FOOD FOR THOUGHT

Criminalisation of errors and deviations from procedure in criminal inquiries

Transcript of an expert debate

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TOPIC

Articulation between compliance and initiative in safety management

Les Cahiers de la sécurité industrielle

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Fondation pour une culture de sécurité industrielle

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- ▷ undertake and fund research activities that contribute to improving safety in hazardous organizations (industrial firms of all sizes, in all industrial sectors);
- ▷ work towards better mutual understanding between high-risk industries and civil society, aiming for a durable compromise and an open debate that covers all the dimensions of risk;
- ▷ foster the acculturation of all stakeholders to the questions, tradeoffs and problems related to risk and safety.

In order to attain these objectives, the FonCSI works to bring together researchers from different scientific disciplines with other stakeholders concerned by industrial safety and the management of technological risk: companies, local government, trade unions, NGOs. We also attempt to build bridges between disciplines and to promote interaction and cross-pollination between engineering, sciences and the humanities.

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Abstract

Title	Criminalization of errors and deviations from procedure in post-accident inquiries
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In post-accident investigations, the judicial authority must assess the degree of **culpability** (in criminal trials) or **liability** (in civil trials) associated with the actions or decisions of professionals that are causally linked to damages. These actions or decisions may pertain to different phases of the lifecycle of high-risk systems: their operation, maintenance, design, manufacturing, safety audits by accredited third parties, and inspections by a safety authority.

This analysis often relies on the opinions of **court-appointed experts**, who evaluate the level of compliance of actions or decisions with prescribed standards (laws and regulations, operating procedures, and professional best practices, which are more or less documented depending on the sector). Generally, the judiciary tends to view culpability as greater when the **deviation** from the prescribed standards is more significant, treating the standards as an **algorithm** to be followed strictly rather than as a source of **guidance**, which professionals may follow to a greater or lesser extent depending on local circumstances.

This document, a transcript of discussions from an online workshop organized (in French) by FonCSI in September 2024, examines the extent to which the judicial system can move away from the principle of "deviation → culpability", a principle that is largely incompatible with the way in which professionals work in a number of industry sectors. It also explores the implications of the criminalization of deviations and errors for frontline workers (notably, the **defensive reactions** it provokes, such as defensive medical practices), as well as the consequences for businesses and authorities, including regulatory and procedural inflation.

The original French version of this document is also available from FonCSI's website (DOI: 10.57071/rgr112).

About the authors

This document is a summary of the online debate titled *Criminalization of errors and deviations from procedure in post-accident inquiries* organized by FonCSI in September 2024, in the context of its strategic analysis on the articulation between initiative-based and compliance-based safety. The debaters were Aurélia Grignon, associate manager of the Soulez-Larivière Avocat legal firm; Nicolas Gombault, chief operating officer of the insurance firm MACSF; Yannick Malinge, Head of Airbus Aviation Safety, and Pierre-Franck Chevet, CEO of IFP Énergies Nouvelles, who also moderated the debate. Eric Marsden from FonCSI organized the event and prepared this written adaptation of the debate discussions.

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Résumé

Titre	Judiciarisation des écarts au référentiel réglé
Mots-clefs	sécurité industrielle, justice, écarts, référentiel, criminalisation
Auteurs	Aurélia Grignon, Nicolas Gombault, Yannick Malinge et Pierre-Franck Chevet
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Lors d'enquêtes post-accidentelles, l'autorité judiciaire doit apprécier le degré de **culpabilité** (procès pénal) ou de **responsabilité** (procès civil) associé à des actions ou décisions de professionnels qui sont liées causalement à des dommages. Ces actions ou décisions peuvent concerner différentes phases du cycle de vie des systèmes à risques : sa conduite, sa maintenance, sa conception, sa fabrication, son audit sécurité par un tiers accrédité, et son contrôle par une autorité de sécurité.

Cette analyse s'appuie souvent sur l'avis d'**experts désignés** par la cour, qui apprécient le niveau de conformité des actions ou des décisions au référentiel prescrit (lois et règlements, procédures de l'exploitant, bonnes pratiques de la profession qui sont plus ou moins documentées selon les secteurs). De façon générale, la justice va estimer que la culpabilité est plus importante lorsque l'**écart au référentiel prescrit** est plus significatif, considérant le référentiel comme un **algorithme** à suivre plutôt que comme un **guide** qui vise à apporter un soutien, que les professionnels vont suivre à un degré variable suivant les circonstances locales.

Ce document, une retranscription des échanges au cours d'un atelier-débat organisé en ligne par la Foncsi en septembre 2024, examine à quel point le système judiciaire parvient à s'éloigner du principe « écart ⟶ culpabilité », un principe qui est peu compatible avec la manière dont travaillent les professionnels dans différents types d'activité. Il examine également les implications de la judiciarisation des écarts pour le travail des acteurs de première ligne (en particulier, les **réactions défensives** provoquées, comme les pratiques de médecine défensive), et les implications pour les entreprises et autorités, comme l'inflation réglementaire et procédurale.

La version d'origine de ce document, en français, est disponible sur le site web FonCSI (DOI : 10.57071/rgr112).

À propos des auteurs

Ce document est issu d'un atelier-débat intitulé *Criminalisation des écarts au référentiel réglé* organisé par la Foncsi en septembre 2024, dans le cadre de son analyse stratégique sur l'articulation entre les sphères réglées et gérées de la sécurité industrielle. Ce débat en ligne réunissait Aurélia Grignon, associé-gérant du cabinet Soulez-Larivière Avocat ; Nicolas Gombault, directeur général délégué du groupe d'assurance MACSF ; Yannick Malinge, Head of Airbus Aviation Safety, et Pierre-Franck Chevet, PDG de IFP Énergies Nouvelles, qui animait le débat. L'organisation de l'atelier ainsi que la préparation de l'adaptation écrite des propos oraux tenus a été assurée par Eric Marsden de la Foncsi.

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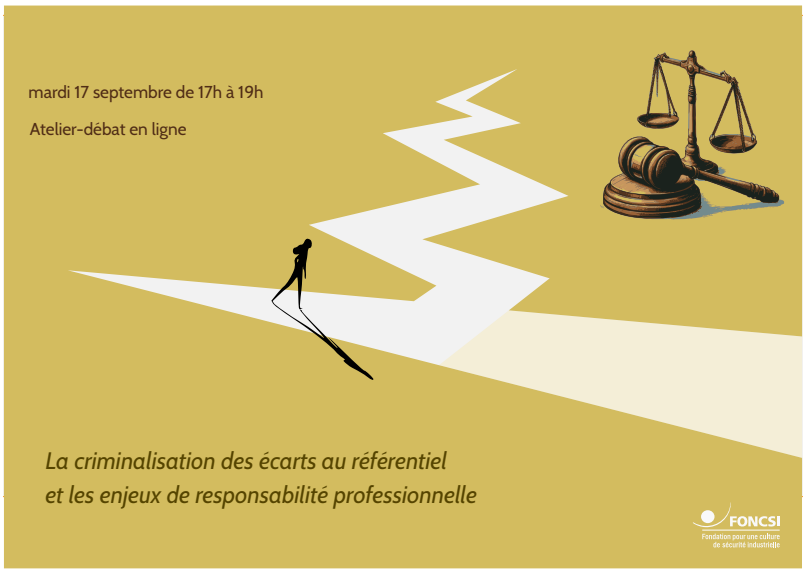
Introduction

Context

An online debate on the "criminalization of deviations from procedure and the challenges of professional responsibility" was organized by FonCSI in September 2024 as part of its strategic analysis on the interplay between rule-based and initiative-based spheres of safety management. The problem statement featured in the invitation brochure is reproduced below.



In post-accident investigations, the judicial authority must assess the degree of culpability (criminal trial) or liability (civil trial) associated with the actions or decisions of professionals that are causally linked to damages. These actions or decisions concern various phases of the life-cycle of high-risk systems:

- their operation (airline pilots, train drivers, surgeons);
- their maintenance (for example the inspection of railway tracks at Brétigny-sur-Orge in France, where a deadly derailment occurred in 2013);
- their design (software defect in the Therac-25 radiation therapy machine which led to patient fatalities, Ford Pinto case in the USA);
- their manufacturing;
- their safety audit by an accredited third party (Vale mining dam in Brumadinho inspected by TÜV, seaworthiness inspection of the Erika);
- their oversight by a safety authority.

This analysis often relies on the opinion of **court-appointed experts**, who assess the degree of conformity of actions or decisions with the prescribed reference framework (laws and regulations, operating procedures, professional best practices, which vary in their level of documentation across sectors). Generally, the legal system considers culpability to be greater when the **deviation from the prescribed reference framework** is more pronounced, treating the reference framework as an **algorithm** to be followed rather than as a **guide** intended to provide support, which professionals may adhere to with varying degrees of flexibility depending on local circumstances.

Objective of this document

This document provides a **transcription of the discussions** and statements made during the debate, as well as the question-and-answer session that followed.

The workshop aimed to explore the following key questions:

- The principle "deviation → culpability" is largely incompatible with the way professionals work in many fields of activity. To what extent does the legal system (in particular in France) manage to move away from this principle (best practices…), and on the basis of which criteria can this be justified?
- What are the implications for frontline workers (defensive reactions…) and for safety management practices within organizations?
- What are the implications for companies and authorities in terms of drafting reference frameworks and conducting inspections?

