TRACING THE EVOLUTIONARY PATH OF EXPERIMENTAL LAW: FROM COMPARATIVE LAW TO REGULATORY SANDBOXES[1]

ALEXANDRE FLÜCKIGER

Abstract: This paper explores the evolution of the experimental paradigm in legal frameworks, tracing its development from early influences in comparative law to the contemporary application of regulatory sandboxes. It begins with the integration of empirical methods inspired by scientific research into the field of law. The exploration covers various aspects of experimental law, including federalism, comparative law, legisprudence, emergency and incremental legislation, soft law, sunset legislation, temporary regulations, and experimental legislation *stricto sensu*. The paper concludes by discussing the challenges and implications of balancing experimental law's flexibility with the need for legal stability and security.

Keywords: experimental law; evidence-based legislation; legisprudence; technological innovation in law; legal security; regulatory sandboxes

DOI: 10.14712/23366478.2024.19

1. INTRODUCTION

I will trace in this paper the sources and the evolution of the experimental paradigm in the field of law. My exploration highlights the shift towards an experimental, evidence-based approach in legal frameworks, influenced by the empirical methods used in scientific research. I discuss how legal pioneers like Jeremy Bentham championed the idea of a trial-and-error approach in legislation, setting the stage for modern developments like regulatory sandboxes. These sandboxes represent the latest step in this evolutionary journey, offering controlled environments for testing new models, especially in rapidly advancing sectors like finance and technology. Through this exploration, I underscore the dynamic nature of legal systems, constantly adapting to meet the needs of a changing society and technological landscape.

[1] This article was written under the umbrella of the project "Regulatory Sandboxes: Mirage and Reality in Public Law", supported by Charles University's 4EU+ Mini-grants Programme.

2. EXPERIMENTAL RATIONALITY AND THE LAW

2.1 LAW'S EVOLVING RATIONALITY

Very early on, the science of legislation felt the need to anchor its rational foundations in step with the evolution of epistemological debate triggered by the development of the sciences.

Numerous legal scholars in the late 19th century suggested approaching law as an experimental science. This was a response to the perceived limitations of logico-deductive reasoning as being overly abstract for accurately representing the complexities of legal dynamics. This approach was inspired by Claude Bernard's principles outlined in his 1865 work, "Introduction à l'étude de la médecine expérimentale". Bernard's method emphasized the importance of observing facts, developing explanatory hypotheses, and conducting experiments to evaluate these hypotheses' validity.[2] I'll mention just one legal scholar: Jean Cruet, who developed this proposal for legislatures in 1908. He urges the latter to *"proceed, like nature, by retouching, and by trial and error"*.[3] The aim is to keep the law alive and constantly evolving in step with society.[4]

Empiricism prevails in this vision; legislation is to be based on facts (evidence based law-making)[5] and will produce the effects it aims to promote. It will thus be capable of achieving the goals it has set itself, i.e., it will become effective. In this way, it bears witness to its rationality, i.e., to the non-arbitrary nature of the measures it provides for.

2.2 PRECURSORS OF EXPERIMENTAL LAW

Jean Cruet concluded his 1908 work, "La vie du droit et l'impuissance des lois", (The Life and the Impotence of Laws) with a particularly explicit and emphatic summation: he enjoined jurists to write an "Introduction à l'étude de la législation expérimentale" (Introduction to the Study of Experimental Legislation),[6] a work he himself did not have the time to write due to his untimely death.[7]

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2 See FLÜCKIGER, A. *(Re)faire la loi: traité de légistique à l'ère du droit souple*. Berne: Stämpfli, 2019, p. 45.

3 *"La loi est une règle faite pour toujours, mais, afin de rester vivante, elle doit sans cesse évoluer. Nous n'avions pas tort de parler d'une antinomie logiquement irréductible. Mais cette antinomie s'atténue pratiquement au point de disparaitre, si le législateur accepte de bonne grâce la collaboration de la coutume et de la jurisprudence, et s'il sait d'autre part, lorsqu'il veut faire œuvre de création juridique, procéder, comme la nature, par retouches, et par tâtonnements, et, comme elle, aller du détail au principe, du particulier au général, de la variété à l'uniformité."* (CRUET, J. *La vie du droit et l'impuissance des lois*. Paris: Flammarion, 1908, p. 304).

