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Fair by Design? The Legal and Ethical Challenges of Algorithmic Hiring

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Abstract

This paper critically examines the promise and pitfalls of algorithmic hiring systems through a legal and ethical lens. Focusing on cases such as Pymetrics, HireVue, and Amazon's résumé screening tool, we explore how automated decision-making in recruitment, despite claims of neutrality and fairness, often reproduces or amplifies existing social inequalities. Drawing from recent legal scholarship and normative theories of algorithmic fairness, we show how systems designed to minimize human bias can inadvertently encode discriminatory assumptions into technical infrastructures. The paper analyzes competing fairness frameworks and emphasizes that fairness is not a purely technical feature, but a normative commitment that must guide every stage of system development and deployment. We argue for a shift from reactive audits to proactive, participatory governance models grounded in transparency, inclusiveness, and accountability. Through the "Developer's Model for Responsible AI", we propose a structured, lifecycle-based approach to operationalize fairness in algorithmic systems, especially in sensitive domains like employment. Ultimately, the paper contends that ensuring justice in AI is not only a technical challenge but a democratic imperative.

Keywords: algorithmic fairness, automated hiring, discrimination, responsible AI, governance

1. Introduction: Algorithmic Glitches and the Illusion of Neutrality

We live in an era where decisions that deeply impact people's lives are increasingly being delegated to artificial intelligence (AI) systems (Gasser & Mayer-Schönberger, 2024, p. 13). From résumé screening in hiring processes (Wilson et al., 2021) to credit approval (Gillis, 2022), and from judicial decisions (Legg & Bell, 2020) to educational assessments (O'Neil, 2016) and welfare distribution (Eubanks, 2018), algorithms

have become central mediators of opportunities, rights, and obligations. Yet this technical advancement comes with a troubling paradox: while AI promises greater efficiency and impartiality, it often replicates, and even amplifies, historical inequalities it was meant to mitigate, not automate (O'Neil, 2016).

The question, therefore, is not simply how to build technically robust systems, but how to ensure that these systems operate on legitimate principles of justice and equality.

This challenge demands a fundamental shift in our mindset. For decades, technical flaws in computational systems were treated as “natural failures” (Broussard, 2019), inevitable statistical noise (O’Neil, 2016), the price of progress. In stark contrast to this normalization of failure, Meredith Broussard offers a sharp critique in her book *More Than a Glitch: Confronting Race, Gender, and Ability Bias in Tech* (2023). What we often label as AI failures—bias, exclusion, injustice—are not merely technical accidents or random distortions. They are the predictable outcomes of design decisions made by largely homogeneous teams using biased datasets without meaningful engagement with the communities affected. Glitches, Broussard (2023) argues, are not bugs in the system; they are symptoms of a technological imagination that refuses to confront its social consequences.

This critique becomes even more concrete when we turn to algorithmic hiring systems such as Pymetrics. The company promised to offer a fairer, neuroscience-based hiring process through gamified assessments. But, as we will see, its design replicated bias instead of erasing it, revealing how discrimination is not a side effect of algorithmic systems, but often a consequence of flawed assumptions built into their architecture.

If Broussard (2023) exposes the risks, Orly Lobel proposes a counter-narrative. In *The Equality Machine* (2022), she flips the script: what if, instead of fearing algorithms as tools of injustice, we intentionally designed them as mechanisms for promoting fairness? For Lobel, technology is not neutral; it can and should be shaped by normative commitments from the start.

That requires abandoning a reactive view of justice, one based on fixing things after the fact, and adopting a proactive one: designing systems that actively promote equity, inclusion, and diversity (Lobel, 2022). This means forging strong collaborations between programmers, lawyers, philosophers, and affected communities in what Lobel calls “built-in fairness.”

These provocations lead us to the central question of this paper: what does it take to build algorithmic decision systems that embed legitimate standards of equality from the ground up? How do we move from the myth of algorithmic neutrality to the messy, but

necessary, practice of computational equity?

To explore this challenge, the paper begins by examining the cases of Pymetrics, HireVue, and Amazon, examples that encapsulate both the promise and the peril of algorithmic hiring. The cases serve as a lens through which to analyze how such systems are designed, the forms of fairness they claim to embody, the biases they inadvertently reproduce, and the strategies proposed to mitigate these biases. Building on that, the discussion then turns to the foundational models of algorithmic fairness, particularly as articulated by Barocas et al. (2023).

The second section unpacks competing visions of fairness while scrutinizing their respective technical, legal, and ethical implications. The final section advances a dialogue between two complementary approaches to ensuring fairness: one focused on embedding justice from the outset through “fairness by design”, and the other centered on *ex post* mechanisms of evaluation through “algorithmic auditing”. Together, these perspectives illuminate how fairness can be integrated across the entire life cycle of algorithmic systems and inform a more robust framework for sustained accountability.

Our goal is normative and practical: to imagine systems that are not only designed to “do no harm” but that are explicitly built to do good. Because ultimately, what’s at stake in the quest for fair AI is not just the future of technology, it’s the future of equality.

2. From Promise to Paradox: Lessons from Pymetrics, HireVue, and Amazon

The story of Pymetrics offers an illuminating case study of the tensions at the heart of algorithmic hiring. Founded with the mission of using neuroscience-based games and machine learning to match job candidates with roles based on cognitive and emotional traits, Pymetrics was positioned as a progressive alternative to traditional hiring practices, ones often steeped in human bias. The company claimed that its tools would promote fairness by eliminating subjectivity and focusing on scientifically grounded traits (Wilson et al., 2021). What emerged instead was a more complicated picture: one where fairness itself became a contested terrain, and where the very mechanisms intended to correct bias ended up perpetuating it in new forms.

Unlike conventional hiring platforms that

connect résumés to job openings, Pymetrics operates as a behavioral analytics service focused specifically on candidate screening. Its approach involves using gamified tasks, drawn from neuroscience and cognitive psychology, to assess a wide range of behavioral and cognitive traits, such as attention span, risk tolerance, and emotional regulation. These assessments are not scored in a vacuum. Instead, Pymetrics develops predictive models trained on gameplay and performance data from high-performing employees in a given role, aiming to identify candidates whose behavioral patterns align with those of top performers (Wilson et al., 2021) and to create predictive models for success (Raghavan et al., 2020).

The screening process unfolds through a structured partnership with employers. First, Pymetrics gathers detailed information about the target position, including performance criteria and team composition. Then, current employees in that role are asked to complete the same suite of games offered to applicants. Their gameplay data, combined with their on-the-job performance metrics, is used to train a machine learning model. This model is tested not only for its predictive accuracy but also for compliance with legal fairness guidelines, specifically the Uniform Guidelines on Employee Selection Procedures (UGESP's) four-fifths rule¹, to avoid disproportionate exclusion of candidates from protected groups (Wilson et al., 2021).

Once a model passes these benchmarks, it is deployed in real-world hiring. New candidates complete the same set of games, and the model scores them based on how closely their behavioral profile matches that of previously identified top performers. Those with high compatibility scores are advanced to the next stage of the hiring process, such as résumé review or interviews. Pymetrics positions this system as both efficient and fair, arguing that it

minimizes human bias through standardized, scientifically grounded evaluations (Wilson et al., 2021).

However, the promise of fairness through automation is far from uncontested. While the company claims to audit and update its models regularly to mitigate disparate impact, critics have raised concerns about the opacity of its algorithms and the limitations of behavioral profiling. When cognitive and emotional norms are codified into models of employability, they risk reinforcing narrow conceptions of talent that exclude neurodivergent, disabled, or culturally diverse candidates (Andrews & Bucher, 2022).

One illustrative example of Pymetrics' game-based assessment is a task inspired by the Balloon Analogue Risk Task (BART), a measure in behavioral science used to evaluate risk tolerance. In this game, a candidate is asked to inflate a virtual balloon, earning points for each pump. However, the balloon can pop at any moment, causing the candidate to lose the accumulated points. The key behavioral signal here is how far a candidate is willing to push their luck before cashing out, an indirect indicator of how they manage risk under uncertainty. A candidate who consistently inflates the balloon only a few times before securing their points might be deemed more risk-averse, while one who pushes the limit may be categorized as more risk-tolerant.

These behaviors are not interpreted in isolation. The AI model behind Pymetrics analyzes not only the final outcomes (e.g., how many points a candidate earned) but also the micro-patterns in their decision-making: how long they hesitate between pumps, whether their strategy changes over time, or if they adjust after a balloon pops. Each of these data points is logged, quantified, and fed into a machine learning algorithm that compares the candidate's responses to those of high-performing incumbents. The model is trained to detect the behavioral patterns most predictive of success in a given role, say, financial analysts who perform well under pressure may share a specific risk-taking profile. This allows the system to flag candidates who exhibit similar traits, regardless of their educational background or professional experience (Wilson et al., 2021).

But the granularity of this analysis also raises important questions. What happens when a

¹ The four-fifths rule, also known as the 80% rule, is a guideline developed by the U.S. Equal Employment Opportunity Commission (EEOC) to detect potential adverse impact in employment practices. According to this rule, a selection rate for any demographic group, such as based on race, gender, or ethnicity, should be at least 80% of the rate for the group with the highest selection rate. If the selection rate for a particular group falls below this threshold, it may be considered evidence of discriminatory impact, even in the absence of intentional bias. For example, if 60% of white applicants are selected for interviews but only 30% of Black applicants are, the selection rate for the latter group is only 50% of the former, well below the 80% benchmark, indicating possible disparate impact.

candidate's play style deviates from the expected profile, not because they lack the skills, but because they approach decision-making differently due to cultural norms, disability, or neurodivergence? The algorithm's interpretation of "ideal" behavior is only as inclusive as the training data it learns from. In this sense, a candidate's cautious strategy in the balloon game might be misread as a liability in a role that values assertiveness, even if their restraint would actually be an asset. Thus, what appears as a neutral behavioral metric is, in practice, embedded with normative assumptions, making the promise of fairness through AI as contested as the hiring practices it seeks to replace.

This dilemma echoes what legal scholar Ifeoma Ajunwa (2020) has termed the "paradox of automation as anti-bias intervention". While technologies like Pymetrics are marketed as solutions to human bias, precisely because they rely on standardized data and algorithmic consistency, Ajunwa warns that such systems often reproduce the very forms of discrimination they claim to eliminate. In Pymetrics' case, the reliance on behavioral data from high-performing employees risks encoding existing workplace norms into the algorithm. If those norms are themselves shaped by historical inequalities, such as the underrepresentation of disabled, neurodivergent, or racially marginalized employees, then the model merely automates exclusion in a more opaque, technical form.

What makes this particularly troubling is the illusion of neutrality. Because candidates are assessed through playful, seemingly objective games, the process can feel fair and scientifically grounded. Yet the criteria used to evaluate performance—how fast someone reacts, how they manage risk, how flexible they are in adapting to rules—are themselves subjective, value-laden, and often culturally contingent. Ajunwa's insight highlights how algorithmic tools can obscure structural bias behind a veneer of precision, making discriminatory outcomes harder to detect and legally contest. Unlike a biased human recruiter, an algorithm can't be cross-examined, and its design choices often evade transparency.

Moreover, the legal frameworks designed to prevent discrimination in hiring are poorly equipped to handle this new form of bias. As

Ajunwa (2020) notes, laws like Title VII¹ were built around human actors and interpersonal prejudice, not machine learning systems trained on thousands of data points. In the case of Pymetrics, even if the company complies with formal fairness metrics like the four-fifths rule, these statistical thresholds may overlook more subtle, cumulative forms of disadvantage, such as the systematic misinterpretation of behavior by neurodiverse candidates. In short, compliance is not the same as justice.

The Pymetrics case thus illustrates Ajunwa's broader argument (2020): that automating human judgment does not dissolve bias, but rather recasts it in algorithmic form. By embedding contested notions of competence and fitting into game-based assessments, the system risks naturalizing exclusion under the guise of innovation. Far from eliminating bias, algorithmic hiring tools may simply shift where and how discrimination occurs, placing it beyond the reach of those most affected. This is the paradox at the heart of algorithmic fairness: a system built to correct human flaws may only deepen them, unless its assumptions are made visible and its values open to debate.

This is precisely what the case of HireVue brings into sharper relief. Like Pymetrics, HireVue marketed itself as a tool for making hiring "fairer" by replacing gut instinct with AI-driven assessment. But unlike Pymetrics, which focused on cognitive games, HireVue's platform included facial and vocal recognition technologies to analyze candidates during video interviews. These systems evaluated not just content, but tone, micro-expressions, eye movements, and other behavioral cues. Civil liberties groups, including Electronic Privacy Information Center (EPIC), raised concerns that the tool penalized candidates based on features

¹ Title VII of the 1964 Civil Rights Act is a foundational piece of U.S. civil rights legislation that prohibits employers from discriminating against individuals on the basis of race, color, religion, sex, or national origin. It applies to all aspects of employment, including hiring, promotion, compensation, and termination. Title VII not only forbids overt, intentional discrimination (disparate treatment), but also extends to practices that may appear neutral on their face but result in disproportionate harm to protected groups (disparate impact). This dual focus makes it particularly relevant in the context of AI-driven hiring tools, where algorithms may unintentionally replicate historical patterns of exclusion. While Title VII was designed with human decision-makers in mind, its principles now serve as a critical reference point in the legal and ethical evaluation of algorithmic systems in the workplace (Páez, 2021, p. 24).

like accents, anxiety levels, or lighting conditions, factors that disproportionately affect individuals from marginalized racial, socioeconomic, or neurodivergent backgrounds. As Sheard (2022, p. 620) notes, when models are trained on historical decision-making data or normative behavioral patterns, they are highly susceptible to replicating entrenched inequalities.

This concern became tangible in 2025 when a deaf Indigenous woman, identified as D.K., filed a discrimination complaint against Intuit and HireVue. The complaint alleged that the HireVue system misinterpreted her video interview due to her speech pattern, which differed from normative training data because of her disability. As a result, the AI-generated score reflected not her actual competencies but the system's inability to interpret her correctly. Despite being qualified and already working at Intuit, she was denied a promotion (Sheard, 2022, p. 623). This case underscores what Sheard (2022, p. 628) calls the "liability vacuum": harm occurs, but the diffusion of responsibility across vendors, data scientists, and employers prevents clear accountability.

The parallels with Pymetrics are significant. Both companies developed tools grounded in behavioral science and marketed them as bias-reducing innovations. And both rely on data from existing employees, people who often reflect the demographics and behavioral norms of previously privileged groups. While Pymetrics uses game data and HireVue analyzes audiovisual input, the underlying logic is the same: performance is modeled on those who have already succeeded, assuming those profiles are universally applicable. Yet, as Sheard (2022, p. 632) emphasizes, when systems are trained on unrepresentative data and evaluated through inaccessible models, they become vehicles for indirect discrimination, subtle, legalistic, and hard to contest.

Moreover, both companies have adopted internal auditing procedures aimed at demonstrating compliance with formal fairness standards. Pymetrics, for instance, open-sourced part of its auditing code and tested for adherence to the four-fifths rule (Wilson et al., 2021). HireVue, under public pressure, eventually phased out its facial recognition component. But as Sheard (2022, p. 630) argues, these gestures are often insufficient: internal audits do not guarantee external accountability,

and formal compliance does not ensure substantive fairness. The real issue lies not in whether these systems can meet statistical parity thresholds, but in whether the assumptions they encode, about competence, behavior, and fit, are themselves just.

Another revealing example of algorithmic hiring gone awry is the case of Amazon Jobs (Sheard, 2022, p. 624), which also set out to eliminate human bias through machine learning. In 2018, Amazon developed an internal AI tool to automatically rank résumés for software engineering roles. The tool was trained on a decade's worth of past hiring decisions, data that, as it turned out, reflected the company's historical preference for male candidates. Unsurprisingly, the AI began downgrading résumés that included words like "women's chess club" or came from all-women's colleges. Although the system did not explicitly consider gender as a variable, the bias was encoded in the patterns it learned.

This example mirrors Sheard's broader critique: bias is often not about what data is explicitly fed into the system, but about what the model *learns* from historical structures. Like Pymetrics, Amazon's system relied on existing data to determine what a "good" candidate looks like. And like Pymetrics, it assumed that past performance is an adequate and neutral benchmark for future success. Yet when historical data reflect exclusionary practices or demographic imbalances, models trained on them will necessarily reproduce these patterns, regardless of whether the developers intend to discriminate.

What makes the Amazon case particularly instructive is that the company eventually abandoned the tool, recognizing that the bias it embedded was too deeply rooted to be easily corrected (Sheard, 2022, p. 624). This stands in contrast to Pymetrics, which continues to operate with the claim that its games and models can deliver fairer outcomes. However, both cases suggest a troubling overconfidence in the ability of behavioral proxies—whether linguistic, cognitive, or gamified—to serve as neutral indicators of talent. As Sheard (2022) argues, these systems don't simply fail to overcome bias; they recode it into data-driven language that is harder to interrogate and easier to legitimize.

The convergence of these three cases, Pymetrics,

HireVue, and Amazon, reveals a broader pattern in algorithmic hiring: a persistent failure to recognize that fairness is not a technical output but a normative commitment. Tools that claim to reduce bias by optimizing behavioral signals often obscure the cultural, neurological, and social assumptions embedded in those very signals. Whether it's the misinterpretation of a deaf accent, the undervaluing of cautious decision-making, or the erasure of non-masculine leadership styles, these systems embed a behaviorist epistemology that equates "fit" with conformity to dominant norms.

Sheard's analysis offers a critical lens through which to view these failures, not as isolated glitches, but as structural outcomes of a model of hiring that prioritizes efficiency and scalability over contextual judgment and equity. When responsibility is diffused across technical, legal, and organizational domains, and when performance is measured by proprietary proxies, those harmed by algorithmic decisions are left without recourse. The real danger, as Sheard (2022, p. 630) warns, lies in how this model of automation presents its results as neutral facts, when they are, in truth, deeply political choices made invisible through code.

In the end, these cases serve as cautionary tales. They show that algorithmic fairness cannot be achieved by technical patchwork or an internal audit alone. What is needed is a deeper reckoning with the assumptions driving these systems—who defines merit, what counts as evidence of potential, and who is authorized to decide. Without that reckoning, the promise of AI in hiring will remain an elegant fiction: a system built to reduce bias that, in practice, only reorganizes it behind the veil of objectivity.

3. Invisible Values, Visible Harms: Rethinking Accountability in Algorithmic Hiring

These concerns are further reinforced by the comprehensive review conducted by Anna Lena Hunkenschroer and Christoph Lütge (2022), who identify a broad spectrum of ethical tensions arising from AI-enabled recruiting and selection systems. In their analysis of over fifty academic and industry sources, the authors argue that while algorithmic tools promise improvements in efficiency, consistency, and bias mitigation, they also introduce new and understudied ethical risks. These include not only well-known concerns like data privacy and bias reproduction, but also deeper moral

ambiguities, such as the appropriate trade-off between predictive performance and fairness, and the moral legitimacy of behavioral proxies used in candidate evaluation. Their contribution helps shift the discussion from purely technical concerns toward a broader inquiry into the normative values that underpin automated hiring.

One of the most significant ethical risks they identify lies in the illusion of objectivity. When algorithms are perceived as neutral tools, there is a tendency to overlook how design choices, ranging from data labeling to performance criteria, are already value-laden. As Hunkenschroer and Lütge (2022) caution, systems that evaluate candidates based on personality traits, emotional signals, or behavioral tendencies often rely on culturally specific assumptions about what constitutes a "good fit." These assumptions may inadvertently marginalize neurodivergent individuals, people with disabilities, or candidates from underrepresented backgrounds.

Ajunwa (2023, p. 88) draws attention to this particularly insidious form of algorithmic discrimination: the use of "cultural fit" as a proxy for race or class-based exclusion. In many hiring platforms, algorithms are trained on the profiles of previous "successful" employees, embedding historical biases into the predictive model. What appears as a neutral preference for candidates who "fit the culture" often masks the perpetuation of racially and socioeconomically homogeneous workplaces.

Ajunwa warns that this type of discrimination is especially dangerous because it presents itself as meritocratic and efficiency-driven, when in reality it reproduces structural inequality through coded language and design choices. By optimizing for traits associated with past hires—such as communication style, problem-solving approach, or demeanor—automated systems risk filtering out equally competent candidates who do not mirror existing norms. These design choices become gatekeeping mechanisms that entrench exclusion while appearing objective.

Consider, for instance, a candidate taking part in Pymetrics' suite of gamified assessments, including the previously mentioned game inspired by the Balloon Analogue Risk Task. By removing human subjectivity from the hiring

process, the system claims neutrality, but what it actually removes is context. A human recruiter might ask *why* a candidate approached the task cautiously, perhaps they were being strategic, or perhaps they come from a cultural context where calculated restraint is valued. The algorithm, in contrast, interprets that caution as a measurable trait without nuance, assigning it a numerical score and fitting it into a pre-constructed model of ideal behavior. This mechanical interpretation may appear impartial, but it conceals normative biases built into the architecture of the system itself. In attempting to eliminate the variability of human judgment, the system replaces it with a rigid and unexamined hierarchy of behavioral preferences, turning judgment into computation and fairness into a statistical façade.

The subjectivity of human evaluators is far from unproblematic. Human recruiters may exhibit implicit biases, favoritism, cultural misunderstandings, or inconsistent judgment, all of which can lead to unfair hiring outcomes. These flaws are well-documented and, in many cases, visible and challengeable through interviews, appeals, or legal processes. Our aim is not to romanticize human discretion or ignore its dangers. Rather, the concern lies in the *illusion* that algorithmic systems have solved these issues simply by removing the human element. When subjectivity is embedded in code, through design choices, training data, or performance criteria, it becomes harder to detect and contest. The risk is not just that AI systems make biased decisions, but that they do so under the mask of neutrality and scientific legitimacy, making the underlying value judgments less visible and more difficult to question.

It is in response to this challenge that Van Giffen et al. (2022) propose a comprehensive and accessible framework to understand and address machine learning bias. Recognizing that algorithmic systems do not eliminate subjectivity but instead shift and obscure it, the authors seek to bridge fragmented literature by providing a shared vocabulary and actionable guidance. Using the Cross-Industry Standard Process for Data Mining (CRISP-DM) as an organizing structure, they map eight distinct types of bias and mitigation strategies across the phases of a project. This effort not only clarifies where and how bias can emerge, but also equips researchers and practitioners with tools to identify and intervene in these points of

vulnerability.

Among the types of bias identified, *social bias* refers to the reproduction of preexisting inequalities embedded in available data, biases that precede model design and reflect societal patterns. *Measurement bias* emerges when chosen features or labels act as poor proxies for the variables of actual interest, such as using hospital admissions as a stand-in for health status. *Representation bias*, meanwhile, results from input data that fail to adequately reflect the diversity of the relevant population, leading to systematic errors, particularly when underrepresented groups are marginalized in training datasets.

Additional sources of bias arise further along the pipeline. *Label bias* occurs when labeled data systematically deviates from the underlying truth, often due to subjective, inconsistent, or biased categorization. *Algorithmic bias* stems from technical design decisions—such as model architectures, loss functions, or training procedures—that produce unequal outcomes. Even evaluation and deployment introduce distinct risks: *evaluation bias* can occur when testing data or metrics are misaligned with real-world performance, while *deployment bias* arises when systems are used in contexts different from those for which they were built. Finally, *feedback bias* illustrates how algorithmic outputs can shape user behavior and future datasets, creating self-reinforcing loops of discrimination. Mapping these biases across the stages of a machine learning project, as Van Giffen et al. propose, makes it possible to identify targeted mitigation strategies at each step, an essential move toward more accountable and socially aware algorithmic systems.

However, identifying and mitigating bias is only part of the challenge. Equally important is the question of accountability—who is responsible when harm occurs, and what mechanisms exist to ensure that mitigation efforts translate into meaningful protections for affected individuals and groups. In this regard, Hunkenschroer and Lütge (2022) highlight a persistent gap in accountability mechanisms. While some

companies adopt internal fairness audits¹ or comply with procedural fairness standards like the four-fifths rule², these measures are often insufficient to address the substantive harms caused by algorithmic decision-making. This echoes the concern raised earlier in the context of HireVue and Amazon: that fairness cannot be reduced to statistical parity alone. As Hunkenschroer and Lütge note, internal audits, without external oversight, risk becoming reputational tools rather than instruments of genuine accountability. When the impact of an AI system disproportionately harms a particular group, the question is not only whether it meets compliance thresholds, but whether it respects the broader ethical principle of equal opportunity.

Michael Kearns and Aaron Roth (2019, p. 70) provide a critical examination of statistical parity as a fairness criterion in algorithmic decision-making. While statistical parity, ensuring that different demographic groups are selected at similar rates, may appear to promote equality, the authors argue that it can produce misleading and even counterproductive results. One of the core problems is that statistical parity focuses solely on outcomes without regard to underlying qualifications or contexts. This can

lead to situations where individuals with vastly different attributes are treated identically, potentially sacrificing merit-based considerations in the name of equal group-level representation.

Furthermore, Kearns and Roth (2019, p.71) emphasize that enforcing statistical parity may inadvertently introduce new forms of unfairness. For example, to equalize acceptance rates across demographic groups, an algorithm might be forced to lower thresholds for one group or raise them for another, leading to perceptions of reverse discrimination or unjustified favoritism. In practice, this can create tensions between fairness and accuracy, especially in high-stakes contexts like hiring or college admissions, where decision-makers must weigh individual qualifications against broader social goals. For Kearns and Roth, the key is not to reject group-based fairness metrics altogether, but to recognize their limitations and use them alongside other criteria that better capture the nuances of individual justice.