These questions were discussed primarily in relation to French law and the practices of the French legal system, though the participants also made some references to different approaches adopted in other countries. This document provides some limited contextualization of some of the specific principles and practices in footnotes.

Thanks

The FonCSI would like to thank the participants in the debate for their thoughts and the quality of the discussion:

Aurélia Grignon, managing partner of the Soulez-Larivière Avocat legal firm

Criminal lawyer specialized in negligence-based offenses and high-visibility industrial catastrophes and aviation accidents (Erika oil spill, crash of the Concorde, AF447 crash, explosion of the AZF chemical plant…).

Nicolas Gombault, deputy CEO of the insurance company MACSF

Doctor of law, member of the French Observatory of medical risks, with a particular interest in the responsibility and liability of medical professionals.

Yannick Malinge, Senior Vice President, Head of Airbus Aviation Safety

Responsible for accident investigations as well as aviation safety, with a particular interest in the potential impact of criminalization in the context of the "just culture" concept that is promoted in the aviation sector.

Pierre-Franck Chevet, CEO of IFP Énergies Nouvelles

Director-general of energy an climate at the French environment ministry (2008–2012), President of the French Nuclear Safety Authority (2012–2018). Chair of the debate session.

We also thank the participants who contributed to the question-and-answer session at the end of the debate.

1

Summary of the main points discussed

The debate covered the following main topics:

- Judicial decisions, and the very principle of liability for damages, are based on the existence of a **clear and precise reference framework**. Since a judge is not expected to act as an expert in the technical field of each case they are called upon to adjudicate, it is this reference framework that makes it possible to determine whether a transgression has occurred and distinguish between acceptable behaviors or decisions and those that are not. This reference framework is not necessarily regulatory in nature; the judiciary may rely on sector-specific standards, professional best practices, or a company's operating manual, for instance. The use of this basis for judgment is essential to ensuring **legal certainty** (the principle that the law must be clear, precise and unambiguous, and its legal implications foreseeable).

- Major accidents and disasters, which often result in numerous casualties, naturally generate a strong **collective emotion** and place pressure on the judicial system to identify and designate the responsible party or parties, even in situations where the causal link between the actions (or lack thereof) of individuals and the occurrence of the accident is difficult to establish.

  These accidents also generate a strong **demand for redress**. This demand takes multiple forms: a demand for **understanding** (as deaths perceived as being "in vain" are particularly difficult to accept, lessons must be learned to prevent the recurrence of such accidents), for **compensation** (such as financial reparations), and for criminal **culpability**. The relative weight given to these different forms of redress varies depending on national culture and the characteristics of the judicial system. For instance, the pursuit of financial compensation is typically more pronounced in the USA than in Europe, while France tends to place particular emphasis on the identification of criminal culpability.

- Some potential approaches have been suggested to reconceptualize the normative reference framework more as a **guide** that supports the expertise of professionals working to ensure safety, rather than as an **algorithm** to be applied mechanically. These approaches could help move away from the automatic rule of "procedural deviation → culpability" applied by the judiciary when analyzing accidents (and thus cases of involuntary manslaughter and injuries), as well as when assessing deviations that have not resulted in harm (e.g., the offense of endangering others):

  - The concept of **ordinary diligence** (Article 121.3 of the French Penal Code, a term which could also be translated as "due care"), which invites an assessment of "*fault due to carelessness, negligence, or failure to comply with a duty of prudence or safety prescribed by law or regulation*" based on the "*nature of the missions or functions of the person being judged, their skills, as well as the authority and resources at their disposal*". Thus, the search for culpability is conditioned by a principle of reality, and ordinary diligence must be assessed according to the **specific circumstances** under which decisions were made and the **knowledge available** at the time they were made.
  - In the medical field, a practitioner who can demonstrate (supported by expert judgments) that a deviation from professional standards was justified by particular circumstances in which the deviation would produce a medical benefit for the patient, and who can demonstrate that they informed the patient (ideally in writing) that their

treatment would deviate from the standard, may avoid a judgment of culpability if the decision finally produces a negative outcome.

- Situations of urgency or exception, where it is not possible to apply the prescribed reference framework.
- Systemic deviations (e.g., insufficient resources or staffing) are less likely than individual non-compliance to lead to an automatic judgment of "deviation implies culpability".

However, the very idea that the judiciary might move away from the automatic implication of culpability when a deviation from a prescribed reference framework has been documented, remains relatively revolutionary. A significant gap persists between a judicial system inclined to seek out deviations "as if they were truffles at the roots of trees", and an industrial world which is focused on assessing risks and preventing accidents, while acknowledging that zero risk can never be guaranteed.

▷ **Legal experts** play a crucial role in investigative procedures for major accidents, as their analyses provide the primary key to understanding for lawyers and judges, who naturally cannot be experts in each technical field involved in the various cases they handle. Unfortunately, the quality of expert analyses does not always meet the level demanded by the associated judicial stakes. Some experts appear to bias their analysis by seeking to identify a culpable party, as this is often the mandate given to them by the investigating judge. Counter-expert analyses, supplementary expert reports, and private expert opinions (an exception to the confidentiality of judicial investigations as provided by the French Code of Criminal Procedure) can help mitigate the impact of an unfavorable expert report, but this issue often plays a significant role in the progression of legal proceedings.

This challenge is underscored by the fact that experts are sometimes subjected to **disciplinary proceedings** before their professional regulatory body provoked by challenges by dissatisfied parties (as observed in the medical sector during the debate), or to civil liability proceedings for misconduct, and in some cases even to criminal proceedings.

▷ It is crucial to emphasize the **contextual nature of best practices**, the challenges faced by professionals working in complex systems (frontline operations, design offices, operational management, strategic management, oversight, and supervision), and the difficulties in identifying appropriate courses of action at any given moment. It is necessary to adopt the perspective of the individuals involved, identify what they knew or did not know at that moment, and consider the constraints and challenges they faced at the time. Analyses conducted by court-appointed experts during trials concerning major accidents are too often counterfactual, proposing hypothetical scenarios with no causal link to the accident.

▷ **Collegial decision-making** contributes to the safety and rationality of decisions. It reflects the value of diverse perspectives in achieving a comprehensive and nuanced assessment of complex situations, as highlighted during the debate concerning the aeronautical and medical sectors, both at the operational level and within regulatory authorities. However, a decision made collectively does not exempt individuals from their personal responsibility for the consequences of that decision.

▷ The limits of a regulated domain are those of predictability. However, the ability to **anticipate all possible scenarios** is inherently constrained in technical fields, and even more so when dealing with certain phenomena linked to human nature or complex organizational and inter-organizational processes. Nevertheless, the safety implications of this uncertainty are particularly poorly tolerated in ultra-safe systems (e.g., aviation, nuclear energy), where accidents are so rare that they become unacceptable, as if society has become unaccustomed to catastrophes. The gap between the "worlds" of risk management and the public's emotional response to the consequences of disasters is especially pronounced.

▷ Judicialization — and *a fortiori*, criminalization — of deviations has **potentially negative impacts on safety**:

- It may **discourage actors** involved from **reporting anomalies** and deviations, even though the process of "lessons learned" is essential for developing a thorough understanding of anomalies and uncertainties that arise in complex systems and for continuously improving industrial safety.

- Judicialization tends to promote **regulatory and normative inflation**: drafting an additional regulation is often (both for the industrial operator and the regulatory authority) the simplest way to demonstrate to victims that the accident was not “in vain”.

2

Transcript of the debate

This chapter is a non-verbatim transcript, reformulated in written style, of the debate organized on September 17 2024. The adaptation of the comments made by participants, as well as the footnotes that provide some additional background material, are the responsibility of FonCSI. A recording of the debate can be viewed on FonCSI's YouTube channel.

A short biography of each participant is available on page 2.

Pierre-Franck Chevet

The theme that brings us together — the criminalization of deviations from established standards — is not an easy one. Judicial cases are ongoing, often involving victims and individuals seeking accountability. It is not the simplest subject to address in a debate.

Here are the questions raised in the flyer for this workshop, which mentions several catastrophic events: the crash of AF 447 in 2009, the Brétigny-sur-Orge train accident in 2013, as well as issues of a potentially different nature, such as those associated with PIP breast implants[1]. The responsibilities of industrial or medical actors directly involved are highlighted. But we also touched on the potential accountability of third-party experts, accredited organizations intervening in specific domains, and oversight authorities — a role I myself held in the relatively recent past.

Among the questions posed: what is the nature of the link between identifying a deviation and the necessity of pinpointing a culprit? How is this link established — or not? This question is crucial. Do judicial systems worldwide operate in the same way, or do we observe differences in approach regarding this issue?

Within organizations, let us consider the example of a team of healthcare providers: what are the implications of knowing that a major trial has occurred and that a particular individual or organization has been convicted? What are the repercussions for frontline workers? And for the leaders involved, what are the implications? Are these always positive with respect to the ultimate goal, namely accident prevention?

