

Radbruch Revisited: Coping with Injustice in Post-Conflict Societies

*Radbruch reconsiderado:
Cómo afrontar la injusticia en sociedades posconflicto*

Knut Seidel

Rechtsanwalt, Cologne, Germany

knut.seidel@smb-legal.de

Abstract: This article revisits Gustav Radbruch's famous formula in the context of transitional justice, with a comparative focus on Germany and Argentina. It argues that the formula, although theoretically inconsistent and not coherently derivable from Radbruch's own relativist legal philosophy, has proven highly functional in judicial practice by fulfilling a structural threshold function in post-conflict adjudication. German jurisprudence after 1945 and 1989, as well as the landmark decisions of the Argentine Supreme Court of Justice of the Nation (CSJN) in *Simón* (2005) and *Mazzeo* (2007), illustrate how Radbruch's insight –that extremely unjust law cannot be valid as law– operates as an argumentative bridge between legal certainty and substantive justice. The article develops a comparative structural analysis: while German courts relied explicitly on Radbruch's threshold of "intolerable injustice", the CSJN reached functionally equivalent results through the doctrine of *ius cogens*. Philosophically, the formula oscillates between relativism and natural law, between positivism and idealism. Its logical inconsistencies are undeniable, yet courts have applied it responsibly and with restraint. The article argues that the jurisprudential significance of the Radbruch formula lies less in its theoretical coherence than in its capacity to articulate a legally structured threshold for the recognition of extreme injustice, thereby constraining judicial recourse to moral limits within a juridical framework.

Keywords: Radbruch formula, extreme injustice, legal positivism and natural law, transitional justice, *ius cogens*, constitutional adjudication, moral limits of law.

Resumen: Este artículo revisita la célebre fórmula de Gustav Radbruch en el contexto de la justicia transicional, con un enfoque comparativo centrado en Alemania y Argentina. Se sostiene que la fórmula, aunque teóricamente inconsistente y no plenamente derivable de la filosofía jurídica relativista de Radbruch, ha demostrado ser altamente funcional en la práctica judicial al cumplir una función estructural de umbral en la adjudicación postconflicto. La jurisprudencia

cia alemana posterior a 1945 y 1989, así como las decisiones emblemáticas de la Corte Suprema argentina en *Simón* (2005) y *Mazzeo* (2007), muestran cómo la intuición de Radbruch –que un derecho extremadamente injusto no puede ser válido como derecho– opera como un puente argumentativo entre la seguridad jurídica y la justicia sustantiva. Mientras los tribunales alemanes se apoyaron explícitamente en el umbral de la “injusticia intolerable”, la Corte Suprema argentina alcanzó resultados funcionalmente equivalentes mediante la doctrina del *ius cogens*. Desde una perspectiva filosófica, la fórmula oscila entre el relativismo y el derecho natural, entre el positivismo y el idealismo. El artículo sostiene que su relevancia jurisprudencial reside menos en su coherencia teórica que en su capacidad para articular un umbral jurídicamente estructurado frente a la injusticia extrema, encauzando el recurso judicial a los límites morales dentro de un marco propiamente jurídico.

Palabras clave: fórmula de Radbruch, injusticia extrema, positivismo jurídico y derecho natural, justicia transicional, *ius cogens*, justicia constitucional, límites morales del derecho.

I. Historical and Systematic Context

Arbitrariness, repression, tyranny, and violence are recurring phenomena in the history of human societies. The manifestations of injustice are manifold. While violence as such is not necessarily unjust or immoral, this article is concerned with forms of violence that are exercised or enabled by arbitrary rule, repression, and systems of domination. Authoritarian violence may be exercised by the state against all those subject to its power or targeted against specific groups within society: against “the Left”, “the Right”, against “true believers” or “true unbelievers”, against immigrants, foreigners, or persons whose group affiliation is arbitrarily defined by the authorities in religious, racial, or other terms. Violence can also be exercised by factions or groups against other parts of the population. Hybrid forms are common, where state power is exercised or delegated to parts of the apparatus –such as the military or police– or to non-state actors, including paramilitary groups or gangs, who carry it out autonomously. The scale of violence is variable.

Philosophers have long reflected on such developments. For Plato, tyranny was one possible form of government among others. In his analysis, Plato argues that tyranny –understood as an unjust form of government by definition– arises from an unrestrained democracy when the “protector of the people” elevates himself to absolute ruler (Plato 2000, Republic 562a-569c). In the same work, Thrasymachus asserts that justice is nothing other than the advantage of the stronger: “What is good for the stronger [...] is just” (Plato 2000, Republic 338c). Thomas Hobbes drafted his *Leviathan* (1651) against the backdrop of a politically and militarily torn England in civil war, shaped

by decades of confessional conflict. Yet neither Plato nor Hobbes exhaust the possible manifestations of authoritarian violence, nor do they capture the full historical variety. History does not unfold linearly (cf. Radbruch 1973c, pp. 180-186), which makes it richer in variations than any single historical constellation might suggest. What recurs, however, is the rupture itself, which brings forth a new order (Radbruch 1973c, pp. 185-186).

Typically, a post-conflict society follows a conflict society. After civil strife, armed confrontation, or state injustice, a phase of stabilization ensues. This was the case for Germany as a whole in the aftermath of 1945, for East Germany following 1989 (cf. Ambos et al. 2009, pp. 435-449, 449-462, 462-464), and for Argentina after the end of the military dictatorship in 1983 (cf. Parenti et al. 2009, p. 133). Not all societies, however, experience this transition in a clearly defined way (cf. Ambos 2009, p. 23). Colombia, for instance, despite the 2016 peace agreement, continues to be regarded as a transitional case, marked by ongoing armed violence, political instability, and structural inequality. The transition is ambivalent: it began even before the formal end of the conflict (Testi 2018, p. 516) and remains characterized by a simultaneity of judicial reckoning, social relapse, and unstable political conditions (Gómez 2022, p. 14). At the same time, Colombia demonstrates that transitional justice can also operate without invoking the figure of “intolerable injustice” (on this in detail below). Whereas Germany and Argentina, in their landmark decisions, relied explicitly on the Radbruch formula (discussed below) or on its functional equivalent, Colombia follows a different paradigm: a combination of prosecution, truth, and reparation. Colombia illustrates that transitional justice does not necessarily follow Radbruch, but is plural, while nonetheless revolving around the same core question: how law can respond to injustice.