They also highlight the challenge of strategic gaming when statistical parity becomes a rigid requirement (Kearns & Roth, 2019, p. 72). Once organizations are required to meet demographic quotas, there may be incentives to manipulate input data or alter labeling practices to produce superficially fair outcomes without making meaningful structural changes. In hiring, for instance, a firm might design its AI system to pass fairness audits by adjusting score thresholds across groups, while still relying on biased features that disadvantage marginalized candidates in subtler ways. As Kearns and Roth (2019, p. 71) caution, fairness is not simply a constraint to be satisfied, but a dynamic and context-sensitive principle, one that must be thoughtfully integrated into the architecture of algorithmic systems from the outset.

Importantly, Hunkenschroer and Lütge (2022) also underscore the psychological and societal implications of AI-based hiring. Candidates subjected to opaque systems may experience dehumanization, alienation, and a loss of agency. Unlike human interviewers, algorithmic systems rarely provide meaningful feedback, leaving candidates uncertain about why they were rejected or what they might improve. This creates an ethical tension between efficiency and transparency. A faster, cheaper process may come at the cost of undermining dignity, trust, and procedural fairness, values that are central

¹ Hunkenschroer and Lütge (2022) define fairness audits as systematic evaluations of algorithmic systems intended to detect and mitigate discriminatory outcomes, particularly those affecting protected groups. These audits typically involve assessing whether a system's outputs result in disparate impact and whether they comply with formal fairness criteria such as demographic parity or the four-fifths rule. However, the authors emphasize that fairness audits often remain narrow in scope, focusing on statistical indicators rather than addressing the deeper normative assumptions embedded in system design. They caution that such audits can become performative tools, used more to signal compliance than to enact meaningful change, especially in the absence of external oversight or public transparency. For instance, a company might audit its AI hiring tool and find that selection rates for men and women are statistically similar, thereby passing the audit, even though the model still penalizes candidates who display communication styles more common among women.

² While the four-fifths rule provides a quantitative standard for identifying imbalances in hiring or promotion decisions, it is not a definitive legal test. It is a diagnostic tool meant to trigger further investigation rather than prove discrimination outright. In the context of AI-based hiring systems, many companies use the rule as part of internal audits to demonstrate compliance with fairness benchmarks. However, critics argue that this kind of formal parity can obscure deeper forms of exclusion, particularly when the criteria used for evaluation, such as behavioral traits or cognitive scores, are themselves biased. In other words, a system can meet the four-fifths rule and still perpetuate inequality if the underlying assumptions remain unchecked (Páez, 2021, p. 24).

to democratic labor markets. From this perspective, the deployment of AI in hiring is not just a technical shift; it is a moral transformation of how we understand evaluation, inclusion, and worth.

Ultimately, the authors call for a research and policy agenda that goes beyond algorithmic optimization to embrace ethical reflexivity. They advocate for the integration of moral philosophy into AI development processes, interdisciplinary collaboration across law, ethics, and computer science, and the cultivation of organizational cultures that value inclusion over efficiency.

The growing trust in artificial intelligence as a substitute for human rationality is often accompanied by a seductive promise: that algorithmic systems can deliver faster, more efficient, and, most importantly, more impartial decisions than humans ever could. Yet this promise masks a deep moral trap. As Brian Christian (2020) reminds us, the real challenge posed by AI is not its ability to process massive amounts of data or detect complex patterns, but its failure to align those patterns with legitimate human values. What happens when a system makes a technically correct decision that, from an ethical perspective, feels profoundly unjust?

This tension is powerfully illustrated in the case of Pymetrics. Imagine two candidates who perform equally well on the platform's behavioral games, but are ranked differently because one of them exhibits a response pattern more common among white, middle-class men. Technically, the decision is defensible; the algorithm is simply reflecting patterns learned from historical data, but morally, it is indefensible. Why should the statistical average of a dominant social group serve as the benchmark for evaluating individuals who do not share that background but possess the same skills? This is not a technical error, but a normative one: a confusion of correlation with justice. A statistically robust model may still violate fundamental principles of equality (equal treatment under the same conditions) and equity (ensuring comparable opportunities for those with different starting points). This is where the so-called alignment problem emerges: the disconnect between what AI *can* do and what society *expects* it to do.

Christian argues that this disconnect demands a shift in our design perspective. The challenge is not merely to build systems that work well, but

to build systems that do good.

In *Fairness and Machine Learning: Limitations and Opportunities* (2023), Barocas et al. propose a reorientation of both the conceptual and technical agenda for building machine learning systems that internalize fairness. Fairness, they argue, is not a matter of statistical performance alone; it is a normative commitment to non-discrimination and the proactive promotion of equal opportunity. This commitment requires more than simply removing sensitive variables from datasets; it calls for a full rethinking of data collection practices, optimization goals, and the social groups impacted by those systems.

The case of Amazon's résumé screening tool illustrates precisely why fairness cannot be reduced to statistical performance or the mere removal of sensitive attributes like gender. Although the system was designed to be "gender-blind" by excluding explicit gender indicators, it still learned to associate proxies of maleness—such as participation in all-male sports teams or attendance at male-dominated institutions—with higher hiring potential. This outcome reveals what Barocas et al. (2023) emphasize: that removing protected variables does not neutralize a system if the underlying data and optimization goals continue to reflect historical patterns of discrimination.

What Amazon's case demonstrates is that fairness cannot be achieved through technical tweaks alone. The absence of gender as a feature did not prevent gender bias; it merely obscured its mechanism. As Barocas et al. (2023) argue, fairness demands attention not just to the outputs of a system, but to the entire process by which data is collected, interpreted, and used to train predictive models.

Without confronting the social conditions embedded in training data and the institutional goals driving optimization, fairness efforts remain superficial. Any attempt to make AI "fair" involves explicit choices about which inequalities to address, how individuals should be treated, and how to balance predictive accuracy with social responsibility. In this light, fairness is not merely a statistical metric but a normative lens; it is a field of moral and political contestation, a perspective on justice that must guide the system's entire lifecycle.

This debate becomes even more urgent when

examined through the lens of negligent¹ algorithmic discrimination, a concept advanced by Páez (2021, p. 27). In this view, algorithmic bias is not simply an unfortunate side effect of optimization. It is the foreseeable result of poor design decisions, weak safeguards, and structural indifference to inequality. To describe an algorithm as “biased” is to suggest a flaw; to call it “negligent” is to attribute responsibility.

The case of HireVue offers a compelling example of what Andrés Páez (2021) terms negligent algorithmic discrimination, the failure to take reasonable precautions against foreseeable harms caused by automated systems. The system operated as a black box, with little transparency into how the signals were interpreted or weighted. From Páez’s perspective, the problem is not simply that HireVue’s technology produced biased outcomes, but that those outcomes were entirely preventable.

Developers and adopters had ample warning from ethicists, technologists, and advocacy organizations about the discriminatory potential of facial and voice analysis. Yet rather than halt deployment or subject the system to rigorous public validation, HireVue proceeded, only discontinuing its facial analysis component in 2021, after public backlash. This sequence reflects a classic case of algorithmic negligence: not acting out of malice, but failing to anticipate or meaningfully address harms that were both foreseeable and ethically consequential. It illustrates how the abdication of responsibility in the name of innovation can result in deeply unjust consequences, especially when fairness is measured by compliance metrics rather than lived impacts.

What these cases reveal is not only the risk of

misclassification but the erosion of opportunity itself. Algorithmic systems increasingly shape who is seen, who is shortlisted, and who is hired. They convert social disparities into technical signals. They do not just replicate bias; they normalize it, embedding discrimination into the architecture of decision-making.

This is why the call to frame bias as negligence is not simply a legal strategy; it is a moral imperative. Negligence occurs when foreseeable damage is not tested for, when unrepresentative data is used without scrutiny, and when systems lack interpretability. Even more troubling is the use of fairness as a public relations strategy rather than a commitment to accountability. Developers and deploying institutions must ensure that algorithmic tools do not reinforce structural harm.

Ajunwa (2023, p. 80) challenges the notion that automated decision-making is categorically distinct from human decision-making, arguing that this separation constitutes a “false binary.” She contends that automation does not eliminate human judgment; it merely reconfigures it into different layers of design, deployment, and interpretation. Behind every algorithm are human choices: about which data to collect, which features to prioritize, and what trade-offs to tolerate. By framing automation as neutral or objective, institutions obscure the very real human agency embedded in these systems and evade the ethical scrutiny that would typically accompany discriminatory decisions made by people.

Recognizing this false binary is crucial for understanding why negligence in algorithmic systems should be taken just as seriously, if not more so, than in human-led processes. The veneer of technological objectivity can anesthetize both users and the public to harm, enabling biased outcomes to persist under the guise of efficiency. By accepting Ajunwa’s critique, we see that the responsibility for discriminatory outcomes cannot be shifted onto the machine; it rests squarely with those who design, implement, and rely on these tools without rigorous safeguards. This reframing helps bridge the moral disconnect highlighted in Bigman et al.’s findings, revealing that the real failure lies not in the algorithm’s intent but in the abdication of human responsibility.

And yet, as recent research by Bigman et al. (2022) shows, algorithmic discrimination

¹ Andrés Páez (2021, p. 28) defines negligence in the algorithmic context as the failure to take reasonable precautions against foreseeable harms caused by automated decision-making systems, particularly harms related to discriminatory outcomes. Unlike intentional discrimination, which involves purposeful bias, negligent discrimination arises when developers or deploying institutions ignore warning signs, overlook structural risks, or inadequately test their systems for unfair impact. For Páez, negligence is not just about flawed outputs, but about a lack of due diligence in anticipating and mitigating how algorithms may disadvantage protected groups. This includes failing to audit training data for representativeness, disregarding how models interact with social contexts, or assuming that technical neutrality absolves moral responsibility. In this sense, negligent algorithmic discrimination is ethically serious not because it is malicious, but because it is avoidable.

provokes less moral outrage than human discrimination. This “algorithmic outrage deficit” stems from the perception that algorithms, being mindless tools, cannot possess intention and therefore cannot be held morally responsible. But absence of intent is not absence of harm. When organizations hide behind algorithmic opacity to escape accountability, the moral damage is doubled.

Barocas et al. (2023) remind us that fairness, to be meaningful, must be designed from the beginning, not bolted on after deployment. Their typology of fairness criteria—demographic parity, equal opportunity, individual fairness—offers frameworks, but no silver bullet. In practice, these criteria often conflict. For instance, achieving demographic parity across race groups in the Pymetrics case would require altering model thresholds in ways that could reduce individual-level accuracy. This illustrates the classic trade-off between predictive precision and distributive justice.

Other approaches attempt to navigate this tension. Statistical parity requires ongoing monitoring of approval rates across demographic groups, with algorithmic recalibration as necessary. The Pareto frontier model seeks the optimal balance between equity and performance, allowing companies to make ethically informed trade-offs rather than performance-maximizing shortcuts.

Yet perhaps the most important lesson is this: fairness is not a property to be added to a functioning system. It is a normative lens that must guide every step of system development, from problem framing and data collection to model design, deployment, and evaluation. AI does not eliminate the ethical tensions of decision-making; it codifies them. The real challenge is not simply technical. It is political. Either we design systems that reflect democratic values, or we silently accept the consolidation of new forms of exclusion masquerading as algorithmic objectivity.

4. From Code to Consequence: Algorithmic Fairness as a Political Imperative

The hope that technology might correct centuries of structural discrimination is nowhere more vividly tested than in the realm of hiring. The story of Lakisha Washington—a highly qualified Black woman whose résumé, identical to that of a white applicant except for the name, consistently received fewer callbacks—illustrates

the deeply entrenched nature of racial bias in employment practices. Her case, part of a now-famous field experiment conducted by economists Marianne Bertrand and Sendhil Mullainathan¹, underscores how even minimal signals, like a name, can trigger exclusion in supposedly meritocratic processes. This raises an urgent question: can artificial intelligence, when used in hiring, help break this cycle, or does it merely encode and automate it?

Orly Lobel (2022) takes up this question with nuance and ambition. She challenges the techno-pessimistic view that algorithms inevitably replicate human bias. Instead, she asks: what if, properly designed, machine learning systems could not only avoid past discrimination but actively promote *equality of outcomes*? For Lobel, the transformative potential of AI lies not in its mimicry of existing decision patterns but in its ability to offer a more corrective, intentional model of fairness, one that moves beyond formal equality to material inclusion. But realizing that potential, she warns, is far from straightforward.

Among the barriers Lobel (2022) identifies is the human element behind every system: the so-called “coding ninjas” whose decisions, blind spots, and assumptions shape what an algorithm sees and what it ignores. Engineers may believe they are building neutral systems, but their values inevitably enter the code. From the selection of training data to the choice of optimization goals, each step involves subjective judgment. When these developers come from homogeneous backgrounds or fail to consult with affected communities, the systems they create risk reinforcing the very inequalities they claim to solve.

Orly Lobel (2022) suggests that systems like Pymetrics could be redesigned to actively promote equitable outcomes rather than simply

¹ In this *New York Times* article, economist Sendhil Mullainathan revisits his field experiment with Marianne Bertrand, which demonstrated how identical résumés received different callback rates based solely on the perceived race suggested by applicants’ names. One résumé bore the name Lakisha Washington; the other, Emily Walsh. Despite being equally qualified, Lakisha received far fewer responses, a finding that exposed how deeply racial bias shapes hiring decisions. Mullainathan argues that algorithmic systems, if properly designed, might help correct such discrimination, but warns that many current tools risk automating rather than eliminating bias. He emphasizes the need for greater transparency, auditing, and ethical accountability in AI-driven hiring. Available at: <<https://www.nytimes.com/2019/12/06/business/algorithm-bias-fix.html>>. Access: 23.06.2025.

avoiding overt discrimination. This would involve not only diversifying training datasets and regularly auditing for disparate impacts, but also embedding normative commitments to inclusion at every stage of system development. Rather than aiming for mere neutrality, the platform could be optimized to correct for historical disadvantages, shifting its goal from replicating past success profiles to fostering a more diverse and representative workforce.

Thus, while AI offers new possibilities for expanding access and promoting inclusion, it also forces us to grapple with the fundamental ambiguity of *fairness* itself. Is fairness about treating everyone the same, or about compensating for historical and structural disadvantages? Should hiring algorithms mirror societal demographics or focus on individual aptitude, even if that reinforces inequalities? These are not merely technical questions; they are moral and political ones, embedded in how we define merit, justice, and belonging.

In light of this, the pursuit of equitable AI in hiring is not just about better code; it is about better values. As we shift decision-making power from individuals to machines, the underlying assumptions embedded in our systems become all the more consequential. If we want AI to advance fairness rather than obscure its absence, we must confront these dilemmas directly and design technologies that reflect the plural, contested, and evolving nature of justice in our societies.

The growing trust in artificial intelligence as a substitute for human rationality is often accompanied by a seductive promise: that algorithmic systems can deliver faster, more efficient, and, most importantly, more impartial decisions than humans ever could. Yet this promise masks a deep moral trap. As Brian Christian reminds us in *The Alignment Problem: How Can Artificial Intelligence Learn Human Values* (2020), the real challenge posed by AI is not its ability to process massive amounts of data or detect complex patterns, but its failure to align those patterns with legitimate human values. What happens when a system makes a technically correct decision that, from an ethical perspective, feels profoundly unjust?

If the Pymetrics case exposes the pitfalls of using AI in high-stakes decision-making, the normative response cannot be limited to *post hoc* corrections. As Orly Lobel (2022) provocatively

argues, the goal is not to dismantle algorithmic systems but to reimagine how they are built from the ground up. She rejects the fatalistic view that algorithms are inherently discriminatory and instead insists that technology can and must serve equality if designed with that purpose in mind.

Lobel's vision is ambitious yet pragmatic. Fairness must be embedded at the start, not retrofitted later. This requires ongoing mechanisms for monitoring and reform, grounded in the understanding that every algorithm is a social artifact shaped by history, institutions, and existing inequities.

In this sense, Van Giffen et al. (2022) have emphasized the need for a multi-phase mitigation approach, involving interventions at the pre-processing, in-processing, and post-processing stages. Strategies include careful data curation and sample balancing, the use of fair learning algorithms, and group-disaggregated performance audits. Crucially, no single technique suffices on its own. Effective mitigation demands a contextual awareness of ethical risks and the continuous integration of normative values throughout the system's lifecycle. Such a systemic approach resists the temptation of purely technical fixes, acknowledging that the harms posed by algorithmic systems are ultimately rooted in broader social and political dynamics.

Barocas et al. (2023) offer a complementary and detailed framework for translating these commitments into technical practice. To meaningfully address fairness in automated hiring, companies must go beyond abstract commitments and adopt concrete practices that allow them to detect, mitigate, and respond to algorithmic discrimination.

Drawing from the framework proposed by Barocas et al. (2023), four key mechanisms have emerged as essential to a fairness-aware deployment of algorithmic systems: bias audits, regulatory audits, algorithmic risk assessments, and algorithmic impact evaluations. Each plays a distinct role in the lifecycle of an AI system and contributes to a culture of accountability. Yet implementing them is not a simple technical fix; it requires organizational will, interdisciplinary coordination, and cultural transformation.

Bias audits are designed to identify disparities in how algorithmic systems treat individuals from different social groups. As Barocas et al. explain,

these audits are fundamentally diagnostic: they help uncover whether a model's outputs are correlated with sensitive attributes like race or gender in ways that are not justifiable by business necessity or job-related criteria. In practical terms, for developers, this means analyzing the model's predictions using disaggregated data and fairness metrics such as *demographic parity*, *equalized odds*, or *predictive parity*.

Each offers a different way of understanding what it means for an algorithm to treat individuals and groups fairly. While these definitions are often in tension, applying them to real-world systems like Pymetrics can illuminate where interventions are needed and what values are being prioritized.

Demographic parity asks whether different demographic groups are selected at similar rates, regardless of underlying differences in qualifications. In the hiring context, this would mean that candidates from different gender or racial groups are recommended for jobs in roughly equal proportions. Applied to Pymetrics, a lack of demographic parity might be revealed if, for instance, significantly more men than women are flagged as high-potential candidates. Addressing this would likely require adjusting the algorithm's thresholds or training objectives to ensure more balanced representation, an approach aimed at correcting historical disparities in access to opportunity.

Equalized odds, by contrast, focus on the model's error rates. It requires that candidates from different groups have similar chances of being correctly or incorrectly classified. For Pymetrics, this would mean ensuring that highly qualified women are just as likely as their male counterparts to be correctly identified as strong matches, and not disproportionately filtered out. If false negatives are higher for one group, the system may be reinforcing existing inequalities under the guise of objectivity. Achieving equalized odds often involves recalibrating the model to reduce disparities in how it treats equally capable individuals.

Predictive parity takes yet another angle, asking whether the scores assigned by the model are equally meaningful across groups. In other words, if two candidates—say, one black and one white—receive the same “match” score, they should have similar chances of succeeding in the role. A lack of predictive parity would

suggest that the model's predictions are more accurate for some groups than others, often because the definition of success was drawn from biased or homogeneous data. Improving predictive parity may involve redefining performance benchmarks in ways that better reflect a diverse workforce.

These metrics don't offer a single answer to what fairness means, but they help clarify the trade-offs involved in system design. In some cases, improving one metric may come at the cost of another. Still, applying them to systems like Pymetrics allows both developers and employers to move beyond vague commitments to fairness and instead make their values visible, measurable, and accountable.

For companies deploying these systems, the practical challenge lies in knowing what to ask from vendors and how to interpret audit results. Business teams should request evidence that pre-deployment audits were conducted with sufficiently diverse test data, and ask whether any corrective measures were taken when disparities were detected. This is not always straightforward: it requires data literacy, a basic understanding of statistical fairness concepts, and, critically, a willingness to act when results reveal uncomfortable truths about existing practices.

Regulatory audits, by contrast, are external mechanisms carried out by public institutions or regulators to assess whether an algorithmic system complies with legal standards related to discrimination, privacy, and transparency. Barocas et al. (2023) emphasize that while technical compliance may be necessary, it is rarely sufficient to ensure fairness. Compliance frameworks often lag behind technological innovation, and even well-intentioned systems can produce disparate impacts if deployed without oversight.

Recent legislative efforts in jurisdictions such as the European Union and Brazil have begun to address the challenges posed by algorithmic hiring. The EU Artificial Intelligence Act (AI Act), adopted in 2024, classifies AI systems used to evaluate job candidates as *high-risk*, subjecting them to requirements related to transparency, data governance documentation, and risk management. Providers must also ensure human oversight and adopt safeguards against discriminatory outcomes, aligning with broader EU commitments to fundamental rights. By

framing hiring algorithms as high-risk, the AI Act signals that automated systems used in employment deserve heightened scrutiny, but how these obligations will be interpreted and enforced in practice remains uncertain.

In Brazil, the proposed Bill No. 2338/2023 takes a similar risk-based approach, also identifying employment-related AI systems as high-risk and imposing obligations for audits, impact assessments, and transparency. While the bill is still under legislative debate, its inclusion of discrimination and bias as specific risks to be addressed reflects a growing awareness of how automated systems can reinforce historical inequalities, particularly in the Global South. Still, both frameworks face challenges in implementation and enforcement, and their effectiveness will ultimately depend on how legal principles translate into organizational practices and technical design choices.

In practice, companies must prepare to demonstrate not only what their systems do, but also how they were built, tested, and monitored. That means maintaining detailed documentation of training data sources, design decisions, fairness goals, and any internal governance procedures. Organizationally, this requires strong cross-functional collaboration between legal, technical, and HR teams, a task that can be culturally difficult in companies where these functions are siloed or operate with different priorities.

Algorithmic risk assessments are proactive exercises meant to identify potential sources of harm *before* a system is deployed. Barocas et al. (2023) treat this process as a core component of responsible AI development, emphasizing that harm is often foreseeable if organizations take the time to interrogate design choices. Developers, for example, should assess whether training data reflects historical biases, whether certain groups are underrepresented, and whether the optimization objectives align with fairness goals.

From an employer's standpoint, conducting or demanding algorithmic risk assessments can feel burdensome, especially when procurement timelines are tight or internal expertise is limited. But skipping this step invites reputational, legal, and ethical risks. Companies can start small: incorporate fairness checkpoints into pilot testing, ask vendors for their risk assessment protocols, and involve external

experts when internal capacity is lacking. Risk assessment is not just a technical tool; it is a governance mindset that prioritizes foresight over damage control.

Algorithmic impact evaluations, finally, focus on how systems perform *after* deployment in real-world conditions. While risk assessments ask "What could go wrong?", impact evaluations ask "What is actually happening?". Barocas et al. (2023) argue that this stage is often neglected, even though it is essential for understanding whether the system's use aligns with its intended goals and whether it introduces unintended harms.

Companies should establish ongoing mechanisms to track outcomes across demographic groups, review hiring patterns over time, and ensure that the technology contributes to diversity and inclusion goals. This requires collaboration between technical teams (to collect and analyze the data), HR (to interpret it in the context of hiring strategy), and leadership (to act on the findings). It also requires confronting the possibility that a tool once celebrated as "objective" might perpetuate exclusion.

Implementing these four mechanisms—bias audits, regulatory audits, risk assessments, and impact evaluations—requires not just technical adaptation, but organizational transformation. Many companies are not set up to carry out these processes easily. Data may be siloed, accountability diffuse, and fairness not yet embedded in performance metrics. Moreover, cultural resistance often arises when fairness mechanisms challenge long-held beliefs about meritocracy or reveal structural imbalances in current practices.

Still, as Algorithmic impact evaluations emphasize, fairness is not a static property of systems, it is an ongoing process that must be embedded in institutional routines. For developers, this means designing for auditability, transparency, and ethical responsiveness from the start. For employers, it means building internal capacity, setting up governance structures, and creating incentives for responsible technology adoption.

These practices are neither quick nor cheap. But they are necessary if companies are serious about using AI not merely to optimize efficiency, but to promote fairness in one of the most consequential areas of human life: access to

employment. A system that cannot demonstrate how it avoids harm—or worse, how it justifies unequal treatment—has no place in a fair labor market.

Applying the tools outlined by Barocas et al. (2023) requires technical knowledge, regulatory awareness, and above all, ethical commitment. When deployed together, these mechanisms offer not only safeguards against discriminatory outcomes but also a roadmap for aligning technological innovation with democratic values and social inclusion.

These mechanisms, however, are not sufficient on their own. They must be embedded within a deeper epistemological shift in tech development: the move toward participatory design. Drawing from citizen science, inclusive urban planning, and user-centered design, participatory AI involves affected communities in every stage of system development, from problem framing and variable selection to validation and governance (Barocas et al., 2023).

Applied to Pymetrics, participatory design might have involved historically marginalized groups in early-stage testing, ensuring their

behavioral norms were recognized and respected. It might have engaged “Diversity, Equity, and Inclusion” (DEI) experts, labor psychologists, and legal scholars in defining job-relevant traits. Most critically, it would have established ongoing feedback loops for iterative improvement based on lived user experiences.

This is the essence of fairness by design: not a checkbox, but a systemic reorientation. When combined with bias audits, risk assessments, impact evaluations, and participatory governance, we move from reactive correction to proactive justice. As Lobel insists, algorithms are not immutable, they are contested spaces, subject to norms, negotiations, and institutional duty. AI can be an “equality machine,” but only if we choose to build it that way.

To support this vision, the Developer’s Model for Responsible AI, presented below, builds on the categories proposed by Barocas et al. (2023), translating their conceptual framework into a structured, lifecycle-based approach that operationalizes fairness through concrete practices at each stage of system design, development, deployment, and monitoring.