I also wish to introduce a question based on my professional experience in the field of the prevention of major accident hazards, particularly in the nuclear and Seveso sectors. It is generally acknowledged that the most effective way to enhance nuclear safety or industrial safety relies on a system that, for every anomaly or deviation first identifies the problem and then analyzes it, often in collaboration with oversight authorities (a process known as experience feedback or "**lessons learned**"). In my view, this is the most constructive approach to improving safety. However, when sanctions are imposed in cases with significant consequences, it is important to question the medium-term effects of this, particularly concerning the interplay between normative and judicial logic. This is a genuine question that I add to our discussion.

To begin, I would like our three speakers to introduce themselves and share their perspectives or reactions to the theme outlined in the flyer. They are, of course, welcome to expand upon

[1] The Poly Implant Prothèses (PIP) scandal, dating back to 2010, involved a French manufacturer of breast implants that used non-compliant gels in their products, violating regulations regarding medical devices. These cheaper gels subsequently caused harm to patients.

this theme, as I have just done, and to illustrate their views with examples if they deem it relevant.

Aurélia Grignon

My perspective is shaped by my professional experience as a criminal defense attorney. Today, I am a partner and co-manager, alongside another partner, of the Paris-based law firm Soulez-Larivière Avocats, founded several decades ago by Daniel Soulez-Larivière, a prominent figure in the judicialization of major catastrophes.

Over the years and through the significant cases we have handled, our firm has specialized in unintentional criminal law, particularly in matters of criminal justice related to disasters. For this workshop, I have been invited to reflect on a representative case that could illustrate my understanding of the subject. However, I find that considering this issue outside the fundamental framework of "procedural deviation = culpability" is, in itself, somewhat revolutionary. Indeed, in my professional universe and in light of all the cases we have handled, I have always observed that the judicial mechanism is deeply imbued with this notion: "deviation = culpability". Admittedly, this is a somewhat schematic view, and I will likely have the opportunity to revisit it when we discuss the first question together.

I must immediately clarify that the cases we address, concerning involuntary homicides and injuries governed by articles 121.3 and 221.6 of the French Penal Code, inherently presume that establishing culpability requires either a **legal or regulatory violation**, or **negligence** or **imprudence**. In major catastrophes, which generate intense collective emotion and involve numerous victims — often hundreds or thousands — it is emblematic, in my view, to observe the **pressure exerted on the judicial institution** to identify and **assign blame**.

This pressure triggers a dynamic where the judiciary's primary concern is to identify **breaches of legal and regulatory requirements**. When such breaches are not immediately evident, the judiciary turns to more nebulous concepts such as negligence, imprudence, or gross misconduct in a determined search for a culprit. In other words, the idea of a framework where deviation is not systematically equated with culpability, where the reference standard is seen merely as a guiding principle, is far removed from my professional reference points.

In fact, the only times I have encountered this type of reflection in my professional practice were in cases where disaster was averted. I am thinking particularly of recreational aviation cases, where a pilot, through a perilous maneuver, miraculously avoids an accident. These situations indeed involve deviations, technical actions, and lapses, but the absence of immense pressure to find a culprit reframes the question: should deviation be penalized?

I mention this because, in France, such cases are subject to criminal prosecution for **endangerment**. There is no involuntary homicide or injury, yet these pilots may face correctional trials. This could defy the intuition of the general public. It recalls, somewhat, the case of the pilot who executed the miraculous Hudson River landing[2]. In such cases, it seems outrageous that a hero could be prosecuted. Yet in the reality of French criminal courts, leisure aviation pilots are prosecuted for endangerment simply due to regulatory breaches — landing too close to an airport or flying too near high-voltage power lines, for instance. These are daring actions taken to save the aircraft, but legally, a procedural breach exists, allowing for prosecution.

This, in my opinion, reflects the repressive pressure and how criminal justice approaches deviations. Nonetheless, I am delighted to be here and eager to exchange ideas with you, to discover perspectives different from my own.

Nicolas Gombault

I am the deputy CEO of the MACSF Group, a French insurance company that specializes in medical liability insurance. We provide coverage for slightly more than two-thirds of French physicians as well as numerous paramedical professionals.

[2] The water landing of US Airways Flight 1549 near Manhattan in 2009 following a double engine failure caused by bird strikes on takeoff.

In medicine, it is common for almost any civil fault to also be considered a criminal fault because it directly concerns the integrity of the human body, bringing the issue into the realm of homicide or unintentional injury.

One phenomenon frequently discussed in hospitals is what is, in my opinion, erroneously called "task-shifting". Due to a lack of resources or personnel, nurses may perform medical acts, which is entirely illegal, just as nursing assistants may carry out actions reserved for nurses. These situations lead to cases where the illegal practice of medicine by nurses, or the illegal practice of nursing by nursing assistants, becomes subject to criminal penalties.

However, the topic that brings us together today invites a more nuanced reflection. Indeed, it is important to ask: against what benchmark is this deviation measured? In the context of medical liability — limiting myself to a field I know well — legal and regulatory prescriptions are relatively rare. Why? Because the obligation incumbent upon physicians, and healthcare professionals more broadly, has for many years been based on the principle of an **obligation of means**. Physicians must provide care that is not merely adequate but **diligent, attentive, and aligned with the current state of scientific knowledge**.

It is against this scientific knowledge that a physician's diligence is assessed. Did they apply the prevailing medical knowledge at the time the act was performed? This is a difficult question to answer, as such knowledge is not always explicitly documented and evolves constantly with scientific progress. This evolution makes the assessment of medical liability all the more complex, particularly for the expert and judge, who may be called upon to render a decision years after the events, yet must situate themselves in the context of that time to determine whether the physician adhered to the medical knowledge available at that moment.

In this regard, the French Court of Cassation rendered a particularly interesting decision a few months ago, clarifying that if scientific advances *a posteriori* justify a medical act performed years earlier, the physician cannot be held liable. In other words, if scientific knowledge evolves in favor of the practitioner, they cannot be deemed responsible.

In this context, **consensus conferences**, the opinions of scientific societies, and academic publications are of paramount importance, especially in fields such as surgery, where knowledge evolves very rapidly. Moreover, within each specialty, different schools of thought often exist, and it is not uncommon for a **battle of experts** to be necessary to determine whether the professional adhered to the standards of the profession or committed a deviation.

Amid this trend of penalizing every deviation and systematically recognizing liability, I would like to highlight recent judicial decisions that diverge from this principle. I recall, for instance, a case involving bariatric surgery for an obese patient. Scientific societies have established several criteria to justify such interventions: a minimum BMI, the absence of certain comorbidities, prior consultation with a psychiatrist, etc. In this particular case, one of these conditions was not met, and the opposing party's lawyer cited this nonconformity to claim the physician's liability. However, it was demonstrated that, in this situation, the risks of not intervening outweighed the risks associated with the surgery, thus justifying the surgical act.

To conclude this introduction, I believe it is essential to take several **precautions when addressing a deviation**. The first is to **clearly inform the patient**, explaining that the situation falls outside the usual recommendations of the profession. These recommendations are not legal or regulatory, but they stem from practices established by the profession itself. Additionally, I would argue that a deviation creates a presumption of liability, placing the burden on the individual who deviated from the rules to demonstrate their lack of culpability. It is therefore advisable to provide justification in writing, even before an accident occurs.

Yannick Malinge

Among the speakers, I believe I am the only one without a legal background; therefore, I ask for your understanding should I make any terminological errors. My expertise lies in the field of flight safety at Airbus, where I also work on risk management. Drawing on my experience, I will attempt to provide an operational perspective from the aeronautical sector, having been involved in various incidents affecting the global Airbus fleet — whether through technical investigations, in the aeronautical sense, or legal proceedings in international contexts such

as the USA or Japan, each with its unique judicial culture, particularly in criminal matters. Of course, France is no exception, with cases such as the Rio-Paris crash, the Concorde disaster, or the Mont-Saint-Odile accident.

One of the primary insights my experience has provided, regardless of legal systems or cultural differences, is the encounter of two "worlds" that struggle to understand one another. On one side is a **cold, technical world**, governed by very strict standards, as is the case in aeronautics. On the other is a **world imbued with emotion**, particularly in accidents involving significant loss of life. This latter world is often driven by the pursuit of the truth — or rather, "*a* truth" — in contrast to the continuity of aviation operations, which cannot simply cease.

This clash between two worlds makes the task exceedingly difficult. It reminds me of an international seminar we organized in the aeronautical sector. The collective message conveyed was that our sector is so highly regulated that justice could resolve its issues by merely adhering to our standards. However, this perspective often overlooked the complexity of the penal system, especially in France. I remember asking the participants: *"Who are we, as representatives of the aeronautical world, to judge these matters alone? Should we not place ourselves in the position of the other world — that of emotion, that of victims and justice — which must ultimately render a decision?"*.

These reflections lead me to pose two fundamental questions. The first concerns the notion of deviation: **deviation from what**? Aeronautics, like many other technical fields, is highly regulated. The standards are international, with several primary certification authorities such as EASA in Europe and the FAA[3] in the United States, alongside others like the CAAC[4] in China and ANAC[5] in Brazil. This regulatory framework extends beyond the aircraft itself to encompass engines, systems, crews, air traffic control and airports, all of which are meticulously codified.

The challenge arises when entering the judicial domain. Judges who lack specialization in aeronautics must rule on **deviations from highly specific technical standards**, often concerning issues where **expert disagreements** persist. Yet, these rulings are based on the Penal Code and societal expectations, not aeronautical standards. There may also be societal pressure to address the **emotional expectations of victims**, as is often seen in the USA, where the goal frequently appears to maximize compensation quickly. In contrast, in France, the focus is primarily on finding someone to blame. These are two vastly different approaches.