Whatever the form of transition, post-conflict societies face major challenges in legal terms. They must address acts of violence and encroachments upon liberty, life, physical integrity, and health that conformed to previous laws, were not regarded as unjust at the time, or were simply not prosecuted, but which can no longer be accepted morally or legally. Three problem categories can be distinguished:

- (1) There may be (previous) positive norms with reprehensible content (“wicked laws”; cf. Dworkin 1986, pp. 101-104) that formally claim the status of law but are materially unacceptable, for instance provisions on the deprivation of nationality for racist reasons (BVerfG 1968) or the provisions which, until the fall of the Berlin Wall, legitimized the use of extreme violence at the inner-German border (§ 27 Border Act of the GDR 1982). Should a denouncer, whose victim

was killed in an unjust regime as a result of the denunciation, be able to invoke with success that the denunciation was permitted or even required (Fuller 1958, pp. 653-661)? Should the legal consequences of such “acts of injustice” grounded in law persist? Ultimately, this raises the question whether the new legal order can perpetuate injustice.

(2) Also falling under the category of unjust consequences are privileged impunities for acts of injustice, such as statutory amnesties or executive pardons, as initially applied in Argentina to human rights violations of the military dictatorship. Should disappearances, torture, and murder remain unpunished simply because the law provided for it? These questions had to be faced by the Argentine judiciary (CSJN, *Simón*, 14 June 2005; CSJN, *Mazzeo*, 13 July 2007). Argentina is not a singular case. Portugal, for instance, also provides examples of such impunity during its dictatorship (Teles 2009, pp. 433-436). Structurally, similar issues arose in Colombia’s peace process (Testi 2018, p. 516).

(3) Finally, there are factual acts of violence and “state practice” that were never subject to criminal prosecution in the conflict society but formed an integral part of an orchestrated system of violence (BGH 1992, paras 32-36). Should such practices be treated as legally irrelevant merely because they were never formally adjudicated?

A disruptive break with an “unjust regime,” a legal *tabula rasa*, promises no solution. In every conflict society, children are born and people die; there are marriages and inheritances, private property and contracts, driving tests and medical examinations, as well as convictions for ordinary crime, legal acts that were previously recognized as valid and which the post-conflict society neither seeks nor is able to annul, and which can be integrated into the new order. This dilemma was aptly described by Fuller (Fuller 1958, p. 648):

After the collapse of the Nazi regime the German courts were faced with a truly frightful predicament. It was impossible for them to declare the whole dictatorship illegal or to treat as void every decision and legal enactment that had emanated from Hitler’s government. Intolerable dislocations would have resulted from any such wholesale outlawing of all that occurred over a span of twelve years. On the other hand, it was equally impossible to carry forward into the new government the effects of every Nazi perversity that had been committed in the name of law; any such course would have tainted an indefinite future with the poisons of Nazism.

Beyond the limited integration of discriminatory norms in civil or public law, there is a continuing need –especially in relation to grave human rights violations– for sanction, individual accountability, and criminal justice. A criminal response by the new society is considered essential, since only it can recognize and mark the atrocities (Castro Cuenca 2022, pp. 85-86). Criminal trials provide victims with a “direct moral and ethical response” by the state, which thereby “strengthens the rights of victims as citizens in a constitutional democracy and acknowledges their pain and experience,” as Figari Layús notes (Figari Layús 2015, p. 439). Yet the prosecution of atrocities is complicated by the fact that perpetrators of the conflict society may invoke the guarantees of the post-conflict society, in particular the prohibition of retroactive punishment, even for the most egregious crimes against humanity (IMT, Nuremberg Judgment, p. 219; ECCC SC, *Duch* Appeal Judgment 2012, pp. 47, 51).

This brings into focus a classic tension of transitional justice: the need to respect the prohibition of retroactivity while at the same time ensuring that grave state injustice does not go unpunished. Transitional justice necessarily oscillates between the postulate of legal certainty and the demand for substantive justice (Neumann 2017, p. 382). Illustrative examples include, in addition to the aforementioned Nuremberg Judgment of 1 October 1946 and the Appeals Judgment of the Cambodian tribunal of 3 February 2012, the so-called “Mauerschuetzen” cases, in which direct perpetrators as well as high-level state officials (BVerfG 1996) invoked the prohibition of retroactivity under Article 103(2) of the Basic Law (cf. Barco 2023, pp. 338-344). The prohibition of retroactivity is also anchored in Colombian constitutional law (Ambos et al. 2022b, p. 124; Barco 2023, pp. 328-337) and is discussed in detail in the Argentine jurisprudence in *Simón* and *Mazzeo*, where the principle *nullum crimen, nulla poena sine lege* is thoroughly examined (CSJN, *Simón* 2005; *Mazzeo* 2007). The experiences of authoritarian rule and systematic violence have thus confronted the legal orders of various countries with comparable challenges. Both in Germany –most recently in the criminal prosecution of the East German border regime– and in Argentina –through the annulment of amnesties and pardons for crimes against humanity– the central question was how a post-conflict society can respond criminally to continuing injustice.

In both countries, judicial decisions were rendered that reveal striking parallels in structure, reasoning, and orientation. At their core –explicitly or implicitly– was the conviction that there can be laws and legal acts so intolerably unjust that they must be denied recognition as law under the new order. The criterion of intolerability in the so-called Radbruch formula– discussed in detail below– functions here as the central

analytical key.

The jurisprudential interest of Radbruch's formula does not depend on its theoretical coherence, which is limited, but on the very function it performs in situations of transitional justice. Post-conflict adjudication confronts courts with cases in which formally valid norms are inseparable from extreme injustice, while the ordinary resources of legal doctrine offer no uncontroversial solution. In such constellations, courts recurrently rely on threshold concepts that allow them to deny legal recognition to norms whose injustice exceeds what the legal order can tolerate, without abandoning the commitment to legal certainty as such. The Radbruch formula exemplifies this threshold function in German jurisprudence after 1945 and 1989, just as the Argentine Supreme Court fulfilled an equivalent function through the doctrine of *ius cogens*. The relevance of the formula thus lies not in its theoretical consistency, but in the structural insight revealed by its practical role: the necessity for legal systems to articulate a normative threshold at which extreme injustice defeats the authority of positive law.

