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Proposed Paper for Sub-theme 20: “Invisible/Silent Aspects of Change: The Role of
Phronesis in Managing Organizational Change”

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**“The Challenger Launch decision, a case study of organizational deafness to
practical wisdom”**

Abstract

In this paper, we argue that intuition is a necessary, but non sufficient, step towards the use of practical wisdom in organizations. The conceptualization of practical wisdom by Paul Ricoeur offers a heuristic to understand how it may unravel in organizational settings. It also leads to emphasizing the role of prudence in practical wisdom. We use the Challenger launch decision as a case study, and ask why prudence was expressed, but ultimately went unheard. We analyse the testimonies of six participants to the discussion that led to the decision, in order to understand how practical wisdom was hindered. As a result, we show that the development of an intuition into a practically wise decision requires reasoned argumentation, and the possibility of contradictory dialogue. We believe our results help better appreciate how practical wisdom may help members of an organization act in the face of high uncertainty, and refine our understanding of agency in organizations.

Key words

Practical wisdom; Paul Ricoeur; Deliberation; Decision; Uncertainty

1. Introduction

Our research uses NASA's decision to launch the Challenger shuttle as a case study to better understand how organizational settings may help (or hinder) the use of practical wisdom in organizations.

On January 28, 1986, NASA's Challenger space shuttle (STS-51L) exploded, 73 seconds after it was launched, killing a crew of seven. A teacher was part of the crew, with the purpose to teach a class from space to young Americans. This was a highly publicised event which was broadcast live, and the accident happened in front of millions of people. The accident was attributed to "a failure in the joint between the two lower segments of the right Solid Rocket Motor", as a result of "the destruction of the seals that are intended to prevent hot gases from leaking through the joint during the propellant burn of the rocket motor"¹. Diane Vaughan has shown very clearly that the progressive routinization of deviance led to the decision-makers' inability to see the risk (of the joint failing) for what it was (Vaughan, 1997).

However, there were indeed people who saw that risk, as witnessed by the fact that the initial recommendation was to not launch the shuttle. This decision was later reversed, because of the lack of tangible data to support the launch opponents' position. In other words, there were people who felt that safety was at stake, despite the culture, and despite not having all the relevant data to rationally argue their position. In this paper, we argue that this initial position may be considered as an instance of phronetic intuition, which could have been the first step of a broader sequence leading to practical wisdom; however, as this intuition went unheard by the collective, it was not acted upon and did not result in practical wisdom.

The relevance of practical wisdom, also termed *phronesis*, for organizational science and practice is acknowledged by the vast body of literature that analyses the concept, and documents its presence in organizational settings (e.g. Nonaka, Toyama, 2007; Küpers, Statler, 2008; Antonacopoulou, 2010; Nonaka et al., 2014; Rooney, McKenna, 2007; Shotter, Tsoukas, 2014). In this literature, emphasis is often put on phronesis as an intuitive ability to find a way out of difficult situations and to aim the good (Shotter, Tsoukas, 2014), on the connection it establishes between general rules and particulars

¹ Source: *Report of the Presidential Commission on the Space Shuttle Challenger Accident*, chapter 4, "The Cause of the Accident".

to “solve real-world problems” (McKenna, 2013, p.15), or on its ability to manage tensions inherent to real-world experiences (Antonacopoulou, 2010).

However, attention seldom seems to be given to the fact that phronesis rests on deliberation, “a correctness in thinking” (*Nichemachean Ethics (NE)*, Ross translation, 1984, 1142b10). According to Aristotle, the “mark of a man of practical wisdom is to be able to deliberate well about what is good and expedient for himself, not in some particular respect (...) but about what sorts of thing conduce to the good life in general (ibid., 1140a25). Earlier on, he had indicated that “one ought to choose the intermediate, not the excess nor the defect” (ibid., 1104a1127). Therefore, we may infer that practical wisdom rests on a specific way of reasoning that aims the good, which is defined as the intermediate – in other words, “prudence”, the Latin translation for “practical wisdom” (Aubenque, 1963).

If Küpers and Statler (2008) mention hubris, the opposite of the “intermediate” which “one ought to choose” (ibid., 1104a1127), and Antonacopoulou (2010) reminds us that prudence and critical judgments are central features of phronesis, deliberation and prudence do not seem to have triggered specific research in organization science. Our research attempts to fill this gap, and show that deliberation and prudence are actually central features of practical wisdom in organizational contexts, in particular those that deal with high levels of risk and uncertainty.

The decision to launch the Challenger shuttle, offers a compelling case study of how phronesis was present – and, we argue, was unheard – in such a context. Indeed, the situation that ultimately led to the accident was characterized by a high level of uncertainty. As Richard Feynman, professor of theoretical physics who was part of the Audition committee that was set up to determine the causes of the accident, stated:

“There were many seals that didn't have any problem, and so it is obviously a random effect. It depends upon whether or not you get a blow hole or you don't get a blow hole. So if within a particular flight it happens that all six seals don't get a blow hole, that's no information. The fact that - as far as I can understand this, it doesn't mean you are suddenly good because it worked and the next time when one goes off it's suddenly bad. It seems to me that it has to be understood as a probabilistic and confusing, complicated situation. So you could never

decide they are all going to break or they are all not going to break it's not the wonderful one-horse stray, and when you look at it that way, it is a question of increasing and decreasing probabilities that we have to consider rather than did it work or didn't it work. (Presidential Commission, Report 4: 1472).