To conclude this introduction, I would like to share a poignant reflection from a prosecutor who, during his closing arguments, after presenting his case, posed the following question to all representatives of the judiciary:

> *Who are we, as men and women of justice, to judge deviations in the field of aeronautics? This sector relies on the work of thousands of engineers, pilots, technicians, and national and international authorities. Who are we, knowledgeable in matters of justice but not in the world of aeronautics, to rule on events that are often unpredictable?*

I will stop here for this introduction and thank you for your attention.

Pierre-Franck Chevet

These initial remarks introduce several interesting questions. The rule represents the state of the art, yet it is not absolutely precise. This reminds me of the nuclear domain. The rule is set at a relatively low level, with numerous criteria, ensuring that it is certain to function. However, this does not mean that exemptions are impossible in particular cases where, with potential justification, as Nicolas Gombault mentioned, it is considered entirely acceptable, or even preferable. Indeed, there may also be contraindications to strictly applying the rule, even though the rule is designed to guarantee safety. This brings us to the notion or perspective that each of us has regarding the rule. It is easy to adhere to the established reference framework,

3 FAA: U.S. Federal Aviation Administration.

4 CAAC: Civil Aviation Administration of China.

5 ANAC: Agência Nacional de Aviação Civil.

knowing that there are many supervisory authorities that state, "this is the rule". What I understand is that when one steps outside the rule's framework, the question arises: how are these deviations documented? I noted that this must be formalized in writing, which is an important point.

I also appreciated the reference to the film *Sully* and the landing on the Hudson River. It was a particularly relevant example for an engineer. Although I am not a lawyer, this case demonstrated that the best possible decision was made. One can also imagine an alternative scenario where, after making the same decision, the plane crashed into the Hudson, leading to much more severe consequences. It would then have been very interesting to see how such an event would have been managed, as it might still have minimized the consequences. Ultimately, it is possible that it was the best decision, but circumstances could have altered the outcome.

Aurélia Grignon

Pierre-Franck, I am absolutely convinced that if the plane had crashed into the Hudson, the fact of not having strictly followed the regulatory prescriptions would have immediately led to a search for responsibility or culpability.

Pierre-Franck Chevet

There is no doubt about that. But how would it have been judged?

Aurélia Grignon

We are dealing with a hypothetical scenario. Nonetheless, I find this very interesting and would like to elaborate on this point. There is a message I wish to convey to the audience—a personal conviction derived from my experience. It is terrible to say this when it involves the loss of human life, but I am convinced that criminal justice does not react in the same way when the victim is singular as compared to situations involving 150, 250, or even 2,500 plaintiffs. This is due in part to the pressure placed on the judicial authority, which is expected to deliver a result. As Yannick Malinge stated, in France — perhaps this is particularly French — the search for a guilty party is a reality, especially in cases that provoke intense collective emotion.

This has repercussions on the **way deviations are perceived** and on the behavior of the actors involved in a system deeply attached to this priority of designating a culprit. Based on my experience, this extends to the entire chain of stakeholders, including **judicial experts**. In the Concorde and AZF cases, I was struck by the reports of experts, which seemed to adopt the judiciary's goal of identifying a culprit and sought to achieve this outcome by all means. When I say "by all means", this is, of course, a subjective perspective as a defense attorney in these cases. However, I do not make such claims lightly.

I am struck by the observation that when expert analyses do not reveal any violations of legal or regulatory provisions, they tend to "cast a wider net" to try to identify deviations elsewhere. It seems to me that the mechanism first seeks to identify a breach — a real deviation from the rule. This aligns with the intrinsic functioning of criminal justice: being guilty means breaking the law. Violating the law or a regulation means failing to comply with what is prescribed or doing what is prohibited.

The legal texts underpinning criminal prosecutions in cases of disasters, involuntary manslaughter, involuntary injuries, or endangerment are based on Article 121-3 of the French Penal Code, as well as Articles 221-6 and following. These texts specify that a **crime** is committed in cases of **carelessness**, **negligence**, or **failure to meet a specific duty of care or safety**. For individuals indirectly involved in an accident, this same duality applies: either there is a **manifestly deliberate violation of a specific duty of care or safety**, or there is a **characterized fault**. This gives the judicial authority the choice between identifying a violation of a legal or regulatory provision or relying on vaguer notions, such as carelessness, negligence, or characterized fault, which are less precisely defined. This duality always structures the process.

This phenomenon is less pronounced in cases where the pressure to identify a culprit is lower. However, in major disasters involving numerous victims, the judiciary often seeks a culprit by scrutinizing deviations from the norm, examining the entire hierarchy of norms. Either a violation of a constitutional principle is sought — extremely rare — or reliance is placed on legal or regulatory prescriptions. In the aviation sector, this is also infrequent, as Daniel Soulez-Larivière noted: without virtue, there is no activity. Aircraft do not fly without adhering to stringent safety measures.

As such, violations of legal or regulatory prescriptions directly linked to the damage are rare. The focus often shifts to lower levels of the hierarchy of norms (operating manuals, procedures, best practice guides), examining deviations from best practices or notions of **normal diligence**, which are critical in determining criminal culpability.

Nicolas Gombault

I fully agree with what Aurélia Grignon has just said. However, I would like to emphasize two points: deviations from which norms, and, most importantly, a point we have not emphasized: very often, particularly in the medical field, deviations are not individual but **systemic**. They may result from insufficient personnel or resources. In such cases, I believe the judge's role becomes more challenging than simply stating, "Here is a deviation, and based on this deviation, I sanction the individual before me".

Yannick Malinge

There are several points I would like to address. The first, though quite anecdotal in relation to our discussion, concerns the film about the Hudson incident[6]. Being very familiar with this case, I would like to draw the attention of the audience to the fact that it is a Hollywood production. The film deviates significantly from the reality of the investigation conducted by the NTSB[7], which, to be clear, was very upset about the film as it grossly misrepresented the manner in which the investigation was carried out. I will close this parenthesis here.

Now, regarding standards in the aviation sector, a point often misunderstood due to the emotional responses triggered by certain events is that we are not merely technocrats concerned with corporate stock performance. Above all, we share a strong aviation culture. Having experienced several such events, whether at Airbus, among suppliers, or even at our competitors, I can tell you that when an incident occurs, the first, almost instinctive, reaction of test pilots, chief engineers, and design teams is: "What went wrong? What did we miss?". This is a visceral reaction, far removed from the financial considerations some might imagine.

This mindset is omnipresent. To give you an idea of the pressure we face daily: the Airbus fleet makes approximately 10,000 flights every day, meaning an aircraft is taking off or landing every second. Over six million passengers fly on an Airbus every day, amounting to nearly 2.5 billion passengers annually. These figures demonstrate that, for this system to function, we must absolutely ensure safety. The consequences of any failure are immediate and severe.

Flight safety, therefore, lies at the heart of our operations, embedded within a highly complex system involving the aircraft itself, suppliers, airlines, airports, and air traffic management. Safety is a shared value among all stakeholders in air transport. When an accident occurs with casualties, it profoundly affects us. Immediately, we strive to understand what we could have done better. While we all recognize that an aviation accident represents a collective failure of the air transport system, the question of culpability is a separate matter. Our focus is then on finding solutions.

An implicit, unwritten standard has emerged from decades of aviation efforts. Over the past 30 years, we have reduced the rate of fatal accidents by a factor of 30, a remarkable achievement. These efforts bear fruit today, even though, given the size of our fleets and our exposure to risk, the public's expected standard remains zero accidents. Each incident is perceived as an inexcusable failure.

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6 Film *Sully* (2016), directed by Clint Eastwood, starring Tom Hanks as the heroic pilot.

7 NTSB: US National Transportation Safety Board, an independent federal agency that investigates accidents across all modes of transportation (aviation, rail, road, maritime, pipeline transport).

To illustrate, consider a counterexample: car accidents are a daily occurrence and no longer surprise anyone. In road transport, the standard is not "zero accidents". Conversely, in aviation, even the smallest failure is perceived as a defeat, making it difficult to understand when one is judged *a posteriori*[8].

It is crucial to understand that in risk management, facts are not always known in advance. This is true across all high-risk sectors, whether aviation, medicine, or nuclear energy. What remains unpredictable is the variability of human factors. All our activities rely on human involvement, whether at the level of manufacturers, airlines, crews, or maintenance personnel. What Mr. Gombault mentioned earlier, regarding the distinction between individual and systemic responsibility, resonates particularly in this context.

Forty to fifty years ago, in the wake of early accidents, investigations focused primarily on technical aspects: repairing or modifying a technical standard allowed operations to continue. Over time, the focus shifted to crew behavior. For instance, the Tenerife accident[9] led to the introduction of CRM (Crew Resource Management), a system where crews collaborate to make optimal decisions.

Over the past 15 years, organizational factors have been integrated into investigations, complementing technical aspects, CRM, and human factors. It is therefore essential to avoid systematically seeking individual blame, as we operate within highly complex systems. This notion of organizational risk is now central to risk management in the aviation sector.