II. Judicial Response Patterns

A. German Jurisprudence

Against this background, the criminal prosecution of fatal shootings and other violent measures at the inner-German border, aimed at preventing so-called "border crossings" (BVerfG 1996, para. 63), constituted the central test case in the Federal Republic. In 1994 the Federal Court of Justice held, with regard to the responsibility of members of the National Defense Council of the GDR, that the intentional killing of refugees by firearms, automatic-firing devices, or mines in order to prevent escape from the GDR, accepted as a matter of policy, could not justify the perpetrators, because such killings constituted an "obvious and intolerable violation of fundamental principles of justice and of human rights protected under international law." The use of lethal force against unarmed refugees was therefore to be classified as intentional homicide, irrespective of the legal situation in the GDR at the time (BGH 1994, paras. 14-15).

In an earlier decision from 1992, concerning subordinates –that is, GDR border guards– the Federal Court of Justice had expressly invoked Gustav Radbruch in rejecting the argument that reliance on positive GDR law could absolve individual criminal responsibility. This was a case, the Court stated, in which the law "so intolerably contradicts justice that it must, as 'flawed law', yield to justice" (BGH 1992, para. 39). A violation of the prohibition of retroactivity was denied, since the supposed justification for

the killings –the statutory provision of § 27 GDR Border Act– was to be regarded as “flawed law” and therefore inapplicable. This argument has been repeatedly endorsed (cf. Seidel 1999, pp. 46-49), most recently by Tan: anyone who participates in killings under an intolerably unjust statute cannot rely on legal justification; punishment in such cases is not retroactive criminalization, but the application of existing criminal law (Tan 2024, p. 485).

The Federal Constitutional Court confirmed in its decision of 24 October 1996 that this evaluation and its consequences “correspond to the Basic Law” (BVerfG 1996, paras. 144): “[...] the justification in state practice for the killing of ‘border violators’ [is] to be disregarded as extreme state injustice [...]” (BVerfG 1996, para. 145).

This line of jurisprudence found international confirmation in the judgment of the European Court of Human Rights of 22 March 2001. The Court held that Article 7(1) ECHR did not preclude the conviction of former GDR officials, since the lethal border regime against refugees had already been prohibited under domestic law of the GDR at the time of the acts (ECtHR 2001, pp. 36-37):

Thus, by installing anti-personnel mines and automatic-fire systems along the border, and by ordering border guards to “annihilate border violators and protect the border at all costs”, the GDR had set up a border-policing regime that clearly disregarded the need to preserve human life, which was enshrined in the GDR’s Constitution and legislation, and the right to life protected by the above-mentioned international instruments; that regime likewise infringed the right to the freedom of movement mentioned in Article 12 of the International Covenant on Civil and Political Rights. The State practice in issue was to a great extent the work of the applicants themselves, who, as political leaders, knew –or should have known– that it infringed both fundamental rights and human rights, since they could not have been ignorant of the legislation of their own country. [...]. If the GDR still existed, it would be responsible from the viewpoint of international law for the acts concerned.

The Court held that the convictions did not violate the prohibition of retroactivity, without any need to rely on Article 7(2) ECHR (ECtHR 2001, p. 37). In sum, the Federal Court of Justice and the Federal Constitutional Court grounded their judgments in the recognition that extremely unjust law loses its claim to application, an aspect of the Radbruch formula that will be distinguished from questions of legal validity later in the paper. The Radbruch formula functioned here as an explicit normative guideline, flanked by the “more concrete standards of review” provided by the “international human rights covenants” that had been added since 1946 (BVerfG 1996, paras. 143-144). The European Court of Human Rights, by contrast, relied exclusively on a framework of norms corresponding to the GDR’s domestic law in light of its international

obligations, reproduced the reasoning of the lower courts with reference to Radbruch (ECtHR 2001, p. 9), but did not itself invoke Radbruch. Tan has suggested that the European Court of Human Rights may have sought to avoid the political sensitivities that would have arisen had Radbruch's formula been invoked, as this might have been taken as an equation of East German crimes with Hitler's crimes (Tan 2021, p. 9). The Federal Court of Justice itself, however, had explicitly emphasized that no such equation was intended (BGH 1992, para. 39).

B. Argentine Jurisprudence

In Argentina, too, the question arose after the end of the military dictatorship how state injustice –most notoriously the practice of enforced disappearances, employed as a systematic instrument of repression including detention and torture (Figari Layús 2015, p. 433)– could be legally addressed. The *Ley del Punto Final* (1986) and the *Ley de Obediencia Debida* (1987) had largely blocked the prosecution of the gravest human rights crimes. Only with the political shift of the early 2000s did a new phase of criminal accountability begin (Figari Layús 2015, p. 436).

In its *Simón* judgment (2005), the Supreme Court of Justice of the Nation declared the amnesty laws unconstitutional. Central to its reasoning were human dignity, the principle of imprescriptibility, and the binding force of international *ius cogens*. Serious crimes such as genocide, torture, or enforced disappearance violated *ius cogens* and could neither be amnestied nor time-barred (CSJN 2005, cons. 15). Two years later, in *Mazzeo* (2007), the Supreme Court of Justice of the Nation reaffirmed this position, holding that any form of impunity for crimes against humanity was inadmissible (CSJN 2007, cons. 20 f.). Such norms –even if formally enacted– were null and void because of their conflict with *ius cogens* and could not produce legal effect (CSJN 2007, cons. 24).

Characteristic of the Argentine jurisprudence is thus a consistent anchoring in international legal standards. Structurally, however, its reasoning follows a logic strikingly close to that of the Radbruch formula: there are laws that are unworthy of legal recognition, not because they are formally defective, but because they are materially unacceptable. While Radbruch spoke of “intolerable injustice,” the Corte Suprema operated with *ius cogens*: if a norm violates *ius cogens*, it was invalid from the outset. In this way, Argentine jurisprudence –without explicit reference to Radbruch– created a functional equivalence: it denied positive law validity where it violated fundamental

justice and universal legal principles. The difference lies in the fact that *ius cogens* provides a justiciable standard in positive international law, whereas Radbruch's "intolerability" remains a more open moral category. All the more remarkable, then, is the structural convergence: both lines of reasoning deny recognition to norms that offend against fundamental justice.

As Laise has shown, this reasoning rests on a trans-positivist conception of law. The *Simón* decision implies that the duty of legal obedience ultimately derives from supra-positive standards. In the opinions of Lorenzetti, Zaffaroni, and Maqueda, one finds explicit and implicit references to natural law; Zaffaroni even expressly invokes Radbruch's formula, according to which a norm loses its legal quality when it stands in "intolerable contradiction" to justice (Laise 2015, pp. 343-349). The topos of "intolerability" ("*inadmisibile*") runs through *Simón* as well as *Mazzeo* (CSJN 2005, cons. 8, 29, 34; CSJN 2007, cons. 15, 19, 34).