With this statement, professor Feynman makes clear the ambiguity of the data available at the time, which created a high level of uncertainty. He adds, “from the point of view of the engineers, they were explaining why the temperature would have an effect, and when you don't have any data, you have to use reason, and they were giving reasons” (ibid). This statement summarizes the value of phronesis in uncertain environments. As Shotter and Tsoukas write, it rests on a capacity to “intuitively grasp the most salient features of an ambiguous situation and to craft a particular path of response, in their search for a way out of their difficulties, while driven by the pursuit of what is good for their practice” (Shotter, Tsoukas, 2014). If we follow Feynman’s contention, engineers that participated in the debates leading to the decision to launch the shuttle expressed phronesis, i.e. a value judgment in the face of uncertainty that favoured prudence.

Yet, when reading the testimonies, it is not clear that “reasons” were given, and that value judgments expressing phronesis were expressed, including by Roger Boisjoly, the most vocal opponent to the launch. The question in debate was: is the temperature an issue for O-Ring performance?² Roger Boisjoly, along with some his colleagues, tried to prove that it was. However, neither him nor his colleagues attempted to argue that what was in the balance was a delayed launch, versus the possibility of an accident. In that sense, engineers may have given reasons why a technical problem was concerning, but they did not build a reasoning as to why the shuttle should not be launched. In other words, they used fact judgments, rational arguments and instrumental reasoning, when their position, due to the level of uncertainty, could not be found in the realms of rationality, and required value judgments, reasonable arguments and teleological reasoning instead. From the perspective of practical reason, it may have been experienced in the shape of an intuition, but it was not

² The O-Rings were the joints which failure was considered as the main cause of the accident.

expressed in a reasoned argument. This raises the question: why was phronesis not expressed, despite the fact that a phronetic intuition was being experienced?

In order to address this question, it is helpful to turn to Paul Ricoeur's conceptualization of practical wisdom (Ricoeur, 1992). Ricoeur's practical wisdom builds on Aristotelian phronesis, but surpasses it. Indeed, he articulates the ethical intuition that arises in particular situations, characteristic of phronesis, with the set of fixed moral rules that usually guide action, and suggests that practical wisdom ultimately rests on the ability to make an ethical decision when no rules apply. He also integrates this construct in the collective context of the "just institution", which designates the environment most favourable to the expression of practical wisdom. In other words, Ricoeur helps understand in which conditions practical wisdom may arise, how it unravels, and the role played by the social environment which may help or hinder the expression of practical wisdom.

We start by outlining Ricoeur's conceptualization of practical wisdom and the just institution; we explain why it is relevant to the study of the Challenger decision and, more broadly, for contemporary organizations (2). We then describe why testimonies offered a relevant set of data, our method to analyse it, and ensuing results (3). Last, we discuss those results in the broader perspective of the relevance of practical wisdom to make decisions in uncertain situations (4).

2. Theoretical background: Ricoeur's "practical wisdom" and "just institution"

Ricoeur's concept of "practical wisdom" brings together Aristotle's ethics (in particular, but not limited to, his concept of phronesis) and Kant's formal morals.

According to Ricoeur, there is no fundamental distinction between morals and ethics. Therefore, he establishes by convention that ethics is reserved "for the aim of the "good life" with and for others within just institutions" (Ricoeur, 1992, p.240). Aiming "the good life" is seen as an essential element of human nature and a requirement for human beings to lead successful lives. On the other hand, "morality" refers to the articulation of this aim in *norms* characterized at once by the claim to universality and by an effect of constraint" (ibid., p.170).

In his perspective, ethics (aim) take precedence over morals (duty): “morality is held to constitute only a limited, although legitimate and even indispensable, actualization of the ethical aim, and ethics in this sense would then encompass morality” (Ricoeur, 1992, p.170). Still, the ethical aim needs to be passed through norms in order to ensure its universality; conversely, moral rules need to be confronted with the ethical aim to ensure that they indeed allow the individual to achieve “the good life”. Therefore, they are critically examined before being accepted as legitimate, a process that allows them to become truly autonomous. Once accepted as legitimate, they are followed as if they had been arrived at independently. According to Ricoeur, this “self-legislation” (i.e. following self-administered rules) is the equivalent of the highest form of freedom (Ricoeur, *ibid.*, p. 273). This aspect also offers tangible grounds to build organizational systems of rules that empower rather than constrict individual action.

However, there are times where norms are confronted with a ‘practical impasse’” (*ibid.*, p.170), i.e. where rules contradict one another, or none apply. In such situations, deliberation, i.e. the critical examination of the general rules with regards to the particulars of the situation, may lead to practical wisdom, a result of “the moral judgment in situation and the conviction that dwells in it” (*ibid.*). This conviction rests on the principle of solicitude, ultimate expression of the ethical aim of “the good life”; Ricoeur defines solicitude as an action carried out “in favour of others, out of consideration for others” (*ibid.*, p. 222). The Challenger launch decision may be seen as a typical “practical impasse”: a deontological rule, i.e. ensuring that launch can proceed as scheduled, is conflicted with another one, the need to ensure crew safety. In Ricoeur’s perspective, such a situation would require that the rules being opposed are explicitly recognized as such, a prerequisite to determine how they are conflicted – with one another and with the situation’s particulars. If it is found that no rule can be applied without contradicting another one, an ad hoc decision would have to be made, that would respect the fundamental principle of solicitude, all the while remaining as close as possible to the rule that schedule must be respected.

