org/10.2307/258959. The authors examine the meaning and requirements of sustainable development. They evaluate the conventional paradigm of "technocentrism" and its opposite, "ecocentrism," and propose a new integrative paradigm of "sustain-centrism," concluding that its implications can transform the theory and research of sustainable development management.

[71] The Sustainable Development Solutions Network was created by the United Nations Secretary-General to promote sustainable development as a platform where global scientific and technological knowledge converge. Network Sustainable Development Solutions, "A Framework for Sustainable Development," *Sustainable Development Solutions Network*, (2012). http://www.jstor.org/stable/resrep16082

all stakeholders, explain the challenges, focus operational action at the right scale, and form a basis for a real international partnership.[72]

Consequently, the challenges for legal science in the face of the environmental crisis involve analyzing how it can contribute to its solution, and therefore what the usefulness of law in the current reality is. As Koskenniemi[73] developed when answering the question of what law is for, he states that it seeks to realize the political values, interests, and preferences of different international actors.[74] But it also appears as a critical standard and a means of controlling those in positions of power.

Sustainable development may have the potential to be a paradigm that even transcends the borders of legal knowledge. Therefore, its study demands important degrees of interdisciplinarity, and its analysis seeks to determine if it is or has the capacity to become a paradigm that can solve current environmental challenges.

## Conclusions

Throughout history, legal paradigms have evolved in response to significant crises, and the current environmental crisis requires a new one: that of sustainability. Particularly in the current context of environmental crisis, in which the traditional legal paradigm has proven to be insufficient to face the challenges posed by environmental degradation, especially the problems associated with climate change. Kuhn's theory is fundamental to understanding this transformation. Indeed, scientific paradigms predominate until they accumulate anomalies that cannot be resolved within the existing framework, leading to a crisis and, eventually, a scientific revolution that establishes a new paradigm.

The paradigm of the social rule of law, which emerged as a response to the shortcomings of the liberal model, emphasizes social justice and equal rights. However, this paradigm also faces challenges in addressing the environmental crisis, as it is insufficient to offer comprehensive solutions to the contemporary ecological cataclysm. This emergency has overwhelmed the capabilities of the predominant legal paradigm, requiring a new, more comprenhensive approach. Sustainability,

72 Sustainable Development Solutions, "A Framework for Sustainable Development," 1.

73 Martti Koskenniemi, "What is International Law For?," in *International Law*, ed. Malcolm Evans (Oxford, 2010), 32.

74 On the effect of political interest in international law from a Latin-American perspective see: Fabián Cárdenas and Jean d'Aspremont, "International investment law in Latin America: Universalizing resistance," in *Latin America and international investment law* (Manchester University Press, 2022).

understood as the ability to satisfy present needs without compromising those of future generations, emerges as a transformative paradigm for legal sciences.

Sustainability implies a profound reconfiguration of the relationships between the economy, society, and the environment. Furthermore, it is argued that economic, social, and environmental objectives are not exclusive, but complementary. This notion suggests that a prosperous economy can invest in environmental protection and guarantee social justice, ensuring human survival and care for the planet. However, its conceptualization, real and holistic application in law, is still under debate because it is interpreted in a diverse way, from principle to customary rule or legal paradigm, which in parallel affects its complexity and transformative potential.

The consolidation of sustainability as a new paradigm in law implies a change in mentality and a difficult restructuring of economic, social, and environmental governance. Taking on the challenge of offering solutions to the ecological crisis implies its theorization as a principle for law. But in practice, it requires a transition towards an intrinsically sustainable law, which recognizes the interdependence of human beings with the environment and promotes ecological justice that transcends the traditional boundaries of law.

The current environmental crisis requires a paradigmatic revolution in juridical sciences where sustainability is established as the transformative axis. For this new paradigm to be consolidated, it is necessary to integrate economic, social and environmental objectives, generating an interdisciplinary legal framework. The positioning of sustainability as a legal paradigm responds to the urgency of the environmental crisis and in this way can profoundly redefine the law, promoting comprehensive justice on a global scale.

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