Thus, Argentine jurisprudence combines –drawing on Nino and moving beyond the dichotomy of "positivism" or "natural law" (CSJN 2005, cons. 13; CSJN 2007, cons. 13)– the doctrinal standards of international human rights protection with a legal-philosophical figure that functionally corresponds to Radbruch's formula. In both contexts –Germany and Argentina– the formula operates as an argumentative bridge: it allows selectively rejecting formally enacted laws without abandoning law's claim to normative authority.

III. Comparative Structural Analysis

Despite differing contexts, German and Argentine jurisprudence display a striking argumentative proximity. Both legal systems were confronted with the question of whether norms that formally claimed the status of law could, in retrospect, be recognized as valid law. In both cases, the answer was: no, if such norms violated fundamental justice or peremptory international law.

German jurisprudence after 1945 and again after 1989 relied on the Radbruch formula, formulated by Gustav Radbruch in 1946, which drew a boundary between unjust but still applicable law, on the one hand, and non-law or invalid law on the other (Radbruch 1973a, p. 345; cf. Paulson 1995, pp. 490-491):

The conflict between justice and legal certainty may well be resolved in this way: The positive law, secured by pronouncement and power, takes precedence even when its content is unjust (*ungerecht*) and fails in its purpose of benefitting the people, unless the conflict between positive statute and justice reaches such an intolerable degree that the statute, as “flawed law” [*unrichtiges Recht*], must yield to justice. [...] Where there is not even an attempt at justice, where equality, which forms the core of justice, is deliberately betrayed in the laying down of positive law, then the statute is not even merely “flawed law” –rather, it completely lacks the very nature of law. [...] Measured by this standard, whole portions of National Socialist law never attained the dignity of valid law [*niemals zur Würde geltenden Rechts gelangt*].

The formula contains two logically distinct operators: the “intolerability formula” (if a law exceeds the threshold of “intolerable injustice,” it loses validity and must be denied effect as “flawed law”) and, “as another demarcation,” the “denial formula” (if a law consciously negates the “will to justice,” it lacks legal nature altogether). Logically, both follow a conditional structure (if-then), combined with negation (no law). Robert Alexy sharpened this into the succinct maxim: “Extreme injustice is not law” (Alexy 2004, p. 165; Alexy 2021, p. 19), while at the same time developing and transforming Radbruch’s formula further.

The intolerability and denial variants mark two thresholds beyond which a law loses its claim to validity. The boundary is grounded in moral philosophy: if a statute violates justice in an intolerable way, it is “flawed law”; if it deliberately denies the will to justice, it is no law at all.

Argentina, by contrast, drew on international law. The CSJN grounded the nullity of the amnesty laws not in a moral standard, but in the force of *ius cogens*. If a norm violates peremptory international law, it was invalid from the outset, irrespective of its formal legal nature.

Both approaches thus follow a common logical pattern. The starting point in each case is a statute that claims to be law. That statute is then measured against a higher-order criterion –Germany: justice and human dignity; Argentina: *ius cogens* and the international duty to prosecute. The outcome is the non-recognition of the statute as law: it no longer applies, or it never applied at all.

The difference lies in their normative anchoring. In Germany, an overpositive idea of justice dominates (Radbruch); in Argentina, a doctrinal construction grounded in international law (*ius cogens*). The comparison drawn here is not one of normative foundations or theoretical justification, but of function: in both cases, the respective doctrine operates as an argumentative bridge that enables courts to exclude extreme

injustice from the law while preserving the law's claim to normative authority. It should already be noted here that recourse to the Radbruch formula is not necessary. Neither in Portugal nor in Colombia –in Colombia, Radbruch and his formula have been positively received (Aponte 2005, pp. 55-78)– can one find judicial decisions that relied on it (Teles 2009, p. 450; Testi 2018, pp. 513-522; cf. also Ambos 2022a, pp. 36-62).

The convergence between countries as different as Germany and Argentina –each turning, in distinct historical and social contexts, to a functionally equivalent demarcation– suggests that these are not merely national idiosyncrasies, but rather expressions of a legally and philosophically relevant structure for coping with injustice. Put more generally: post-conflict societies can, according to this model, employ normative threshold concepts to deny positive law its validity where it violates fundamental justice or universal international law.

IV. Philosophical Reflection

The decisions of German and Argentine courts reveal a remarkable substantive and structural proximity in their legal treatment of systemic violence and state injustice. Despite differing contexts, they operate with a common guiding idea: not every statute formally enacted deserves to be applied as law.

This normative boundary of application can be conceptualized in different models. Some commentators have assumed there is only a single formula, the second part merely clarifying a clear instance of intolerable injustice (Tan 2021, p. 3; cf. also Seidel 1999, pp. 165-179). Yet this reading overlooks that Radbruch in fact makes two categorically distinct claims.

The first part, the so-called intolerability formula, assumes that positive law remains binding even if it is unjust or ill-conceived. Only when injustice reaches an intolerable degree does the statute lose its binding force. In other words: if a norm is positive law, its conditions are fulfilled, and it is not intolerably unjust, then the legal consequence follows. If, however, the norm is intolerably unjust, then the consequence does not follow. In this reading, the result is what may be called “statutory injustice” of the first category: statutes that formally remain law but whose application is excluded once they stand in fundamental contradiction to justice or higher law. The moral assessment here occurs outside the concept of law itself. It is precisely this structure that today's *ius cogens* reasoning mirrors, as in the judgments of the European Court of Human Rights (ECtHR) and in Argentina's *Simón* and *Mazzeo*. The claim is not that the statutes in

question were never law; rather, their application is barred because they conflict with higher-ranking, peremptory norms, as assessed within the reasoning of domestic courts rather than through a full transposition of international validity doctrines. This is the reasoning followed by the Federal Court of Justice (BGH 1994), the Federal Constitutional Court (BVerfG 1996), and, supporting their argument, the CSJN in *Simón* and *Mazzeo*.