Finally, Ricoeur contends that ethical action requires a fostering environment, which ideal-type he terms “just institution”. Constructed in such a way that individuals truly have the liberty to reach for an ethical life, it designates the “being-with” structure of a specific, historical and cultural community, built on common customs and not on

constraining rules (Ricoeur, 1992, p.194 and following). In this perspective, an institution appears as a space allowing power-in-common, which is based on two pillars, plurality and dialogue. According to Ricoeur, it is the willingness to act and to be together that is at the heart of justice, which defines the just institution. To him, justice constitutes another “point of application” for ethics (ibid.). Indeed, it looks in two directions, the direction towards the “good”, where it extends the aim of the good life to interpersonal and collective relationships, and the direction towards the “legal”, thanks to which the legal system can be coherent and assume the right of coercion (ibid.). Justice therefore refers to both the legal system, and to the “sense of justice” (i.e. the “good”) it triggers in individuals. This very quick description of the just institution shows that the workings of ethics which are found at the individual level are reflected at the institutional level. As such, it offers a key to articulate a macro (possibly, organizational) setting, with the micro level of agency, thereby finishing to establish it as a heuristic to understand how ethical actions can be carried out in organizations.

To sum up, it seems that before the decision to launch the Challenger shuttle, some of the actors intuitively grasped some of the salient features of the situation, which led them to feeling concerned and expressing prudence, i.e. recommending that the launch be delayed until more favourable conditions could be gathered. However, the remainder of the phronetic path, i.e. explication of the terms of the dilemma, confrontation through a process of deliberation, and conception of an ad hoc ethical solution, were missing. Phronesis is often considered as being a fleeting phenomenon, that can only be grasped after the fact (e.g. Mackay et al, 2014). It is indeed, in the sense that, being primarily anchored in the ability to grasp the particulars of a situation, phronetic intuitions cannot be predicted, or the conditions for their emergence systematically described.

Still, using Ricoeur’s conceptualization, we can better understand how a phronetic intuition leads to an ethical decision, and possibly identify whether something went wrong in the process, which could ultimately lead to suggesting ways to help its smooth proceeding. Analysing the decision to launch the Challenger shuttle using this prism of analysis should help shed light on this process.

3. Methodology and results

The debates leading to the decision to launch the Challenger shuttle are only accessible through hand-written notes made at the time, and recollections that participants shared during their audition by the Presidential Commission. We chose to focus on testimonies which, in a Ricoeurian perspective, may be seen as offering accounts of the way individuals evaluate and interpret their own actions, thus possibly shedding light on the way practical wisdom emerged and was experienced at the time (3.1). We describe which testimonies we selected and how we analysed our corpus (3.2), before outlining our main results (3.3).

3.1. *Testimonies, a privileged material to analyse ethical intentions and actions*

Vaughan's demonstration of how deviance was routinized is crystal-clear, and the phenomenon undeniably played a role both in the progressive acceptance of growing levels of risk, and in the way the data was finally interpreted on the day before the launch. However, Vaughan's analysis focuses on the broader social and cultural context (Vaughan, 1997, pp.278-279), rather than on the micro dynamics that led to the decision. This is mostly because of the limitations of the material available. Indeed, "For the eve of the launch, only the charts from the Thiokol engineering analysis and some handwritten notes made by some of the participants exist against which we can evaluate what they say", (ibid, p.279). As Vaughan writes, "It is very difficult, if not impossible, to assess the effect of this trauma on post-disaster accounts" and, when faced with tragedy, "we correct history every day, not to fool others but to fool ourselves, because it is integral to the process of going on" (ibid, p.281).

Although these limitations are indeed an issue when one attempts to reconstruct a factual sequence, in the perspective of Ricoeur's ethics, particularly of his concept of "narrative identity", they are actually meaningful. Ricoeur's concept of narrative identity is now well-known in organization studies (e.g. Sparrowe, 2005; Cunliffe, Hibbert, 2016). According to the philosopher, "as for the narrative unity of a life, it must be seen as an unstable mixture of fabulation and actual experience" (Ricoeur, 1992, p.162 162). In his perspective, being able to integrate one's various actions and experiences into a homogeneous tale, oriented towards the good life, is the foundation of individual identity. As 'a subject recognizes oneself in the story one tells oneself about oneself' (Ricoeur, 1985, p. 445), it is by telling their own story, which is the result of the reflexive

evaluation/interpretation of their actions, that a person fully understands who they are and how to act, in a virtuous circle oriented towards the good life. Being able to tell one's experiences requires that one has reflexively evaluated and interpreted their own actions, before making sense of them and integrating them in the continuous construction of a personal narrative. Ricoeur terms the process 'narrative configuration' (Ricoeur, 1990 (1992)). In this perspective, the "hermeneutic effort", i.e. effort to interpret one's actions by interpreting the world around one, is a prerequisite to narrative identity. In other words, the Ricoeurian perspective leads to re-examining the value of testimonies, and to displacing this value from the factual plan, to the ethical one. In that sense, testimonies are a privileged material to analyse the ethical nature of actions and decisions – and therefore, practical wisdom.