4 FLÜCKIGER, *(Re)faire la loi*…, p. 46.

5 Ibid., p. 186 ff.

6 *"Se trouvera-t-il parmi les juristes un Claude Bernard pour écrire une Introduction à l'étude de la législation expérimentale ? Elle ne serait pas inutile assurément à l'éducation politique de la nation souveraine et de ses représentants."* (CRUET, *c. d.*, p. 336).

7 FLÜCKIGER, *(Re)faire la loi*…, p. 660.

The doctrinal exploration and definition of experimental law began in earnest at least from the 1820s onward.[8] Jeremy Bentham had suggested in the 1820s that the legislature *"will be well advised to apply it 'by trial' and to test, almost experimentally, its effects"*.[9] Inspired by the book by French engineer and economist Léon Donat, English jurist James Williams categorized *"the legislation of the Parliament of the United Kingdom from its experimental side"* into five characteristics, including restriction of duration and limitation of territorial scope.[10]

In 1881, Julius Ofner, a distinguished Austrian jurist and politician, delivered a thought-provoking lecture in which he posed a critical question to his audience: to what extent should experimentation be allowed within the realm of legislative processes?[11] He admitted that an experimental approach was a departure from the spirit of the historical school, but he took as an example the Code of Western Galicia, introduced with the explicit intention, if it proved successful, of extending it to the whole of Austria.[12]

3. FIGURES OF EXPERIMENTAL LAW

3.1 INTRODUCTION

I will examine in this chapter various forms of experimental law, starting with the role of federalism and comparative law as early forms of legal experimentation and concluding with experimental law in the strict sense.

3.2 FEDERALISM AND COMPARATIVE LAW

Federalism was very early on seen as an experimental laboratory for testing a solution locally before extending it to the entire federation. U.S. James Williams (1889), Jean Cruet (1908), or Supreme Court Justice Louis Brandeis (1932), all noted this.[13] For example, the latter: *"a single courageous State may, if its citizens choose,*

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[8] In her work, Ranchordás discusses the early origins of experimental legislation, tracing it back to the era of Louis XVI in France, suggesting that the roots of this approach can be found much earlier than commonly thought (RANCHORDÁS, S. *Constitutional Sunsets and Experimental Legislation: a Comparative Perspective*. Cheltenham: Edward Elgar, 2014, p. 25). While Frederic Beutel (BEUTEL, F. *Some Potentialities of Experimental Jurisprudence as a New Branch of Social Science*. Lincoln: The University of Nebraska Press, 1957) is sometimes cited in legal doctrine as a significant figure in the development of experimental legislation, it's not accurate to label him the sole "father" of this concept.

[9] *Le législateur "sera bien avisé* [de] *faire application* [de la loi] *'à l'essai' et d'en éprouver, quasi expérimentalement, les effets"* (ref. cited in: FLÜCKIGER, *(Re)faire la loi*…, p. 662).

[10] WILLIAMS, J. Experiment in Legislation. *Law Magazine and Review*. 1889, Vol. XIV, p. 301 ff.

[11] OFNER, J. "Das Experiment im Recht". Vortrag, gehalten in der Juristischen Gesellschaft in Wien am 28. Dezember 1881. In: OFNER, J. (ed.). *Beiträge zur exakten Rechtswissenschaft*. Wien, 1883, p. 7 ff.

[12] FLÜCKIGER, *(Re)faire la loi*…, p. 661.

[13] Ref. cited in: FLÜCKIGER, *(Re)faire la loi*…, p. 670.

serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country".[14]

Comparative law, too, assumes the status of an experimental laboratory, as long as one considers the possible legislative transplants in their concrete impacts and not solely in their textual perspective. For Peter Noll, often regarded as the father of legisprudence (*Gesetzgebungslehre*, *légistique*) in Switzerland, comparative law (and even history of law) somewhat assumes the status of an experimental laboratory as soon as the comparison aims to analyse the way in which factual problems have been differently addressed: *"The comparison of norms that have applied or apply in different times (legal history) or in different places (comparative law) says little in itself about the appropriateness or justice of these norms. Rather, it is necessary to assign to the norms the factual problems they have or have not solved. Only then can historical or contemporary comparative law claim the approximate cognitive value of an experiment."*[15]