Pierre-Franck Chevet

I am particularly sensitive to what you have just said about the **absence of zero risk**.

No activity can claim zero risk. Let us take the example of French laws, though similar situations exist in other countries, particularly in the nuclear and Seveso sectors. These laws mandate the implementation of necessary safety measures "as far as reasonably practicable". This constitutes the rule, but what does it mean in concrete terms? It is, of course, necessary to translate this obligation into legal terms to ensure it is achievable, both materially and humanly. However, the **economic dimension** underpinning these texts should not be overlooked.

Why this economic consideration? Because excessively costly requirements imposed by a regulatory authority would become infeasible, potentially leading to the cessation of the activity. In such a case, the authority imposing the rules would share some responsibility for this outcome. Additionally, investing heavily in highly expensive measures might mean foregoing other, more useful yet less costly actions. Therefore, a prioritization of efforts is required when applying rules. As previously mentioned, rules may be binary, but their application often varies depending on their context.

I was particularly struck by the example provided by Nicolas Gombault. Imagine a doctor in an operating room, surrounded by their team, facing several patients in simultaneous emergencies. The doctor, capable of performing certain medical procedures, must delegate other tasks to less qualified personnel due to resource constraints, reserving for themselves only the most critical interventions. This doctor is then making a choice, a trade-off, which may prove crucial. How does the judicial system account for such situations? At that specific moment, the doctor acted with the necessary due diligence. One might criticize them for not having previously organized a general strike to highlight the difficulties faced, but at that time *t*, they made the least harmful decision possible, given the circumstances, to ensure patient safety.

This concept of "necessary due diligence" strikes me as highly vague. How can an outsider to the situation grasp its nuances? It is extremely complex. I am neither a doctor nor a lawyer; I am merely an engineer, but these situations resonate deeply, as they affect us all, for we are also, at times, patients. How can we act in the best possible way under such circumstances?

[8] FonCSI note: **hindsight bias**, often present when examining the facts that lead to an accident, creates a tendency to ask, "Why did they do that?". It is important to remember that those involved at the time did not know how events would unfold.

[9] Collision of two 747s on the ground at Tenerife airport, resulting in 587 fatalities in 1977.

This brings us back to your point, Aurélia: once the standard has been defined, evaluating necessary due diligence remains an delicate exercise.

Aurélia Grignon

The concept of **ordinary diligence** is a key point in determining culpability. The legal text I referred to earlier is subtler than the commonly held idea that any deviation automatically implies guilt. This text, specifically Article 121-3 of the French Penal Code, is foundational and works in conjunction with specific provisions relating to involuntary manslaughter and involuntary bodily harm. It establishes the principle that a crime or offense can be committed in unintentional situations. In principle, as stated in the first paragraph of this article, a crime or offense requires intent: *"There is no crime or offense without intent to commit it"*. However, an exception exists in cases where the law provides for an offense in situations involving endangerment (in French: « mise en danger »).

I will not delve deeply into the topic of endangerment, though it is a vast subject. Instead, I want to draw attention to the third paragraph, as it forms the basis for how criminal justice approaches accidents. It stipulates (our translation):

> *There is also an offense, when provided for by law, in cases of negligence, carelessness, or failure to meet a duty of caution or safety required by law or regulation, if it is established that the perpetrator of the act did not perform the ordinary diligence required, taking into account, where applicable, the nature of their tasks or functions, their skills, as well as the authority and resources available to them.*

This introduces an interesting limitation to the general principle of "deviation equals culpability". In determining culpability, one must adhere to a **principle of reality**. The **ordinary diligence** (as clarified by case law) must be assessed *in concreto*. This does not involve applying an abstract standard of the "average person" but rather evaluating what could reasonably be expected in a specific situation, such as during a storm. To return to one of the questions raised — how far justice manages to move away from the principle that "deviation equals culpability" — the concept of ordinary diligence provides an intriguing perspective. It compels us to **consider the concrete circumstances under which decisions were made**.

However, I must express some pessimism after 17 years of dealing with judicial catastrophes. Although our arguments are legitimate, they are often disregarded due to an overwhelming pressure to identify a culprit at any cost. Nevertheless, acquittals have been achieved in certain cases, such as those involving the Concorde and the *Erika*. I will not go into detail about the AF 447 case[10], but it is telling that a dismissal of charges was initially issued, followed by an appeal to the investigating chamber, a referral to the criminal court, acquittal recommendations, and, ultimately, an acquittal, which was then appealed.

This illustrates how strong the pressure to find a culprit can be. I refrain from using pejorative terms like "obsession", but it is clear that the situation is difficult, particularly for those accused. For example, we defended Claude Frantzen, the former head of technical oversight at the DGAC (French Civil Aviation Authority), who spent 20 years under indictment before being acquitted. This prolonged judicial process profoundly affected him and his family. It underscores how grueling it is to be subjected to such a judicial ordeal for so many years, despite ultimately receiving a rightful acquittal.

The legal text nonetheless requires that the search for culpability account for whether the accused failed to perform the ordinary diligence expected of them. This opens the door to numerous interpretations, particularly in situations like those encountered in an operating room, where urgency compels difficult decisions. The response of criminal justice is often (regrettably) influenced by the pressure on judges and their ability to rise above it to apply the law rigorously and faithfully.

[10] The Paris Public Prosecutor's Office has appealed the acquittal of Airbus and Air France by the criminal court in April 2023; the appeal is ongoing at the time of this debate.

Pierre-Franck Chevet

This is why it is crucial to emphasize the notion of **proportionality**, which requires contextualizing the actions of all involved parties. I fully understand how difficult this may be in high-pressure situations, but it is vital to listen to all stakeholders.

Nicolas Gombault

I would like to add a point, introducing some legal elements to the discussion — please forgive me. Reflecting on the theme of today's meeting, "Does deviation equal culpability?", it seems important to highlight that, even in the absence of an accident, French law can penalize a deviation. This is evident in the offense of **endangerment**. If I recall correctly, the text specifies that this involves exposing others to the risk of death or serious injury through the manifestly deliberate violation (intent must therefore be clearly demonstrated) of a specific obligation of caution or safety.

Thus, the judge has the authority to criminally sanction an evident deviation from a legal norm, even in the absence of an accident. Although such prosecutions are relatively rare, they represent a looming threat.

Aurélia Grignon

From my perspective as a criminal lawyer, I have been involved in several cases where I found the prosecutions for endangerment to be disproportionate, excessive, and often disconnected from reality.

Yannick Malinge illustrated this well earlier: there is a **striking disconnect between the language of magistrates and that of industrial actors**. This chasm is particularly stark in the understanding of regulatory texts. It is sometimes frustrating to see deviations pursued with such zeal, almost as if hunting for truffles at the roots of trees. This is not how the world's economy operates. The concept that zero risk does not exist remains largely unheard, especially in Seveso-related cases.

The debate often shifts to risk mapping and the foreseeability of danger, where **hindsight bias** leads people to believe that risks could always have been identified beforehand. Returning to the central question: are there ways to move away from a system in which the normative framework is perceived as an algorithm to be mechanically applied rather than as a guide?

When an accident occurs with numerous victims, the legal system tends to scrutinize all normative frameworks to identify who acted improperly and failed to comply with the rules. The debate on ordinary diligence truly arises only when there is no immediate, identifiable violation. At that point, we can engage in a genuine discussion about ordinary diligence, best practices, and the **options available** at the time decisions were made. If we **place ourselves in the shoes of the individuals involved, considering what they knew or did not know**, what should they have chosen, and what did they do wrong? Often, experts intervene to suggest what should have been done, but these recommendations are frequently counterfactual, bearing no causal connection to the accident. They envision a world where alternative decisions would have been made, yet without logical ties to the occurrence of the incident.

To me, this represents a distortion of criminal justice. It often struggles to grasp the realities of the industrial or aviation world — a world in which zero risk does not exist, even as we strive to mitigate and manage risks to the fullest extent possible.

Yannick Malinge

Concerning the concepts related to endangering the lives of others, I wish to share a recollection of an event that took place outside France. During an approach and landing, a codified technical incident occurred, for which procedures exist to manage such malfunctions. The aircraft landed without causing injuries or fatalities. Nevertheless, a criminal investigation was initiated for endangering the lives of others, although this was not precisely the term used, as the relevant legal system — Italy's — differed from the French legal framework.

This event brings to mind Aurélia's account of Claude Frantzen's experience, an engineer-in-chief at the DGAC, who was personally indicted for matters beyond his technical purview. Although the case was resolved positively, it illustrates the challenges professionals can face when confronted with such accusations.

Aurélia Grignon highlighted how professionals in technical fields, whether in medicine, nuclear energy, or aviation, **anticipate risks** through **codified procedures**. Professionals such as pilots, air traffic controllers, mechanics, or relevant authorities are expected to respond appropriately in the event of a failure, assessing risks and taking necessary measures, whether by implementing design modifications or recalling procedures. These decisions are made within a rigorous risk management framework but remain subject to the inherent uncertainty of human nature.

It is difficult to anticipate the unpredictable, and certain accidents, even if technically explainable, often lack a unanimous interpretation of the role played by individuals and collectives in their occurrence. This complexity is further exacerbated by the **clash between legal expectations and technical realities**, as exemplified by the Concorde case, where the judicial demand to reinforce the aircraft would have compromised its ability to fly.