That being said, we do not focus on the narrative identity construction of the participants. Indeed, the auditions do offer instances of reflexive evaluation and interpretation, but they are not strictly speaking instances of narrative configuration, in particular because those who speak answer questions rather than structure the narrative in a personal manner. Furthermore, this research focuses on how the unravelling of practical wisdom was impacted by the collective environment, rather than on individual experiences. As a result, we carry out a content analysis of a number of testimonies, in the hope that they reveal what it was during those debates that hindered the unravelling of practical wisdom.

We now describe which testimonies we selected and how we proceeded to code the data.

3.2. *Our corpus: selected Morton Thiokol testimonies*

We focus on Morton Thiokol Inc. (hereafter MTI), the contractor responsible for the Solid Rocket Motors, a part of the Solid Rocket Booster that defaulted during the launch.

Indeed, MTI's recommendation to launch was necessary to go ahead, and it was the MTI team who initially recommended not to launch and wait until more favourable (i.e. warmer) conditions were gathered, before reverting its position. Therefore, it seems fair to expect that it is within the MTI team that debates were the strongest.

Within the MTI team, we focus on six testimonies. We look at the one offered by **Jerry Mason**, Senior Vice President of Wasatch Operations, i.e. hierarchically superior to all other participants, who became famous for having asked his colleagues to "take off your engineering hat and put on your management hat", which is usually considered as one of the tipping points in the decision reversal; **Robert K. Lund**, Vice-president of Engineering, who presented the initial recommendation not to launch under 53°F, which triggered the comment that NASA was "appalled" by the recommendation (which was seen as the first tipping point); **Joe Kilminster**, Vice President in charge of Space Booster Programs, who initially supported the team's recommendation not to launch, and was the one who asked for a caucus when NASA expressed their displeasure at the recommendation; **Allan McDonald**, Director at Thiokol, in charge of the Solid Rocket Motor Project, who was at Kennedy Space Flight Center with the NASA team when the decision to launch was debated and, as such, was expected to sign MTI's official recommendation to launch when the decision was finally reverted – which he refused to do; **Roger Boisjoly**, Senior Scientist and member of the Seal Task Force (i.e. the workgroup that had been put together to address the faulty joints), the most vocal opponent to the launch of the shuttle both before and during the caucus; and finally **Arnold Thompson**, Supervisor in charge of Rocket Motor Cases, who also tried to advocate against the launch before and during the caucus.

Those participants were selected because of the role they played in the build-up to, and final, decision. Five out of six of them were initially opposed to the launch. Yet, the decision was reverted. We therefore started our analysis looking for debates and disagreements, and expected to carry out a content analysis of those debates, which would have helped understand what it was that made prudence go unheard. This was in line with Shotter and Tsoukas' approach (2014), as they analyse the conflicts arising within a junior doctor when she witnessed her senior using drugs. Their aim was to make visible "the inner, experiential, unfolding journey made by practitioners who, at first, find themselves in a bewildering situation (...) which they come to resolve on a best or right line of action, which gradually (like achieving a visual fixation and focus) becomes clear to them", thus presenting the conflictual path walked by the practitioner in question. We now describe how what we found led to reorienting our approach.

3.3. *An inductive process: Looking for traces of dialogue and conflict... and then to their absence*

We coded the testimonies with the qualitative data analysis software NVivo. Our method of analysis is partly inspired by Gioia et al. (2012). We proceed first with an open, inductive coding, “which tries to adhere faithfully to informant terms” (ibid.), and look for concepts before trying to establish similarities between the emergent themes (i.e., constructs).

In parallel of this open enquiry into the text, we looked (in a more deductive manner) for specific expressions of intuition and concern, and for traces of experienced conflict, both internal (i.e. one feeling conflicted about preserving safety to the detriment of the launch schedule, or to launching to the detriment of safety, or about reversing one’s position) or external (different actors disagreeing with each other).

The purpose of these two parallel lines of enquiry was to identify the concepts that were the “building blocks” of the debate and finally led the decision to be reversed, and shed light on how those concepts interacted with the expressions of practical wisdom that must be there – as witnessed by the initial decision not to launch and by the constant opposition of Roger Boisjoly and Arnold Thompson.

The results of this first approach came as a surprise. Indeed, contrary to what we felt was a safe assumption, there were neither any traces of conflict, nor any substantial expressions of concern. For instance, throughout all the testimonies the term “concern” counts 115 instances and is ranked 37. This puts it far behind the word most used, “temperature”, which counts 331 instances, and also behind such descriptive concepts as “ring” (318), “seal” (283), “data” (210), “degrees” (198), “know” (162) or “test” (138), to cite only a few. When appropriated (e.g. “I was concerned”), only 48 instances can be found. Similarly, “feel”, “feeling” and “felt” respectively count 37, 20 and 108 instances; “opinion” counts 35; “conviction” counts 1. This quantitative description is only used to exemplify the qualitative work that was carried out, looking for traces of concern (and synonyms, such as “anxious” or “nervous”) and personal engagement in the debate, to very little avail. The only expressions of personal evaluation that can be found are under the mirror expressions “away from the direction of goodness” (5 instances) and “in the direction of badness” (4 instances), which we will comment in our results sections. The search for traces of disagreement, conflict and even debate

gave even less results, with no accounts of explicit contradiction or even disagreements – other than NASA's comment of being “appalled” by the recommendation: “disagree” (and stemmed words) appears twice³, “debate” once. Instead of disagreements, the notions of “discussions” as part of a “thought process” is usually being used (7 instances), as well as the idea that a “unanimous decision” (5 instances) was not going to be reached – which are both rather euphemistic ways to reflect on opposed positions.