3.3 LAW IN ITS EVALUATION CYCLE

For proponents of a non-formalist conception of law, every new law can be seen as an experiment in a broad sense.[16] This opinion was already encountered as early as 1852: *"All new laws* […] *are in the nature of experiments. They are not indeed scientific experiments, but they are experiments made for a practical purpose, and they are regarded merely as provisional and tentative until experience has proved their fitness, and they are confirmed by the proof of practical success."*[17]

More recently, *legislative evaluation*, as encompassed within the framework of *legisprudence*, particularly in its substantial aspect (légistique matérielle),[18] firmly establishes the experimental character of all new legislation. This approach insists on the necessity for laws to be adaptive and learn from real-world experiences (feedback principle). This highlights the role of *policy evaluation* in the legislative cycle.[19]

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[14] Supreme Court of the United States decision from 21 March 1932 (*New State Ice Co. v. Liebmann*), 285 U.S. 262, p. 311.

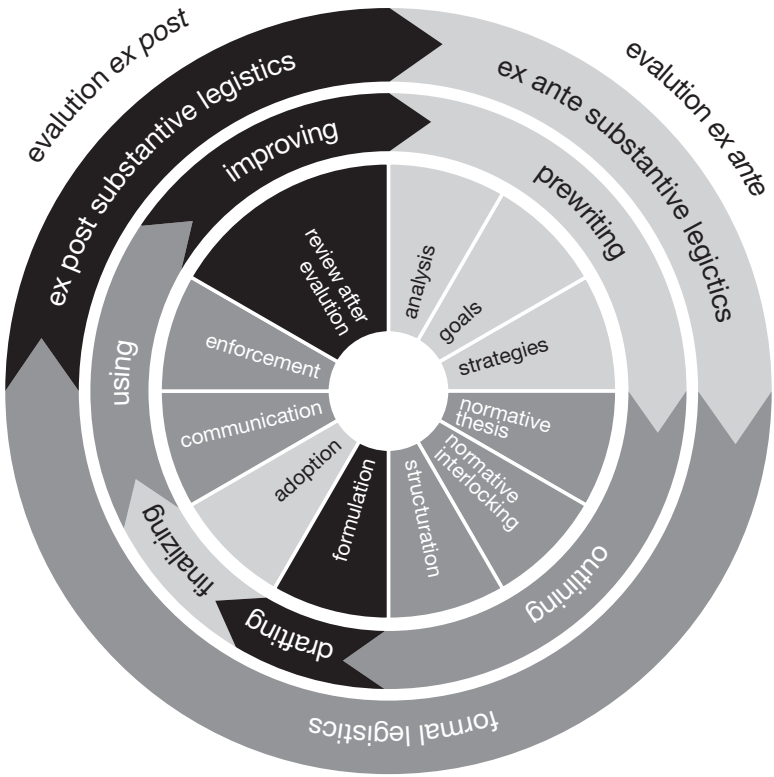
[15] NOLL, P. *Gesetzgebungslehre*. Reinbek: Rowohlt, 1973, p. 88 [personal translation]: *"Der Vergleich von Normen, die in verschiedenen Zeiten (Rechtsgeschichte) oder an verschiedenen Orten (Rechtsvergleichung) gegolten haben oder gelten, sagt für sich allein wenig über Zweckmäßigkeit oder Gerechtigkeit eben dieser Normen aus. Erforderlich ist vielmehr, daß den Normen die von ihnen bewältigten oder nicht bewältigten faktischen Probleme zugeordnet werden. Erst dann nämlich kann die historische oder auf die Gegenwart bezogene Rechtsvergleichung annäherungsweise den Erkenntniswert eines Experiments beanspruchen."*

[16] FLÜCKIGER, *(Re)faire la loi*…, p. 662.

[17] LEWIS, G. *A treatise on the methods of observation and reasoning in politics*. London: John W. Parker, 1852, as cited in: WILLIAMS, *c. d.*, p. 301.

[18] FLÜCKIGER, *(Re)faire la loi*…, p. 33 ff.

[19] FLÜCKIGER – POPELIER, *c. d.*, p. 64.