This reveals the difficulties encountered when the judicial and technical worlds collide, with the judiciary seemingly demanding the **anticipation of the unforeseeable**. Technical actors frequently ask themselves "Should we account for a scenario resulting from a convergence of numerous contributory factors?". Such questions arise regularly, prompting some industrial experts to respond, "This situation is inconceivable; how far must we go?" Thus, the question emerges: to what extent should the precautionary principle be applied without **stifling innovation**? This is a complex debate that warrants thorough consideration, especially as judges, lacking in-depth technical expertise, rely on normative frameworks to assess responsibilities. But can we imagine these frameworks being adapted to include the instinct or adaptability of professionals when faced with uncertainty, particularly when circumstances deviate from standard norms?

It is imperative that decisions made under urgency or in critical situations are examined in light of prevailing standards, but it is equally crucial to recognise the role of human judgement when confronted with unforeseeable events. These reflections should prompt us to consider mechanisms that **better integrate adaptability into legal evaluations**, while ensuring the legal certainty necessary for the proper functioning of justice.

Nicolas Gombault

I would like to follow up on Yannick's remarks. I can only concur with his observations regarding the predictability of risk, which poses a genuine challenge. Allow me to recount a brief anecdote. For many years, I lectured at the École nationale de la magistrature (the main higher-education institution that trains magistrates in France), delivering a course on medical liability. I often used the example of a psychiatrist. To my knowledge, there have been at least four convictions of psychiatrists responsible for treating patients hospitalised without consent due to the danger they posed to themselves or others. These psychiatrists, believing the patients' dangerousness had diminished due to a period of remission, compliance with medication, and apparent calmness, judged that hospitalisation was no longer necessary. However, in certain cases, this assessment proved incorrect, leading to tragic consequences.

At that time, I often posed the following question to the attending magistrates: have you ever heard of criminal convictions against **judges responsible for the application of sentences** who released a detainee before the end of their sentence, only for the detainee to commit a crime or offence following their early release? Personally, I have never heard of such convictions. Let us recall that no judges are present today, making it challenging to speak on their behalf.

Aurélia Grignon

Indeed, those who find themselves entangled in the judicial system often face highly stringent expectations, sometimes disconnected from the realities they encounter. I recall, for instance, the Concorde case, where critiques were raised concerning the fact that the aircraft had not

been significantly reinforced after incidents arose. A lengthy struggle was required to explain to the court that if an aircraft is too heavy, it simply cannot fly. What seems obvious at first glance may necessitate several days of hearings to be understood, following a decade of investigation. Sometimes, this level of clarity is necessary to bridge the gap between one "world" and another. Yet, I remain hopeful.

Regarding the questions raised here — namely whether the judicial system or jurisprudence could incorporate "initiative-based safety" rather than remaining within the domain of "rule-based safety" — this terminology is not one with which I am particularly familiar. However, I understand that the issue here is to adapt to uncertainties and act as effectively as possible under the circumstances. If I am mistaken, please feel free to correct me. The question, therefore, is whether this approach could supersede the normative framework when judging the proper or improper application of a rule. On what criteria could such an approach be based if it does not rest on the question, "Did you follow the framework or not?".

The difficulty I perceive is that in the language of jurists — including myself — we, as lawyers and magistrates, require **explicit standards, rules and regulations**. Jurisprudence stipulates — and I believe this is salutary — that magistrates are not to improvise as experts in the field. So, **how can one judge a transgression without relying on an explicit set of rules**? And how can we incorporate a standard, even in the form of due diligence, that would include the idea that a pilot, for instance, must rely on their instinct? I am uncertain whether this is realistic or utopian. What I do know is that, within the judicial sphere, we require legal certainty. We are not apprentices experimenting with uncertain outcomes. As this is a domain beyond our expertise, we are obliged to rely on a framework. This framework need not necessarily be normative: *soft law* also works, as do best practices or operators' manuals. However, it must be clearly established somewhere how things should be done so that it is then possible to judge whether they were done well or poorly.

Pierre-Franck Chevet

There is a point that we have touched upon through several examples but which deserves deeper exploration: the manner in which professionals, and I am not placing myself here in the position of a judge or the judiciary, make **complex decisions in a collegial manner**. Nicolas, you mentioned the importance of justifying these decisions, but you also spoke of a collective deliberation on a patient's situation. This collegial process improves the decision-making process, not only vis-à-vis the judiciary but, more importantly, to ensure the robustness of the decisions made.

This is a fundamental point that we have not sufficiently addressed. In my professional experience, as a supervisor, or rather, a norm setter and guarantor of their proper execution — a sort of "policeman" tasked with establishing and enforcing the rules — I have observed the importance of decisions made collectively in the most delicate moments. Even when one individual has the final say, the role of the collective is crucial. Once again, I am not referring to the role of the judiciary but rather to the rationality and security of the decisions made. The collective adds significant value.

We have also spoken little about the **questioning of supervisory authorities** themselves. Perhaps in the aeronautical field, you have encountered cases where authorities were criticized for establishing inadequate rules or for failing to conduct appropriate inspections, or at least not in the necessary areas.

Yannick Malinge

Regarding collegial decision-making, as opposed to unilateral thinking, I believe that in the aeronautical sector, we fully subscribe to this approach. At Airbus, for instance, we have a "**safety board**" where decisions on critical flight safety issues are made. We refuse to allow one individual to make such significant decisions. Every decision must integrate several dimensions: technical, operational, certification-related, the feasibility of modifying equipment, etc. This approach is fundamental, and I am convinced that it should become the norm in many technical fields in a broad sense, as it allows for multiple perspectives and optimizes decision quality.

Nicolas Gombault

In medicine, this collegial approach is self-evident. In some fields, and increasingly so, **multi-disciplinary consultation meetings** are organized, particularly in oncology, though this practice is expanding to many other specialties. These meetings enable decisions to be made collectively, thereby alleviating individual responsibility. However, if a team fails to organize such a meeting when required, it becomes a ground for liability due to deviation from the standard. Nevertheless, this collegial decision-making is limited in emergency situations, where, unfortunately, time constraints preclude a deliberative process.

Pierre-Franck Chevet

With regard to the direct questioning of supervisory authorities, I have been closely involved, though not directly responsible, in the **AZF factory accident**[11], which led in France to the adoption of the 2003 law on land use planning around Seveso facilities. The administration responsible for oversight was implicated but was ultimately acquitted. The main accusation was that the facility had not been inspected for two years and that the authorities had failed to identify the risk of an explosion. Simply put, the criticism was for failing to anticipate what occurred. *In fine*, the administration was collectively acquitted, as it was recognized that inspections had to focus on the most critical elements **due to insufficient resources**. It was justified on the grounds that, on such a large site, inspection efforts were appropriately allocated to the most dangerous components, though not necessarily to the warehouse that exploded. While the accident caused casualties, it was deemed that the administration fulfilled its role by prioritizing inspections on the most hazardous elements.

Nicolas Gombault

Through various scandals, notably in the health sector, we observe that administrations are regularly called into question and may be held liable for lack of vigilance. For instance, in the Depakine scandal[12] the supervisory authority was held accountable by a committee of experts established under an *ad hoc* law. The grounds were that the drug was not withdrawn in a timely manner or that usage recommendations were not updated promptly, despite several weak signals that should not have been ignored. This concept of **failure of vigilance** is becoming increasingly significant today.

Aurélia Grignon

The criminal prosecution of regulatory authorities is frequent. The Soulez law firm, for instance, has long been the legal counsel for the French Directorate General of Civil Aviation. As an administration cannot be directly prosecuted, responsibility falls on its agents. Thus, we often defended individuals, but in reality, it was the inspector's or certifier's mission that was under scrutiny. Whether rightly or wrongly, scandals sometimes lead to the entire chain being implicated, and if the entire chain is involved, it is logical for it to be examined. This stems, in my view, from the same mechanism: in the search for culpability, the net is cast as wide as possible, if I may put it that way.

In certain cases, even when the primary responsible party is *a priori* the pilot, who may be deceased, judicial authorities tend to extend the search for liability. They then examine the certifier's responsibility for failing to know that the aircraft was unfit to fly, or that of other actors. This phenomenon, particularly evident in cases of involuntary manslaughter and major disasters, consists of broadening the search for responsible parties to all indirect actors, often invoking indirect causality, as allowed under Article 121.3 of the Penal Code. The Fauchon Law[13] sought to limit such criminal prosecutions by requiring a characterized fault

[11] A major explosion at a factory producing nitrogen fertilizers in Toulouse in 2001, which resulted in 31 fatalities and numerous serious injuries.

[12] A drug marketed by the Sanofi laboratory, accused of failing to meet its obligation of vigilance and failing to adequately warn of the risks posed by the drug to the fetus if taken during pregnancy. The French National Agency for the Safety of Medicines and Health Products was also indicted for unintentional injuries and manslaughter due to negligence.

[13] "Fauchon Law": Law No. 2000-647 of July 10, 2000, aimed at clarifying the definition of unintentional offenses. This French law amended the Penal Code, the Code of Criminal Procedure, and the General Code of Local Authorities. See the proceedings of a Senate colloquium organized in October 2020 titled *The Fauchon Law: 10 Years Later*.

or a deliberate violation for individuals. However, the trend remains to seek responsibility along the entire chain, sometimes legitimately, sometimes not.