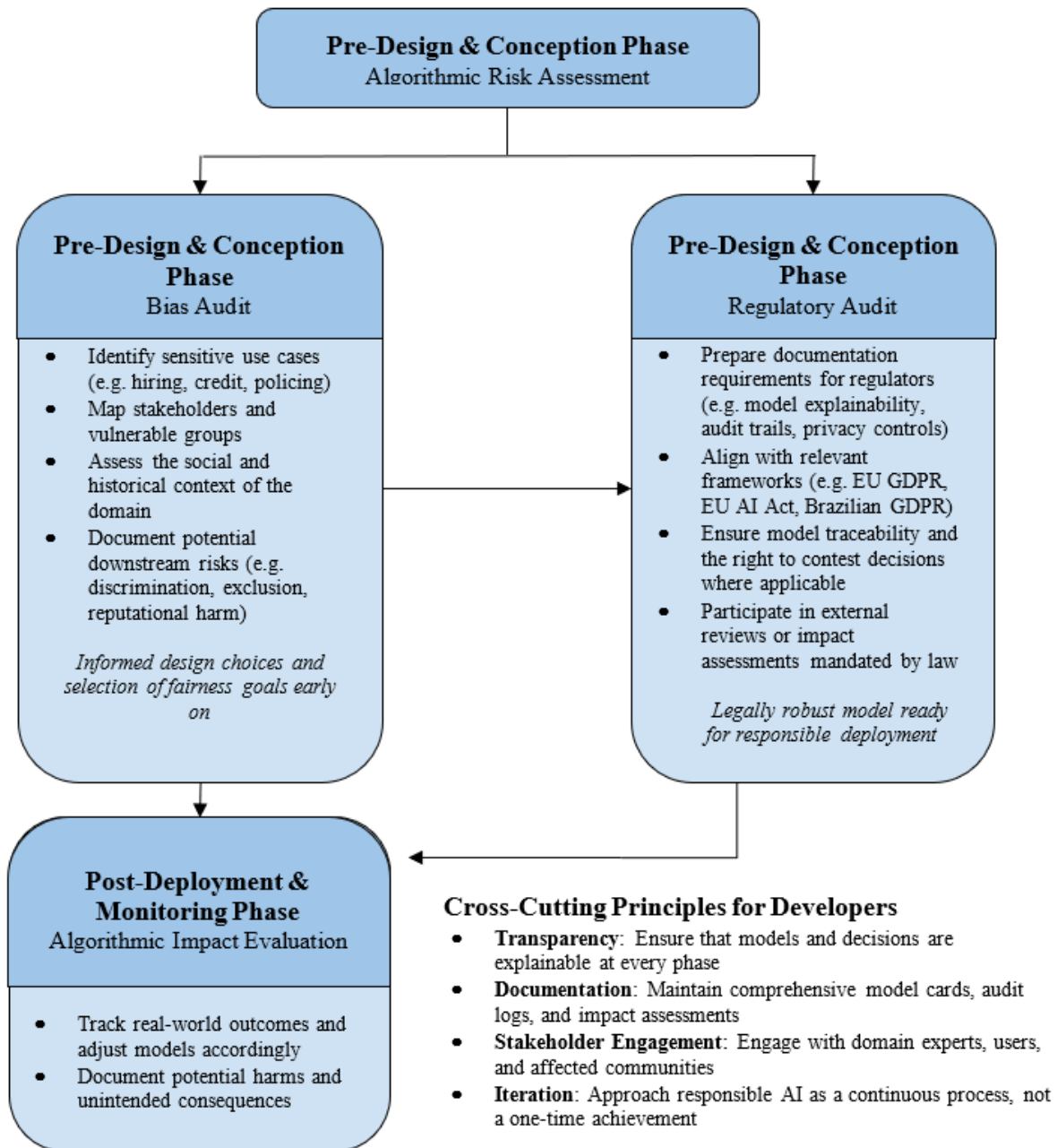


Figure 1. Developer's Model for Responsible AI

Source: Authors' elaboration based on Barocas et al. (2023).

The *Developer's Model for Responsible AI* illustrates that fairness in algorithmic systems must be embedded across multiple layers, from the earliest stages of design to post-deployment oversight. This involves more than implementing technical safeguards: it requires inclusive design practices, robust bias audits, transparent decision-making processes, and meaningful avenues for appeal. When applied together, these mechanisms create an ecosystem of accountability, one that relies not on a single intervention but on the continuous interaction

between internal controls, external audits, and public engagement.

Although audits play an increasingly central role in the governance of AI, they are not a panacea. Often limited to surface-level metrics like statistical parity, audits can overlook deeper normative questions, such as whose values are embedded in the system and what forms of inequality are being reproduced. Even more concerning, audits can become symbolic gestures, offering legitimacy without real accountability. In the cases of Amazon and

HireVue, the absence or superficiality of audits allowed discriminatory systems to persist until public exposure forced a reckoning.

This mismatch between the speed of algorithmic deployment and the slowness of institutional oversight reveals the importance of iterative, responsive governance. The *Developer's Model* proposes precisely this: a continuous loop that connects risk assessments, bias detection, regulatory alignment, and real-world impact evaluation.

Realizing this vision of fairness by design requires more than technical guidance; it calls for new institutional arrangements and shared governance models. Developers and companies must collaborate with regulators, civil society organizations, and the communities affected by these systems. This includes adopting enforceable measures such as algorithmic transparency reports, public model registries, pre-deployment impact assessments, and formalized appeal processes. These tools anchor fairness not in good intentions, but in verifiable practices.

Crucially, this model also demands participatory mechanisms. Democratic legitimacy in AI governance cannot be achieved without giving voice to those who are subject to algorithmic decision-making. Creating spaces where users, advocates, and experts can contribute to shaping the design and oversight of these systems is essential to preventing harm and building public trust.

In the end, fairness by design is not simply a technical challenge; it is a political undertaking. It asks us to consider: who defines what is fair? Who gains and who loses from algorithmic systems? And how do we ensure accountability when those systems fail? AI is not a neutral force. It reflects and amplifies existing structures of power. Whether it reinforces exclusion or becomes a tool for equity depends not on the algorithm alone, but on the governance choices we make collectively.

5. Conclusion: Equality by Design – Reclaiming the Political Imagination of AI

The promise of artificial intelligence systems that are fairer, more rational, and more efficient than humans now confronts a fundamental paradox: the more technically advanced these systems become, the more apparent their normative limitations grow. Throughout this paper, we have argued that algorithmic fairness

is not a feature that can be toggled on with a click; it is a social and political construction that must be continuously embedded, monitored, and renegotiated.

In the first section, the cases of Pymetrics, HireVue and Amazon served as a starting point to show how even well-intentioned technological solutions, designed to promote meritocracy and diversity, can end up reproducing, or even intensifying, structural inequalities. The audit conducted by Christo Wilson and his team (Wilson et al., 2021) demonstrated that these systems do not fail by accident; they fail because they are built on business models and epistemologies that often overlook the complexity of what it means to be fair. As Roman V. Yampolskiy (2024) highlights, the opaque and unpredictable nature of AI systems makes these distortions even harder to control. Meredith Broussard (2018, 2023) reminds us that there is no such thing as neutral code; technical design always reflects social and political choices.

In the second section, we moved from critique to normative theory. Drawing on the work of Brian Christian, Barocas, Hardt, Narayanan, Kearns, and Roth, we explored the conceptual dilemmas of defining fairness and the multiple approaches to understanding justice in algorithmic systems. We argued that the real challenge is not to eliminate all bias, a task that is both unrealistic and epistemologically flawed, but to decide, publicly and transparently, which forms of unequal treatment are morally defensible and which ones reinforce historical injustices. We discussed the foundations of unfair discrimination and competing conceptions of equal opportunity, showing how models such as statistical parity and the Pareto frontier can be used to navigate trade-offs between accuracy and equity.

In the third section, we adopted a propositional stance, guided by the work of Orly Lobel (2022) and Barocas et al. (2023). Algorithmic justice cannot be a corrective measure; it must be a design imperative. This means embedding fairness from the earliest stages of system development, but also maintaining ongoing accountability mechanisms once the system is deployed. We discussed tools such as bias audits, risk and impact assessments, and the need for participatory design practices that actively include affected communities in deciding what, ultimately, should be optimized.

What emerges from this trajectory is a provocative but necessary conclusion: justice is not a product to be purchased; it is a process to be built. And like all processes, it requires participation, oversight, revision, and a willingness to recognize limits and learn from failure. Algorithmic systems will not replace our ethical debates; they will make them more urgent, more visible, and more complex.

If we want AI to play a constructive role in building a more equitable society, technical advancement alone is not enough. These systems must also be institutionally accountable, socially conscious, and normatively committed. In the end, the fight for algorithmic justice is not a battle between engineers and lawyers; it is a struggle over the future of digital democracy.

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Toward a Legally Interoperable NFT Ecosystem: A Hybrid Framework for Intellectual Property Governance in Digital Assets

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Abstract

This paper investigates the unresolved intellectual property challenges posed by non-fungible tokens (NFTs), a rapidly growing class of digital assets that blend decentralized technologies with creative content distribution. Despite widespread adoption across art, entertainment, and gaming sectors, the legal infrastructure surrounding NFTs remains fragmented, creating uncertainty for creators, buyers, and platforms alike. The objective of this study is to critically evaluate existing theoretical models—including property-based, contract-based, and provenance-centered approaches—and assess their adequacy in governing NFT-related rights and obligations.

Methodologically, the paper employs a comparative legal analysis of current NFT licensing practices, supported by interdisciplinary review of blockchain architecture, smart contract functionalities, and relevant international IP frameworks. Based on legal theory, technical standards, and case studies, the paper identifies critical gaps in enforceability, rights attribution, and jurisdictional clarity.

In response, the study proposes a hybrid legal-technical framework comprising seven interconnected components: Smart Licensing Infrastructure (SLI), an On-Chain Provenance and Rights Registry, Embedded Royalty Clauses with Legal Backing, Token-Linked Legal Contracts (TLCs), along with dispute resolution and jurisdictional compatibility. These elements collectively aim to bridge decentralized code execution with enforceable legal standards, facilitating clearer licensing arrangements, more reliable royalty enforcement, and scalable dispute resolution mechanisms.

It presents a novel blueprint for technical capabilities of NFTs with the foundational requirements of intellectual property law. By incorporating legal metadata, verifiable authorship records, and jurisdictional parameters directly into NFT structures, the framework strengthens legal predictability without restricting innovation. This research contributes to academic discourse by advancing a multidimensional governance approach for digital assets, offering actionable pathways toward regulatory coherence and sustainable development within the NFT ecosystem moving forward.

Keywords: NFTs, intellectual property, smart contracts, digital rights

sparked significant legal questions about their fundamental nature, ownership implications, and fit within established intellectual property systems. As NFTs increasingly serve as vehicles for cultural expression, artistic dissemination, and digital commerce, clarifying their legal character becomes essential for addressing intellectual property concerns.¹ This paper examines the conceptual separation between NFTs and the digital assets they point to, tackles widespread misunderstandings about ownership rights, and places NFTs within property law's wider context.

1.1 The Concept and Characteristics of NFT

NFTs do not actually hold the digital artwork, music file, or other creative content they represent.² Instead, they operate as “cryptographic tokens” recorded on a blockchain, functioning as verifiable pointers to specific assets typically stored off-chain. The creation and management of NFTs occur through smart contracts—self-executing programs deployed on blockchain platforms like *Ethereum* or *Solana*.³ These contracts automate core functions including minting, transfers, and enforcement of token-related conditions. Unlike interchangeable cryptocurrencies such as Bitcoin, where each unit holds identical value, NFTs derive uniqueness from distinct metadata and identifiers that make every token irreplaceable.⁴

This metadata conventionally includes the creator's wallet address, the timestamp of minting, and a *Uniform Resource Identifier (URI)*⁵

linking to the referenced digital content. Critically, NFT architecture fundamentally separates the token from its associated asset. While serving as a verifiable certificate of authorship and provenance, the token neither contains nor embodies the actual creative work. Typically, the digital file resides externally—hosted either on traditional servers or decentralized storage solutions like the *InterPlanetary File System (IPFS)*⁶—and remains under the original creator's or hosting platform's control.

1.2 Legal Misconceptions of Digital Ownership

A primary source of confusion in the NFT market stems from the widespread yet mistaken belief that purchasing an NFT automatically grants full ownership of the underlying digital asset or its intellectual property rights.⁷ As a matter of fact, such rights don't actually transfer through the blockchain transaction alone. Intellectual property ownership or usage rights require explicit authorization—typically via written agreement, licensing terms, or smart contract provisions—that clearly spells out what rights are being conveyed.⁸

This misconception echoes long-standing ambiguities in intellectual property law. Consider how purchasing a physical artwork doesn't automatically give the owner reproduction or distribution rights, which needs to be clearly transferred through separate agreement. Similarly, acquiring an NFT associated with a digital image doesn't actually grant permission to adapt, reproduce, distribute, or commercially exploit the underlying content. Without explicit contractual terms, copyright and related rights remain with the original creator or rights holder as the default legal position.

In most cases, NFT purchasers receive only a limited license, typically for personal or

¹ Gultom, A., & Asril, F. (2023). Key Issues of NFT (Non-Fungible Token): How Transfer of Copyright Should Adapt?. *Perspektif Hukum*. <https://doi.org/10.30649/ph.v23i1.197>.

² Troitskiy, V. (2023). Neither Tinder nor Karaoke: Approaching the Legal Status of Non-Fungible Tokens (NFTs). *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4581840>.

³ Kamkuemah, M., & Sanders, J. (2023). NFT formalised. *ArXiv*, abs/2310.14600. <https://doi.org/10.48550/arXiv.2310.14600>.

⁴ Mishra, P., Singhal, A., Thakur, V., Sharma, D., & Bedi, M. (2024). Beyond Traditional Intellectual Property: Rise of Non-Fungible Tokens (NFTs) and Role of Blockchain in Protecting Digital Art. *Journal of Intellectual Property Rights*. <https://doi.org/10.56042/jipr.v29i3.2636>.

⁵ Razi, Q., Devrani, A., Abhyankar, H., Chalapathi, G., Hassija, V., & Guizani, M. (2024). Non-Fungible Tokens (NFTs)—Survey of Current Applications, Evolution, and Future Directions. *IEEE Open Journal of the Communications Society*, 5, 2765-2791. <https://doi.org/10.1109/OJCOMS.2023.3343926>.

⁶ Dolganin, A. (2021). Non-fungible tokens (NFT) and intellectual property: The triumph of the proprietary approach?. *Digital Law Journal*. <https://doi.org/10.38044/2686-9136-2021-2-3-46-54>.

⁷ Abubakar, M., Gunathilake, N., Buchanan, W., & O'Reilly, B. (2023). A Review of the Non-Fungible Tokens (NFT): Challenges and Opportunities. In: Tan, Z., Wu, Y., Xu, M. (eds) Big Data Technologies and Applications. BDTA 2023. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 555. Springer, Cham, 171-190. https://doi.org/10.1007/978-3-031-52265-9_12.

⁸ Davtyan, T. (2023). Navigating the Legal Landscape: An Analysis of NFTs Under Armenian Law. *Bulletin of Yerevan University C: Jurisprudence*. <https://doi.org/10.46991/bysu:c/2023.14.1.034>.

⁹ Öztürk, Ö. (2023). Intellectual Property in NFTs and Legal Challenges. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4322697>.

non-commercial use, such as displaying the content on digital platforms or within virtual environments. Any broader permissions—such as commercial use, derivative creation, or sublicensing—need to be expressly set out in the metadata, licensing terms, or accompanying documentation. Without such clarity, the scope of rights remains narrowly construed in favor of the original rights holder.

1.3 The Controversial Legal Identity of NFTs

A central legal issue in the ongoing discourse surrounding NFTs concerns their ontological classification: should NFTs be treated as property, as licenses, or as a distinct legal category altogether? ¹ Although legal systems have not yet reached consensus, NFTs are increasingly regarded as a form of intangible personal property, comparable to digital assets such as domain names, in-game items, or dematerialized financial instruments.

Under the framework of common law, NFTs generally fall under personal property principles, while civil law systems often define them as digital movable goods or assign them to *sui generis* categories based on domestic statutes. ² Although blockchain transactions transfer the token itself, they don't automatically transfer actual rights to the linked digital content to third parties—that requires clear licensing agreements or contractual frameworks. This fundamental disconnect prompts serious questions about whether NFTs truly fit within traditional property law frameworks. The real problem is compounded by regulatory authorities' and courts' lack of clear guidance regarding NFTs' legal status across different contexts, which doesn't help resolve the confusion.³

In bankruptcy proceedings⁴, where it's still unclear whether NFTs constitute recoverable

digital assets holding real economic value or merely symbolic tokens without enforceable legal claims. Tax authorities similarly haven't figured out whether to treat NFTs as collectibles, software licenses, or financial instruments.⁵ Each category carrying dramatically different tax obligations. These unresolved doctrinal gaps create substantial challenges extending beyond intellectual property enforcement to consumer protection concerns, compliance headaches for businesses, and ultimately undermining transaction stability across digital markets.

2. Copyright Challenges in NFT Transactions

2.1 Restrictions on Rights Transfer in NFT Sales

A persistent challenge in NFT-related copyright law stems from the widespread but mistaken belief that owning a token equates to holding copyright in the associated digital work. This confusion not just mislead buyers, it's created significant legal unpredictability across NFT markets. Crucially, while purchasing an NFT confers ownership of a verifiably unique cryptographic token recorded on-chain, it does not transfer any copyright interests without separate explicit contractual terms in the underlying creative content. These terms are protected separately by intellectual property law.

A widely cited example occurred in March 2021, when a blockchain-focused collective purchased Banksy's limited-edition print *Morons*⁶ for approximately \$95,000, incinerated the physical artwork during a live-streamed event, and minted a non-fungible token representing a video of its destruction. The NFT later sold for approximately \$380,000. Notably, neither Banksy nor Pest Control (the only entity authorized to authenticate Banksy's works) endorsed the act or transferred any reproduction or copyright rights in connection with the NFT. This incident illustrates a key doctrinal point: purchasing an NFT, even one tied to a physical or symbolic event, does not, in itself, grant the legal authority to reproduce, distribute, or publicly display the associated content. Rather, the buyer

¹ Tan, C. (2024). Rights in NFTs and the flourishing of NFT marketplaces. *Int. J. Law Inf. Technol.*, 32. <https://doi.org/10.1093/ijlit/eaee018>.

² Kim, Y. (2024). Analysis and Implications of the Spanish First Instance Court's Decision of Mango NFT's Copyright Infringement Case: Focusing on Property Owner's Lazy Minting, Use in Metaverse, and Application of U.S. Fair Use Doctrine. *Korea Copyright Commission*. <https://doi.org/10.30582/kdps.2024.37.4.5>.

³ Alqarni, A. (2024). A blockchain-based solution for transparent intellectual property rights management: smart contracts as enablers. *Kybernetes*. <https://doi.org/10.1108/k-04-2024-1074>.

⁴ Polezhaev, O. (2023). NFT Assets in the System of Legal Rights: Problems of Legal Qualifications. *Zakon*. <https://doi.org/10.37239/0869-4400-2023-20-9-68-75>.

⁵ Dwitanti, A., & Simatupang, D. (2022). Tax Imposition and Legal Enforcement on the Digital Asset of Non-Fungible Token (NFT). *Unram Law Review*. <https://doi.org/10.29303/ulrev.v6i2.250>.

⁶ Internet & Technology Law Blog. (2021, March 18). *The Fungible Banksy NFT: What Did the Buyer Really Get?* Morrison Foerster LLP. Retrieved from <https://www.internetandtechnologylaw.com/fungible-banksy-nft-copyright-digital-art>

merely obtains a token that references a digital file. As *Murray* (2022) have emphasized, the process of tokenization does not, by itself, transform possession of a file into ownership of enforceable intellectual property rights.¹ Thus, even where high prices are involved, the legal interest remains confined to the token, not the content it points to.

Although most NFT projects provide minimal or no intellectual property rights to holders, the Bored Ape Yacht Club (BAYC)², created by Yuga Labs, represents a notable exception. Each purchaser is granted a broad commercial license to use the specific image of their ape in merchandising, branding, and creative ventures. However, these rights are not embedded in the NFT's smart contract but are instead articulated in off-chain Terms and Conditions. As such, their enforceability depends on traditional contract law doctrines, which require, among other things, clear notice and assent—often satisfied through mechanisms such as clickwrap agreements or conspicuous disclosure. Further complexity arises in the context of secondary sales. Since subsequent purchasers may not be made aware of or affirmatively consent to these licensing terms, it remains unsettled whether the license transfers automatically upon resale. This example underscores that the legal rights associated with NFTs continue to be governed by conventional legal frameworks and highlights ongoing uncertainty regarding rights succession in secondary markets.

2.2 Unauthorized Tokenization and Infringement

The dispute in *Miramax vs. Tarantino* (2021)³ illustrates the legal uncertainties that arise when legacy intellectual property agreements are tested by emergent digital formats like NFTs. In this case, director Quentin Tarantino announced plans to auction NFTs containing digitized excerpts from his handwritten *Pulp Fiction* screenplay, prompting a lawsuit from Miramax,

the studio that produced the film. Miramax argued that its 1993 contract with Tarantino granted it exclusive rights to all media and derivative uses of the film—including those arising from future technological developments. Tarantino, by contrast, maintained that he retained “publication rights” to the screenplay, and that the NFTs fell within that category. Central to the dispute was the question of whether NFTs—cryptographic tokens referencing content stored off-chain—constituted a new form of “publication” or a distinct commercial exploitation requiring separate rights clearance. Although the case settled privately in 2022 without judicial resolution, it brought into sharp relief the legal ambiguity surrounding how pre-digital contracts allocate rights in relation to tokenized content. It further underscores that the act of minting an NFT implicates not only ownership of the token, but also underlying rights in the associated work—particularly when the work is governed by pre-existing intellectual property arrangements. As such, the case serves as a cautionary precedent for creators and rights holders navigating the intersection of legacy IP and novel digital asset commercialization.

The case of *Nike vs. StockX* (2022)⁴, further illustrates how NFT transactions can give rise to significant trademark liability when digital tokens are linked to branded physical goods without authorization. StockX, a resale platform for sneakers, launched a series of “Vault NFTs” representing physical Nike shoes it held in storage. Nike alleged that the use of its trademarks and product images in these NFTs constituted unauthorized commercial use, potentially misleading consumers into believing that the NFTs were endorsed or issued by Nike. The lawsuit raised multiple claims under U.S. trademark law, including infringement, dilution, and unfair competition. StockX defended its Vault NFTs as digital receipts analogous to traditional product listings on e-commerce platforms, invoking both the first-sale doctrine and fair use defenses. However, the legal dynamics shifted when Nike amended its complaint in 2023 to include counterfeiting and

¹ Murray, M. (2022). Transfers and Licensing of Copyrights to NFT Purchasers: A Brief and Pleasant Guide to NFTs and Copyright Law, Part 2. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4152475>.

² Skadden, Arps, Slate, Meagher & Flom LLP. (2022, June). *NFTs and IP: The Growing Complexity of Commercial Rights*. Retrieved from https://www.skadden.com/-/media/files/publications/2022/06/skadden_discusses_the_growing_complexity_of_commercial_rights_issues_in_nfts.pdf

³ *Miramax, LLC v. Tarantino*, No. 2:21-cv-08979 (C.D. Cal. filed Nov. 16, 2021). Retrieved from <https://www.meshiplaw.com/litigation-tracker/miramax-v-tarantino>

⁴ *Nike, Inc. v. StockX LLC*, No. 1:22-cv-00983 (S.D.N.Y. filed Feb. 3, 2022) District Court, S.D. New York. Retrieved from <https://www.courtlistener.com/docket/62654048/nike-inc-v-stockx-llc/>

false advertising, after discovering that some sneakers sold via StockX's platform were inauthentic. In March 2025, the federal court granted Nike partial summary judgment on the counterfeiting claim, affirming that even digitally-mediated representations of physical products can trigger trademark liability if they imply unauthorized origin or endorsement. This case highlights how NFTs, though technically distinct from the underlying goods, function in practice as brand-linked commercial assets, and thus fall squarely within the regulatory scope of trademark law. It also underscores the limitations of traditional doctrines like first-sale and fair use when applied to blockchain-based tokens that are not merely descriptive or passive representations, but actively circulated as high-value digital commodities.

The landmark case of *Hermes International vs. Mason Rothschild (MetaBirkins)* (2023)¹, provides a pivotal illustration of how NFT-based artistic expression may still infringe trademark rights when commercial confusion is likely. In this case, digital artist Mason Rothschild created and sold a series of NFTs titled *MetaBirkins*—stylized digital renderings of faux-fur Birkin-style handbags—which closely evoked Hermes' iconic luxury product line. Although Rothschild claimed his works were protected under the First Amendment as artistic commentary, Hermes argued that the NFTs misappropriated its trademarked brand elements and created a false association with its products.

The federal jury ruled in favor of Hermes, finding Rothschild's use of the Birkin trademark constituted infringement, dilution, and cybersquatting, ultimately awarding the fashion company \$133,000 in damages. Crucially, the court dismissed Rothschild's defense positioning the NFTs as purely conceptual artworks—concluding their design and marketing deliberately exploited Hermes' brand equity to mislead customs.² This landmark case makes it clear that trademark protections absolutely reach into digital markets. Crucially, it establishes that turning art into NFTs will not shield creators from commercial responsibility

when their tokens effectively operate as brand symbols. Even more important, the decision appeals a fundamental truth: judging NFTs' legal standing demands looking beyond their technological wrapping to examine their real-world marketplace behavior and how consumers actually perceive them. *Hermes v. Rothschild* now stands as concrete precedent, showing how creative freedom and brand protection might coexist within NFT commercial constantly shifting landscape.