Still, the fact remains that there was an intuition that prudence was necessary, as attested by the initial recommendation not to launch. Consequently, we modified our initial research question, which asked “why practical wisdom was not heard”, and replaced it by “why practical wisdom was not expressed”. Indeed, our initial search in the testimonies showed that the intuition was there, but it was not discursively elaborated, and did not trigger actual debates, as would have been expected if practical wisdom had been fully present.

From a method perspective, this raised the challenge of finding proof of the existence of something that is absent – or at least not present explicitly – a challenge which, ironically, is probably the most pressing one when discussing phronesis in organizations. This leads us to presenting a set of converging elements, that we argue show how practical wisdom could have been expressed to follow up on the initial intuition, and why it was finally silent. They were identified on the basis of our initial, open coding of the testimonies, and systematic re-readings of the testimonies in this new light.

3.4. *Results: The Challenger launch decision, phronesis made silent*

First, we show that there was an implicit, and sometimes explicit, recognition of the ambiguity of the data available, which, as stated by professor Feynman, rendered it useless, or at least insufficient, to make a rational decision. In that sense, the Challenger launch decision was clearly in the realm of practical wisdom, i.e. of reasoned rather than rational argumentation. Second, we argue that the systematic reliance on – and appeal to – quantitative data, prevented arguments from being

³ On the other hand, “agree” and stemmed words appears 29 times.

argued in a reasonable manner. Last, we contend that it was not only reasonable argument, but also reasonable dialogue, i.e. the expression of contradictory opinion, that was impossible. It is therefore in a literal sense that practical wisdom was made silent throughout the sequence that led to the decision to launch the shuttle.

3.4.1. The ambiguity of data called for reason, rather than rationality

20 sections of the testimonies were coded as “Inconclusive data not triggering prudence”, i.e. sections where the person tells about the ambiguity, insufficiency, or contradictory nature of data, being recognized at the time when the decision was made, and still failing to raise some sort of alertness. Instances were found in all of the testimonies. Some of the following quotes illustrate how the inconclusiveness was experienced:

“the challenge came from looking at the total data, because even though we were as concerned about this flight, which was the coldest ever at that time, from Florida a year earlier there was a flight back in the late fall of '85, I think it was probably October, 61-A, was our SRM-22 set, that had some blow-by of the O-rings, no erosion of the primary O-rings, in fact a couple of them. And, this happened to be a launch that had the highest temperature, and so there was some concern that the data was inconclusive” (Allan MacDonald, Presidential Commission, Report 4: 1273).

“Someone on the net commented that we had soot blow-by on SAM-22, which was launched at 75 degrees. I don't remember who made the comment, but that is where the first comment came in about the disparity between my conclusion and the observed data because SRM-22 had blow-by at essentially a room temperature launch.” (Roger Boisjoly, Presidential Commission, Report 4: 1415).

“And so I think that as Marshall pointed out, I think Mr. Mulloy pointed out, he said, you know, the data is just not conclusive at all, and it wasn't because we had a low temperature motor and a high temperature motor,

and we had ten motors in between that showed nothing.” (Robert Lund, Presidential Commission, Report 4: 1461).

“Out of that discussion, we got to the point where we just - we couldn't make a clear conclusion of the effect of temperature on the O-ring performance. And a number of the engineers felt that on that basis we ought to just stay where we were in our flight history and, with the information we had at that point and as far as we had proceeded in our thought process, that appeared to be the right thing to do.” (Jerry Mason, Presidential Commission, Report 4: 1344).

The inconclusiveness of data was therefore explicitly recognized as such when the decision was made, and commented upon, without triggering heightened risk awareness – which Vaughan showed was the result of the routinization of deviance.

It is in those highly uncertain cases that practical wisdom proves particularly helpful: in the absence of clear data, it is both intuition, and the ability to build a reasoning based on this intuition, that may help decide on the right course of action. Such a decision may be considered as an initiative, understood in the strongest sense of starting a new sequence of events in the world (Ricoeur, 1985, p.415-20). Taking an initiative requires that one gives the present its fullest attention. This special attention, where one is “present in the present” (Ricoeur, 1986, p.291), is actually a way of perceiving things, which implies two essential characteristics, the ability to *select* (this object and not that other one) and the ability to perceive *clearly* (I can see better) (Ricoeur, 2013, pp.55-8). These characteristics are anchored not in pre-existing knowledge, but in the ability to truly explore and question the background (ibid., pp.68-9). Ricoeur does not explicitly connect his theory of attention and initiative to practical wisdom, as his work on the concept focuses on the later stage of the deliberation process. However, this is in line with Aristotle’s conceptualization of phronesis as “intuitive reason” (NE, 1984, 1143a11) on which Ricoeur builds.