Source: Adapted from FLÜCKIGER, *(Re)faire la loi*…, p. 38[20]

3.4 INCREMENTAL LEGISLATION

I define incremental legislation as the successive amendment of a law at short intervals to ensure that each added value brings an improvement.[21] The acceleration of legislative revisions until a more or less stable situation has been consolidated can be seen as a phase of experimentation, all the more so if these revisions were to form part of successive impact analyses and cycles of prospective and retrospective evaluation.

The COVID pandemic offers an enlightening example. It demonstrated a truly experimental method of legislative drafting, improving the text in real time by trial and error, with extreme reactivity in the corrections.[22]

The method is actually old. François Gény's interpretation of the series of amendments made to the French Civil Code in the late 19th century, which focused on the

[20] Ibid., p. 65.
[21] FLÜCKIGER, A. Le droit expérimental: potentiel et limites en situation épidémiologique extraordinaire. *Sécurité et droit*. 2020, Vol. 3, pp. 142–158, p. 156.
[22] Ibid., p. 156.

financial independence of married women demonstrates this. In his "Science et technique en droit privé positif" (1913), Gény viewed these legal changes as part of an experimental phase in law, reflecting the evolving understanding and application of legal principles in response to social changes.[23]

3.5 EMERGENCY LEGISLATION

Emergency legislation serves as a rich field for legal experimentation. Federal emergency law in Switzerland, such as the measures implemented during the COVID pandemic, represents a temporary legal framework that facilitates the testing of novel measures. Even though these laws were lacking a formal mandate for subsequent evaluation, there exists an implicit requirement to assess their effects.

This obligation is rooted in constitutional provisions, including Article 170 of the Federal Constitution, which focuses on efficacy, as well as Articles 5(2) and 9, which pertain to proportionality and the prevention of arbitrary actions. Therefore, while not explicitly mandated, the evaluation of these emergency laws is implicitly guided by these constitutional principles.[24]

3.6 SOFT LAW IN ITS EXPERIMENTAL FUNCTION

Soft law also has an experimental function. It uniquely facilitates the trial of emerging regulations in a pre-legal context, promoting a gradual acclimatization process. This approach gently acquaints the intended addressees with evolving behavioural standards. Once these standards achieve a certain maturity, they become poised for transition into enforceable regulations. I describe this process of law creation as the gradual crystallization of soft law into hard law.[25]

One can say that it enhances the acceptance of a measure among its target audience via a habituation effect, thereby boosting its effectiveness, which translates to greater compliance by the population. A law that becomes too stringent too rapidly can be counterproductive; conversely, a law that intensifies progressively tends to be adhered to more effectively.

From this perspective, soft law acts much like a legal laboratory, enabling a nuanced and progressive assessment of the potential impact of new regulatory frameworks.

This phenomenon is obvious in various contexts.

At the national level in Switzerland, it was observed in speed limits, smoking bans in public places, seat belt usage, or the mandate for wearing masks during the COVID pandemic. In the European Union, a similar pattern is seen in the development of the Charter of Fundamental Rights of the European Union. Globally, the Universal Declaration of Human Rights serves as another noteworthy example.[26]

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[23] See FLÜCKIGER, *(Re)faire la loi*…, p. 669 for references and further examples.
[24] FLÜCKIGER, *Le droit expérimental*…, p. 154.
[25] FLÜCKIGER, *(Re)faire la loi*…, p. 300.
[26] Ibid., p. 303.

3.7 SUNSET LEGISLATION AND TEMPORARY REGULATIONS

"Sunset legislation" refers to a temporary regulatory act subject to review, with its extension contingent on evaluation. This concept involves the enactment of laws or regulations for a specified period, and their continuation depends on a thorough assessment of their effectiveness.[27]

By limiting the duration of regulations, this type of law was intended to curb state intervention by slowing normative growth. So, to clarify, sunset legislation is not strictly experimental by its intention. However, the temporary nature and subsequent evaluation indicate that a regulation model has been, in fact, tested for a certain period.[28]

Temporary regulation often becoming durable is a phenomenon observed in regulatory frameworks. Initially, these measures are introduced for a limited period to test new concepts or address specific issues. However, over time, they can become entrenched in the system, evolving from temporary solutions to permanent fixtures.