In conclusion, these legal battles spanning film studios, luxury brands, and retail giants expose an undoubtable truth: turning physical or digital assets into NFTs routinely happens in legal gray zones. In these misty spaces, IP rights often exist in vague limbo, where poorly defined, erratically licensed, and frequently impossible to enforce in practical terms. Whether people are seeing pirated content minted without permission, or using NFTs to infringe brand trademarks with artistic disguising. These conflicts reveal how NFT deals spotlight traditional intellectual property systems' failure to handle digitally-native value transactions. They also lay bare how vintage legal tools—first-sale copyright doctrine or fair use defenses—just fail to translate effectively when applied to decentralized code-driven assets. While courts build NFT-specific case law, one fundamental principle is non-negotiable: minting and trading NFTs must follow the same core intellectual property rules that bind old-school media. Technological innovation is not supposed to become a legal loophole for dodging obligations.

2.3 Platform Practices and Their Limitations

NFT marketplaces such as OpenSea, Rarible, Foundation, SuperRare, and Zora serves for the creation, circulation, and monetization of NFTs.³ Despite of their pivotal role in shaping the NFT economy, these platforms operate within fragmented and underdeveloped legal regimes, particularly in relation to copyright governance. Enforcement practices across platforms remain inconsistent and opaque, with limited vetting of uploaded content, few proactive mechanisms to prevent unauthorized minting, and a general absence of standardized disclosures regarding intellectual property rights.

¹ United States District Court of the Southern District of New York [2023]: *Hermes Int'l v. Rothschild*, No. 22-CV-384-JSR, 2023 WL 1458126 (S.D.N.Y. Feb. 2, 2023), <https://www.wipo.int/wipolex/en/members/profile/WIPOLEX>

² Elzweig, B., & Trautman, L. (2022). When Does a Nonfungible Token (NFT) Become a Security?. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4055585>.

³ Wang, R., Lee, J., & Liu, J. (2024). Unwinding NFTs in the Shadow of IP Law. *ArXiv*, abs/2501.03556. <https://doi.org/10.1111/ablj.12237>.

Platform enforcement practices remain wildly inconsistent and opaque. Most exhibit inadequate content vetting, almost no preventive measures against unauthorized minting, and generally missing standardized IP disclosures.¹ Consequently, creators face substantial infringement risks, while buyers often don't really grasp what rights, are actually conveyed through their NFT purchases. This contractual ambiguity and copyright non-compliance across marketplaces has created a legal breeding ground where token ownership is routinely confused with content ownership, turning rights uncertainty into the default marketplace condition rather than an occasional exception.

OpenSea, the biggest NFT marketplace by volume, demonstrates the contradictions in current platform governance around intellectual property protection. While its Terms of Service technically prohibit minting unowned content, enforcement remains minimal and largely reactive. The platform depends almost entirely on a *Digital Millennium Copyright Act* (DMCA)² takedown system, which requires copyright holders to file formal complaints before any action occurs. This approach allows infringing NFTs, including plagiarized art and unlicensed media, to stay publicly listed and actively traded for weeks or even months before removal.³ The situation gets worse significantly in 2021 with OpenSea's "lazy minting" tool⁴ coming out, which allowed NFT creation without upfront gas fees. Though intended to democratize access, this tool enabled industrial-scale unauthorized minting due to near-zero verification barriers. By early 2022, OpenSea admitted over 80% of NFTs created were fraudulent works, plagiarized, spam, or outright

scams⁵. This shocking news exposing flaws of their governance model.

Although the platform implemented temporary restrictions, like disabling the functionality and limiting free minting capabilities, but these fixes did not last for a long time. Following objections from user communities, the measures were promptly withdrawn. Consequently, NFT marketplaces face an urgent mandate: to implement robust content screening mechanisms, establish verifiable creator authentication systems, and develop binding licensing frameworks. The governance measures remain essential to prevent operational convenience from undermining copyright integrity.

A frequently referenced incident on *Rarible*⁶ reveals systemic defaults in NFT platforms to prevent copyright infringement. In this notable case, a digital artist discovered their complete artistic portfolio had been minted and sold by an impersonator without authorization. The unauthorized party replicated not only the images but also the original titles and descriptions, successfully generating thousands of dollars in NFT sales before the infringement came to light. Although *Rarible* ultimately removed the counterfeit tokens, the platform offered no restitution to either the original artist or the misled buyers, who had unknowingly purchased unauthenticated digital assets. This case illustrates a broader structural deficiency: most NFT marketplaces expressly disclaim responsibility for verifying the legitimacy of user-submitted content, framing themselves as neutral intermediaries akin to web hosts or content platforms.⁷ While such provisions may offer platforms legal protection, they also create a permissive environment for abuse, in which the burden of enforcement falls disproportionately on individual creators.

3. Academic Perspectives and Theories of Legal

¹ Bobek, H. (2025). To mint or not to mint: non-fungible tokens and the right of publicity. *Russian Journal of Economics and Law*. <https://doi.org/10.21202/2782-2923.2025.1.141-174>.

² Davis-Fox, N. (2025). World Wide Whac-a-Mole: The Inadequacies of the DMCA to Protect Copyright Holders Online and Why Artificial Intelligence is the Solution. *Texas A&M Journal of Property Law*. <https://doi.org/10.37419/jpl.v11.i2.5>.

³ Wiryanthi, N. (2025). Copyright Infringement in Online Media: Corporate Legal Liability. *Al-Adalah: Jurnal Hukum dan Politik Islam*. <https://doi.org/10.30863/ajmpi.v10i1.7681>.

⁴ Fang, M., Fang, Y., Gao, C., Leung, A., & Ye, Q. (2025). The Impact of "Lazy Minting" on Seller Performance in NFT Marketplaces—A Transaction Cost Economics Perspective. *Journal of Operations Management*. <https://doi.org/10.1002/joom.1368>.

⁵ Pearson, J. (2022, January 28). *More than 80 percent of NFTs created for free on OpenSea are fraud or spam, company says*. Retrieved from <https://www.vice.com/en/article/more-than-80-of-nfts-created-for-free-on-opensea-are-fraud-or-spam-company-says/>

⁶ Stephen, B. (2021, April 22). NFT mania is here, and so are the scammers. *The Verge*. Retrieved from https://www.theverge.com/2021/3/20/22334527/nft-scams-artists-opensea-rarible-marble-cards-fraud-art?utm_source

⁷ Helman, L., & Tur-Sinai, O. (2023). Bracing Scarcity: Can NFTs Save Digital Art?. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4378570>.

Interpretation

The explosive growth of NFTs has ignited vigorous academic debate about their intersection with intellectual property regimes. While NFTs provide novel mechanisms for verifying digital ownership and provenance, established IP frameworks have largely failed to adapt, exposing transactions to widespread misinterpretation, systemic exploitation, and persistent litigation. To bridge this gap, scholarly discourse now centers on four dominant frameworks for conceptualizing NFTs' legal status concerning copyright, licensing, and authenticity: first, property-based approaches; second, contractual and licensing models; third, provenance and authenticity paradigms; and finally, hybrid or reformist perspectives. Each offers pathways for clarifying NFT-related legal uncertainties, yet each also grapples with significant limitations that complicate practical implementation.

3.1 Property-Based Approaches

One influential perspective in the scholarly debate conceptualizes NFTs as a form of intangible personal property. Advocates contend that granting NFTs explicit property status would better align buyer expectations with enforceable rights and provide a coherent framework for digital ownership. Werbach, K. (2022)¹, for instance, draws a compelling analogy to domain names, which are recognized in legal systems as choses in action—intangible rights enforceable through legal remedies. Like domain names, NFTs derive their value not from any inherent material form but from their uniqueness, transferability, and recognized control within economic markets.² This analogy highlights the potential of a property-based framework to integrate NFTs into established legal categories while addressing the market demand for clear and secure ownership structures.

This framework carries clear appeal for those seeking stability in the NFT market. Treating NFTs as property could give buyers a much

stronger sense of security, since ownership would translate into legally enforceable rights rather than just a blockchain record. Besides, it would resonate with the widespread assumption that purchasing an NFT is essentially equivalent to purchasing “the work” itself, an expectation that currently leads to frequent misunderstandings. It could also foster greater confidence among investors, as a settled property status would provide a more reliable foundation for using NFTs in trading or even as collateral in securitization schemes.

While civil law systems like Turkey³, Japan⁴ and Netherlands⁵ have experimented with classifying NFTs as “digital movables,” they remain hesitant to extend traditional property frameworks built for tangible goods into the digital realm. As the *OECD Digital Assets Report (2021)*⁶ observed, global recognition of NFTs as property remains fragmented and unsettled, leaving cross-border transactions especially uncertain.

3.2 Contractual and Licensing Approaches

Some scholars argue that NFTs should not be seen as property but instead as evidence of certain contract-based rights.⁷ Under this view, the value and meaning of an NFT depend on the terms set out in smart contracts and related licensing agreements.

These smart contracts are bits of code recorded

¹ Werbach, K. (2022). Digital Asset Regulation: Peering into the Past, Peering into the Future. *William & Mary Law Review*, 64(1), 185–245. Retrieved from <https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=3984&context=wmlr>

² Yu, M. A. (2023). From code to contract: Understanding NFTs as enforceable rights. *Northwestern Journal of Technology and Intellectual Property*, 21(1), 77–102. <https://scholarlycommons.law.northwestern.edu/njt看ip/vol21/iss1/4>

³ Çağlayan Aksoy, P. (2023). The applicability of property law rules for crypto assets: considerations from civil law and common law perspectives. *Law, Innovation and Technology*, 15(1), 185–221. <https://doi.org/10.1080/17579961.2023.2184140>

⁴ Manon Fafet. (December 2024). Introducing a droit de suite through NFTs in Japan: legal hurdles. *Journal of Intellectual Property Law & Practice*, 19(12), 908–916. <https://doi.org/10.1093/jiplp/jpae087>

⁵ Zimmermann, Katja. (2022). “What’s New in European Property Law?: An Overview of Publications in 2019–2021.” *European Property Law Journal*, 11(1-2), pp. 105–128. <https://doi.org/10.1515/eplj-2022-0004>

⁶ OECD. (2021). Regulatory Approaches to the Tokenisation of Assets, OECD Blockchain Policy Series, www.oecd.org/finance/Regulatory-Approaches-to-the-Tokenisation-of-Assets.htm

⁷ Fairfield, J. A. T. (2022). Tokenized: The law of non-fungible tokens and unique digital property. *Indiana Law Journal*, 97(4), Article 4. Retrieved from <https://www.repository.law.indiana.edu/ilj/vol97/iss4/4/>; Putranti, D., & Putri, U. (2024). Enforcement of Copyright Law on Non-Fungible Token (NFT) Through Smart Contracts. *Kosmik Hukum*. <https://doi.org/10.30595/kosmikhukum.v24i1.18476>; Marias, M. (2022). I Want My NFT!: How an NFT Creative Commons Parallel Would Promote NFT Viability and Decrease Transaction Costs in NFT Sales. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4210589>.

on the blockchain. They help carry out tasks like transferring ownership or paying royalties automatically. However, they usually do not explain what specific intellectual property rights the buyer actually receives. As Ellul and Revolidis (2023)¹ note, smart contracts “facilitate the execution of transactions, but not the interpretation of rights,” which often leaves buyers confused about what they legally own. Many buyers assume that because the transaction is handled securely and automatically, the legal ownership must be clear as well. But in reality, the legal side is often much more complex—and this gap between expectation and legal reality can cause real problems.

Despite of the existed challenges, viewing NFTs as evidence of contractual rights still offers important advantages. It supports copyright protection by allowing creators to keep control over how their work is reproduced or modified, which reinforces long-standing legal norms. In addition, the structure is flexible. Projects can design licenses that match their goals, whether for commercial, personal, or community use. This adaptability is especially useful in a fast-changing digital environment. Another strength lies in its legal compatibility. Many NFT platforms now use licensing models², which are already familiar in both legal and creative fields. This makes it easier to connect NFTs with existing systems, lowering barriers for users and reducing potential misunderstandings.

The limitations of this framework are hard to ignore. A study titled *2024 NFT PFP Project IP License Report* conducted by the University of San Francisco³ analyzed 100 profile picture (PFP) NFT projects and revealed notable inconsistencies in licensing practices. The findings show that only 41% of the projects adopted the NFT 2.0 license, a figure that is equal to the percentage of projects that offered no license at all. Among those using the NFT 2.0

framework, 65% imposed restrictions on the transfer of image rights, while only 17% allowed full transfer of those rights. However, this figure rises to 31% when projects that allow full transfer of image rights—excluding the transfer of moral rights—are also taken into account. A well-known example involves *NBA Top Shot Moments*, where buyers later discovered they were only granted personal use rights. This restriction came as a surprise to many, especially given that the marketing materials had implied broader permissions.

3.3 Provenance and Authenticity Approaches

Another way of understanding NFTs focuses less on legal ownership or licensing rights and more on their role as proof of authenticity and origin.⁴ In this view, the primary function of an NFT is to confirm that a digital work comes from a specific creator. Rather than acting as a legal title or contract, the NFT serves as a certificate of provenance, helping to distinguish original works from copies in a digital space where duplication is easy and often indistinguishable.⁵

This concept closely mirrors practices in the traditional art world. A certificate of authenticity does not transfer copyright to the buyer, but it plays a crucial role in confirming the work’s originality and supporting its market value.⁶ In much the same way, NFTs can verify the source and legitimacy of digital creations. This is particularly important in online spaces, where digital files can be copied endlessly without any loss of quality. By linking a work to its creator through blockchain records, NFTs offer a way to maintain trust and traceability in digital art and media markets.

This authenticity-based model offers several practical benefits. One of its key strengths is transparency. Because NFTs record minting dates and link works to specific wallet addresses, they create a public and verifiable

¹ Ellul, J., & Revolidis, I. (2023). *Non-fungible tokens (NFTs), smart contracts and contracts: The need for legal and technology assurances*. SSRN. <https://doi.org/10.2139/ssrn.4325415>

² García, R., Cediél, A., Teixidó, M., & Gil, R. (2022). Semantics and Non-fungible Tokens for Copyright Management on the Metaverse and Beyond. *ACM Transactions on Multimedia Computing, Communications and Applications*, 20, 1-20. <https://doi.org/10.1145/3585387>.

³ Belle, Charles, NFT PFP Project IP License Report (October 25, 2024). Available at SSRN: <https://ssrn.com/abstract=5044481>

⁴ Sviridova, E. (2022). NFT tokens in the context of copyright on the works. *Gosudarstvo i pravo*. <https://doi.org/10.31857/s102694520021581-0>; Tarasenko, L. (2022). NFT — the latest digital copyright object or form of expression. *Theory and Practice of Intellectual Property*. <https://doi.org/10.33731/22022.259748>.

⁵ Kartasheva, A., & Trubina, M. (2024). Between Crypto Art and Copyright: NFT Tokens as Tools for Confirming the Authenticity of Art Objects. *Changing Societies & Personalities*. <https://doi.org/10.15826/csp.2024.8.2.285>.

⁶ Kedlaya, S., R, S., & H, N. (2024). NFT Based Secure Platform for Copyright Images. *International Journal of Advanced Research in Science, Communication and Technology*. <https://doi.org/10.48175/ijarsct-15370>.

trail of authorship. It helps reduce fraud and increases trust in digital art markets. ¹Another advantage is that it avoids conflict with copyright law. By not claiming to grant intellectual property rights, this approach respects the limits of what NFTs can legally do.² It also sets realistic expectations for consumers. Buyers are more likely to understand that they are purchasing a certificate of authenticity rather than acquiring ownership of the underlying work itself.

It is inevitable that provenance on the blockchain can be manipulated. Fraudsters have been known to mint digital assets without permission from the original creators, thereby producing false records of authorship. A well-known case in 2021 involved a Twitter user who minted thousands of images scraped from *DeviantArt*, linking them to their own wallet. Despite repeated takedown efforts, these unauthorized NFTs continued to appear on multiple platforms.

3.4 Hybrid and Reformist Approaches

In light of the limitations found in existing NFT frameworks, some scholars have suggested alternative paths. These include hybrid models³ that blend elements of current approaches, as well as calls for legal reform aimed at providing clearer guidance in the evolving digital landscape.

Hybrid models attempt to bridge the gap between consumer expectations and legal certainty. They recognize the NFT token as a form of property while also embedding machine-readable licenses directly within smart contracts. ⁴By doing so, the rights attached to an

NFT can be specified in a clear, accessible, and automated manner. This structure may help avoid the confusion caused by off-chain terms and improve both legal enforceability and user transparency. As *Fenwick and Kaal (2023)* explain, hybrid models provide “the best prospect for aligning NFT markets with legal predictability while preserving flexibility for innovation.” Their view reflects a growing interest in frameworks that can adapt to market needs while still offering robust legal foundations.

In response to the limitations of current NFT frameworks, some scholars propose hybrid models that integrate blockchain-based smart contracts with traditional legal systems. These models identify NFTs as digital assets and directly embed machine-readable license terms into the smart contracts of the tokens. This approach ensures that rights are clearly defined, accessible and automatically enforced, bridging the gap between consumer expectations and legal certainty. It is designed to eliminate the confusion usually caused by off-chain terminology and enhance transparency and enforceability. *Compagnucci et al. (2023)* ⁵ emphasized that these hybrid frameworks combine NFTs with traditional licensing structures, providing a balanced solution that integrates technological innovation with legal predictability. This flexibility allows a market-driven customization, while protecting the intellectual property rights and ensuring its enforceability. In the end, the mixed mode represents the combined NFT market and legal definition, while maintaining the digital innovation dynamic quality of the most promising method.

Undoubtedly, implementing hybrid frameworks or developing new legal regimes is often complex and time-consuming. It would likely require a high level of international coordination, which can be difficult to achieve in practice. There is also concern about the risk of overregulation. If new laws are too strict or burdensome, they could limit innovation or make it harder for smaller creators and startups to participate in the NFT space. As the

¹ Mishra, P., Singhal, A., Thakur, V., Sharma, D., & Bedi, M. (2024). Beyond Traditional Intellectual Property: Rise of Non-Fungible Tokens (NFTs) and Role of Blockchain in Protecting Digital Art. *Journal of Intellectual Property Rights*. <https://doi.org/10.56042/jipr.v29i3.2636>.

² Radermecker, A., & Ginsburgh, V. (2023). Questioning the NFT “Revolution” within the Art Ecosystem. *Arts*. <https://doi.org/10.3390/arts12010025>.

³ Compagnucci, M., Nilsson, N., Wagner, P., Olsson, C., Fenwick, M., Minssen, T., & Szkalej, K. (2023). Non-fungible tokens as a framework for sustainable innovation in pharmaceutical R&D: a smart contract-based platform for data sharing and rightsholder protection. *International Review of Law, Computers & Technology*, 38, 66-85. <https://doi.org/10.1080/13600869.2023.2233803>.

⁴ Notland, J., Notland, J., & Morrison, D. (2020). The Minimum Hybrid Contract (MHC): Combining Legal and Blockchain Smart Contracts. *Proceedings of the 24th International Conference on Evaluation and Assessment in Software Engineering*. <https://doi.org/10.1145/3383219.3383275>.

⁵ Compagnucci, M. C., Nilsson, N., Wagner, P. S., Olsson, C., Fenwick, M., Minssen, T., & Szkalej, K. (2023). Non-fungible tokens as a framework for sustainable innovation in pharmaceutical R&D: a smart contract-based platform for data sharing and rightsholder protection. *International Review of Law, Computers & Technology*, 38(1), 66-85. <https://doi.org/10.1080/13600869.2023.2233803>

technology continues to evolve, striking the right balance between structure and flexibility remains a central challenge for both legal scholars and policymakers.

3.5 Conclusion

Nowadays, NFTs span a wide range of applications and sit at the crossroads of technological innovation, creative practice, and legal regulation. From my perspective, none of the current theoretical models offers a complete solution that meets the practical and legal demands of the evolving NFT landscape. While each existing framework brings something valuable, most of them fall short in critical ways. Some offer robust technical systems but lack enforceable rights protections, while others prioritize legal certainty at the expense of the open, decentralized character that defines much of the NFT ecosystem.

This lack of coherence reflects a broader challenge: the pace of NFT innovation continues to outstrip the development of legal, economic, and governance structures. To respond effectively, a more flexible and forward-looking approach may be necessary. A hybrid strategy that draws from multiple models could provide the balance needed—combining legal enforceability to safeguard creators and rights holders, increased transparency through on-chain licensing and metadata, and enough creative freedom to preserve the community-driven spirit of NFT development. Any framework with high feasibility should take into account two realistic factors: the global influence of digital content and the uniqueness of NFTs. Only in this way can the decentralized system of blockchain be truly linked with the traditional legal structure.

With this in mind, the next section will introduce a new approach specifically designed to address intellectual property challenges related to NFTs, aiming to link the decentralization of blockchain with stronger legal protection for digital works. The core of this framework is to carefully balance the demands among creators, buyers and platforms, support innovation while maintaining ownership and legal clarity.

4. A Novel Institutional Framework

NFT transaction methods have evolved rapidly; the corresponding legal frameworks have not kept pace yet. Key issues related to intellectual property, rights allocation, and enforcement

remain unresolved, lead to significant uncertainty among stakeholders and inconsistent regulatory practices. In light of these challenges, this section introduces a structured legal framework aimed at addressing these persistent gaps. The framework strives to create a more reliable and transparent system for managing intellectual property in the NFT space with combining unique technical features of blockchain and established legal principles. Ultimately, the goal is to foster long-term trust and accountability while preserving the creative and economic opportunities that NFTs continue to offer.

4.1 Smart Licensing Infrastructure (SLI)

The proposed Smart Licensing Infrastructure (SLI)¹ resolves these challenges by encoding explicit licensing terms directly into NFTs via smart contracts and machine-readable metadata. Unlike traditional approaches that depend on off-chain agreements or generic terms of service, SLI enables creators to select from standardized license options—including exclusive rights, non-commercial use, or customized restrictions—during the minting process. These terms are permanently embedded in the token's smart contract, ensuring their visibility and enforceability across all transactions, including secondary market resales and cross-platform transfers.

The direct integration of machine-readable licensing terms into NFTs via smart contracts represents a substantial improvement in establishing legal certainty and reducing transactional ambiguity. In contrast to traditional off-chain agreements, which remain sensitive to alteration, misplacement, or disputes, these embedded on-chain licenses create a permanent, auditable record of asset rights that travels with the token throughout its lifecycle. This technical innovation provides market participants with explicit understanding of permitted uses while both addressing the enforcement challenges that have plagued previous approaches to digital asset governance.

¹ D. Di Francesco Maesa, F. Tietze and J. Theye. (2021). Putting Trust back in IP Licensing: DLT Smart Licenses for the Internet of Things, 2021 IEEE International Conference on Blockchain and Cryptocurrency (ICBC), Sydney, Australia, pp. 1-3, doi: 10.1109/ICBC51069.2021.9461145.

As Madine et al. (2023)¹ demonstrate, incorporating licensing agreements directly into NFT smart contracts creates a self-enforcing system that automatically clarifies ownership and usage rights during all subsequent transactions. This embedded approach removes the interpretive ambiguity that frequently arises when digital assets change hands, particularly in secondary market transfers where traditional off-chain agreements often prove inadequate. This approach is aligned with the core principles of blockchain technology, particularly decentralization, and provides a trustless, automated solution that benefits both creators and consumers by ensuring clear rights and preventing disputes. By reducing reliance on centralized intermediaries, this framework fosters decentralized content governance and streamlines content distribution and rights management.

4.2 On-Chain Provenance and Rights Registry

A key structural limitation in today's NFT landscape is the absence of a reliable and transparent system for verifying authorship and tracking intellectual property rights. In digital markets where copying and redistribution are nearly effortless, "provenance" is essential. While this concept is well established in the traditional art world, it remains underdeveloped in blockchain-based ecosystems. The introduction of an on-chain rights registry could address this gap by offering a tamper-resistant, publicly accessible ledger that records authorship claims, licensing agreements, and the transfer of IP rights over time.

As Razi et al. (2024)² explain, the use of blockchain technology ensures an immutable record of ownership, making it virtually impossible for fraudulent transactions or counterfeit works to go undetected. By taking advantage of blockchain's built-in timestamping and immutability, such a registry would allow each NFT to be definitively linked to its original creator. All changes in ownership or rights could be recorded in an unalterable, chronological

order. This would give creators stronger protection and provide collectors and platforms with an authoritative source of truth. For example, a music producer issuing tracks as NFTs could register their authorship and clearly document any licenses for derivative uses, such as sampling or remixing. These records would then be visible to buyers and enforceable across marketplaces.

4.3 Legally Supported Embedded Royalty Clauses

Although many NFT platforms currently support programmable royalty functions through smart contracts, these mechanisms often operate in isolation.³ Their effectiveness is typically limited to the platform where the NFT was minted, and resale royalties are bypassed in many cases. As a result, creators may lose out on compensation when their works are resold on secondary markets that choose not to honor the original terms. This undermines one of the key promises of NFTs—the ability for artists and digital creators to receive ongoing revenue from the value their work generates over time.