This position is also in line with the findings Brittain and Sitkin (1990) and, more recently, Erez and Grant (2014), when they gave students a case study replicating the data available at the time the Challenger launch decision was made. As Erez and Grant write, “Although students are encouraged to ask for additional information, in my experience, usually only one team in a class of 13–14 teams asks for the information that provides them with the correct decision. The other 90% of the students in the class just use the information contained in the case and make the common mistake of sampling on the dependent variable.” (Erez, Grant, 2014).

In other words, the exploratory attention characteristic of the early stages of practical wisdom would have helped the participants to the decision explore the background and question the information available, which could have given additional weight to the intuition that prudence was required. Still, phronetic intuition was experienced by some, as indicated by the initial recommendation not to launch. Yet, it appears that it was not enough for prudence to prevail.

This is because the stage of intuition is only the first one in the entire practical wisdom process. In Ricoeur’s perspective practical wisdom is the result of an “arbitrage” (Ricoeur, 1992, p.253), or judgment, that relies on the ability to “deliberate well” (ibid, p.249). To put it differently, argumentation is necessary for a final decision to be made, one based on the conviction that this decision is one that simultaneously respects solicitude while deviating as little as possible from the rules. As Ricoeur writes, argumentation is “the critical agency operating *at the heart* of convictions, argumentation assuming the task not of eliminating but of carrying them to the level of “considered convictions”” (ibid, p.288). In this perspective, practical wisdom can be described as the “reflective equilibrium between the ethics of argumentation and considered convictions” (ibid, p.289).

This seems to be in line with professor Feynman’s contention, during the auditions, that “when you don’t have data, you use reason” (Presidential Commission, Report 4: 1472). However, phronetic intuition did not lead to reasoned argumentation of the conviction that prudence was required. The main reason, it seems, was because of the dominance of rationality as a discursive strategy.

3.4.2. The ambiguity of data called for reason, rather than rationality

The impact on the participants' ability to express their arguments in terms other than quantitative is best exemplified by Roger Boisjoly when he says that "that night we presented the information on the basis of what we knew, and what we knew - and I feel very strongly about it - is that we had a problem with temperature, and it was away from the direction of goodness, and that is my phrase because I can't quantify it, but I always use that. It is away from the direction of goodness" (Presidential Commission, Report 4: 1399).

Indeed, the dominant theme that emerges from the testimonies is the appeal to, and reliance on, positive / quantitative data. 49 sections were coded as such. They include references to reliance on charts, the lack of / need for additional data, and generally, indications that discussions were purely based on technical aspects of the problem. Examples of this state of mind include:

"Well, I never said I was opposed to the launch. I just made a few comments about why I thought some of the data was not appropriate, like the static tests, for saying the O-rings were good to 36 degrees." (Allan MacDonald, Presidential Commission, Report 4: 1284).

"They did look at the other launch and static test temperatures and concluded that they did have a concern. They broke that meeting up and started to do some work. Mr. Maw was to run the calculation of what the O-ring temperature would be if the ambient were 18 degrees" (Jerry Mason, Presidential Commission, Report 4: 1337)

"They felt that we had not demonstrated, or I had not demonstrated, because I was the prime mover in SAM-15, because of my personal observations and involvement in the flight readiness reviews, they felt that I had not conclusively demonstrated that there was a tie-in between temperature and blow-by." (Roger Boisjoly, Presidential Commission, Report 4: 1202)

The entire discussion on whether or not to launch the shuttle therefore revolved around the technical performance of some of the joints. It was not related to the potential implications for the entire shuttle performance, and even less so to the non technical aspects of the mission, such as the life of the crew.

In other words, because of the reliance on rationality, reason was absent from the discussions. According to Ricoeur, rationality is only one of the various forms that reason can take⁴, and it is non-rational reason that is necessary for “argued convictions” underlying practical wisdom to emerge. Roger Boisjoly’s inability to argue his intuition in terms other than “away from the direction of goodness” or “in the direction of badness”, almost childish turns of phrases, and definitely not basis for a convincing argument, exemplifies this absence.

Further, it is not only reasoned argumentation that is missing. The potential implication of a joint failure, i.e. an accident possibly resulting in the death of the crew, is never even expressed, not even by those advocating the most strongly against the launch such as Roger Boisjoly and Arnold Thompson. Expressing surprise at this might be partly a case of hindsight bias. However, in a letter dated from July, 31st 1985, Roger Boisjoly had stated clearly that this was what he feared⁵, showing that he was well aware of the possibility.

This absence may be considered as symptomatic of the participants’ inability to reason teleologically, i.e. with a goal in mind, and of thinking only instrumentally, i.e. with a focus on the means. According to Ricoeur, teleological reasoning is one of the essential features of practical reason and of practical wisdom, which is guided by the need to act with solicitude. In that sense, the focus on technical data and rational argumentation appears as triggering some quite fundamental implications, that go beyond an issue of problem framing; it shows how the very humanity of the

⁴ He conceptualizes practical reason⁴ precisely to offer a construct “that would deserve to be called reason, all the while not limiting itself to technical-scientific rationality” (our translation, Ricoeur, 1986, p.263). Practical reason may be broadly described as the ability to construct a reasoning oriented towards the achievement of an ethical goal, which according to Ricoeur is shared by all human beings and guides every action. Cf. Ricoeur, 1986, pp.264-9.