For example, in the Concorde case, judicial authorities argued that, for 20 years before the accident, the risk of fire was poorly understood. Although there was no formal regulatory or legal infraction, it was claimed that the aircraft should not have been authorized to fly. These cases often end in acquittals, but it takes time for reality to prevail, sometimes causing significant damage, including within the industry.

These threats of criminal prosecution **influence how the industry reacts**, as safety improvement relies heavily on **transparency regarding errors and malfunctions**. However, this transparency becomes practically impossible due to the judiciary's grip on aviation safety. Legislative developments occurred, notably in 2016, with the introduction of a reform in France promoting a "just and fair" culture, aimed at fostering cooperation between technical investigations, which identify causes, and judicial investigations, which seek to identify culpable parties. Nevertheless, this has not resolved all issues.

I mention this because I was particularly struck by the ruling of the Versailles Court of Appeal in the Concorde case[14], which included an entire preamble criticizing the Bureau of Investigation and Analysis (BEA) for its intervention in the case. This ruling was issued before 2016, thus before **cooperation between technical and judicial investigations** was regulated, but it remains indicative of the persistent tensions. Even today, I observe that judicial investigators struggle to accept the involvement of technical investigators or the BEA, which might temper the primacy of the criminal judge. This sometimes excessive search for culpability induces a culture of silence incompatible with the primary mission of the aviation safety system, which requires sharing deviations and difficulties encountered in rule application.

Pierre-Franck Chevet

The purpose of my question is not to challenge the legitimacy of prosecuting regulatory authorities. Indeed, it is part of the raison d'être and responsibility of being a regulator to assume such accountability. However, as you pointed out earlier, the effect of judicial intervention, beyond individual cases, can have a long-term negative impact on safety. There is a risk that issues might be concealed or deviations might not be reported, but these are essential drivers of continuous improvement. There is also a second risk: in order to protect themselves, both companies and authorities tend to produce extensive documentation. Everything is regulated. Ultimately, the burden is placed on the frontline actor — such as a pilot, if this analogy is appropriate — to manage or memorize an entire manual. This obligation is hardly conducive to industrial safety. If individuals are expected to consult a bookshelf's worth of regulations before taking action, the system cannot function effectively. Thus, the potential criminalization of actions carries at least two negative consequences.

Once again, I do not in any way question the emotional response generated by major catastrophes of this kind. If I were personally affected, I would undoubtedly align with those seeking accountability, demanding that culpability be determined, and so on.

Yannick Malinge

Very briefly, without encroaching on the Q&A session, I would like to emphasize that in the aviation sector, technical investigations are governed by Annex 13 of ICAO (International Civil Aviation Organization). These investigations are conducted by specialized organizations, such as the BEA in France or the NTSB in the United States. Their mission is to examine all actors and elements related to an incident. This includes aircraft manufacturers, airlines, air traffic control, airports, as well as certification and airworthiness authorities, and oversight bodies for the operators involved.

These investigations are conducted within an extremely rigorous framework in compliance with Annex 13, incorporating a strongly adversarial dimension, as all relevant parties are

[14] The ruling can be consulted online. Criticism of the BEA's independence by the judges begins on page 95.

involved and represented at the table. They are often international in scope, meaning the facts are quickly disclosed and shared among stakeholders. Certification authorities are not exempt from this critical scrutiny, which applies to all actors involved.

On the topic of a "just culture", it is true that excessive recourse to criminal proceedings can hinder progress — not in decision-making, as our priority is always to protect the fleet regardless of the consequences — but in the reporting of what is actually occurring during aircraft operations. At this level, practices vary significantly based on **national cultures**. For example, in certain Asian or Western cultures, many actors are reluctant to report their mistakes for fear of being reprimanded by their superiors or regulatory authority, or even facing sanctions.

This is not about the criminal dimension but rather the daily management of issues, with the aim of fostering **greater transparency** to share **lessons learned**, which is essential for improving safety. Nonetheless, this remains a broad and ongoing debate. Even in the highly structured aviation sector, there is still room for improvement. This is especially true when considering the diversity of global cultures, where, for instance, some Asian cultures exhibit a systematic inclination toward punitive measures, significantly complicating the situation.

Pierre-Franck Chevet

I can attest to this concerning the Fukushima-Daïchi nuclear accident. Beyond the technical aspects of the incident, there was something fundamental rooted in the culture. When a minor error — not even a fault in the strict sense — occurred and could potentially lead to an incident requiring reporting, it was simply not discussed. This was not out of fear of legal action but due to a deeply entrenched cultural norm, where acknowledging an error was equated with being fundamentally at fault.

This cultural dynamic led to a **complete lack of transparency**: everything appeared flawless on the surface. It was through internationally organized cross-inspections that it became evident they reported ten times fewer significant incidents than others. This discrepancy stemmed from the fact that it was unacceptable for the person identifying the issue to report it, whether to their colleagues or even to themselves if they were directly involved. This represents a critical challenge.

2.1 Questions from participants

Question

A first question, or rather a hypothesis for you to comment: the **judicial expert** often plays a significant role, certifying whether the observed deviation is common practice or, on the contrary, constitutes a culpable risk-taking. However, it is well known that experts do not always share the same opinions, and therefore the selection of an expert by the judiciary or the parties can become a **means of influencing judicial outcomes**.

Aurélia Grignon

This issue resonates deeply with me because technical cases, particularly in the context of involuntary criminal liability, often require us to address matters outside our expertise as legal professionals or magistrates. Whether we belong to the prosecution or the judiciary, we are compelled to examine complex topics, such as the functioning of brake systems or the packaging processes in chlorine production facilities — areas far removed from our domains of expertise.

As a result, it becomes essential to rely on the **opinions of experts**. This reliance means that part of the judicial process depends on these expert assessments. Undeniably, the role of experts in such cases is absolutely central. Personally, I have encountered cases during my career where the expert evaluations were very poorly done given the stakes involved. At times, certain experts, driven by the desire to provide findings that align with the investigating judge's expectations, skew their analyses to point to a guilty party. This represents a negative scenario. It is not about the judiciary being influenced, but when an expert is oriented toward a specific objective, their impartiality can be compromised. Fortunately, this is not the norm.

In this context, the **collegiality of expert opinions** is paramount. When experts are not unanimous, it is crucial to appoint multiple experts and, where necessary, request counter-expert evaluations. We often observe a tension between judicial expert evaluations and those conducted by technical bodies like the BEA or BEA-Mer. In such processes, expert evaluations serve as indispensable raw material for determining liability.

Although we have no direct control over the selection of experts, we have the right to request additional evaluations, though these requests are not always granted. As stakeholders, we can also engage private experts, which constitutes an exception to the secrecy of the investigation under the Code of Criminal Procedure. This allows us to share expert reports with these private experts for their analysis and feedback. Expert evaluations are thus a vital link in the chain of investigation and accountability in criminal cases.

The quality of experts is critical to the proper conduct of the investigation. For instance, I recall a case involving an explosion — distinct from the AZF case — where, despite the issue being clearly chemical in nature, the judiciary appointed a metallurgy expert. Such situations illustrate the challenges we face, particularly given that expert evaluations are often the **primary key to understanding** for judges and lawyers in a case.

Nicolas Gombault

I completely agree: expert evaluations are absolutely fundamental across all fields. In the **medical** domain, for example, experts are regularly subjected to **disciplinary proceedings before the Medical Council**, **civil lawsuits for negligence**, and even, though less frequently, criminal proceedings. Such occurrences are rare but do happen.

Question

A related observation: appointed experts are often highly specialized but lack expertise in issues like multiple causality or management-related matters. Are magistrates trained in these areas?

Aurélia Grignon

Not to my knowledge, but this is not my area of expertise.

Nicolas Gombault

On the topic of causality, there are two legal regimes of causality: the equivalence of conditions and adequate causation[15]. The equivalence of conditions can be explained using the French song *Tout va très bien, madame la marquise*: a spark, a candle, a spreading fire because a horse kicked a curtain in the castle, and eventually everything burns down. A single minor event can, under the equivalence of conditions, lead a magistrate to conclude total causality. This principle is applied in civil law. In criminal law, however, causality is assessed more rigorously.

Question

There is a question of whether investigations should not only focus on frontline actors but also systematically examine the role of management, up to the board level, given that in complex accidents, their decisions often play a determining role. Are organizational or inter-organizational shortcomings contributing to accidents investigated as thoroughly as those of frontline actors?

Yannick Malinge

I am not convinced by the premise that accidents frequently result from poor decisions made at the executive committee level. I am unsure of the technical basis for this claim, which

[15] The theory of equivalence of conditions posits that an event is the cause of damage if, in its absence, the harm would not have occurred. The theory of adequate causation relies on experience to determine whether the events typically lead to such damage.

might allow us to challenge this assumption. While such situations can occur, I do not think they are the norm. However, there may be some overlap with the previous discussion: I must emphasize that making the best possible decisions also involves considering economic factors. Indeed, placing an entire system under economic pressure while demanding adherence to strict safety regulations inevitably raises management challenges.