The second part, the so-called denial formula, marks a different and sharper threshold: where justice is not even pursued –where, above all, equality as the core of justice is deliberately denied– “the statute lacks altogether the nature of law.” In legal terms, this corresponds to *ab initio* voidness and to what may be called statutory injustice of the second category: norms that never attained the dignity of valid law and from the outset cannot be qualified as law. If the moral minimum is absent –especially in cases of the deliberate denial of equality– the statute is not law; and a norm without legal character can generate no legal consequences. Law and morality are here necessarily connected within the very concept of law. This line of argument, grounded in denial of validity, is exemplified in the Federal Constitutional Court’s ruling on the deprivation of citizenship for racial reasons, in which § 2 of the Eleventh Ordinance to the Reich Citizenship Law of 25 November 1941 (RGBL. I, p. 722) was held to be “void from the beginning” (BVerfG 1968, para. 31).

Robert Alexy generalized this second category in his much-cited maxim (Alexy 2001, p. 137; Alexy 2021, p. 19): “Extreme injustice is not law.” Whereas Radbruch still distinguished between “flawed law” (first category) and “not law” (second category), Alexy draws a single boundary only where the moral minimum is absent, making that minimum a necessary element of the concept of law itself.

On closer inspection, Alexy thus introduces an additional model. The differences become clear when the two categorical distinctions of Radbruch are broken down into their respective logical structures, and when Alexy’s generalization is considered alongside them:¹

(1) First category of statutory injustice (intolerability formula):¹

$$(P(x) \wedge T(x) \wedge \neg U(x)) \rightarrow R(x)$$

unjust law, but the injustice is still tolerable; the norm remains valid and applicable.

$$(P(x) \wedge T(x) \wedge U(x)) \rightarrow \neg R(x)$$

unjust law, but now intolerable; the norm may not be applied. It remains valid, but loses binding force and applicability.

(2) Second category of statutory injustice (denial formula):

$$\neg M(x) \rightarrow \neg \text{Law}(x)$$

where a statute lacks the moral minimum, especially deliberate denial of equality, it is invalid (i.e., lacks legal character).

$$(\text{Law}(x) \wedge T(x)) \rightarrow R(x)$$

only a valid can generate legal consequences. Dogmatically, this is a denial of validity: not merely a bar to application, but the complete withdrawal of legal status.

(3) Alexy's generalization of the second category:

$$\text{Law}(x) \leftrightarrow (P(x) \wedge M(x))$$

a norm is law if and only if it is both positive law and possesses a moral minimum.

$$(\text{Law}(x) \wedge T(x)) \rightarrow R(x)$$

if legal character is present and the conditions are met, the consequence follows.

Thus the denial formula is universalized: "Extreme injustice is not law."

Dworkin, by contrast, takes another path. He is skeptical of the claim that immoral norms are conceptually not law. For him, "wicked laws" remain formally valid statutes, though they ought not to be applied. Even morally reprehensible laws "hold [...] by institutional fiat" (Dworkin 1977, p. 352). He calls it an "absurd view [...] that a morally bad law cannot be the law" (Dworkin 1977, p. 326). He also explicitly states that he does not find the theoretical question "Did the Nazis have law?" particularly interesting (Dworkin 1965, pp. 678, 682; see also Dworkin 1986, p. 101). What matters is that no judicial decision may be issued that violates the principle of the "right to treatment as an equal." This principle is concretized in the demand to be treated with "equal concern and respect" (Dworkin 1977, p. 182, pp. 198-199, pp. 272-273; Dworkin 1985, p. 191). In this way, Dworkin excludes systems whose "legal rights" cannot be justified: "No doubt Hitler [...] violated what rights any plausible political theory would provide [...]" (Dworkin 1985, p. 370).

Atienza emphasizes that law cannot be understood as mere factuality, but can gain legitimacy only through rational argumentation. For him, every legal problem is a question of the normative solution to a concrete case, which can only be answered through an argumentative mediation of empirical facts, normative standards, and value judgments (Atienza 1990, pp. 393-394, 406-412). In this, he follows Alexy and Dworkin,

but radicalizes the point: every legal decision must be, or at least be capable of being, argumentatively justified.

H.L.A. Hart, often read, and indeed presented by Dworkin, as the opposite pole (Dworkin 1977, p. ix) shares with all of these positions the insight that there are statutes so morally iniquitous that their consequences ought not to be realized. Unlike Radbruch or Alexy, however, he refuses to ground this outcome in the invalidation of legal norms. His famous counter-question is: “In what way is it better, when faced with morally iniquitous demands, to think ‘This is in no sense law’ rather than ‘This is law but too iniquitous to obey or apply’?” (Hart 1994, p. 210).

For Hart, criticism of application can certainly be persuasive for moral reasons, but it does not derive from legal theory itself; it comes from a discourse external to law. Hart had already set out this position in 1958 in his programmatic essay *Positivism and the Separation of Law and Morals* (Hart 1958, pp. 593-629). There he stressed that while laws could indeed be morally iniquitous, this should not lead to denying them the status of law. The appropriate response is to recognize them as valid law while at the same time refusing to apply them for moral reasons: “What surely is most needed [...] is that [...] the certification of something as legally valid is not conclusive of the question of obedience, and [...] its demands must in the end be submitted to a moral scrutiny” (Hart 1958, p. 620). Hart thus grounds a version of legal positivism that emphasizes the moral responsibility of the legal actor without normatively loading the concept of law itself.

V. Conclusion and Outlook

As Neumann has emphasized, every project of transitional justice oscillates between reconciliation and just punishment, without being able to exclude either side entirely (Neumann 2017, p. 382-383). Against this background, Radbruch’s famous formula acquires its urgency: it is an attempt to provide normative orientation within this tension.

Radbruch’s diagnosis after 1945 was that legal positivism had rendered German jurists defenseless. “It was positivism, with its principle ‘a law is a law,’ that rendered German jurists defenseless after 1933” (Radbruch 1973a, p. 344). In truth, however, it was not a methodological doctrine but the failure of moral judgment and personal integrity that explains the legal profession’s complicity. What is noteworthy is that Radbruch never abandoned his relativist jurisprudence after 1945. He continued to insist

on presenting his philosophy as a general theory of law, accepting the contingency of legal contents for the sake of generality. What required revision was above all his earlier insistence that judges bore a “sacred duty” to apply the law as it stood. One may speculate whether Radbruch had misunderstood Kant at this point. In retrospect, however, sentences such as “For the judge, it is a professional duty ... to ask only what the law is, and never whether it is just” (Radbruch 1973c, p. 178), proved disastrous.