⁵ “If the same scenario should occur in a field joint (and it could), then it is a jump ball as to the success or failure of the joint because the secondary O-Ring cannot respond to the clevis opening rate and may not be capable of pressurization. ***The result would be a catastrophe of a highest order – loss of human life***” (our emphasis; letter from R. Boisjoly to R. K. Lund, July, 31st 1985).

participants, their ability to remain aware of the fact that human beings were part of the equation, may be obscured by the dominance of rationality.

To sum up, practical wisdom requires that arguments are confronted in a reasoned manner for a “considered conviction” to emerge. However, participants seem to have been unable to argue on terms other than rationality, as indicated by the poverty of the vocabulary used and systematic retort to tangible data. There was literally no expression of concern other than mentioning “concern”, nor a narrative that would have made the potential consequences of not acting with prudence explicit. In other words, practical wisdom was literally muted in the very agents who could have expressed it. In Ricoeur’s perspective, this can be interpreted as the result of an unfavourable environment.

3.4.3. The “just institution”, a requirement for practical wisdom to be expressed

Deliberation, the process which is triggered by practical impasses and (possibly) leads to practical wisdom, is a dialogical process, i.e. one where contradictory arguments are confronted with one another in a constructive manner.

In Ricoeur’s perspective, dialogue is essential to ethics at the individual level – solicitude stems from the recognition of “oneself as another”, i.e. of the simultaneous similitude and difference of all human beings – which is reflected at the collective level of the institution. According to him, “What fundamentally characterizes the idea of institution is the bond of common mores and not that of constraining rules. In this, we are carried back to the *ethos* from which ethics takes its name. A felicitous manner of emphasizing the ethical primacy of living together over constraints related to judicial systems and to political organizations is to mark, following Hannah Arendt, the gap separating *power in common* and *domination*.” (Ricoeur, 1992, p.194). Plurality and action in concert are the two main characteristics conditions of this “power in common” (ibid, p.195). The “just institution”, where the aim of the good life can be found at the collective level of a society, is the environment most favourable to the expression of practical reason and practical wisdom.

Both at the individual and at the collective level, ethics therefore rest on the preservation of differences. Yet, it seems that the sequence that led to the decision precisely denied the ability to diverge. This is what the absence of expressions of

disagreement and conflict, outlined in our “Methodology” section (3.3), seems to suggest: despite recognized differences in the participants’ positions, there are no traces of disagreements, only accounts of an ongoing “thought process”.

Jerry Mason’s contention that “it became a matter of judgment rather than a matter of data, and that is the reason we couldn’t reach a unanimous opinion” (Presidential Commission, Report 4: 1135) also appears symptomatic of a specific understanding of agreements, as being out of reach of individual (reasoned) judgments, and requiring data (and, supposedly, “objective” rationality). On the other hand, the Ricoeurian perspective suggests that initially differing judgments can be confronted dialogically and ultimately lead to a shared decision.

However, it seems that the very possibility of such dialogue was denied by the progressive shutting down of contradictory voices. This is at least one of the possible interpretations of the request for a caucus, and then the reduction of decision-makers to the “managers”, excluding the discordant voices (of the engineers). The request of a caucus intervened after a NASA representative said that he was “appalled” by MTI’s recommendation not to launch, without an actual debate taking place. As to the reduction of the vote to three members, it was not the result of heated debate; Roger Boisjoly even states that “Arnie actually got up from his position which was down the table, and walked up the table and put a quad pad down in front of the table, in front of the management folks, and tried to sketch out once again what his concern was with the joint, and when he realized he wasn’t getting through, he just stopped. (...) I also stopped when it was apparent that I couldn’t get anybody to listen” (Roger Boisjoly, Presidential Commission, Report 4: 1419-20). The decision itself was reduced to a “yes / no” vote, without any argued comments. Further, this reduction of the number of decision-makers was accompanied by a comment by a manager to “put on a management hat” instead of an engineering one, which can be interpreted as an appeal to a shared identity and an invitation to avoid discordance. Finally, Allan MacDonald’s decision not to sign the official recommendation to launch, without arguing for the reasons why he was taking such a position, also points to an inability – or unwillingness – to engage in contradictory dialogue.

To sum up, the discussion was progressively entrenched in an ever-decreasing number of decision-makers, with discordant voices becoming silenced one by one –

literally. In Ricoeur's perspective, such an absence of contradiction would prevent the very possibility of deliberation and, subsequently, of practical wisdom. In turn, deliberation and practical wisdom require an environment where plurality exists and is fostered. This suggests that plurality did not exist in the collective environment in which the decision took place, and that this played as an additional hindering factor of practical wisdom.

4. Discussion

In this paper, we have suggested that the Challenger launch decision could be read as an aborted process of practical wisdom, i.e. a sequence where a phronetic intuition was not followed by a reasoned and contradictory argumentation which could have led to a prudent decision, guided by solicitude towards other human beings – in this case, the members of the crew.