As Liu et al. (2024)⁴ emphasize, well-designed royalty systems benefit not only creators but also enhance overall market efficiency by encouraging the production of high-quality content. The proposed system, which aligns smart contracts with established contract law principles, ensures that resale royalties become a reliable revenue stream for creators. By integrating internationally recognized standards, such as those set by UNCITRAL (*United Nations Commission on International Trade Law*), these royalties can be enforced across different jurisdictions and platforms, ensuring the long-term sustainability and stability of NFT-based economies.

4.4 Token-Linked Legal Contracts (TLCs)

Integrating Token-Linked Legal Contracts (TLCs) directly into NFTs offers a promising solution to address the legal limitations of blockchain-based transactions. While smart contracts are efficient in automating actions such

¹ M. Madine, K. Salah, R. Jayaraman and J. Zemerly. (2023). NFTs for Open-Source and Commercial Software Licensing and Royalties. *IEEE Access*, 11, pp. 8734-8746, doi: 10.1109/ACCESS.2023.3239403.

² Razi, Q., Devrani, A., Abhyankar, H., Chalapathi, G., Hassija, V., & Guizani, M. (2024). Non-fungible tokens (NFTs)—Survey of current applications, evolution, and future directions. *IEEE Open Journal of the Communications Society*, 5, 2765-2791. <https://doi.org/10.1109/OJCOMS.2023.3343926>

³ Harris, E. (2022). Mint, sell, repeat: Non-fungible tokens and resale royalties for Indigenous artists. *Alternative Law Journal*, 48(1), 11-16. <https://doi.org/10.1177/1037969X221141096> (Original work published 2023)

⁴ Liu, X., Xu, H., & Zhu, S. X. (2024). Optimizing the Nonfungible Token Ecosystem: Effects of Business Models, Secondary Markets, and Royalties. *IEEE Transactions on Engineering Management*, 71, 15525-15539. <https://doi.org/10.1109/TEM.2024.3500359>

as payments and ownership transfers, they often fall short of providing the legal language, clarity, and jurisdictional specificity required by traditional contract law. This regulatory gap presents considerable challenges for both content creators and purchasers in enforcing rights or resolving disputes through conventional legal methods. Tokenized License Contracts (TLCs) address this critical limitation by encoding royalty agreements and usage terms directly into the asset smart contract. This integration ensures automatic enforcement while establishing formal legal standing, thus, in the event of a breach of contract, appropriate remedial measures can be provided to the creator.

As *Putranti & Putri (2024)*¹ points out, smart contracts alone cannot adequately address the complex legal requirements of intellectual property enforcement. The integration of legally binding Tokenized License Contracts (TLCs) within NFT metadata provides creators and buyers with stronger legal protections as a complement of blockchain's technical capabilities. These embedded contracts establish clear parameters for acceptable use, designate governing jurisdictions for disputes, and outline termination procedures — creating a hybrid framework that combines automated execution with enforceable legal terms. This approach significantly enhances transactional certainty in NFT markets by bridging the gap between decentralized technology and established legal systems.

4.5 Dispute Resolution

As legal disputes involving NFTs become more frequent and complex, while traditional court systems are often too slow, costly, or too hard to handle the unique features of blockchain-based transactions. At the same time, most NFT platforms lack formal procedures for addressing intellectual property conflicts, including cases of unauthorized use, unclear licensing, or breach of token-linked agreements.

To address this gap, the on-chain intellectual property dispute resolution layer can offer an alternative solution, similar to DAOs

(*decentralized autonomous organizations*)². These bodies would evaluate disputes using blockchain-based evidence, including transaction records, metadata, and contract clauses. While their rulings would be binding within participating platforms, they could also be designed to meet procedural standards that make them admissible in formal legal contexts, where needed.

Such a mechanism could significantly reduce friction in enforcing rights and resolving licensing conflicts, especially across international jurisdictions where legal norms differ.

4.6 Jurisdictional Compatibility

A persistent challenge in NFT regulation is determining which legal system governs transaction. The borderless nature of blockchain technology complicates jurisdictional issues, particularly when buyers, sellers, and platforms operate across different countries with varying legal frameworks. Lack of clarity often results in legal uncertainty, making enforcement inconsistent and difficult in cross-border disputes.

It could be a potential solution to this challenge is that allow creators and purchasers to define the governing law and dispute resolution forums at the time of minting. By embedding these choices directly into the NFT's metadata in a standardized, machine-readable format, the relevant information becomes easily accessible and transparent throughout the asset's lifecycle. For example, an artist in Germany could specify that the NFT is governed by the EU Digital Copyright Directive and designate a Germany arbitration institution for dispute resolution. This would ensure that all subsequent owners and platforms clearly understand the legal framework, reducing confusion and preventing conflicting interpretations.

5. Conclusion

This paper examines the legal standing and conceptual nature of NFTs, technologies that persistently test conventional boundaries of ownership, licensing, and intellectual property protection. The analysis base on the fundamental technical architecture of NFTs,

¹ Putranti, D., & Putri, U. T. (2024). Enforcement of Copyright Law on Non-Fungible Token (NFT) Through Smart Contracts. *Kosmik Hukum*, 24(1), 40–51. <https://doi.org/10.30595/kosmikhukum.v24i1.18476>

² Prakash, I. B., Tiwari, A. K., & Hariharan, U. (2023). Fully on-chain DAO to invest in NFTs. *2023 4th International Conference on Smart Electronics and Communication (ICOSEC)*, 1–8. <https://doi.org/10.1109/ICOSEC58147.2023.10275875>

highlighting their role as cryptographic proof of authenticity and ownership history rather than as carriers of digital assets themselves. This crucial distinction explains the prevalence of legal conflicts in NFT markets, particularly when purchasers incorrectly believe acquiring a token automatically grants them underlying intellectual property rights.

The paper systematically examines how existing legal frameworks lack of governing NFT transactions. Through analysis of highlight case studies, it demonstrates how traditional legal doctrines and disconnected regulatory systems fail to resolve the unique challenges. These issues are further deepened by marketplace practices, as leading platforms often ignore to verify uploaded content or disclose the specific rights relevant to NFT sales. As a result, durable uncertainty affects all market participants, from artists and collectors to legal professionals in this field.

To address these challenges, this paper critically evaluates four dominant theoretical approaches to NFT classification and governance: property-based approaches, contractual and licensing frameworks, provenance-centered models, along with hybrid reform perspectives. While each approach offers valuable analytical insights, the analysis reveals key operational limitations in all of them. Property-based frameworks often conflict with established copyright doctrines; contractual models depend too heavily on unclear off-chain agreements; provenance systems ensure stable certification but fail to establish enforceable rights; and hybrid solutions, despite potential in theory, lack fully developed implementation strategies and face considerable jurisdictional barriers to adoption.

In light of these limitations, this paper proposes a novel governance framework specifically designed for NFT ecosystems. The model intentionally integrates legal principles with blockchain infrastructure to settle decentralized technologies with established enforcement systems. Unlike rigid regulatory approaches, this adaptive framework evolves alongside technological and market developments while preserving fundamental legal protections. It aims to protect intellectual property through transparent system, reach buyer expectations with legally recognized rights, and foster innovation within clear legal boundaries. As NFT applications grow swifter, such integrated

governance solutions will be crucial to build market confidence and supporting responsible growth in this rapidly developing field.

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A Legal Appraisal of the Conceptualization of Environmental Protection

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Abstract

This paper provides a critical legal appraisal of the conceptualization of environmental protection, examining its evolution, theoretical foundations, and implementation within national and international legal frameworks. Environmental protection has shifted from a reactive approach rooted in common law remedies to a more proactive, rights-based and sustainable development-oriented paradigm. The study explores key legal principles such as the precautionary principle, polluter pays, intergenerational equity, and public participation, and evaluates how these have shaped environmental legislation and policy. It further investigates the role of soft law, multilateral environmental agreements, and judicial activism in defining the legal contours of environmental protection. Challenges such as weak enforcement mechanisms, conflicts between economic development and ecological sustainability, and disparities in global environmental governance are also addressed. The paper argues for a more integrated and enforceable legal framework that balances ecological imperatives with socio-economic needs, advocating for the elevation of environmental rights within the broader context of human rights. Ultimately, the appraisal highlights the need for a robust legal conceptualization that responds effectively to contemporary environmental threats, including climate change and biodiversity loss.

Keywords: legal, appraisal, conceptualization, environmental protection

1. The Concept of Environmental Protection

Generally, the term environment means ecology, the air, water, minerals, organisms, and all other external factors surrounding and affecting a given organism at a given time.¹ It is the complex of physical, chemical, and biological factors/processes which sustain life. In fact, the

environment has been described as the totality of the physical, economic, cultural, aesthetic and social circumstances and factors, which surround and affect the desirability and value of property and which also affect the quality of people's lives. According to the World Bank, environment is the natural and social conditions surrounding all mankind and including future

¹ Garner BA. (2004). *Black's Law Dictionary*, 8th edn, St. Paul's Minn, United States of America: West Publishing Co.

generation.¹

Environmental protection encompasses a wide array of measures aimed at conserving, maintaining, and preserving the state of the environment. While this definition simplifies the concept, it may be deemed overly restrictive as it primarily focuses on avoiding or preventing activities that harm the environment.

This “ancient” perspective of environmental protection emphasizes what should not be done to ensure environmental safety. However, modern environmental protection extends beyond mere prevention of harm to proactive actions that enhance environmental safety. It involves stakeholders taking positive steps to create a safer environment. In essence, environmental protection is not solely about avoiding detrimental actions but also includes actively sustaining and improving the environment through positive measures.

Moreover, the definition of environmental protection is subjective and varies depending on the context. Each treaty or agreement tends to define environmental protection based on the specific subject matter it addresses. For instance, the Kyoto Protocol predominantly considers environmental protection in terms of climate change and pollution, while the Convention on Biological Diversity focuses on conserving plant and animal life (biodiversity). Further, the nature of environmental protection has evolved with time. From the onset, environmental protection was simply geared towards the preservation endangered species of fauna and flora as reflected in the early treaties. Under this form of protection, states simply had to ensure the protection of their natural environment to fulfill their obligations under the treaty. From this initial setting, environmental protection expanded to protection of other natural elements like air, water, land, space and in fact basically everything around us which has an impact on the environment is now subject to environmental protection. Though these elements may fall within the territorial boundaries of a particular state, their use causes effects beyond their boundaries; this therefore imposes a new standard of protecting the environment. This new standard takes environmental protection from a national to an international obligation which imputes a

responsibility on states to cater for their environment. This forms the basis of environmental protection under international law and to these we now turn. To better elaborate on the concept of environmental protection, it will be prudent to analyze the concept from the global and regional perspectives.

1.1 Concept at the Global Level

The concept of global environmental commons encompasses specific areas that are not subject to any single national jurisdiction, such as the high seas, the atmosphere, Antarctica, outer space, as well as other commons that may fall within defined national or regional boundaries but offer benefits beyond them. Freshwater ecosystems, coastal areas, and marine ecosystems also fall under this category, providing essential benefits to the global community.² Safeguarding the global environmental commons involves operating within planetary boundaries, preserving and managing these shared resources and ecosystems sustainably, along with addressing their common vulnerabilities and risks. Due to the Trans boundary nature of these environmental commons and their interconnectedness, sustainable management necessitates coordinated and integrated efforts. This approach emphasizes the importance of collective responsibility and cooperation among nations to address environmental challenges that transcend borders. By recognizing the interconnectedness of these global resources and ecosystems, it becomes imperative to adopt a holistic and collaborative approach to their conservation and sustainable use.³

The global environmental commons being foundational to the existence and good functioning of human societies and economies, failing to secure them would have grave consequences and directly hamper the achievement of the sustainable development goals, noting that global environmental commons have direct influence on sustainable

¹ See World Bank. (1991). *Environmental Assessment Source Book*. Washington D.C.: World Bank Tech. Pap.

² Baumol WJ, Oates WE. (1988). *The Theory of Environmental Policy*. Second Edition. Cambridge University Press, Cambridge.

³ Mohn C (ed). (1980). *Environmental Law. From Resources to Recovery*. (West Publishing, St. Paul, Minn), p. 51. Tanja Brauhl and Udo E. Simonis. (2010). *World Ecology and Global Environmental Governance*, Science Center Berlin. Available at <https://www.econstor.eu/obitstream/10419/49549/1/322769558.pdf>. Accessed on the 2nd of July 2021.

development goal two which talks of zero hunger, goal six which is of clean water and sanitation, goal nine which talks of industry, innovation and infrastructure, goal thirteen on climate action, goal fourteen on life below water and goal fifteen on life and land corollary, securing these global environmental commons would have a positive impact on accelerating progress on human well-being and capacities, sustainable food systems and in achieving sustainable development and energetic system.

Environmental problems have always been part of our history of life and work, yet the way in which environmental problems are perceived and politicized has changed. This is because at first, only local and regional environmental problems were recognized but in recent years, global environmental problem have been a major cause of concern. Global problems can be tackled only by means of internationally coordinated environmental policies.

The United Nations conference on the Human environment in 1972 is regarded as the starting point towards tackling environmental concerns. Since then, a number of environmental agreements have been entered into both national and bilateral but in most cases multilateral and global have been signed. The efforts undertaken so far are not comprehensive enough and they do not appear to be sufficient. So, there is still a wide policy-implementation gap between ongoing environmental standards that have been agreed upon and the compliance record that can be noted for them. Three causal complexes seem to be responsible for the degradation of the environment. First, the overuse of renewable and non-renewable resources¹, second, natural sink are being over burdened². Third, more and more ecosystem are being destroyed to make way for man's habitat, for settlement, industrial plant and physical infrastructure.

In fact, prior to industrial revolution, environmental pollution caused by human activities was generally of a local or regional nature. Today the focus on scientific and political concern is above all on transboundary or global environmental problems. The creation

of international environmental regime to regulate individual environmental problems is in general term, an adequate approach to dealing with such problem, though international regimes also have their weak points, particularly since they often lack provision on dealing with non-complying countries. If each and every international regime builds up its own institutional approaches like secretariat, conference of the parties, advisory boards then this could lead to fragmentation and discrimination of developing countries. Thanks to their low capacity as regards funding and manpower, these countries are often neither able to participate in the conferences nor in a position to provide sufficient support and funding to implement the signed environmental regime. Agenda 21 adopted in Rio, underline in chapter 28 the role of municipalities in implementing sustainable development.

For thousands of years, people worried most about the health of individuals, including injuries fights or wars, periodic famine, vector borne disease and accidents. The industrial revolution brought some relieve waste and water treatment for example, reduced the incidence of water borne disease but new technologies generated new threats, ranging from toxic industrial chemical to global transportation system that spread infectious diseases and exposed individuals to greater variety of disease³.

Liability and state responsibility rules determine whether the polluter pays principle is a principle of consequence in international environment law or if it is just a principle that hardly applies in practice⁴. Most international liability regime channel liability to the person who is in control of an environmentally damaging activity. In the case of oil pollution and the sea of hazardous substances, the person in control is the ship owner. In the case of a nuclear pollution, the operator of a nuclear power plant and in the case of carriage of dangerous goods, it is the carrier.

¹ They include the exploitation of fossils energies and the clearance of forest for firewood to make way for agriculture and industrial use.

² They include the accumulation of heavy metal in soils and greenhouse gases in the atmosphere are reaching ever highly concentration.

³ Sinisa Franjic. (2018). Importance of Environmental Protection on the Global Level. *Scientific Journal of Research and Review*, pp. 1-5. Bosnia and Herzegovina, Europe.

⁴ Elli Louka. (2007, November). International Environmental Law: Fairness, Effectiveness, and World Order. *A United Nations Sustainable Development Journal*, 31(4), pp. 448-449. ¹²² Barry L. Johnson and Maureen Y. Lichtveld. (2017). *Environmental Policy and Public Health*, CRC Press, Taylor and Francis Groups, p. 3.

1.2 The Concept at the Regional Level

At the Regional level, Africa contribute little to climate change, it will be the continent among the first ones to be hit quite hard by the impacts of various climatic turnovers. This is why, it is fundamental to attack environmental problems in Africa for the future generations and the whole world. So, Africa should turn decisively to the renewable energies and take the head of the African shuffler of the energy revolution to reduce climate change¹. The democratic Republic of Congo for example fought and is still fighting for the protection of the tropical bits threatened by the industries of the wood in the pond of Congo because it risks losing 40 percent of it bits in the next forty years. That is why Africa needs to fight climate change, deforestation, water pollution and respond positively on the urgent problems connected with environmental protection.

As a matter of fact, Africans unfortunately are consumers of polluted goods and behave like toys in the hands of great economic powers of the world. Consequently, African nature will continue to fall victim of the very power as well. So, if industries in the name of profit pollute everything, there is no equitable and balance management of the environment after Gods will. Management after Gods will require taking into account values, especially, ecological values such as environmental protection, the protection of the soil² and subsoil, of forest, of water, of flora and fauna. Fighting pollution, deforestation, erosion is necessary for the African people because God meant them to live a healthy life in most cases, the ecological norms are often sabotaged by the very people who elaborated them because deep within them lies a huge dangerous love for money³.

In fact, the exploitation of Africa by their former colonial leaders continued after decolonization and thus has contributed gravely to the total destruction of the ecosystem. The political and military crisis in the Create lakes regions (Burundi, Democratic republic of Congo and

Rwanda) has terribly affected the environment in this part of Africa. For example, the immigration of Rwanda into Congolese territory in 1994 seriously worsened the environment of the Democratic Republic of Congo as forest and animals of the area where the refuges are living were the first victims.

Research identifies poverty as the main cause and consequence of environmental pollution and degradation in Africa. Poverty is multidimensional and goes beyond the lack of an income to include as stated by the united national development programme, (UNDP) the denial of opportunities and choices to most basic human development to lead to long health, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others. The protection of the environment is vital to the reduction to poverty in Africa⁴. This is due to the fact that the poor in sub-Saharan Africa, who live predominantly in the rural areas, rely upon the resources obtainable from the immediate environment for substance and hence are severely affected by environmental degradation.

2. Principles of Environmental Law

2.1 The Principle of Common but Differentiated Responsibility

Environmental protection is a common challenge to all nations. Despite the fact they states have different patterns of development, they share a common responsibility in protecting the environment; each according to their means, to wit, some countries may be asked to carry a greater burden in the protection of the environment. This principle entails two elements; the first is that of common responsibility which signifies state effort in protecting the environment. The second element is a manifestation of the divergence in the capacity and efforts of states in environmental protection; for example, industrialized countries are to contribute more global warming than developing countries.

This principle is enshrined in Principle 4 and 7 of The Rio Declaration and formed the basis of the argument advanced by developing countries at conference. They opined that developing countries have special needs which priority

¹ Kalembe Mwambazambi. (2009). A Glance on Environmental Protection in Africa: theological Perspective. *Ethiopia Journal of Environmental Studies and Management*, 2(3), pp. 19-25.

² *Ibid.*

³ The Good News Bible in 1st Timothy 6: 10 provides that "For the love of money is the root of all evil: which while some coveted after, they have erred from the faith, and pierced themselves through with many sorrows."

⁴ Kalembe Mwambazaambi. (2011). The Complexity of Environmental Protection in Sub-Saharan Africa and the Reduction of Poverty. *Ethiopia Journal of Environmental Studies and Management*, 4, pp. 17-24.

must be accorded to and their participation in the protection of the environment should be for some reward/incentive. This principle ensures environmental protection by making it the subject a common responsibility of states to wit, all states have a common responsibility to protect the environment but their level of involvement and participation differs, some more than others.¹

2.2 The Principle of Sustainable Development

Although sustainable development is susceptible to somewhat different definitions, the most commonly accepted and cited definition is that of the Brundtland Commission on Environment and Development, which stated in its 1987 report, *Our Common Future*, that "Sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs." The parameters of sustainable development are clarified in *Agenda 21* and the *Rio Declaration*. Principle 4 of the Rio Declaration provides that: "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it." The National objectives and Directive principles of state policy set out in the 1995 Constitution in regard to the environment state that: "The state shall promote sustainable development and public awareness of the need to manage land, air, water resources in a balanced manner for the present and future generations." ² "The utilization of natural resources of Uganda shall be managed in such a way to meet the development and environmental needs of the present and future generations of Ugandans and in particular the state shall take all the possible measures to prevent or minimize damage and destruction to land, air and water resources resulting from population pressures and other causes."³

The above principles are not contained in the Constitution and are therefore not enforceable as such leaving it to government or whoever is authority to take a subjective decision as to how they are to be applied. The same principles are repeated even in more detail in sections 2 and

5(2)(b) of the National Environment Act (NEA) 2019. It is submitted that whereas the constitution and the NEA recognise the fundamental importance for sustainable development, both fail to set the necessary legal mechanism to ensure it. The people themselves should have been given express authority to ensure the observance of the principle of sustainable development both under the constitution and the NEA. In this way, they would have been provided with a peaceful avenue, for instance the courts of law, with which to have conflicts relating to natural resources were resolved. Leaving the resolution in the hands of the executive escalates conflict because decision making by the executive is more influenced by politics than reason.

An example is the public outrage and demonstration over the Mabira forest give away in 2007.

Lastly, under the principle of sustainable development, are the approaches that take into account long term strategies and those that include the use of environmental and social impact assessment, risk analysis, cost-benefit analysis and natural resource accounting.

2.3 Inter-Generational Equity

Under inter-generational equity, the present generation has the right to use and enjoy resources of the earth but is under an obligation to take into account the long-term impact of its activities and to sustain the resource base and the global environment for the benefit of future generations of human kind. Intergenerational equity is also central to the attainment of sustainable development as resources must be used sparingly if they are exhaustible or must be replenished if possible. The Preamble of the 1995 Constitution of Uganda, Intergenerational equity requires that the present generations exploit or use natural resources in a way that will enable the next/future generations to use the same resources. Some national courts have referred to the rights of future generations in cases before them.

For example, the supreme court of the Republic of the Philippines decided, in the *Minors Oposa Case* (Philippines- *Oposa et. Al. v Fulgencio S. Factoran, Jr. et. Al.* G.R. 101083) that, the petitioners could file a class suit, for others of their generation and for the succeeding generations. The court considering the concept of intergenerational responsibility, further stated

¹ *Ibid.*

² XXVII(i)

³ XXVII(ii) Mutesasira Peter Davis – Lecturer Faculty of Law, Uganda Christian University Mukono – 2019.

that every generation has a responsibility to the next to preserve that rhythm and harmony necessary for the full enjoyment of a balanced and healthful ecology.

2.4 The Precautionary Approach/ Principle

The 1982 World Charter for Nature in its principle 11(b) states that: “Activities which are likely to pose significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed.”¹ Although the World Charter for Nature did not make any explicit mention of the precautionary principle, it contained the essential ingredients of what eventually evolved into this contentious legal doctrine. Probably the most accepted articulation of the precautionary approach is principle 15 of the Rio Declaration which states that: “In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.” The precautionary principle is provided for under sections 4(3), 5(2)(g), 5(2)(i), 5(2)(j) and Part X² of the National Environment Act (NEA) 2019.

The precautionary principle has also been consistently referred to in various international instruments such as: the 1992 Convention on Biological Diversity (CBD);³ 1992 United Nations Framework Convention on Climate Change (UNFCCC);⁴ the 2000 Cartagena Protocol on Biosafety;⁵ the 1995 Agreement on Fish Stocks;⁶ and the 2000 Convention on the Conservation of Migratory Fish Stocks in the

Western and Central Pacific Ocean.⁷ The precautionary principle has also been invoked before the courts. The precautionary principle has been invoked before the International Court of Justice (ICJ). In the *ICJ order of 22, September 1995*⁸, Judge Weeramantry in his dissenting opinion concluded that the precautionary principle was gaining increasing support as part of the international law of the environment.

The European Court of Justice (ECJ) has also adopted the precautionary approach, particularly in respect to environmental risks that pose danger to human health. In the ECJ case *UK V Commission of the EC*⁹, the court held that the Commission had not committed manifest error when banning the export of beef during the “mad cow” crisis. The Court said: “At the time when the contested decision was adopted, there was great uncertainty as to the risks posed by live animals, bovine meat and derived products. Where there is uncertainty as to the existence or extent of risks to human health, without having to await the reality and seriousness of those risks to become fully apparent.” In the *Southern Bluefin Tuna Case* (New Zealand v Japan; Australia v Japan)¹⁰, the International Tribunal on the Law of the Sea (ITLOS) could not conclusively assess the scientific evidence regarding the provisional measures sought by New Zealand and indeed, the country requested the measures on the basis of the precautionary principle, pending a final settlement of the case. ITLOS found that in the face of scientific uncertainty regarding the measures, action should be taken as a measure of urgency to avert further deterioration of the tuna stock. In its decision, the tribunal said that the parties should act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern blue fin tuna.

2.5 Common but Differentiated Responsibilities

This principle is explicitly elaborated by Principle 7 of the Rio Declaration which states that: “States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the earth’s ecosystem. In view of the different contributions to global environmental degradation, states have

¹ This signified a deviation from the traditional tort law liability principles that required proof of causation as the basis for awarding damages. Even in international law, the link between cause and defect had been articulated in the trial smelter Arbitration between the United States and Canada. That case became a leading precedent on international responsibility, the Tribunal required proof of “substantial injury” demonstrated by clear and convincing evidence.

² sections 110-116 on EIA.

³ Preamble.

⁴ Article 3(3), Mutesasira Peter Davis – Lecturer Faculty of Law, Uganda Christian University Mukono – 2019.

⁵ Articles 1, 10 and 11.

⁶ Article 5(c), 6 and Annex II.

⁷ Article 5(c)

⁸ At Pg. 342.

⁹ ICJ Case C-180/96.