The 1946 formula cannot be coherently derived from Radbruch’s earlier theory. It breaks with the dualism of his prewar work and remains caught between idealism and positivism. Theoretically, it is inconsistent and fails as a closed theory. As has been argued elsewhere (Seidel 1999, pp. 159-164) and underscored by Paulson (Paulson 1995, pp. 494-500), its reception oscillates between a transformation thesis –according to which 1945 marked a radical break– and a continuity thesis, which assumes merely a shift in emphasis (Seidel 1999, pp. 186-190). One may plausibly read the later formula as a correction of an earlier error, namely the excessive priority accorded to legal certainty over justice (Paulson 1995, pp. 499-500; Adachi 2006, p. 86, pp. 96-97; Nurkić 2022, p. 173). Yet this reading is not theoretically sustainable, since Radbruch’s conception of justice contains no substantive content beyond the merely formal “equal treatment.” It does not transform into a principle of “treatment as equals.” Thus Radbruch’s own theory could not generate the substantive force that his formula achieved in practice. Here lies the gap between its theoretical incoherence and its practical success.

Brian Bix has therefore suggested that Radbruch’s formula should be understood less as a conceptual analysis than as a practical directive for judges in transitional situations (Bix 2011, pp. 52-54; Nurkić 2022, p. 175). In this sense, it is best read as a pragmatic recipe rather than a consistent theory of law. This pragmatic dimension has been highlighted in more recent debates: Radbruch’s insight is not a coherent theory of natural law but a pragmatic formula for balancing legal certainty and justice under extreme conditions (Collin/Casagrande 2023, p. 154).

Practically, however, the formula has been extraordinarily successful. It provided German courts with an argumentative bridge to condemn the DDR border killings, and it finds a functional equivalent in Argentina, where the Corte Suprema in *Simón* and *Mazzeo* struck down amnesties and pardons for crimes against humanity. In both contexts, Radbruch’s intuition –that extreme injustice cannot claim recognition as law– offered judges a normative compass. Academic debate on the formula continues, as the works of Adachi, Forschner, and Lakonig demonstrate (Adachi 2006; Forschner 2003; Schlüter 2009; Lakonig 2011).

Recent contributions by Seow Hon Tan have underscored the formula's broader relevance. She defends it as a natural-law position within constitutional democracies, arguing that a broad historical consensus on fundamental human rights marks the threshold of "intolerable injustice" (Tan 2021, p. 25). Her later work illustrates its continuing relevance for individual criminal responsibility in successor regimes, for instance in the case of hypothetical "racial registration laws" (Tan 2024). Thus the international resonance and ongoing pertinence of Radbruch's insight are reaffirmed.

Other examples extend the picture. Portugal's post-1974 transition combined elements of post punishment (criminal prosecutions of the PIDE) and post non-punishment (amnesties for opposition-related political offenses). Ex post justice here was not only about retroactivity but also about "cleansing through non-punishment." Teles interprets this hybrid through Alexy's "claim to correctness" and against the background of Radbruch's formula (Teles 2009, pp. 425-466). France, too, has taken up Radbruch: Walz reads the formula as a paradigmatic articulation of the tension between statutory legality and supra-statutory legitimacy (Walz 1994, pp. 305-318). In Bosnia-Herzegovina, as Nurkić shows, the formula became a reference point in constitutional reasoning (Nurkić 2022).

The more recent theoretical debate, especially between Eugenio Bulygin and Robert Alexy, illustrates both the promise and the limits of Radbruch's legacy. Bulygin insists that even extremely unjust norms remain law as long as they are enacted and effective. In his "Governor System" thought experiment, he posits a legal order made up solely of arbitrary decrees; such an order, he contends, still counts as law (Bulygin 2013, p 52). Alexy, by contrast, defends law's "dual nature": positivity and a claim to correctness. From the participant's perspective of the judge, the formula marks the limit at which extreme injustice forces justice to prevail over certainty (Alexy 2013, 236-237).

The upshot is that Radbruch's reflections are not confined to Germany or Latin America but resonate across legal cultures. The formula remains insufficient, however. Who decides whether a law is "intolerable"? Courts, legislators, or society at large? Radbruch supplies a powerful tool of demarcation but no objective criteria for fixing the threshold. The risk of arbitrariness persists.

VI. Concluding Reflections: What Remains

The philosophical models of Radbruch, Alexy, Dworkin, Atienza, and Nino –and the jurisprudence of Germany and Argentina– demonstrate that post-conflict societies need normative boundary concepts to prevent injustice from being transfigured into law. Whether as application bar (Radbruch's intolerability formula), as denial of validity (Radbruch's denial formula), as conceptual necessity (Alexy), as pragmatic non-application (Dworkin), or as argumentative structure of justification (Atienza, Nino), all approaches seek a balance between legal certainty and substantive justice.

In the language of transitional justice theory, Radbruch's formula can be read as an early paradigm of how law in times of transition plays a constitutive role. As Teitel has shown, transitional justice is inherently paradoxical: it looks backward and forward at once, processing past injustice while constituting a new liberal order (Teitel 2000, pp. 3-7). Elster has added that transitional justice recurs across epochs, from Athens to France to modern Germany, with societies learning from earlier experiences and navigating between retribution and reconciliation (Elster 2004, pp. 1-3). Argentina's role as a global leader in accountability –with thousands of prosecutions since 2003 (Nazareno 2020, pp. 175-177)– underscores the global relevance of this struggle.

What remains of Radbruch's formula, then, is not a coherent theory but a fragment that endures in practice. Habermas once observed that since Hegel, legal philosophy in Germany had ceased to be “a matter for philosophers” (Habermas 1992, p. 9). He himself declined to engage Radbruch directly. Yet Radbruch's fragment continues to haunt the law, not as a system but as a reminder.

The formula is, in the end, a piece of philosophical rubble: a comet, unsystematic and incomplete, but one that returns again and again, trailing a wide arc across jurisprudence. Courts cannot choose not to decide. They cannot rule: “The revocation of citizenship stands, because the plaintiff is Jewish.” They cannot say: “Those who threw others into the ocean by the thousands shall tend their gardens in peace.” In such cases, jurisprudence requires philosophy to step in, even if only as a fragment.

Its theoretical flaws are real, but they may be forgiven once we grasp Radbruch's development aporetically: the questions are posed, but the answers remain open. Other philosophers of greater rank, too, have ended in aporia. Yet Radbruch preserves a moral sensitivity that Kelsen and Hart lost: where Kelsen declared law “morally mute” (Kelsen 1960, pp. 68-69) and Hart reduced it to the factuality of a rule of recognition (Hart 1994, pp. 292-293), Radbruch kept open the possibility that jurisprudence itself must confront moral questions, at least in extremity.