Rather than the traditional Aristotelian concept of phronesis, we have used the concept developed by Paul Ricoeur, which builds on phronesis and expands it. This has led to suggest that the resulting broader concept, termed "practical wisdom", may be described as comprising three phases, 1) the realisation that rules do not apply to the particular of the situation, which could be termed the "phronetic intuition"; this intuition is anchored in an attitude of acute attention to the environment which allows for selective and clear perception 2/ the process of deliberation, which itself may be divided into a dialogical process of confrontation of rules with the particulars of the situation and between one another, and the constructive process of constructing an ethical, solicitous solution, and 3/ practical wisdom, i.e. the ethical decision itself being selected and rolled out.

We have argued that this sequential perspective on practical wisdom is helpful to address our research question, which asked why practical wisdom had not been heard during the conversations that led to the decision to launch the Challenger shuttle. Indeed, we have shown that the high level of uncertainty did require the type of reasoning characteristic of practical wisdom, as rationality could not provide the grounds for a decision, and that the shortcomings of rationality to address the problem had been recognized. Further, there was indeed a phronetic intuition, which transpired

in the initial recommendation not to launch could not be expressed beyond that intuitive stage.

This led us to asking why this phronetic intuition had not been elaborated upon, and practical wisdom had not been expressed through a prudent decision not to launch. Analysing the testimonies of some of the key participants to the discussions, we have shown that the expression of practical wisdom was prevented by two main factors, namely the inability to use modes of argumentation other than rational, and the impossibility to dialogue. The inability to express the problem in terms other than technical, and corollary difficulty to name the possibility of accident and death, exemplifies how participants were reasoning (instrumentally and not teleologically) as well as the limitations imposed by the rational mind-set. The impossibility to dialogue transpired in the progressive narrowing of the participants to the discussion, and in the fact that discordant voices progressively died down, from lack of response.

This is in line with Paul Ricoeur's conceptualization of practical wisdom, where dialogue is key. Indeed, it is necessary for deliberation to happen, i.e. for the constructive confrontation of rules with the particulars of a situation, that leads to "considered conviction": it is also essential to experience solicitude, which stems from the recognition of "oneself as another", i.e. that others are potential subjects of suffering like I am; it is with this internalized other that I dialogue when making a decision, and that leads me to acting with solicitude, i.e. to showing care for others as I care for myself. Further, dialogue is both the condition of possibility and result of the plurality inherent to the "just institution", which is the environment necessary for individuals to act ethically.

Conversely, we suggest that Ricoeur's conceptualization of practical reason lies at the heart of a broader ethical framework that brings together the individual, inter-individual and collective levels of action, thus contributing to the literature on agency (Ermirbayer, Mische, 1998), and offering a heuristic to build more ethical organizations that would foster ethical actions. This is particularly the case in organizations dealing with high levels of uncertainty, as practical wisdom may rest on a phronetic intuition which is necessary to identify salient phenomena that would be more difficult to recognize using purely rational means (cf. for instance McKenna, 2013; Nonaka et al., 2014). More

broadly, practical wisdom is helpful to deal with some of the tensions inherent to organizational life (Antonacopoulou, 2010, Shotter, Tsoukas, 2014).

With this position, our paper joins the growing body of literature arguing that practical wisdom and, more generally, ethics, could help address some of the shortcomings of contemporary organizations (e.g. Solomon, 1992, 2004; Weaver, 2006; Beadle, Moore, 2011; Rooney, McKenna, 2007; MacKay, Zundel, Alkirwi, 2014). However, we would go further and argue that instead of using practical wisdom to address some of the shortcomings of organizations, current organizations could be challenged in their very foundations, so that practical wisdom may stem naturally within them.

This is at least the opportunity that, we believe, Ricoeur's philosophy offers, as it opens the door to an integrated approach of ethical action at all levels of the organization – as we've tried to show throughout this paper. However, the fact that, contrary to our initial assumption, practical wisdom was almost entirely absent from the testimonies which we analysed constitutes a major limitation. Indeed, we've had to prove the relevance of the concept of practical wisdom by building on its absence. This somewhat mirrors the situation in which those who had to prove that the Challenger shuttle was at risk found themselves – albeit with incommensurable implications. This raises the question: how to determine when weak signals, such as the ones that were detected by the MTI engineers, should be paid attention to? Should production – or, in our case, shuttle launches – be systematically stopped, when a member of the group has the intuition that something is going wrong? Obviously, this would not be a realistic position. However, this is not the result of a Ricoeurian approach of ethics in organizations: in this perspective, the answer lies in the ability to balance the stakes and argue the intuition in a reasoned manner, to convince both oneself and others.

Another limitation of our work rests on the fact that the Challenger accident happened in 1986. Do contemporary organizations bear any resemblance at all with 1986 MTI and NASA, and does our work hold any value for them? For instance, would it still be the case today that the possibility of an accident, and of death, would not even be named, given the tremendous amount of attention given to safety since the 1980's? Although it may be the case that organizations have changed, we would argue that the growing body of work dedicated to phronesis, which we've already mentioned, and to concepts such as mindfulness (Weick, Sutcliffe, 2006; Weick, Sutcliffe, Obstfeld, 2008;

Reb, Atkins, 2015) or organizational aesthetics (e.g. Taylor, Hansen, 2005; Hatch, Cunliffe, 2013; Taylor, 2015) attests to the continued need for alternative approaches of organizations, that rely on mechanisms other than rationality. In contexts where the value of intuition is being reassessed, the Challenger case offers an illuminating account of what could be done differently, and of how more ethical organizations could benefit safety.

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