¹⁰ Case No. 3 and 4, ITLOS, 1999.

common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and the technologies and financial resources they command.” This principle takes into account the differing circumstances, particularly in each state’s contribution to the creation of environmental problems and in its ability to prevent, reduce and control them. States whose societies have in the past imposed, or currently impose, a disproportionate pressure on the global environment and which command relatively high levels of technological and financial resources bear a proportionally higher degree of responsibility in the international pursuit of sustainable development.

In practical terms, the principle of common but differentiated responsibilities is translated into the explicit recognition that different standards, delayed compliance time tables or less stringent commitments may be appropriate for different countries, to encourage the universal participation and equity. According to the principle of common but differentiated responsibilities, developed countries bear a special burden of responsibility in reducing and eliminating unsustainable patterns of production and consumption and in contributing to capacity building in developing countries, *inter alia* by providing financial assistance and access to environmentally sound technology. In particular, developed countries should play a leading role and assume the primary responsibility in matters of relevance to sustainable development.

A number of international agreements have taken into account the principle of common but differentiated responsibilities. These include the 1992 Climate Change Convention,¹ the 1992 Convention on Biological Diversity,² 1994 Desertification Convention,³ and the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1992.⁴

2.6 The Prevention Principle

Experience and scientific expertise demonstrate

that prevention of environmental harm should be the “*Golden Rule*” for the environment, for both ecological and economic reasons. It is frequently impossible to remedy environmental injury: the extinction of species of fauna and flora, erosion, loss of human life and the dumping of persistent pollutants into the sea, for example, create irreversible situations. Even when harm is remediable, the costs of rehabilitation are often prohibitive. An obligation of prevention also emerges from international responsibility not to cause significant damage to the environment extra-territorially. The prevention principle is provided for under sections 3(1), 3(2), 3(5)(a), 3(5)(f), 5(2)(j), 5(2)(p)(i), 70, and 78 of the National Environment Act (NEA) 2019. One obligation that flows from the concept of prevention is prior assessment of potentially harmful activities, i.e., the EIA process. Other preventive mechanisms include: monitoring, notification, and exchange of information, all of which are obligations in almost all recent environmental agreements. International Agreements that provide for the prevention principle include: the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses;⁵ 1976 Convention on the Conservation of Nature in the South Pacific;⁶ and the Convention on Biological Diversity.⁷ In fact, the objective of most international environmental instruments is to prevent environmental harm, whether they concern the pollution of the sea, inland waters, the atmosphere, soil or the protection of human life or living resources. Only a relatively few international instruments use other approaches, such as the traditional principle of state responsibility or direct compensation of the activities.

3. Approaches to Environmental Protection

For environmental protection to become a reality, it is important for societies to develop each of these areas that, together, will inform and drive environmental decisions.⁸ There have been three approaches to environmental protection,

¹ Article 4 and 12.

² Article 5 and 6.

³ Article 5 and 6.

⁴ Article 26 Mutesasira Peter Davis – Lecturer Faculty of Law, Uganda Christian University Mukono – 2019.

⁵ Article 32.

⁶ Article V(4).

⁷ Article 14 (1) (a) and (b).

⁸ Solomon, U.U. (2010). A detailed look at the three disciplines, environmental ethics, law and education to determine which plays the most critical role in environmental enhancement and protection. *Environ Dev Sustain*, 12, 1069–1080.

to wit:

3.1 Voluntary Environmental Agreements

In developed nations, these agreements provide a platform for companies to be recognized as moving beyond the minimum regulatory standards and therefore support the development of best practice in environmental protection.¹ However, in most developing countries, they are commonly used to remedy significant levels of non-compliance with mandatory regulations, which in other hand, helps to build environmental management capacity. The disadvantages associated with them is inability of the developing countries to baseline data, targets, monitoring and reporting systems that would enable them to evaluate the effectiveness of their use.²

3.2 Ecosystem Approach

The purpose of this approach is to consider the complex interrelationship of an entire ecosystem in decision making rather than simply responding to specific issues and challenges. Here, a broad range of stakeholders are involved in the planning and decision making processes. For instance, all relevant governmental departments, representatives of industry, environmental groups and the community would be involved, and this leads to exchange of information, development of conflict resolution strategies and improved regional conservation.

4. Challenges and Recommendation

Despite Cameroon's efforts to enhance environmental protection, the problem of persistent deforestation serves as a huge setback to her strives. The increasing deforestation in Cameroon can be attributed to some factors, including: demographics (that is, population growth and pressure), economic changes (especially market growth and economic structures), just to mention a few. Statistics show that deforestation decreased with some oscillation until 2014, however, it witnesses an increase again more recently.³ It is recorded that, in 2010, Cameroon had a natural forest that extended to 30.4Mha, covering over 66% of its

land area. However, in 2023, she lost 167Kha of her natural forest, which absorbs about 150Mt of carbon dioxide emitted.⁴ Between the years 2015 to 2018, deforestation is said to have accounted for the loss of between 40.000 to 80.000 hectares of primary forest on an annual basis.⁵

Hence, with the increasing deforestation in Cameroon, the success rate of her fight to foster environmental protection lessened. These large numbers of trees which are cut down serve as sinks for large quantities of carbon dioxide emitted. Thus, when fallen, the huge quantities of carbon dioxide, which they could have absorbed will find its way into the atmosphere, where it will entrap heat from the sun and radiate it to the earth surface, consequently resulting in environmental degradation.

Despite the severity and high degree of threat of environmentally unfriendly behaviours, the penalties often attached to environmental crimes do not reflect the dangers they cause. For example, the act of logging beyond the period or quantity granted is punishable with just a fine of 5.000 to 50.000 FCFA or imprisonment for up to ten days or both such imprisonment and fine.⁶ Similarly, the unauthorized felling of protected trees is punishable with a fine from 50.000 to 200.000 FCFA or imprisonment of for twenty days or both such imprisonment and fine.⁷

In *Ministry of Environment and Forestry v. Tame Soumedjong Henry and SOTRAMILK Ltd*,⁸ the respondents were engaged in the production of milk, they demonstrated a number of environmentally unfriendly behaviours. They discharged milky substances into streams, burned plastic yoghurt cases and other waste into the air just to mention a few. In response, the applicant prayed the Court to make the following orders: (1) An order restraining the respondent from polluting natural waters by discharging milky waste or other effluent into streams. (2) An order restraining the respondents from further polluting the

¹ Karamanos P. (2010). Voluntary Environmental Agreements: Evolution and Definition of a New Environmental Policy Approach. *Journal of Environmental Planning and Management*, 44(1), 67-84.

² *Ibid.*

³ WWF, Deforestation Front; Cameroon, available at https://wwfint.awsassets.panda.org/downloads/deforestation_fronts_factsheet_cameroon.pdf, accessed on 14/04/2025.

⁴ GFW, Cameroon Deforestation Rates and Statistics, available online at <https://www.globalforestwatch.org>, accessed on 14/04/2025.

⁵ EUREDD Facility, Cameroon, available online at <https://euredd.efi.int/countries/cameroon/>, accessed on 14/04/2025.

⁶ See Section 154 of the Law N0. 94/01 of 20 January 1994 to Lay Down Forestry, Wildlife and Fisheries Regulations.

⁷ Section 154 of the Law N0.94/01 of 20 January 1994 to Lay Down Forestry, Wildlife and Fisheries Regulations.

⁸ CFIBa/145CM/02-03.

atmosphere by burning plastic yoghurt cases and other waste into the open air; (3) An order restraining the respondent from further polluting the environment in general or perpetrating any environmentally harmful activities in the operation of SOTRAMILK Ltd (Milk Processing Factory) at Nkwen, Bamenda; (4) An order requesting the respondent to rehabilitate the polluted areas with the applicants supervision and a report to be sent to the Court by the applicant to that effect; (5) and for such further and other orders as the Court may deem fit to make in the circumstances.

The Court on its part upon finding the actions of the respondents harmful and contravening to the law, made the following two orders, (1) that the respondent from then restrained from further discharge of milky waste or industrial sewage into the stream. (2) And that the respondent takes steps to rehabilitate the polluted areas near the factory under the strict supervision of the applicant. The cost of rehabilitation was borne by the respondents. Concerning the applicant's prayer 2, the motion was rejected by the Court for failing to propose a better option of eliminating the said plastic cases apart from burning. Prayer 3 was as well rejected for being so wide as to render the respondent vulnerable to its violation at every minute of their operation. Thus, as the Court noted, if prayer 3 was granted, it would be tantamount to telling the respondent to close down the factory which is irrational. The decisions of the Court in the latter case are, however, commendable. Despite that, considering the degree of threat which environmental crimes pose, one would have expected to see a more vigorous ruling from the Court in such cases. Therefore, the inadequacy of penalties provided for perpetrators of environmentally harmful behaviour contributes to the setbacks to the fight against environmental degradation by Cameroon.

The fragmented nature of some environmental legislation in Cameroon amount to huge setbacks to the success of her fight against environmental degradation. A number of environmental statutes are made subject to implementation decrees from the President or Prime Minister, which take a long time to be made. Therefore, such legislations remain unimplemented until their implementation decrees are made. For example, pursuant to Section 17 of Law No. 96/12 of 5th August 1996

Relating to Environmental Management, the promoter or owner of any development, project equipment or labour, which is likely to endanger the environment, is obliged to carry out an environmental impact assessment. Whosoever defaults or breaches the provision will be punished with a fine from two million FCFA to five million FCFA with imprisonment of from six months to two years.¹ However, based on Section 17(4) of same law, the terms and conditions for implementing the provisions on impact assessment shall be laid down by an enabling decree. It is however unfortunate that decree is still awaited, thus making the penal provisions unenforceable.²

The challenge of fragmented legislations is also evident in a number of other environmental legislations. For example, Law No. 2003/006 of 21 April 2003 to lay down Safety Regulations Governing Modern Biotechnology in Cameroon stipulates that 'the modalities for inspection and controls shall be laid down by regulations.'³ Therefore, pursuant to that provision, inspectors or controllers cannot work under the Biosafety law except the enabling legislations are made available. It is heart-breaking that this enabling legislation is still awaited. Despite that, Sections 56, 60 to 64 provide a range of environmental offences to be investigated and prosecuted by inspectors who have been sworn. This problem of fragmented legislations is also evident in the Mining Code, the Water Law and 1994 Forestry, Wildlife and Fisheries Regulations.⁴ Conclusively, the impracticable nature of these environmental laws owing to fragmentation of legislations serves as a huge setback to the success of Cameroon's fight against climate change.

This paper strongly recommends; thus, one of the most pressing challenges identified in this study is the weak institutional capacity of environmental regulatory bodies. Ministries such as the Ministry of Environment, Nature Protection and Sustainable Development

¹ See Section 79 of Law No. 96/12 of 5th August 1996 Relating to Environmental Management.

² See Sama Nchunu Justice, Criminal Law and Environment, Prosecutors, Inspectors and NGOS in Cameroon, available at <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.608.1093&rep1&type=pdf>, accessed on 15/04/2025.

³ See Section 34(3) of Law No. 2003/006 of 21 April 2003 to Lay Down Safety Regulations Governing Modern Biotechnology in Cameroon.

⁴ SamaNchunu Justice, *op.cit.*

(MINEPDED) lack adequate technical expertise, infrastructure, and financial resources to effectively implement and enforce environmental laws. It is therefore recommended that the government increase budgetary allocations to MINEPDED and related agencies, invest in training and equipping enforcement personnel, and decentralize environmental governance functions to regional and local offices. This will not only improve responsiveness but also ensure the integration of local realities into national environmental strategies.

In addition, Enhance Enforcement Mechanisms. Cameroon has a commendable legal framework that incorporates international environmental norms, but enforcement remains largely ineffective. The government must prioritize the operationalization of existing laws by empowering the judiciary and enforcement bodies with clear guidelines, independence, and the authority to hold both state and non-state actors accountable for environmental violations. Environmental courts or dedicated environmental units within the judiciary should be established to accelerate the handling of environmental cases. Additionally, sanctions for environmental offenses should be effectively imposed and publicized to deter further infractions.

Also, Institutionalize Community-Based Environmental Protection. Local communities are the frontline custodians of Cameroon's natural resources. Yet, their role is often informal and under-recognized by statutory law. To enhance compliance, the government should institutionalize community-based natural resource management (CBNRM) systems by granting formal legal recognition to traditional environmental governance structures. Participatory mechanisms should be developed to involve communities in environmental decision-making, planning, and enforcement. Local knowledge systems, particularly those grounded in sustainable customary practices, should be integrated into national strategies, with safeguards to prevent misuse or elite capture.

1) Furthermore, Promote Environmental Education and Public Awareness

The study reveals a significant gap in public understanding of environmental laws, rights, and responsibilities. Effective compliance cannot

occur in a vacuum of awareness. Government institutions, in collaboration with NGOs, civil society, and educational institutions, should implement nationwide environmental education programs. These programs should target schools, universities, the media, and community forums, aiming to instill a culture of environmental responsibility. Civic education campaigns should emphasize the link between environmental health, human rights, and sustainable development, empowering citizens to monitor and demand environmental accountability.

2) Again, Support Civil Society and NGOs as Compliance Partners

Civil society organizations and NGOs play a crucial role in monitoring, advocacy, and bridging the gap between policy and implementation. Their involvement should be formally recognized and supported through legal frameworks that guarantee access to environmental information, participation in environmental impact assessments (EIAs), and access to justice. The government should also consider providing technical or financial support to credible NGOs working on environmental protection, and ensure that their operations are not hindered by administrative or political constraints. Multi-stakeholder forums should be created to facilitate dialogue between government, civil society, and international partners.

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Regulation of Capital Withdrawal from the Perspective of the New Company Law

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Abstract

Although the capital withdrawal rule plays an important role in maintaining the company's capital, its substantive connotation and constituent elements are ambiguous when determining whether the company's distribution behavior constitutes capital withdrawal. In particular, the standard of harm to rights and interests adopted in judicial practice. Damage to the rights and interests of a company is a relatively subjective concept that is difficult to make objective and quantitative assessments. At a time when the Company Law has been fully updated, it is not wise to abolish the rule prohibiting capital withdrawal, which is essentially the withdrawal of company property. The stage distinction rule is used to determine the withdrawal of capital contributions, that is, to compare whether the distribution behavior has damaged capital in advance, and to predict the solvency after the fact — whether it can pay off the debts that have reached the repayment deadline and should be repaid due according to the normal business process after the distribution. When applying this prohibitive rule, the legal responsibilities of relevant entities should be clarified, and a new framework should be built to effectively detect and maintain the actual solvency of the company.

Keywords: capital withdrawal, capital maintenance, loss of capital, actual solvency, stage differentiation rules

1. Introduction

The subscription system extends the capital contribution period to five years, broadens the form of capital contribution, reduces the pressure on shareholders to contribute capital, but also makes the withdrawal of capital contribution more hidden and complicated. The traditional direct withdrawal of capital contributions has decreased, and it has turned into more hidden forms such as the company's guarantee for shareholders and payment of equity repurchase payments. The blurring of the boundaries between these new types of illegal

acts and acts of infringing on company property increases the difficulty of judicial determination and becomes a difficult problem in trial practice. In this regard, there is a controversy in the academic circles over the improvement of rules and the abolition of the rules, and the views such as "embezzlement of company property" instead of "withdrawal of capital contributions" or the introduction of actual solvency tests have attracted much attention. In the context of the new Company Law, it is of great theoretical and practical significance to re-examine the identification standards and legal

responsibilities of capital withdrawal.

2. The Dilemma of the Rules for Determining the Withdrawal of Capital Contributions and the Controversy in the Academic Community

At present, from the perspective of the Company Law of the People's Republic of China (hereinafter referred to as the "New Company Law"), the rules for determining capital withdrawal are facing many difficulties, which have caused widespread controversy in the academic community, mainly manifested in legislative ambiguity and confusion in judicial practice, and the underlying reasons are inseparable from the structural defects of our country's company distribution system.

2.1 The Gaps in Rules and Judicial Practice Discrepancies in Identifying Capital Flight Under the New Company Law

In recent years, our country's commercial legislation has achieved remarkable results, and a set of commercial law norms with diverse content and rich sources has been gradually built. However, when directly applied to commercial trial practice, this system still faces many challenges. Professor Fan Jian pointed out that the lag, complexity, instability, lack of systematicness, and conflict between different norms of commercial law norms are the main reasons for this dilemma.¹ Especially in the practice of the Company Law, these problems are particularly prominent. Professor Zhang Xi holds a similar view that after our country's corporate capital system has changed from "legal capital system" to "subscription system", the relevant laws and regulations have not achieved real synchronization and update in terms of connection and change.²

2.1.1 The Legislation Does Not Clarify the Nature, Connotation and Other Boundaries of Capital Withdrawal and Other Behaviors

After important revisions in 2005, 2013, 2018, and 2023, our country's Company Law has been significantly improved in many aspects, greatly improving its suitability. Nevertheless, in the process of legal interpretation and judicial discretion, the Company Law revised in 2018

still shows broad room for discussion. To this end, the Supreme People's Court has formulated a series of judicial interpretations in response to the difficulties encountered in the application of the Company Law in trial practice, which provide clear guidance for courts at all levels, which is of great guiding significance for the correct understanding and application of the Company Law. However, with the reform of the company's capital system, especially after the reform of the subscription system in 2013, the capital violations in commercial practice have become increasingly complex and hidden, which has weakened the explanatory power of the concept of capital withdrawal in the original sense.

Specifically, Article 53 of the new Company Law clearly stipulates that shareholders shall not withdraw their capital contributions, but lacks an in-depth explanation of the legal attributes of the withdrawal. Although the new Company Law mentions the return of capital contribution and liability for damages, the legal nature of these two liabilities (such as whether the return is unjust enrichment or generalized tort liability, whether the damages are tort liability or special statutory liability) is not clear, making it difficult to determine the constituent elements.³ Article 253 of the Company Law stipulates the consequences of capital withdrawal. This legal responsibility is administrative responsibility, including ordering corrections and fines, but the object of fines is expanded from the perpetrator to the perpetrator, the directly responsible supervisor and other directly responsible persons. In addition, the new Company Law does not follow the provisions of the Interpretation III of the Company Law on the application of capital deficit norms and the three typical forms of capital withdrawal contributions, making it unclear whether the prohibition of capital withdrawal rules should be used as declaratory provisions or have actual adjudication functions in the future. This legislative ambiguity and incoherence undoubtedly exacerbate the uncertainty of the application of the rules.

2.1.2 The Criteria for Determination in the Judgment Are Different

The withdrawal of shareholders from capital

¹ See Chen Jie. (2013). Research on the Application of Commercial Law Norms and Interpretation. *Social Science Literature Publication*, p. 32.

² See Zhang Xi. (2022). An Empirical Study on the Application of Article 18 of the Company Law Interpretation III to Equity Transfer after Withdrawal of Capital Contributions. *Application of Law*, (2), p. 149.

³ See Wang Xiangchun. (2025). The Legal System of Companies Withdrawing Capital Contributions under the Theory of Special Infringement. *Political and Legal Forum*, (3), p. 102.

contributions has always been a major problem in the field of company law. The diversity, secrecy and uncertainty of his behavior have led to many disputes over the determination of capital withdrawal. Although the Company Law explicitly prohibits capital withdrawal, there are significant differences in practice on how to specifically identify capital withdrawal and how to determine the corresponding legal liability. In order to fill this legal loophole, the Supreme People's Court formulated the Judicial Interpretation of the Company Law (III). Among them, Article 12 lists five specific behavior modes of capital withdrawal based on the measurement scale of "harming the company's rights and interests". In related cases, the standard of equity damage is also adopted for whether the company can provide guarantees for the transfer of equity between shareholders, and one judgment holds that although the company provides such a guarantee, although it is not a direct withdrawal of capital contributions, it actually causes an improper reduction in the company's capital and will damage the legitimate rights and interests of the company and creditors, and should be negatively evaluated. For example, in the "Civil Judgment of the First Instance of the Equity Transfer Dispute between Huang Liping and Xie Xiaoming", the Zhongshan Municipal Court ruled on the case, holding that the guarantee agreement involved in the case was negative, and that it was contrary to the legal principle of withdrawing capital contributions. The basis for this is that Article 35 of the Company Law clearly stipulates that once a company is established, shareholders shall not withdraw their capital contributions. If the company intervenes in the equity transfer between shareholders and provides guarantees for it, then when the equity transferee fails to pay the equity transfer money as scheduled, the company may be forced to advance the payment to the company and creditors, which will undoubtedly harm the rights and interests of the company and creditors. In other words, this situation is essentially the act of shareholders indirectly withdrawing their capital contributions in the name of equity transfer, which obviously violates the aforementioned prohibitions.¹ However, another judicial view

holds a different view, holding that the obligation to pay the equity transfer money is borne by the transferee, and it is still unknown whether the company bears the guarantee liability, and this guarantee liability should be regarded as a contingent debt, and the possibility of occurrence is uncertain. Even if the company eventually assumes the guarantee liability, it still has the right to recover from the equity transferee, and the company's assets may not necessarily be reduced as a result. For example, the second-instance judgment of the typical case "Chen Gangguan vs. Hu Shengyong, Guangxi Wanchen Investment Co., Ltd., etc. equity transfer dispute".² It can be seen that whether the shareholders' actions harm the company's rights and interests is a relatively subjective concept, and it is difficult to make an objective and quantitative assessment.

Although the standard of damage to rights and interests provides a certain basis for the determination of capital withdrawal, in practice, there are still many shortcomings in this standard. The criterion of harming rights and interests itself has a certain degree of ambiguity. There is no clear and specific standard for how to judge whether the actions of shareholders have harmed the rights and interests of the company. This leads to the fact that in judicial practice, different adjudicating organs may reach different conclusions for the same or similar acts. Damage to the rights and interests of a company is a relatively subjective concept that is difficult to make objective and quantitative assessments. Especially when the boundary between the company's assets and shareholders' capital contributions is blurred, how to accurately assess whether the actions of shareholders have harmed the company's rights and interests is even more difficult. Due to the relatively vague standards for damages, adjudication organs may unconsciously expand their scope of application when applicable. This may not only lead to some innocent shareholders being mistakenly identified as capital withdrawal, but may also make the determination of capital withdrawal a "pocket" clause, further exacerbating the uncertainty of the application of the law. Judging from the cases tried by the Supreme People's Court itself, there are conflicting standards among local adjudication organs as to what constitutes

¹ See the Civil Judgment of the First People's Court of Zhongshan City, Guangdong Province (2023) Yue 2071 Min Chu No. 1835.

² See Fujian Provincial High People's Court (2015) Min Min Zhong Zi No. 1292 Civil Judgment.

“harm to the rights and interests of the company”. This lack of unified identification standards not only makes it more difficult to identify capital withdrawal, but also undermines the authority and fairness of the law.

2.2 *Achievements and Shortcomings in the Improvement of the Rules on Prohibiting Capital Withdrawal in the Academic Circles*

For a long time, capital withdrawal has been a stumbling block to the healthy development of our country's companies, and scholars are committed to exploring how to get out of this dilemma through institutional changes to promote the steady growth of companies. At present, there are two paths: one is to abolish the withdrawn capital contribution and replace it with other systems or models. The second is to improve the rules prohibiting capital withdrawal within the company law system.

2.2.1 Detect the Theory of Actual Solvency

Drawing on US law, Professor Wang Jun proposed to deeply integrate the capital maintenance norm with the actual solvency detection method, under which the rules of capital withdrawal will gradually withdraw from the stage of history.¹ Although this view is innovative, it still has limitations. Directly abandoning the concept of “withdrawing funds”, which has a stable legal tradition and judicial practice foundation, may lead to instability and uncertainty in the legal system.

2.2.2 Erosion of Share Capital Standards

Professor Liu Yan proposed that based on financial data, “whether the share capital has been eroded” is the requirement for determining the withdrawal of capital contributions, that is, the company's free distribution of assets to shareholders exceeds the sum of the provident fund and undistributed profits, or causes the net assets to be lower than the share capital.²

This standard has certain operability, but it cannot effectively identify transactions that do not directly erode the share capital but damage the solvency of the company, and are not sensitive to changes in asset liquidity.

¹ See Wang Jun. (2021). Systematic Reform of Capital Withdrawal Rules and Company Distribution System. *Legal Research*, (5), pp. 83.

² See Liu Yan. (2015). Reconstructing the Corporate Law Basis of the ‘Prohibition of Capital Withdrawal’ Rule. *China Law Review*, (4), p. 194.

2.2.3 Capital Maintenance Standards

Professor Zhang Fang advocated reconstructing the rules for capital withdrawal in the Company Law, clarifying the effective conditions for capital contributions, and supplementing the provisions on share repurchase to improve our country's capital maintenance system. He stressed that the logic of capital maintenance should be fully implemented in the judiciary, and “damage to capital” should be regarded as the core element of capital withdrawal.³

If the principle of capital maintenance is used as the sole or core basis for determining capital withdrawal, and “loss of capital” is the key element, it will face a practical dilemma similar to that of the “equity erosion standard”. In complex situations (such as the company providing guarantees for shareholders' personal debts), it is difficult to quantify the amount of asset outflows, resulting in a lack of operability, resulting in difficulties in determining capital withdrawal.