The idea that provisional regulations may (possibly inadvertently) become permanent can be explored through the example of Euratom. The Euratom Community, initially established as a time-limited sandbox, showcases the phenomenon of "The Splendid Durability of the Provisional".[29] This concept illustrates how temporary measures, designed for interim solutions, can gain a sense of permanence. In the case of Euratom, what was intended as a provisional arrangement evolved into a lasting structure.

3.8 EXPERIMENTAL LEGISLATION (*STRICTO SENSU*)

Experimental legislation (*stricto sensu*) aims to test new rules according to a predetermined scientific protocol. While there are various approaches, proponents of rigorous experimentation in law only acknowledge the presence of experimental legislation when it incorporates counterfactual analysis protocols.[30] These protocols are employed to assess the effects of a measure on a sample of individuals and compare it against a control group. This form of legislation allows for some relaxation of certain legal requirements, at least to some extent, as it puts the principle of equal treatment and legal certainty to the test, among other things.

The roots of experimental legislation are ancient. Jeremy Bentham suggested in 1820 that the legislature *"would be wise to apply it 'experimentally' and test its effects, almost experimentally"*.[31] Since then, numerous examples have emerged.

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[27] Ibid., p. 655 ff.

[28] For the distinction between sunset laws and experimental law in the strict sense, refer to FLÜCKIGER, *(Re)faire la loi*…, p. 658 ff; RANCHORDÁS, *c. d.*

[29] HANDRLICA, J. The Splendid Durability of the Provisional: A Tribute to Euratom. *Croatian Yearbook of European Law and Policy*. 2018, Vol. 14, No. 1, p. 161 ff.

[30] RANCHORÁS, *c. d.*, p. 37 ff.

[31] Cited in: OST, F. Codification et temporalité dans la pensée de J. Bentham. In: GÉRARD, F. – OST, F. – VAN DE KERCHOVE, M. (eds.). *Actualité de la pensée juridique de Jeremy Bentham*. Bruxelles: Presses universitaires Saint-Louis Bruxelles, 1987, p. 225.

For instance, in 1982, the Federal Supreme Court in Switzerland acknowledged that the Government had the right to enact, as an experiment, a temporary speed limit regulation of 50 km/h in urban areas without violating the principle of equal treatment.[32]

Since 2021, the Swiss Federal Office of Public Health can authorize scientific pilot trials for narcotics with cannabinoid-like effects, subject to strict conditions. These trials are limited in scope and duration, aiming to assess the impact of new regulations on non-medical drug use while ensuring public health and safety. The legislation has a ten-year validity period.[33]

Regulatory sandboxes,[34] used for example in finance[35] or in new technologies (AI),[36] can be considered as the most recent examples of experimental law. As these are controlled environments where businesses can test new innovations and technologies within a regulated framework without strict adherence to standard rules, it allows authorities to monitor and assess the impacts of these innovations before deciding on formal regulations. In essence, regulatory sandboxes represent a modern approach to experimental law, fostering innovation while maintaining a flexible and adaptable regulatory framework.

Experimental law in the strict sense is admissible provided that it respects the *general principles of public law*, notably that of legal basis, proportionality, and equality of treatment. The Swiss government has set several conditions:[37]

- inclusion in a *formal law* if the experimentation implies derogating from the ordinary legal regime; exceptionally, an ordinance is sufficient if the experimentation brings benefits to the addressees, respects the purpose of the law, is very limited in scope and if the government has given a mandate to create the formal legal basis within a reasonable timeframe;
- derogation rules have to be set in an *ordinance of the government*, as well as, as substantially as possible, the broad outlines of the experiment;
- existence of a *clear legal basis* in the event of serious infringement of fundamental rights;
- *reversibility* of experimentation;
- *proportionality* of experimentation (giving priority to trials based on *voluntary participation* and allowing participants in an experiment to *switch to ordinary law* within a short timeframe (e.g., social insurance experiment);
- *transparency* (the *experimental nature* must be *explicitly stated* in the act and no solution presented as experimental should be adopted when it is known from the outset that they are *definitive* in nature);

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32 See below.

33 Art. 8a Federal Act on Narcotics and Psychotropic Substances of 3 October 1951.

34 VOLZ, S. KI-Sandboxen für die Schweiz? *Schweizerische Zeitschrift für Wirtschafts- und Finanzmarkttrecht SZW*. 2022, Nr. 1, pp. 51–68.