Once again, the aim is to find the best possible solutions under reasonably constrained conditions. This argument is often raised when the two realms — the **technical, rational reasoning** and the **emotional dimension** — collide. We are sometimes accused of focusing solely on economic considerations, yet it is precisely due to the scale of our fleets and operations — I mentioned the volumes earlier in the debate — that we strive to avoid at all costs the occurrence of a dreaded event. Our approach is therefore the opposite of what we are often reproached for.

Let me provide a concrete example. A few years ago, we decided to suspend the delivery of 50% of the aircraft generating Airbus' revenue for a four-month period. Why? Because we were dissatisfied with a specific engine failure rate observed on a particular fleet. Although this failure rate fully met regulatory requirements and was even below the thresholds mandated by regulation, we deemed it posed an excessive risk—namely, the risk of turning the aircraft into a glider. Therefore, without any directive from the authorities, we decided to suspend the delivery of this fleet, representing 50% of the A320 family, for four months. Incidentally, it is worth noting that the A320 family accounts for 80% of Airbus' revenue, illustrating the significant financial impact of this decision. Yet financial considerations did not come into play: our priority was to safeguard flight safety.

I therefore wish to dispel the notion that decisions concerning flight safety are systematically driven by economic considerations. As further evidence, I would like to highlight that neither the CFO nor the CEO participates in Airbus' "safety board".

Pierre-Franck Chevet

This is a crucial point, as it represents a recurring discourse in all major criminal cases. I will provide an example to illustrate my argument. My comment or question was not specifically directed at the aviation sector but rather referred to the example Nicolas presented concerning the situation in hospitals, particularly regarding budgetary and resource constraints.

No one would accuse a hospital of attempting to maximize its financial results, but it is undeniable that the situation arises from inadequate funding. Therefore, this is not about imagining a "World Company" at work but rather about acknowledging the existence of economic constraints. In hospitals, these constraints can influence behaviors, lead to errors, or even result in errors with severe consequences. This is a reality that we cannot ignore and for which we must assume responsibility.

I believe that when a hospital director is confronted with a serious incident, they necessarily feel concerned about the situation. This is why it makes sense to reflect on the responsibility of executive committees or leaders.

Aurélia Grignon

It is important to emphasize that **criminal liability** is inherently **personal**[16]. When a catastrophe occurs, the justice system examines all factors that contributed to the event. The fact that certain decisions were made by the executive committee does not hinder the pursuit of individual responsibility for each person who participated in the deliberations of the executive committee. Naturally, certain defenses may be invoked, such as: "I am not an operational decision-maker; I am a functional one". However, in this context, the argument of economic constraints will not be admissible in criminal justice in the event of a catastrophe.

Furthermore, collective decision-making does not preclude the identification of individual criminal liability for all individuals involved in the decision if it is determined that the decision

[16] FonCSI note: internationally, exceptions include the legal notion of corporate manslaughter in the United Kingdom and a similar concept of an organization's criminal liability for negligence in the Canadian criminal code.

contributed to the occurrence of the accident. This may seem like a somewhat pessimistic perspective, but with regard to the question of whether organizational failures that contributed to the accident are systematically investigated, I am uncertain if this is always the case. Nevertheless, the general tendency of the criminal justice system in this search for responsibility is to place no limits on where or at what level it can be sought.

Nicolas Gombault

The question concerned whether the chain of responsibility is systematically investigated up to the highest hierarchical levels. As Aurélia has pointed out, criminal liability is, of course, individual, but it is also important to note that legal entities can be criminally convicted.

However, I believe it is necessary to highlight an obvious point: this does not absolve the final actor, the one who may be accused of an unnecessary failure. The conviction of a legal entity or a member of the management does not preclude the individual from also being held accountable.

Question

To return to fundamental principles, why does the justice system place so much importance on the framework (the regulated sphere of safety), and if one imagines the possibility of moving away from it, what would the implications be for judicial work? In other words, is the framework essential to judicial work, or is it merely a convenience?

Aurélia Grignon

On this topic, my opinion is that I do not see how it could be otherwise. There exists a principle of **legal certainty** and **clarity in decisions**. As I mentioned earlier, the framework, in its broadest sense, is what allows us to determine the **existence or absence of a transgression**. It is imperative to have a reference point for appropriate behavior in order to affirm, at a given moment, that a certain behavior is **unacceptable to society**. This is the social contract according to Rousseau and is also reflected in criminal law.

Criminal law does not merely involve liability for acts, as is the case in civil law, where, for example, you could be held responsible for damages caused by your improperly parked car. In criminal law, there is an additional degree of severity: you are considered a delinquent. For this label to be applied, the defense will demand clarity and comprehensibility regarding the facts for which you are accused. At what point can it be said that a transgression occurred? What did I transgress?

For me, this is what makes the idea of imagining a world where something other than the strictly "regulated" is allowed quite revolutionary. It is not entirely impossible. As I mentioned earlier, there is already a requirement to demonstrate normal diligence, *in concreto*. Thus, there is likely room for evolution, but I believe this will come from professionals and industry stakeholders themselves. **How can we translate, within a clear reference framework, that appropriate behavior involves, at a given moment, responding adequately to an unforeseen or random situation**?

That said, whether one is a magistrate, lawyer, or defendant, we are all subject, within the judicial sphere, to this principle of rigor imposed by legal certainty. One must be able to know what has been transgressed, hence the necessity of a framework.

Nicolas Gombault

Allow me to provide a brief historical reminder. At the beginning of the 19th century, certain cunning individuals would enter the most prestigious restaurants in Paris. They would be greeted by a maître d'hôtel, who would invite them to take a seat. They would sit down, order the finest wines from the sommelier, and enjoy a luxurious meal. When presented with the bill, they would reply: "*You invited me to sit, so I sat; you invited me to eat, so I ate; you invited me to drink, so I drank; therefore, I owe you nothing*".

The restaurateurs sought to prosecute these individuals criminally, but no criminal statute allowed for their conviction. It was not theft, as theft is defined as the fraudulent appropriation

of someone else's property. In this case, there was no fraudulent appropriation: they had been invited to sit, eat, and drink. It was also not fraud, so they could not be criminally convicted. This is why, under pressure from the restaurateurs, the offense of swindling or food fraud was created. However, until this offense was codified in the French Penal Code, it was impossible to convict them.

This example illustrates the principle of **legality of penalties**. Unless a penal statute criminalizes a specific behavior, it is impossible to convict. This principle constitutes a fundamental guarantee in our society and protects our rights. I believe that a judge cannot convict in the absence of a statute, but they also require a framework to evaluate the behavior of the person being judged. This aspect is indispensable and, in my view, will always remain necessary.

Yannick Malinge

I can only concur with everything that has just been said. It seems to me that it would be exceedingly difficult to imagine a judge, working in isolation, confronted with an extremely complex case, and having no reference framework. If we were to move in that direction, it would appear excessively dangerous, opening the door to interpretations even broader and more subjective than those we already observe today. Ultimately, we are addressing a single overarching issue: how can these two opposing worlds be reconciled? How can we strike this balance?

When a dramatic event occurs, it is imperative to respond to the need for reparation. We are all citizens, and I believe we would all agree on this point. Therefore, the challenge lies in finding a way to reconcile these two worlds, rather than perpetuating their constant opposition—a dynamic which is particularly pronounced in France, given our penal culture that is heavily focused on the pursuit of a culprit. This, in my view, remains the core difficulty.

How can these worlds be reconciled in a context where media pressure and external stakeholders are becoming increasingly prominent? This, in my opinion, is the primary challenge of this discussion. It has been noted several times this evening that no representative of the judiciary is present among us. In the past, with Daniel Soulez-Larivière and others, we organized forums at the École nationale de la magistrature. In these forums, structured around the principle of adversarial discussion, we invited an investigating magistrate, a magistrate who had adjudicated a case, civil party lawyers, defense attorneys, representatives from the BEA, as well as members of the aeronautics sector.

I firmly believe in the value of continuing along this path, because each of us, at one point or another, feels the **need for reparation**, especially when directly confronted with a dramatic situation. On the other hand, there are those who, with technical detachment, focus on **risk management**, which represents a somewhat different world. It is therefore essential to find a *modus operandi* that enables the reconciliation of these two approaches. This is undoubtedly a broad endeavor, but ultimately, it is a matter of balance. I remain convinced that a shared reference framework is essential, and that when such frameworks exist, they should not diverge too significantly from one another, whether in the medical field, the aeronautics sector, or any other domain.

Pierre-Franck Chevet

I would like to extend my sincerest thanks to all of you. I found this debate particularly insightful. I appreciate the imagery of the two worlds — the world of emotion and the world of technical decisions. One point that particularly struck me is the perception of the judge's position, who, while not represented here, is by definition not a specialist. Indeed, judges are confronted with cases of diverse nature, which underscores the importance of collegiality—not only among experts but also in the perspectives of both the defense and the prosecution. Similarly, where possible, collegiality in operators' decision-making processes is a crucial element.

In summary, each individual operates within their own area of expertise, and the judge, possessing relatively limited foundational knowledge, is to some extent dependent on this shared judgment, akin to that of jurors contributing at various levels. When it comes to evaluating what constitutes the required or normal level of diligence, the opinions of several peers in a context of broad collegiality often prove indispensable.

I would like to thank the contributors, as you have truly brought the debate to life. Your clarity and exchanges rendered any formal moderation unnecessary, which is a testament to the quality of your contributions.

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