3. **Substantive Identification Criteria for Capital Withdrawal**

The problem of capital withdrawal has existed for a long time in the theory and practice of company law, which poses a continuous challenge to the stability of the company's capital system and the protection of creditors' interests. Although many countries have amended traditional capital control rules to accommodate modern business models, most have not repealed the rules prohibiting shareholders from withdrawing their capital contributions. This is mainly rooted in the basic fact that the working capital of modern companies comes from shareholders' contributions, which not only establishes the status of shareholders in the company, but also shapes a unique corporate governance model. At the same time, as an independent legal person, the company must have property independent of shareholders, which is the cornerstone of the legal person system.⁴ The withdrawal of capital contributions by shareholders is an act of

³ See Zhang Fang. (2022). Problems in Judicial Judgments on Capital Withdrawal and the Improvement of our country's capital system. *Rule of Law Research*, (5), pp. 75-76.

⁴ See Qu Tianming, Xie Lu. (2018). Adjudication Rules for the Determination of Shareholders' Substantive Withdrawal of Capital Contributions: A Case Study of Qingdao Morita Metal Company v. Japan SAN-R Shareholders' Capital Contribution Dispute. *Application of Law*, (4), p. 26.

withdrawing the capital contribution property without the consent of the company, which essentially constitutes an infringement of the company's property rights.¹

3.1 The Substantive Meaning of Capital Withdrawal

With the development of economic activities, in practice, there are not only shareholders directly transferring the capital contributions they have just paid, but also the company providing guarantees for shareholders, the company paying equity acquisition money on behalf of shareholders, and the company's repurchase of equity, which may harm the interests of the company and creditors. The act of withdrawing capital contributions is essentially an illegal appropriation of the company's property, which is particularly obvious under the capital subscription system. In the traditional legal capital system, the registered capital of a company is the limit of shareholders' limited liability to the company, and it is also an important basis for creditors to evaluate the company's solvency. However, with the implementation of the capital subscription system, the symbolic meaning of registered capital has gradually weakened, and creditors and other counterparties have paid more attention to the company's actual assets and net assets.

Under the capital subscription system, shareholders can subscribe to capital contributions when the company is established without immediate paid-in. This results in the registered capital of some companies being very low or even not paid-in, making the traditional definition of capital withdrawal ambiguous. This leads to the view that since the registered capital has not been paid-in, the object of withdrawal does not seem to exist. This view ignores the essence of capital withdrawal, that is, shareholders withdraw from the company's property. The core of capital withdrawal is that shareholders illegally obtain benefits from the company's property and reduce the company's assets, resulting in damage to the company's interests. This behavior not only violates the company's legal provisions and articles of association, but also violates the shareholders' loyalty to the company. Therefore, whether under the authorized capital system or the capital subscription system, the act of

withdrawing from the company's property should be prohibited.²

Under the capital subscription system, adjusting the concept of capital withdrawal to withdrawing company property is in line with the needs of the times. Unlike illegal appropriation of company property, withdrawal of company property includes the types of withdrawal that cause an increase in the company's liabilities. At the same time, because shareholders can cover up their withdrawal of capital contributions through various complex means, the identification process becomes complex and difficult, and from the perspective of withdrawing company property, shareholders' illegal appropriation of company property can be examined more comprehensively, and it is not limited to the specific link of capital contribution, so as to more accurately reveal its illegality.

3.2 The Premise of Determining the Withdrawal of Capital Contributions Under the Stage Distinction Rules: Damage to the Company's Capital

As a serious infringement on the company's capital system, the determination must be rigorous and clear to balance the interests of the company, shareholders and creditors. From the perspective of the nature of the company's distribution behavior, whether it is a legal distribution or an illegal distribution, its essence is that the company's assets are transferred to shareholders free of charge.³ Such a transfer may constitute illegal distribution if it is not carried out in accordance with legal procedures or foundations. There is an essential difference between the withdrawn capital contribution and the illegal distribution of ordinary procedures (such as the distribution of profits without resolution): the latter can be corrected through ex post facto ratification, while the withdrawn capital contribution directly erodes the company's capital base and cannot be legalized by procedural correction. Therefore, the key to determining the withdrawal of capital contribution lies in how to determine the legal basis for the company's distribution.

In the daily operation of a company, its owner's equity mainly includes four core parts: share

¹ See Liu Junhai. (2008). *Company Law*. China Legal Publishing House, p. 67.

² See Wang Yuying. (2023). On the Normative Positioning of the Rules for Prohibiting Capital Withdrawal. *Comparative Law Research*, (5), p. 145.

³ See Wang Jun. (2021). Rules for Withdrawing Capital and Systematic Reform of the Company's Distribution System. *Legal Research*, (5), p. 68.

capital, capital reserve, surplus reserve and undistributed profit.¹ If the company's assets are transferred to shareholders without equivalent value, and this amount exceeds the limit of "the sum of surplus reserve and undistributed profit", that is, the sum of the share capital and undistributable capital reserve is higher than the owner's equity, then this flow may constitute a capital withdrawal. On the contrary, if it does not exceed this limit, it does not constitute a capital withdrawal. The company's capital is the cornerstone of the company's credibility and the protection of the rights and interests of creditors. Any reduction in capital without legal procedures may damage the company's credit base and the interests of creditors. In addition, there are differences in the company laws of various countries on whether a company can pay capital reserve funds to shareholders without consideration. The premium portion of equity investment is a source of capital reserve funds, which are often considered part of shareholder capital contributions. Therefore, the company's act of paying capital reserve to shareholders without consideration usually constitutes capital withdrawal. However, the capital reserve also includes some unrealized gains, such as fair value change gains. The illegal distribution of such proceeds is usually not classified as a capital withdrawal. This is because this part of the proceeds has not yet been converted into the actual assets of the company, so there will be no direct damage to the company's capital base.

In judicial practice, judges should strictly follow the logic of capital maintenance for the determination of capital withdrawal. First, it is necessary to confirm whether the company has paid shareholders. Subsequently, an in-depth investigation of the company's property status at the time of payment is conducted and an assessment of whether such payments weaken the company's capital. Finally, based on the results of the investigation, it was decided whether the payment was illegal. In short, if the value of the company's property cannot maintain or exceed the value of the company's capital (including capital reserve) after paying shareholders, the payment should be considered illegal. constitutes a withdrawal of capital

contributions.²

The determination of capital withdrawal must be based on the premise of damage to the company's capital. This is because the company's capital is the basis of the company's credit and the protection of the interests of creditors. Any reduction in capital without legal procedures may harm the company's credit base and the interests of creditors. Therefore, in judicial practice, judges should strictly follow the logic of capital maintenance to ensure that the determination of capital withdrawal is accurate and fair. At the same time, shareholders and companies should also consciously abide by the principle of capital maintenance and avoid damaging the company's capital base through capital withdrawal and other behaviors.

3.3 Determination of Capital Withdrawal Under the Stage Differentiation Rules: Actual Solvency Prediction

Although the standard of loss of capital can reflect the company's ability to continue operating, it is weakly related to asset liquidity and debt structure, making it difficult to fully protect the interests of creditors. Therefore, it is necessary to introduce the actual solvency test as the bottom standard to enhance the flexibility and comprehensiveness of the application of the rules.

The actual solvency test is no longer based on equity capital, but on "distribution" as the core concept, covering profit distribution, share repurchase, capital return and other behaviors. It requires companies to assess their ability to pay off their debts when due before implementing distributions.³ This method not only frees itself from the shackles of equity standards, but also makes the source of funds for distribution more flexible, which can be equity or profit. Section 6.40(c) of the Model Commercial Company Act establishes a dual testing mechanism: one is the equitable solvency test, that is, whether the company can pay off its debts when it is due; the other is the balance sheet test, that is, whether the total assets are higher than the total liabilities. This mechanism not only expands the scope of legal sources of funds, but also enhances the decision-making

¹ See Liu Yan. (2015). Reconstructing the Basis of Company Law for Reconstructing the Rule of Prohibition of Capital Withdrawal. *China Law Journal*, (4), p. 194.

² See Zhang Fang. (2022). Problems in Judicial Judgments on Capital Withdrawal and the Improvement of our country's Capital System. *Rule of Law Research*, (5), p. 76.

³ See Wang Jun. (2021). Capital Withdrawal Rules and Systematic Transformation of the Company's Distribution System. *Law Research*, (5), p. 90.

flexibility of the board of directors in capital allocation. Of course, this also means that the board needs to take on greater responsibility. They should be good faith, prudent, and do their best to assess the solvency of the company, otherwise they will be personally liable for illegal distribution.¹ From international experience, the company laws of more than 30 states in the United States have accepted the distribution guidelines stipulated in the Model Commercial Company Act. At the same time, the company laws of Canada, Australia, South Africa, New Zealand and other countries have adopted similar distribution models to varying degrees, reflecting the wide acceptance of this method.

It is worth mentioning that the solvency standard does not completely get rid of the dependence on financial indicators. It allows directors to adjust financial indicators based on other reasonable information when making decisions,² in order to better adapt to the complex and changeable business environment. Our country can learn from international experience and introduce solvency testing in profit distribution and other links to make up for the static and manipulative space of traditional financial resource restriction standards³. The Supreme People's Court also pointed out in the "Dispute over the Validity of Contracts between Shiyang Dongming Property Development Co., Ltd. and Jixiang Community Residents' Committee of Eryuan Sub-district Office in Maojian District, Shiyang City" that the act of not damaging the company's assets or solvency does not constitute a withdrawal of capital contributions.⁴

In summary, using the actual solvency test as the bottom line for determining capital withdrawal is both theoretically reasonable and practical. It can not only make up for the shortcomings of traditional share capital standards, but also expand the mobility and autonomy of the board of directors in capital matters, thereby reducing the risk of liquidation of the company's liquidity

liabilities,⁵ in order to better protect the interests of creditors and maintain market order.

4. The Legal Liability System for Capital Withdrawal Under the New Company Law

From the perspective of the new Company Law, the regulation of capital withdrawal is no longer limited to the level of behavior determination, and the construction and improvement of its legal liability system also plays a pivotal role. Through diversified accountability mechanisms, it curbs shareholders' withdrawal behavior, protects the independence of the company's property, and safeguards the legitimate rights and interests of the company's creditors.

4.1 Dual Liability in the Field of Private Law: Tort Liability and Organic Law Liability

The act of withdrawing capital contributions triggers the company's dual liability for the withdrawn shareholders in the field of private law: first, the tort law liability based on the infringement of the company's property rights, which is mainly reflected in the return of capital contributions and damages; The second is based on the liability for the violation of the obligations of the company's organic law, which is often closely linked to the principle of capital maintenance and the norm of capital deficit in judicial practice.

4.1.1 Development of Tort Liability: Return of Capital Contribution and Compensation for Damages

Paragraph 2 of Article 53 of the new Company Law clearly stipulates: "If a shareholder withdraws his capital contribution, he shall return the interest on the capital contribution to the company and be liable for compensation for the losses caused by the company." This provides a direct legal basis for pursuing the tort law liability of the withdrawn shareholder. There is controversy in the academic community about the legal nature of "returning capital interest". One view is that the withdrawal of capital contributions by shareholders is an illegal possession of the company's property, and its return obligation is of the nature of unjust enrichment.⁶ Another view is that the withdrawal of capital contribution directly leads

¹ See Model Business Corporation ACT & 8.30, 8.32(a)(2016).

² See Yao Yaling and Liu Xuebin. (2023). On the Improvement of the Bottom Line Regulation of Company Distribution. *Hebei Law Journal*, (4), p. 140.

³ See Wang Jun. (2022). *Corporate Capital System*. Peking University Press, 2022 edition, pp. 327-328.

⁴ See Supreme People's Court (2021) Supreme Court Min Shen No. 3344 Civil Ruling.

⁵ See Wu Feifei. (2023). The Current Implications of the Principle of Capital Maintenance and Its Reference to the Solvency Test. *Political and Legal Forum*, (4), p. 156.

⁶ See Huang Wei. (2020). *Interpretation of the General Provisions of the Civil Code of the People's Republic of China*. Law Press, 2020 edition, p. 318.

to the damage to the company's property, which constitutes a tort in a broad sense, and the return of capital contribution interest is a special form of tort damages.¹ Regardless of the doctrine, the direct purpose of returning principal and interest is to restore the integrity of the company's property and return the company's property that has been illegally flowed out due to the withdrawal to the company.

On this basis, the new Company Law further stipulates that shareholders should bear the liability for compensation for "losses caused by the company". This shows that in addition to returning principal and interest, the withdrawal of capital contributions may also cause other losses to the company beyond the scope of principal and interest, such as liquidated damages, fines, and opportunity losses caused by the company's capital chain break. At this time, the withdrawn shareholders are liable for these direct damages. This means that the elements of tort liability for capital withdrawal include: shareholders have carried out withdrawal behaviors (such as fictitious creditor's rights and debts transferred out of funds, false statements to distribute profits, etc.); damage to the company's property (decrease in assets or increase in liabilities); There is a causal relationship between the evasion and the company's damage; Shareholders are subjectively at fault (intentional or gross negligence). Its legal effect is the coexistence of returning capital interest and compensating for other losses. Professor Ye Lin also proposed that it is worth paying attention to whether the relationship between shareholders' return of capital contribution interest and compensation liability and joint and several liability is a coexisting relationship or a substitution relationship. Judging from the expression of the new Company Law, the return of principal and interest is a basic obligation, and the compensation for losses is a supplementary obligation, which are independent and complementary to each other, aiming to make up for the losses suffered by the company due to the withdrawal to the greatest extent. Liability is important when the company is unable to obtain a return or the return is not enough to cover the entire loss.

¹ See Fan Yunhui. (2014). From 'Withdrawal of Capital Contributions' to 'Empropriation of Company Property': A Clarification of a Concept. *Law and Business Research*, (1).

4.1.2 Responsibilities of the Organic Law: Application and Coordination of Capital Deficit Norms

The private law liability for capital withdrawal is not only related to tort, but also deeply touches on the principle of capital maintenance at the level of corporate law of companies. As the basis of the company's credit and the protection of the interests of creditors, the integrity of the company's capital is the key to the company's ability to continue operating.

The original Judicial Interpretation III of the Company Law listed various types of capital withdrawal, including the distribution of false statements and inflated profits, reflecting the regulation of illegal distribution in the state of capital deficit. Although the new Company Law does not directly absorb all the contents of Article 12 of the original Judicial Interpretation III of the Company Law, the prohibition on capital withdrawal in Article 53 and the expansion of the rule of "shareholders shall not withdraw capital contributions" to the equity repurchase situation in the VAM Agreement in Article 8 of the Minutes of the National Court Civil and Commercial Trial Work Conference (hereinafter referred to as the "Nine Civil Minutes") all show the continuation and strengthening of the principle of capital maintenance. In particular, Article 5 of the Minutes of the Nine People's Liberations clearly requires that the target company must complete the capital reduction procedure to repurchase equity, otherwise the litigation claim will be dismissed, which is a mandatory requirement for the legality of the company's distribution behavior from the perspective of capital maintenance, aiming to prevent the substantial reduction of the company's capital and harm the interests of creditors.

Under the subscription system, the new Company Law still stipulates that the capital contributions subscribed by shareholders of limited liability companies should be paid in full within five years (Article 47, paragraph 1), reflecting the position of "limited subscription system". This means that the promoter or shareholder still has the obligation to enrich the capital within the capital contribution period stipulated in the company's articles of association. Although withdrawing capital contributions is different from not fulfilling capital contribution obligations, its result may also lead to insufficient or deficit of the

company's capital. Therefore, the provisions of the new Company Law on the accelerated expiration and loss of rights of shareholders who fail to pay their capital contributions in full and on time have a certain synergistic effect on protecting the company's capital and the responsibility for withdrawing capital contributions. Although the two behavior patterns are different, they may lead to insufficient capital of the company, which leads to the application of the organic law, that is, the application of capital deficit norms. When the company's net assets are lower than the registered capital due to the withdrawal of capital contributions, the company and its creditors can invoke the principle of capital maintenance and require the withdrawing shareholders to bear corresponding responsibilities to ensure the company's ability to continue operating and the interests of creditors.

As for the supplementary liability of the withdrawn shareholders to the company's creditors, Article 14, paragraph 2 of the original Judicial Interpretation III of the Company Law clearly stipulates that the company's creditors can require the shareholders who have withdrawn their capital contributions to bear supplementary liability. Although the new Company Law does not directly restate this provision, in judicial practice, according to the relevant provisions of the Company Law on the denial of legal personality and the abuse of the company's independent status as a legal person and the limited liability of shareholders to harm the interests of the company's creditors, when the withdrawal of capital contributions causes the company to become insolvent and unable to pay off the debts of creditors, the withdrawn shareholders may still be required to bear supplementary liability for the company's debts within the scope of the withdrawn capital interest. This reflects the ultimate protection of the interests of the company's creditors and prevents shareholders from avoiding their ultimate responsibility to the company through withdrawal.

4.2 The Liability of Directors, Supervisors and Senior Executives for the Company's Losses

The withdrawal of capital contributions is often not unilaterally completed by shareholders, but usually involves the assistance of other entities within the company, such as directors, supervisors, senior management (directors,

supervisors, senior executives) and even other shareholders or actual controllers. The new Company Law and its judicial interpretations also clearly stipulate the liability of these related parties.

Regarding the responsibility of directors, supervisors and senior executives in the act of withdrawing capital contributions, it is necessary to distinguish according to the nature of their actions. Article 53, paragraph 2 of the new Company Law stipulates: "Responsible directors, supervisors and senior management shall be jointly and severally liable for losses caused by the company in accordance with the provisions of the preceding paragraph." This clarifies the joint and several liability of directors, supervisors and senior executives in withdrawing capital contributions. Its legal basis lies in the duty of loyalty and diligence owed by directors, supervisors and senior executives to the company. On the one hand, if the withdrawal of capital contribution is caused by the directors, supervisors and senior executives paying the company's property to shareholders without effective authorization from the shareholders' meeting or the board of directors based on their personal actions or judgments, then the responsible directors, supervisors and senior executives should bear broader responsibilities for all the consequences arising therefrom. In this case, the behavior is closer to a personal infringement of the company's assets. On the other hand, if the directors, supervisors and senior executives are based on the company's legally formed resolutions, such as the resolution of the shareholders' meeting or the board of directors, rather than their personal decisions or actions, the determination of the responsibilities of directors, supervisors and senior executives needs to be more prudent and meticulous at this time. Analyze whether it violated its duty of loyalty and diligence,¹ when directors, supervisors and senior executives know or should know that shareholders have withdrawn their capital contributions, but fail to fulfill their obligations to stop them, or even actively assist in the implementation of the withdrawal, it constitutes a breach of the company's obligations and thus must bear joint and several liability.

The criteria for determining "responsible

¹ See Ding Yong. (2020). Research on the Exemption of Directors from Implementing Shareholders' Meeting Resolutions. *Law Review*, (5), p. 155.

directors, supervisors, and senior executives” need to consider whether they are aware of it, whether they are at fault (including intentional or gross negligence), and the relevance of their behavior to the act of withdrawal. For example, if the directors, supervisors and senior executives approve fictitious creditor-debt relationships, prepare false financial statements, or sign non-compliant equity repurchase agreements, even if they are not the shareholders themselves, they may be recognized as “facilitators” and jointly and severally liable. Professor Ye Lin pointed out that the instructions or assistance of shareholders and actual controllers are often the main incentives for directors, supervisors and senior executives to transfer out capital contributions, and raised the question of whether the responsibilities of shareholders and actual controllers should be removed. This indirectly illustrates the reality that directors, supervisors and senior executives are subject to major shareholders or actual controllers within the company. However, even if there are instructions, directors, supervisors and senior executives, as company managers, still have the obligation to make independent judgments and perform their duties in accordance with the law.

5. Conclusion

In the development of the company, the most important contradiction stems from the dispute between creditors, shareholders and the company over the interests of the company's property.¹ A new framework that combines ex-ante and post-event constraints is constructed, that is, whether the distribution behavior has damaged capital in advance and predicts the solvency after the event — honestly and prudently evaluate the actual solvency of the company within a certain period of time (such as 12 months) after the implementation of the distribution. The introduction of the verification responsibility of the board of directors, the expansion of the scope of responsibility to directors, supervisors and senior executives, and the strengthening of shareholders' liability for compensation and joint and several liabilities reflect the transformation of the modern corporate governance concept from “strict access” to “strict supervision”. In the future, with the

continuous deepening of judicial practice, the system will continue to improve in dynamic development, providing a solid guarantee for building an honest and trustworthy, fair and orderly market order.

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¹ See Liu Yan and Wang Qiuhaohao. (2020). Corporate Capital Outflow and Protection of Creditors' Interests: Legal Paths and Choices. *Financial Law*, (6), p. 4.

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Funding and Proposals of the European Commission for Resources in the Field of European Defense Policy

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Abstract

The present paper aims to highlight another stage of integration, that is, the field of defense policy. The investigation is based on the White Paper that was adopted in March of 2025 and on the related new proposals that it offered for defense financing. The main topic is the European resources that each EU Member State can offer and especially in our days that the need is even higher given the situation in Ukraine. News and/or steps backwards in the defense sector is still very early to say. It depends on the Member States to take a position on the matter as well as to decide whether defense is truly one of the leading policies in the context of the EU.

Keywords: defense financing, European Union law, ReArm Europe, European Commission, European Parliament, safe, NGEU, sure

1. Introduction

The extraordinary European Council of 4 March 2025 was convened to decide on the support of Ukraine and on the prospects of European defense (Meletidis, 2024). The President of the European Commission spoke to about yet another five-point plan dedicated to the better functioning of defense with the name of ReArm Europe.¹ A one more initiative that was proposed by the European Council² with the support of the European Parliament through a

Resolution of 12 March³ that was included in the White Paper on European defense of 2030. It was presented by the European Commission and by the High Representative for Foreign Affairs and Security Policy (Dermine, 2025; Famà, 2025; Markakis, 2025; Vecchio, 2025; Hampton, 2025).⁴

The interest in the ReArm Europe plan and the White Paper was undoubtedly a consequence of a communication strategy that was chosen for the so-called plan also bringing back a debate on

¹ Press statement by President von der Leyen on the defence package, https://ec.europa.eu/commission/presscorner/detail/en/statement_25_673_

² Extraordinary meeting of the European Council (6 March 2025) – Conclusions, EUCO 6/25: <https://www.consilium.europa.eu/en/press/press-release/s/2025/03/06/special-european-council-6-march-2025/>

³ European Parliament resolution of 12 March 2025 on the White Paper on the future of European defence (2025/2565(RSP)): https://www.europarl.europa.eu/doceo/document/TA-10-2025-0034_EN.html

⁴ Joint White Paper on European Defence Readiness 2030, JOIN(2025) 120 of 19 March 2025: <https://eda.europa.eu/news-and-events/news/2025/03/19/joint-white-paper-for-european-defence-readiness-2030>

the defense of the European continent and the contribution of the policies of the European Union and the related leading role of the European Commission. An institution that had no competence in defense policy, therefore, in the previous weeks responded to the cessation of American support for Ukraine and to the related disengagement of a new American administration that respects the collective security in Europe and not only.

The White Paper and previous interventions by the European Commission and by the High Representative¹ highlighted the deterioration of a strategic context that characterized the increase and intensification of threats to European security, the birth and strengthening of a base characterized the industrial technology of the European defense. Giving voice to the previous programmatic documents and especially to the strategic compass, the Council in March 2022 adopted the Fund for the action of the Union in the field of security and defense for the period 2022-2030.² The proposed interventions identified the creation of a sufficient capacity that prevented aggressive war within a time frame of five years.³ The White Paper recognized the competence that defined the national armed forces to the Member States. The White Paper also suggests the role of the Union which consists in supporting the coordination of the efforts of the Member States in strengthening the industrial base for the defense of the Union including the European contributions and the collective defense of NATO. The reference to other objectives and the support of Ukraine has created a single market for defense products that correspond to the

relevant proposals⁴ which call the White Paper to find the necessary resources and thus support, or rather increase defense spending at a national level.

The proposals of the President of the European Commission and the ReArm Europe plan, as well as the White Paper, therefore, identified some important pillars for the intervention. Pillars such as: establishing a financial instrument to support investments; the coordinated activation for the national safeguard clause and the Stability and Growth Pact; -review and cohesion to facilitate the commitment of European funds and investments in the defense sector, and; -a political review of cohesion that facilitates the use of European funds for investments in the defense sector as well as interventions by the European Investment Bank and the creation of private investments. The legal profiles of the White Paper and the regulatory proposals focus on measures that call for, identify elements of greater novelty, which highlight the main problematic issues. The axes of intervention pre-order create incentives for private investment. As regards the action of the European Investment Bank, it notes that the White Paper includes objectives of doubling annual investments to operate projects on drones, space, cybersecurity, new technologies, military structures and civil protection, as well as the revision of eligibility criteria that limit the scope and excluded activities as much as possible, as well as the revision of the Group's operating framework and the introduction of a specific objective of a public policy that contributes to the peace and security of Europe.

The White Paper reported that the Board of Directors of the EIB followed several measures adopted two days later, i.e. on 21 March 2025.⁵ The proposals for private investments as well as the European Commission have addressed the communication strategy of the Union on savings

¹ Commission Reflection Paper on the Future of European Defence, COM(2017) 315 final of 7 June 2017: https://commission.europa.eu/publications/reflection-paper-future-european-defence_en; Joint Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on the Defence Investment Gap Analysis and Way Forward, JOIN(2022) 24 final of 18 May 2022: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=cellex:52022JC0024>

² Council of the European Union, A strategic compass for security and defence – For a European Union that protects its citizens, values and interests and contributes to international peace and security, doc. 7371/2022, 21 March 2022: https://www.eeas.europa.eu/eeas/strategic-compass-security-and-defence-1_en

³ Joint White Paper on European Defence Readiness 2030, op. cit., p. 5.

⁴ Joint White Paper on European Defence Readiness 2030, op. cit., p. 10.