35 PARENTI, R. – European Parliament, Policy Department for Economic, Scientific and Quality of Life Policies, Directorate-General for Internal Policies. *Regulatory sandboxes and innovation hubs for FinTech: impact on innovation, financial stability and supervisory convergence*. Luxembourg: European Parliament, 2020.

36 BUOCZ, T. – PFOTENHAUER, S. – EISENBERGER, I. Regulatory sandboxes in the AI Act: reconciling innovation and safety? *Law, Innovation and Technology*. 2023, Vol. 15, No. 2, pp. 357–389.

37 Ref. cited in FLÜCKIGER, *(Re)faire la loi*…, p. 671 ff.

– limitation of *duration* and *personal or territorial scope*; and
– introduction of a *monitoring and evaluation* procedure, including criteria and resources for this purpose.

The Swiss Federal Court established in 1982 a significant precedent regarding *equal treatment* in the context of traffic regulations. It has been determined that the Federal government's authority to set general speed limits inherently includes the right to implement temporary regulations on an experimental basis. These trial regulations may be localized and not uniformly applied across the entire territory. This approach is seen as a step towards establishing well-founded, definitive standards. Importantly, this method does not contravene the principle of equal treatment.[38]

When it comes to the *proportionality principle*, the Swiss Federal Court has provided guidance on the use of legal experimentation, especially in scenarios where the effects of a law are uncertain. Experimentation serves as a tool to assess the efficacy of a law in achieving its intended objectives. There exists not only a right but, in certain cases, an obligation to conduct trials for potentially effective measures within a framework of controlled risk. This obligation is particularly relevant when there's ambiguity about the impact of specific measures. For example, in the context of introducing a 30 km/h speed limit, a temporary trial might be imperative to gauge its effectiveness.[39]

4. CONCLUSION

Experimental law has long stood as a cornerstone in the evolving landscape of legal frameworks, continually adapting to meet the dynamic needs of society. In this tradition, the regulatory sandbox emerges as the latest innovation, representing a significant leap forward in legal experimentation. This concept, blending flexibility with structured oversight, offers a unique platform for testing new ideas, technologies, and approaches within a controlled environment.

The point about the experimental approach grounding legal evolution in real-world experience rather than in abstract theory or false promises, while seen as a *strength*, also harbours a potential *negative* aspect. The process of acclimating citizens to new rules through practical experience, although advantageous politically, can be perceived as manipulative. This perception arises because such an approach might seem like a subtle way to shape public opinion and behaviour under the guise of experimentation. While it fosters organic acceptance of legal changes, there's a fine line between guiding public adaptation to new regulations and manipulating the populace into accepting new norms without sufficient critical scrutiny. This duality underscores the complexity of using the experimental approach in lawmaking. These nuanced aspects of the experimental approach in law align well with the theories of early thinkers like Machiavelli and Bentham. It is not very surprising to find echoes of this concept in their work.[40]

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38 ATF (Official Collection of the Federal Supreme Court Decisions) 108 [=1982] IV 52, p. 54 ff.
39 Swiss Federal Supreme Court, Decision 1C_589/2014 (2016).
40 Ref. cited in FLÜCKIGER, *(Re)faire la loi*…, p. 47, footpage 291.

However, epistemological research, particularly the works of Gaston Bachelard and Karl Popper, has raised questions about the *objectivity* of the experimental method, even in the exact sciences. Issues such as perception being an obstacle to empirical observation, the necessity of interpreting reality, and the provisional nature of theoretical truth suggest that the experimental approach may not be a foolproof method of ensuring objectivity.[41]

A significant challenge lies in balancing the *flexibility* of experimental law with the need for *legal security* and rule stability. Frequent changes or experimental iterations in law might undermine this stability, creating uncertainty and potentially disrupting the social order. Therefore, while the experimental approach in law offers a dynamic way to address evolving societal needs, it must be balanced against the need for consistency, security, and predictability of the legal system.

Prof. Dr. Alexandre Flückiger
Université de Genève, Faculté de droit
Alexandre.Flueckiger@unige.ch
ORCID: 0000-0002-7506-037X

[41] Ibid., p. 47.