Ironically, Habermas later admitted that his own life's work had not achieved the public impact he had once hoped for (Felsch 2024, p. 187). The same cannot be said of Radbruch's fragment. It continues to exert influence –as reminder, as aporia, as challenge. In the end, kings are not philosophers but jurists. It is better if, in their backpacks, they carry at least Gustav Radbruch.

References

- Adachi, Hidehiko, 2006: *Die Radbruchsche Formel*. Baden-Baden, Nomos.
- Alexy, Robert, 2021: *Law's Ideal Dimension*. Oxford: Oxford University Press.
- _____, 2013: Between Positivism and Non-positivism? A Third Reply to Eugenio Bulygin. In: Jordi Ferrer Beltrán, José Juan Moreso and Diego M. Papayannis (Eds.), *Neutrality and Theory of Law*. Dordrecht: Springer, pp. 225–237.
- _____, 2004: The Nature of Legal Philosophy. In: *Ratio Juris* 17, pp. 156–167.
- _____, 2001: Positivism and Natural Law Revisited. In: *Ratio Juris* 14, pp. 129–137.
- Ambos, Kai, 2009: El marco jurídico de la justicia de transición. In: Kai Ambos, Ezequiel Malarino and Gisela Elsner (Eds.), *Justicia de transición: Informes de América Latina, Alemania, Italia y España*. Berlin / Montevideo: Fundación Konrad-Adenauer, pp. 23–129.
- Ambos, Kai and Aboueldahab, Susann, 2022: The Special Jurisdiction for Peace and Impunity: Myths, Misperceptions and Realities. In: Kai Ambos and Stefan Peters (Eds.), *Transitional Justice in Colombia: The Special Jurisdiction for Peace*. Baden-Baden: Nomos, pp. 36–62.
- Ambos, Kai and Barco, Gustavo Emilio Cote, 2022: International (Criminal) Law as Applicable Law in the Special Jurisdiction for Peace. In: Kai Ambos and Stefan Peters (Eds.), *Transitional Justice in Colombia: The Special Jurisdiction for Peace*. Baden-Baden: Nomos, pp. 111–133.
- Ambos, Kai and Meyer-Abich, Nils, 2009: Alemania. La superación jurídico-penal de las injusticias y actos antijurídicos nacionalsocialistas y realsocialistas. In: Kai Ambos, Ezequiel Malarino and Gisela Elsner (Eds.), *Justicia de transición: Informes de América Latina, Alemania, Italia y España*. Berlin / Montevideo: Fundación Konrad-Adenauer, pp. 435–470.

- Aponte Cardona, Alejandro, 2009: Gustav Radbruch: ¿Constituye hoy el positivismo una condición del pluralismo liberal? In: *Precedente. Anuario Jurídico*, pp. 55-78. DOI:10.18046/prec.v0.1416.
- Atienza, Manuel, 1990: For a Theory of Legal Argumentation. In: *Rechtstheorie* 21, pp. 393-406.
- Barco, Gustavo Emilio Cote, 2023: The principle of legality of crimes in Colombia and Germany: Difference in similarity? In: Kai Ambos and José Martínez (Eds.), *Göttingen Handbook on Latin American Public Law and Criminal Justice*. Baden-Baden: Nomos, pp. 325-347.
- Bautista Pizarro, Nathalia, 2017: Die Bedeutung der Strafe im Rahmen eines Friedensverfahrens – Überlegungen am kolumbianischen Beispiel. In: *ZIS* 7–8, pp. 358-365.
- Bix, Brian H., 2011: Radbruch's Formula and Conceptual Analysis. In: *American Journal of Jurisprudence* 56, pp. 45-64.
- Bulygin, Eugenio, 2013: Alexy between Positivism and Non-positivism. In: Jordi Ferrer Beltrán, José Juan Moreso and Diego M. Papayannis (Eds.), *Neutrality and Theory of Law*, Dordrecht: Springer, pp. 48-60.
- Castro Cuenca, Carlos Guillermo, 2022: Combining the Purposes of Criminal Law and Transitional Justice in the Special Jurisdiction for Peace. In: Kai Ambos / Stefan Peters (Eds.), *Transitional Justice in Colombia: The Special Jurisdiction for Peace*. Baden-Baden: Nomos, pp. 84-109.
- Dworkin, Ronald, 1986: *Law's Empire*. London: Fontana Press.
- _____, 1985: *A Matter of Principle*. Cambridge, MA: Harvard University Press.
- _____, 1977: *Taking Rights Seriously*. London: Duckworth.
- Elster, Jon, 2004: *Closing the Books. Transitional Justice in Historical Perspective*. Cambridge: Cambridge University Press.
- Felsch, Philipp, 2024: *Der Philosoph – Habermas und wir*. Berlin: Propyläen.
- Figari Layús, Rosario, 2018: Transitional Justice in Argentinien: Dreißig Jahre Suche nach Wahrheit und Gerechtigkeit. In: A. Mihr, G. Pickel and S. Pickel (Eds.), *Handbuch Transitional Justice*. Wiesbaden: Springer VS, pp. 431-456.

- Fuller, Lon L., 1958: Positivism and Fidelity to Law – A Reply to Professor Hart. In: *Harvard Law Review* 71, pp. 630-672.
- Galvão Teles, Miguel, 2009: *Ex Post* Justice, Legal Retrospection, and Claim to Bindingness. In: Augusto Silva Dias, João António Raposo, João Lopes Alves, Luís Duarte d’Almeida and Paulo de Sousa Mendes (Eds.), *Liber Amicorum de José de Sousa e Brito em comemoração do 70.º aniversário: Estudos de Direito e Filosofia*. Coimbra: Almedina, pp. 425-466.
- Gierhake, Katrin, 2017: Strafe und Amnestie in Zeiten fragiler Staatlichkeit – Die Bedeutung des freiheitlichen Rechtsbegriffs für die Übergangsjustiz am Beispiel des kolumbianischen Friedensprozesses. In: *ZIS* 7–8, pp. 391-409.
- Gómez, Gabriel Ignacio, 2022: Ambiguities of the Transition: Peace and Conflict in Colombia. In: Kai Ambos and Stefan Peters (Eds.), *Transitional Justice in Colombia: The Special Jurisdiction for Peace*. Baden-Baden: Nomos, pp. 13-30.
- Hart, H.L.A., 1994: *The Concept of Law*. 2nd ed., Oxford: Clarendon Press.
- _____, 1958: Positivism and the Separation of Law and Morals. In: *Harvard Law Review* 71, pp. 593-629.
- Hormazábal Malarée, Hernán, 2022: El sistema internacional de protección de los derechos humanos y la obligación de perseguir a los responsables de los crímenes contra los derechos humanos. In: *Revista de Derecho Penal y Criminología* 3, pp. 91-110.
- Kelsen, Hans, 1960: *Reine Rechtslehre*. 2nd ed., Wien: Franz Deuticke.
- Laise, Luciano Damián, 2015: El derecho natural y la inconstitucionalidad de los delitos de lesa humanidad: bases para una aproximación al deber de obediencia al derecho en el caso “Simón”. In: *Dikaion* 24/2, pp. 336-352.
- Nazareno, Patricio, 2020: Impunity Reconsidered. International Law, Domestic Politics, and the Pursuit of Justice. In: *Harvard Human Rights Journal* 33, pp. 173-224.
- Neumann, Ulfrid, 2017: Strafrechtliche Grundlagenprobleme der Übergangsjustiz. In: *ZIS* 7-8, pp. 382-390.
- Nino, Carlos Santiago, 1991: The Epistemological Moral Relevance of Democracy. In: *Ratio Juris* 4, pp. 36-51.