⁵ EIB steps up financing for European security and defence and critical raw materials, <https://www.eib.org/en/press/all/2025-156-eib-steps-up-financing-for-european-security-and-defence-and-critical-raw-materials>

for investments presented by the White Paper,¹ which has not yet been formulated a specific legislative proposal.

2. Towards the Establishment of an Instrument for the Security Action for Europe (SAFE) and Art. 122 TFEU

The measures on support for investments in the defence sector were undoubtedly based on the establishment of an instrument for the Security Action for Europe (SAFE) as well as on the related strengthening of industry and defence.² The Security Action for Europe was conceived as a specific instrument for the financing of defence investments by the Member States. It guaranteed the budget of the Union, i.e. a total allocation of 150 billion euros. The SAFE is modelled on a European instrument for temporary support to mitigate risks for unemployment in a state of emergency (SURE) as was established by Regulation (EU) 2020/672 of the Council,³ which allowed the Union to grant financial assistance to Member States for the support of social safety nets after the contraction of a labour market following the spread of the past epidemic of COVID-19.

The legal basis of the new instrument was based on Art. 122 TFEU (Kellerbauer, Klamert & Tomkin, 2024) without making a distinction between the first and second paragraph, on Regulation (EU) 2020/672 and on the establishment of SURE according to Regulation (EU) 2020/2094 to establish a recovery instrument within the scope of the next generation EU (NGEU) plan. The connection with Art. 122 TFEU is placed within the trend of European institutions that resort to a provision for the adoption of interventions within the

scope of economic policy (De Witte, 2021; Chamon, 2023; Dermine, 2024; Chamon, 2024; Panaschi, 2024; Weber, 2024). This solution follows the establishment of the European fund that establishes the financial, namely the European Financial Stability Facility (EFSF).⁴ Art. 122, par. 2 TEU adopts measures of intervention on the energy market to ensure security for the related supplies and for prices in the months following the aggression in Ukraine.⁵

Art. 122 TFEU is composed of two distinct legal bases. On the one hand we have the procedure that is based on the treaties, on the Council after proposal of the European Commission that decides according to the spirit of solidarity between Member States, as well as on the appropriate measures for the economic situation thus arising difficulties in the supply of products in the energy sector. On the other hand, Paragraph 2 allows the Council to make a proposal on the European Commission in order to grant, according to certain conditions, a financial assistance, i.e. when an EU Member State is in serious difficulties due for example to natural disasters or due to exceptional circumstances beyond its control.

From a jurisprudential point of view, we recall the Pringle case that the Court of Justice of the European Union (CJEU) used to establish the relevant mechanism for permanent aid.⁶ Art. 122, par. 2 TFEU has a limited scope for interventions in emergency situations. Thus, the conditions that constrain and recall the notion of force majeure are required, which subordinates the granting of assistance in the form of conditionality. Paragraph 1 instead highlights the measures appropriate to the economic situation that have different content for the granting of financial assistance. The provision thus authorizes interventions of an emergency nature and considers, includes measures of a

¹ Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions, Savings and Investments Union. A Strategy to Foster Citizens' Wealth and Economic Competitiveness in the EU, COM(2025) 124 final: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=cel-ex:52025DC0124>

² Proposal for a Regulation establishing the Security of Europe (SAFE) Instrument by strengthening the European Defence Industry, COM(2025) 122 final: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=cel-ex:52025PC0122>

³ Council Regulation (EU) 2020/672 of 19 May 2020 on the establishment of a European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) following the COVID-19 outbreak, ST/7917/2020/INIT, OJ L 159, 20.5.2020, p. 1–7: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32020R0672>

⁴ Council Regulation (EU) No 407/2010 of 11 May 2010 establishing a European financial stabilisation mechanism, OJ L 118, 12.5.2010, p. 1–4: <https://eur-lex.europa.eu/eli/reg/2010/407/oj/eng>

⁵ Council Regulation (EU) 2022/1369 of 5 August 2022 on coordinated demand-reduction measures for gas, ST/11568/2022/INIT, OJ L 206, 8.8.2022, p. 1–10: <https://eur-lex.europa.eu/eli/reg/2022/1369/oj/eng>. Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices, ST/12521/2022/INIT, OJ L 261I, 7.10.2022, p. 1–21: <https://eur-lex.europa.eu/eli/reg/2022/1854/oj/eng>

⁶ CJEU, 27 November 2012, C-370/12, Pringle, ECLI:EU:C:2012:756, published in the electronic Reports of the cases, par. 65.

structural nature. In this spirit, we recall the *Germany v. Poland* case relating to the OPAL gas pipeline. In this regard, the CJEU has qualified the procedures envisaged under Art. 122 and 222 TFEU, i.e. a precise emergency mechanisms that use the principle of energy solidarity.¹ Limiting art. 1 to interventions of an emergency nature means to make use of the escape clause, as well as of provisions of the relevant treaty. This is an orientation which, on the basis of historical and systematic arguments, denies the emergency nature of Art. 122, par. 1 TFEU as well as supporting the provision which offers a general legal basis for economic policy interventions.

From an institutional point of view, the interpretation of the proposal to establish SAFE is adapted by an approach arguing that the measure legitimizes Art. 122 TFEU as a requirement to increase defense spending. This applies to exceptional situations that do not allow Member States to exercise relative control, which in reality escapes their scrutiny (Weber, 2024). The emergency logic is evident and respects the interventions adopted to counter the economic consequences after the pandemic as well as the increase in energy prices in 2022. The factor qualified as emergency can be found in the solidity of the Atlantic Alliance.²

The European Commission implicitly refers to a continued deterioration of the security of the Union from the beginning of 2025 (Erlanger, 2025). The formulas in the proposal and in the accompanying report, according to the SAFE, seem to mark the respect of instruments based on the same legal basis and on the interpretative evolution of Art. 122, in the sense of openness towards interventions of a structural nature. The objective of the proposal and the entire plan that outlines the White Paper responds to the investment that recognizes the European institutions from the geopolitical point of view for security reasons in the European continent, that escape the control of the Member States, that with difficulty qualifies as an exceptional circumstance.³

The Americans have asked the European

partners of NATO to increase defense spending because of the continuous wars that are increasing in the planet (Guardian, 2025). A position that responds in the defense policy of the US (Becker, Kuokštytė & Kuokštis, 2023). Another point of discussion was the choice of the proposed regulation. This discussion was based on Art. 122 TFEU, which concerns the relationship with other legal bases. More precisely, Art. 122, par. 1 TFEU opens a safety clause with other provisions of the treaties that resorts to the measures that find a different legal basis of a temporary nature for urgent measures that do not adopt in a timely manner the prescribed procedure.⁴ The proposed regulation is based on SAFE. The nexus of economic policy is undoubtedly based in comparison with measures that are based on Art. 122 TFEU after the pandemic crisis. The measure of economic policy and of industrial policy is limited to the common security and defense policy which is defensible to the structure of the instrument which does not create a fund which is based on existing resources, according to the budget of the Union, because it generates debt to support public investments.

The extensive interpretation, within the scope of application and on legal bases that are provided for by Art. 122 TFEU, ends up in the transformation of an exceptional nature as a sort of general legal basis, that applies interventions that go beyond the scope of an economic policy and involve a series of implications at the level of interinstitutional relations and institutional balance. The procedures that are provided for by the paragraphs of Art. 122 TFEU attribute a decision-making power, that excludes the Council after a proposal of the European Commission and with the exclusion of the European Parliament of the decision-making process. Within this perspective, the legal basis defines the procedure that is applicable and necessary for the organization of the functioning, that representative democracy assumes, according to Art. 10, par. 1 TEU. The fundamental choice for economic policy makes the direct involvement for the institution evident, that represents for citizens the decision-making process.

3. Structure of SAFE and Use of Contributions

¹ CJEU, 15 July 2021, C-848/19 P, *Germany v. Poland*, ECLI:EU:C:2021:598, published in the electronic Reports of the cases, par. 62.

² Recital 10 of the proposal for a regulation COM (2025) 122 final, op. cit.

³ Proposal for a regulation COM (2025) 122 final, op. cit. par. 4.

⁴ CJEU, 24 October 1973, 5/73, *Balkan Import Export GmbH v. Hauptzollamt Berlin Packhof*, ECLI:EU:C:1973:109, I-01091, par. 15.

The SAFE found by the European Commission uses loans on capital markets,¹ according to the programs of SURE and NGEU. The solution envisages and marks a step in the direction that makes the use of supranational public debt structural, according to the case of SURE and NGEU that conceives the non-repeatable emergency solution.

The resources that are collected by the European Commission on capital markets and granted to the Member States require the model that is followed by NGEU and that includes loans of a subsidized nature. The burden of the debt was contracted by the European Commission and weighs on the Member States that use the instrument without a mutualization of the related debt. The Member States use loans that schedule the repayment that affects the medium term for public finance policies. The relative finding of resources on capital markets by the Union has an advantage that offers lower interest rates that respect the issuance of national debt securities for the Member States that are burdened by a high public debt.

The difference between NGEU and SAFE bridges and covers a time frame that does not coincide with the Multiannual Financial Framework after the deadline of 2027 and when the availability for loans ends on 31 December 2030.² Another difference that respects the NGEU is the absence of a fixed position for resources that reflects the propensity for Member States to resort to loans. Thus, the proposal as a guarantee clause limits the loans granted to the three Member States that obtain a higher percentage of 60% of the total endowment of their instrument.³

The loans earmarked clarify that SAFE does not finance initiatives of a transnational nature for research and development, such as the purchase of existing products for the period 2025-2030, which indicates the implementation of the rearmament plan. The proposed regulation establishes that Member States request financial assistance for activities, expenditure and measures related to defence and defence products through joint procurement.⁴ Products

relevant to a wide range of munitions and missiles, such as artillery systems, drones and anti-drone systems, protection of critical infrastructures, etc., are solutions for cybersecurity and the protection of space resources, artificial intelligence and electronic warfare.

The actions eligible for funding products that are purchased by Member States are the only antidote to the fragmentation of interventions at national level as well as a condition for the resources allocated, that are used through joint procurement and are carried out by two Member States, i.e. a Member State and/or an EFTA state, according to the EEA Agreement, or a Member State and Ukraine.⁵

The procurement topic is common to at least two states and is subject to a derogation for the twelve months after the entry into force of the relevant regulation.⁶ This is a factor that encourages the relative rush for spending by Member States that do not want to participate in joint acquisitions. Art. 16 of the proposal defines the eligibility criteria for participation in joint procurements that outline a protectionist framework. They establish, in this way, the subcontractors that are involved in the procurement. In this way, the relationship of the Union with the EFTA-EEA and/or Ukraine cannot be controlled by other Member States.⁷ These states form the basis of an agreement of the Union for countries sharing the same principles as acceding countries, candidate countries other than Ukraine, potential candidates and other third countries with the Union established by a partnership in the field of security and defence.

The general rule of establishment of the Union to an EFTA-EEA state and in Ukraine is subject to exceptions when the entity controlling third states and entities establishing a third country to participate in procurement procedures are subject to screening according to Regulation (EU) 2019/452 on the screening of foreign direct

¹ Proposal for a regulation COM (2025) 122 final, op. cit.

² Art. 12, par. 1 of Proposal for a regulation COM (2025) 122 final, op. cit.

³ Art. 13 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁴ Art. 4, par. 1 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁵ Art. 2, n. 3 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁶ Art. 4, par. 3 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁷ Art. 17, par. 1 of Proposal for a regulation COM (2025) 122 final, op. cit.

investments.¹ Guarantees are thus provided that a Member State of establishment ensures that its involvement does not conflict with the security, defence interests of the Union and its Member States.² The guarantees demonstrate the presence of measures that are appropriate and prevent access to third countries that are subject to third countries and to classified information.³

4. Budgetary Constraints and the Stability and Growth Pact

The White Paper constitutes a short-term objective without requiring the specific adoption of new legislative measures regarding the coordinated activation of the national safeguard clause that is provided for by Art. 26 of Regulation (EU) 2024/1263, i.e. the new Stability and Growth Pact (De Haan & Amtenbrink, 2023; Oraheimo & Paasikallio, 2023).⁴ A provision that thus constitutes elements of flexibility as well as allows the adoption by the Council after a request from a Member State and upon recommendation of the European Commission: “(...) that allows a Member State to deviate from the net expenditure path established by the Council (...) exceptional events outside the control of the Member State have significant repercussions on its public finances (...) deviation does not compromise budgetary sustainability in the medium term (...)”. The safeguard clause allows Member States to increase their defense spending by resorting to a derogation in debt for the parameters relating to the ratio between public debt and gross domestic product, i.e. 60% between public deficit and gross domestic product, or 3% of net expenditure.

The European Commission communication accompanying the White Paper and the activation of the national safeguard clause for Member States call for a deviation in the

spending path, that is agreed for a period of four years starting from 2025 and is also extendable.⁵ The related use of the clauses based on Art. 26 of the multi-year investment pact programme highlights a spending path that is established for exceptional circumstances beyond the control of a Member State. The interpretation of Art. 122 TFEU, as an objective relating to the rearmament of Member States functions responds to threats beyond their control, thus constituting an objective of an emerging structural nature. The conditions based on Art. 26 of Regulation 2024/1263 are stringent and call for the activation of a general safeguard clause, which constitutes in various ways an appropriate solution that allows for the general increase in national investments in the defence sector. This is a serious negative situation for the Eurozone and the Union as a whole that is considered inapplicable (Dermine, 2025). The flexibility granted to national budgets by means of activation of the safeguard clause for the European Commission awaits the contribution in a significant way within the terms of financial commitment that strengthens the capabilities for defense of the Member States.

The press release of 4 March 2025 highlighted the average increase in defence spending that corresponds to overall investments exceeding 650 billion euros within four years. The communication clarifies the percentage that constitutes the maximum agreed expenditure.⁶ The increased voluntary indebtedness is unlikely for all Member States that make use of the principle of flexibility granted for the easing of the pact, that reaches the investment objective suggested by the European Commission.

Fiscal space is granted to Member States that request the preservation of sustainability for public budgets in the medium term. The increase in defense investments protects financial stability and leads to a differentiated application of safeguard and flexibility clauses for states and especially for those of the eurozone by virtue of a strong indebtedness and

¹ Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019 establishing a framework for the screening of foreign direct investments into the Union, PE/72/2018/REV/1, OJ L 79I, 21.3.2019, p. 1–14: <https://eur-lex.europa.eu/eli/reg/2019/452/oj/eng>

² Art. 16, par. 4 of Proposal for a regulation COM (2025) 122 final, op. cit.

³ ⁶ Art. 16, par. 5 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁴ Regulation (EU) 2024/1263 of the European Parliament and of the Council of 29 April 2024 on the effective coordination of economic policies and on multilateral budgetary surveillance and repealing Council Regulation (EC) No 1466/97, PE/51/2024/REV/1, OJ L, 2024/1263, 30.4.2024: <https://eur-lex.europa.eu/eli/reg/2024/1263/oj/eng>

⁵ Communication from the Commission, Accommodating increased defence expenditure within the Stability and Growth Pact, C(2025) 2000 final of 19 March 2025, p. 6: https://defence-industry-space.ec.europa.eu/document/download/a57304ce-1a98-4a2c-aed5-36485884f1a0_en?filename=Communication-on-the-national-escape-clause.pdf

⁶ Communication from the Commission, Accommodating increased defence expenditure within the Stability and Growth Pact, C (2025) 2000 final, op., cit., p. 3.

systemic risks that derive from the monetary area and then spread to the financial markets. The proposed solution is inefficient and entails for Member States lower spending margins that do not fill the investment gaps in their defense capabilities within the unsustainable debt (Beetsma, Bitu & Nicoli, 2025; Guttenberg & Redeker, 2025).

It is clear that this type of flexibility lacks adequate coordination and direction tools that risk solving problems of duplication and inefficiency for defense spending. The resources of SAFE are pre-ordained to acquire products, defense equipment for Member States that are lacking and highlight the European Defense Agency.¹ The relaxation of budget constraints in the Stability and Growth Pact leaves Member States greater autonomy for the allocation of their resources. Flexibility concerns investments for current defense spending, also covering investments in equipment for armed forces and infrastructure for expenses, i.e. for the increase in military personnel and training.²

This is “free” spending since the pact conditions the definition of spending path as well as the individual priorities within the framework of a European semester. Already Art. 13, lett. c) of Regulation 2024/1263 asks Member States for the national structural plans of the medium-term budget thus ensuring the implementation of reforms and investments, as a response to individual challenges within the European context. In such a way, the recommendations of each country have to do with the common priorities of the Union as a way for development and defense capacity. It thus occurs that the European Commission is able to address some choices for Member States relating to shared priority resources. These are cooperative solutions that limit duplication. The coordination of economic policies within a framework of the European semester and conditionality as foreseen by the NGEU does not offer other encouragement for empirical studies that report a poor effectiveness for instruments oriented to public investments especially at national level (Efsthaliou, 2018; Kaniok, 2025).

¹ European Defence Agency, The 2023 EU Capability Development Priorities, <https://eda.europa.eu/docs/default-source/brochures/qu-03-23-421-en-n-web.pdf>.

² Communication from the Commission, Accommodating increased defence expenditure within the Stability and Growth Pact, C (2025) 2000 final, op., cit., p. 4.

5. Reviewing Cohesion Policy

Funds Related to the European Defence Structure

The White Paper concerns cohesion policy, which aims to free up other resources in a flexible way to the Member States, namely structural funds distributed within the 2021-2027 programming framework. The European Commission allows for a mid-term review of the programming cycle, thus proposing the extension of the objectives pursued for the European Regional Development Fund (ERDF), as well as for the cohesion funds.³

The proposed amendments, according to the Regulation (EU) 2021/1058,⁴ introduce new objectives for both funds concerning the strengthening and industrial capabilities to produce goods and dual use of a defense capability as well as the development for infrastructures regarding mobility in the military sector.⁵ The related reasoning concerns objectives relating to defense capability. They go beyond the relationship that considers the recital 5 of the proposed regulation as well as the support of the defense industry that: “(...) technological development and production of defense products and other products for defense purposes (...)” are defined through the proposal of the regulation SAFE. The proposal also intervenes on objectives of a cohesion policy, increase of resources for defense that identifies an urgent priority for the European Commission that arises a discussion and approval for the proposal that waives the *vacatio legis* of twenty days for the entry of its regulation.⁶

This is a proposal that puts forward⁷ the decision that redirects part of the resources

³ Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2021/1058 and (EU) 2021/1056 as regards specific measures to address strategic challenges in the context of the mid-term review, COM(2025) 123 final of 1st April 2025: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=cel-ex:52025PC0123>

⁴ Regulation (EU) 2021/1058 of the European Parliament and of the Council of 24 June 2021 on the European Regional Development Fund and on the Cohesion Fund, PE/48/2021/INIT, OJ L 231, 30.6.2021, p. 60–93: <https://eur-lex.europa.eu/eli/reg/2021/1058/oj/eng>

⁵ Art. 1 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁶ Art. 3 and recital 20 of Proposal for a regulation COM (2025) 122 final, op. cit.

⁷ Recital 5 of Proposal for a regulation COM (2025) 122 final, op. cit.

towards the defense industry of each member state. This component strengthens defense and limits Member States in using in flexible way the financial resources that come from the budget of the Union. Other tools that are indicated by the White Paper provide for not all Member States to make intensive use of this component. The proposal observes the evolution of the cohesion policy within the course of the last two cycles of its programming. After an extensive reading of the notion of economic, social and territorial cohesion the Union uses tools that are offered by the cohesion policy, in function of a plurality of objectives that are transversal to various different sectors of intervention.¹ The ecological and digital transition constitutes the components of the NGEU. The proposal thus allows the use of structural funds for investments within the consolidated defense sector. This is a trend that confirms the profound evolution of the purpose of a cohesion policy as a tool for leveling territorial and social inequalities. In other words, it is a vehicle that achieves general objectives of economic and industrial policy.

6. Conclusions

As we have understood so far, the White Paper suggests further relationships for the defense policy and for material policies of the Union relating to the role of the European Commission within the related process of strengthening the capabilities of the Member States in the defence sector. The sense of novelty is generated by public opinion. The White Paper is, therefore, accompanied by initiatives that have long been a topic of discussion.

The establishment of a fund that finances the issuance of a common debt relating to the derogation and/or the constraints of public finances provided for by the stability and growth plate, responds to requests that have long been raised by several Member States. They are expressed by the heads of the European institutions starting from 2023² and the vote of

approval from the European Commission.³ Such measures are placed through initiatives that are already assumed by the European institutions in recent years in the sector of industrial policy.

In 2021, the Union legislator established the European Defence Fund. Its objective was to support research projects for industrial development and defence, as a financial endowment that is relative to consist of eight billion euros in 2021.⁴ The fund thus supports projects that implement new technologies for defence with a different connection that intervenes on acquisitions. It establishes an instrument for the strengthening of the European defence industry through joint procurement (EDIRPA).⁵ This is an initiative that increases the urgency of production for ammunition and artillery, missiles that support defence especially in Ukraine (Caranta, 2023) thus adopting the Regulation for the production of ammunition (ASAP).⁶

The European Commission in March 2024 presented a proposal for regulation and the establishment of a European Defence Industry Programme (EDIP) through a complex system that replaces EDIRPA and ASAP with various other permanent mechanisms. It introduces, in this way, procedures that identify investment priorities to respond to the difficulties of defence products as well as supporting the industry and

¹ L. Di'z Sánchez, Why Cohesion Policy is not about Cohesion, in CMLR, 2025, p. 13 ss.

² European Defence Agency, President Michel calls for 'defence bonds' at EDA Annual Conference 2023. <https://eda.europa.eu/news-and-events/news/2023/11/30/president-michel-calls-for-'defence-bonds'-at-eda-annual-conference-2023>

³ Committee on Regional Development, Confirmation hearing of Raffaele Fitto, Executive Vice-President-designate of the European Commission (Cohesion and Reforms). https://hearings.elections.europa.eu/documents/fitto/fitto_verbatimreporthearing-original.pdf

⁴ Regulation (EU) 2021/697 of the European Parliament and of the Council of 29 April 2021 establishing the European Defence Fund and repealing Regulation (EU) 2018/1092 (Text with EEA relevance), PE/11/2021/INIT, OJ L 170, 12.5.2021, p. 149–177; <https://eur-lex.europa.eu/eli/reg/2021/697/oj/eng>

⁵ Commission Implementing Decision (EU) 2023/2378 of 28 September 2023 postponing the expiry date of the approval of alpha chloralose for use in biocidal products of product-type 14 in accordance with Regulation (EU) No 528/2012 of the European Parliament and of the Council, C/2023/6418, OJ L, 2023/2378, 3.10.2023; https://eur-lex.europa.eu/eli/dec_impl/2023/2378/oj/eng

⁶ Regulation (EU) 2023/1525 of the European Parliament and of the Council of 20 July 2023 on supporting ammunition production (ASAP), PE/46/2023/REV/1, OJ L 185, 24.7.2023, p. 7–25; <https://eur-lex.europa.eu/eli/reg/2023/1525/oj/eng>

defence in Ukraine.¹ According to the legal basis, that was identified in Art. 173 TFEU to a provision with other provisions of treaty, the defence capacity for the Member States is strengthened through financial incentives, that are consistent with the use of resources that come from the budget of the Union thus conditioning the creation of other forms of cooperation that decrease the national defence markets (Meershoe, 2021).

Interventions in the industrial policy create a new public debt at a national level, which loosens the constraints imposed by the new Stability and Growth Pact. It occurs through the issuance of a debt by the Union that allocates and burdens to the Member States, that decide to borrow from the resources collected such as SAFE. This is a dimension and an action of the Union that aims at the greater mobilization of resources that are for the Member States the basis for investing in the defense sector in an intense manner and with different modalities.

European defense refers to documents that are analyzed above.² It is presented by the European Commission as well as by the Council of Europe in order to examine and see the European defense according to Art. 42, par. 2 TEU (Graf Von Kielmansegg, 2017). This is an important step for the EU that refers to the common defense policy (Wolff, Steinbach & Zettelmeyer, 2025) without coordinating Member States' defense policies.

The proposing measures by the White Paper constitute a paradoxical reflection that follows the current integration process. The competence in defense matters makes progress towards an authentic European defence in the hands of the Member States. On the one hand, the autonomy of the Member States defines important aspects for defense policy and for spending decisions, industrial policy through policies and instruments of the Union that lead to conditions and limitations. The objective that strengthens the defense capabilities for the Member States allows economies of scale, that is, the use of resources in forms of cooperation within the

framework of European policies.

After the pandemic, the Union's responses in the sector are the SURE and NGEU programmes. They are extended by the Union's support for public investments by Member States, i.e. they go beyond the traditional boundaries of cohesion policy which offers a model that looks at and defines the structure of interventions that are foreseen through the White Paper. Such proposals consider and guide the creation of European public goods. Within this context, the European Commission highlights the relative flexibility for expenditure and the new European financing instruments, thus contributing to the investment choices of Member States on a basis of governance by funding (De Witte, 2023). This facilitates the adoption of a new regulation that has as its objective for the European Commission advanced competences for the industrial policy and defence. In this regard, the risk remains and ends within the Union's framework for maintaining peace and collective security in Europe, i.e. the main role for a public resource body.

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¹ Proposal for a Regulation of the European Parliament and of the Council establishing the European Defence Industrial Programme and a framework of measures to ensure the timely availability and supply of defence-related products (EDIP), COM(2024) 150 final of 5 March 2024:
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=cel_ex:52024PC0150

² Recital 5 of the Proposal COM (2025) 123 final, op. cit.

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