- Nurkić, Benjamin, 2022: Radbruch's Formula in the Constitution of Bosnia and Herzegovina: Untapped Potential for Strengthening the Rule of Law. In: *DHS* 3 (20), pp. 169-188.
- Parenti, Pablo F. and Pellegrini, Lisandro, 2009: Argentina. In: Kai Ambos, Ezequiel Malarino and Gisela Elsner (Eds.), *Justicia de transición: Informes de América Latina, Alemania, Italia y España*. Berlin / Montevideo: Fundación Konrad-Adenauer, pp. 133-152.
- Paulson, Stanley L., 1995: Radbruch on Unjust Laws: Competing Earlier and Later Views? In: *Oxford Journal of Legal Studies* 15, pp. 489-500.
- Plato, 2000: *Republic*. G. R. F. Ferrari (Ed.) and Tom Griffith (Transl.). Cambridge: Cambridge University Press.
- Radbruch, Gustav, 1973a: Gesetzliches Unrecht und übergesetzliches Recht (1946). In: Eric Wolf and Hans-Peter Schneider (Eds.), *Rechtsphilosophie*. 8th ed., Stuttgart: Koehler, pp. 339-350.
- _____, 1973b: Fünf Minuten Rechtsphilosophie (1945). In: Eric Wolf and Hans-Peter Schneider (Eds.), *Rechtsphilosophie*. 8th ed., Stuttgart: Koehler, pp. 327-329.
- _____, 1973c: Rechtsphilosophie (1932). In: Eric Wolf and Hans-Peter Schneider (Eds.), *Rechtsphilosophie*. 8th ed. (repr. 3rd ed., 1932), Stuttgart: Koehler, pp. 84-324.
- Seidel, Knut, 1999: *Rechtsphilosophische Aspekte der "Mauerschützen"-Prozesse*. Berlin: Duncker & Humblot.
- Tan, Seow Hon, 2024: Punishing Individuals Who Complied with Intolerably Unjust "Laws" in Predecessor Regimes. In: *Israel Law Review* 57, pp. 480-506.
- Tan, Seow Hon, 2021: Radbruch's Formula Revisited: The "Lex Injusta Non Est Lex" Maxim in Constitutional Democracies. In: *Canadian Journal of Law and Jurisprudence* 34, pp. 461-491.
- Teitel, Ruti G., 2000: *Transitional Justice*. Oxford: Oxford University Press.
- Testi, Eleonora, 2018: What Future for Transitional Justice? Colombia and the Balkans as Case Studies. In: *ZIS* 11, pp. 513-523.

Walz, Michael, 1994: Introduction à “Injustice légale et droit supralégal” de Gustav Radbruch. In: *Archives de Philosophie du Droit* 39, pp. 305-318.

Case Law and Legal Materials

National Case Law

Federal Court of Justice (Bundesgerichtshof, BGH), judgment of 26 July 1994 – 5 StR 167/94, juris.

Federal Court of Justice (Bundesgerichtshof, BGH), judgment of 3 November 1992 – 5 StR 370/92, juris.

Federal Constitutional Court (Bundesverfassungsgericht, BVerfG), decision of 14 February 1968 – 2 BvR 557/62, juris.

Federal Constitutional Court (Bundesverfassungsgericht, BVerfG), decision of 24 October 1996 – 2 BvR 1851/94, juris.

Supreme Court of Justice of the Nation (Corte Suprema de Justicia de la Nación, CSJN), judgment of 13 July 2007, *Mazzeo, Julio Lilo y otros s/ recurso de casación*.

Supreme Court of Justice of the Nation (Corte Suprema de Justicia de la Nación, CSJN), judgment of 14 June 2005, *Simón, Julio Héctor y otros s/ privación ilegítima de la libertad*.

International Case Law

European Court of Human Rights (ECtHR), Grand Chamber, *Streletz, Kessler and Krenz v. Germany*, Applications nos. 34044/96, 35532/97 and 44801/98, judgment of 22 March 2001.

Extraordinary Chambers in the Courts of Cambodia (ECCC), Supreme Court Chamber, *Appeal Judgment (Kaing Guek Eav alias Duch)*, Case File No. 001/18-07-2007/ECCC/SC, judgment of 3 February 2012.

International Military Tribunal (IMT), *judgment of 1 October 1946 (Nuremberg Judgment)*. In: *Trial of the Major War Criminals before the International Military Tribunal* (“Blue Series”), Vol. I, Nuremberg 1947, pp. 171-341.

Statutes and Legal Instruments

Law on the State Border of the German Democratic Republic (Gesetz über die Staats-

grenze der Deutschen Demokratischen Republik, GrenzG) of 25 March 1982, GBl. DDR I 1982, 197.

Notes

- 1 For readability and to clarify the logical structure, the following operators are used: $\neg$ = negation (“not”); $\wedge$ = conjunction (“and”); $\vee$ = disjunction (“or”); $\rightarrow$ = implication (“if... then”); $\leftrightarrow$ = equivalence (“if and only if”). Quantifiers (implicit): $\forall x$ = “for all norms x ...”; $\exists x$ = “there exists at least one norm x such that ...”.

Submission: August 28, 2025

Revision: December 19, 2025

Acceptance: January 1, 2026