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Healthy mistrust or complacent confidence? Civic vigilance in the reporting by leading newspapers on nuclear waste disposal in Finland and France

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Abstract

Trust and confidence have been identified as crucial for efforts at solving the conundrum of high-level radioactive waste management (RWM). However, mistrust has its virtues, especially in the form of "civic vigilance"—healthy suspicion towards the powers that be. This article examines civic vigilance in the form of "watchdog journalism," as practiced by the leading Finnish and French newspapers—Helsingin Sanomat (HS) and Le Monde (LM)—in their RWM reporting. Although both countries are forerunners in RWM, Finland constitutes a Nordic "high-trust society" while France has been characterized as a "society of mistrust." Employing the methods of frame analysis, key RWM-related news frames were identified, consisting of varying combinations of confidence, skepticism, trust, and mistrust. LM's mistrust-skepticism-oriented framings reflect the classical watchdog role, in sharp contrast with the confidence oriented framings of HS, which tends to reproduce government and industry framings. Explanations for the observed differences can be sought in historically constituted political and media cultures, as well as national nuclear "regimes". For further research, we suggest two alternative hypotheses concerning the

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implications that these distinct models of civic vigilance have for democracy.

KEYWORDS

media frames, radioactive waste management, trust

INTRODUCTION

The “wicked problem” of long-term management of high-level radioactive waste is frequently described as the Achilles' Heel of the nuclear industry. Largely because of local opposition, few countries have made concrete progress in constructing deep geological disposal repositories—the radioactive waste management (RWM) option preferred by national and international authorities since the 1970s (Sanders and Sanders, 2020). A typical repository would consist of a system of tunnels and deposition holes constructed in stable geological formations at a depth of 400–600 meters. Both engineered (e.g., copper and iron containers in which the waste is packaged) and natural (essentially, the host rock) barriers are designed to isolate the waste from the living environment for up to 100,000 years, that is, the time needed to bring down radioactivity to background levels.

To achieve public acceptance for repositories, national authorities and industry have sought to build confidence in the safety of a repository project and trust in the responsible organizations and individuals (e.g., Dawson & Darst, 2006; Di Nucci, 2019; Ferraro, 2019, pp. 140–148; Kaspersen et al., 1992). However, far less attention has been paid to the potential virtues of mistrust and distrust, notably in the form of “civic vigilance” that could strengthen the societal vetting and robustness of these projects (Lehtonen et al., forthcoming; Zukas, 2018). The general democratic virtues of mistrustful “civic vigilance” are well-known (e.g., Rosanvallon, 2006; Warren, 1999). In RWM, such potentially constructive forms of mistrust include “civic regulation,” whereby civil society exerts pressure on project promoters and implementers, for example, through safety regulation (e.g., Litmanen et al., 2017) or processes of Social Licence to Operate (Litmanen et al., 2016; Lehtonen et al., 2020); as well as active monitoring and surveillance of repository projects by the host municipalities (e.g., Elam & Sundqvist, 2009; Kari et al., 2021).

This article focuses on another form of civic vigilance, which has received limited attention in RWM, namely the role of the mass media as a “watchdog” of the powers that be—through the provision of objective, fact-based and critical information to citizens (Jebril, 2013), in expressing “healthy suspicion” and mistrust towards the powers that be, and thereby helping the citizens to hold political, economic and cultural elites to account (Allard et al., 2016, p. 14; Kojo et al., 2020; Laurent, 2009, p. 27; Warren, 1999, p. 310). We examine the manifestations of such civic vigilance in news articles on RWM policy in the leading newspapers in Finland (Helsingin Sanomat [HS]) and France (Le Monde [LM]), two forerunner countries in high-level RWM. Starting from the assumption that the mass media both reflect and contribute to (re)constructing the expressions of civic vigilance, we examine the ways in which these newspapers frame the national repository projects. The empirical analysis explores the forms of journalistic civic vigilance as varying combinations of confidence, skepticism, trust, and mistrust relating to RWM in general and the repository projects in particular. Drawing on earlier research, we reflect upon the role of the political and media cultures of the two countries in explaining the differences and suggest further research concerning the possible consequences of different forms of civic vigilance in distinct media and political cultures.

The analysis covers the period 2005–2018, that is, when both countries' repository projects were advancing towards implementation. The comparison is particularly instructive, given the highly distinct trust contexts in Finland and France. While Finland boasts exceptionally high levels of trust, France can be characterized as a society of mistrust, in terms of citizens' trust both in institutions and in their fellow citizens (Agacinski, 2018; Melin, 2009; Special Eurobarometer, 2017). Our analysis reveals significant variation in the ways in which LM and HS execute their civic vigilance function, notably between the confidence-focused framings of the latter and the mistrust-skepticism framings of LM. The differences reflect country-specific features relating to historically constituted power structures in the nuclear sector, political and media cultures—in particular, the contrasting traditions of civic vigilance—and the positions of the respective nuclear “regimes” in public imaginaries. Both manifestations of civic vigilance have their own strengths and weaknesses and gain their effectiveness and democratic value in mutual interaction with the evolving country-specific context.

The next section presents the key concepts relating to trust, confidence, and framing. Section three briefly describes the main features and milestones of Finnish and French radioactive waste policies. Data and methods are presented in section four, and the results of the frame analysis in section five. Section six discusses the findings, and section seven concludes.

THE CONCEPTUAL FRAMEWORK

Our conceptual framework consists of two key elements. First, building on social science literature on trust and mistrust, we distinguish between four interrelated key concepts: trust, mistrust, confidence, and skepticism. Second, we employ frame analysis as a method for operationalizing these concepts in our empirical study.

Trust, mistrust, confidence, and skepticism

Two partly interrelated pairs of concepts serve as the starting point for our analysis: trust-mistrust, and confidence-skepticism. Trust can be broadly defined as a situation in which an individual accepts to “believe without knowing,” thereby placing herself voluntarily in a position of vulnerability (Laurent, 2009). Mistrust often operates in connection with trust. It can manifest itself as an *attitude* stemming from doubt or fear, leading to a passive and prudent “wait-and-see” stance, or as a *strategy*, a skill or an art, designed to help deal with a risky or uncertain reality (Allard et al., 2016, p. 10).¹

While trust relies on an individual's “judgment of similarity of intentions or values,” **confidence** is defined as “the belief, based on experience or evidence, that certain future events will occur as expected” (Earle & Siegrist, 2006, p. 386). Trust is based on “morality-relevant information,” relating to the perceived quality of a relationship between parties, whereas confidence relies on “performance-relevant information,” that is, tangible historical evidence and appraisals of prevailing structures and processes (Kinsella, 2016, p. 231). We define **skepticism** as the counterpart of confidence—reflecting the absence of compelling past experience, rules, regulations, or norms underpinning confidence. In RWM, people would typically pass judgement on the trustworthiness of organizations and individuals, and show confidence or skepticism in relation to the technical RWM solution (e.g., Mays et al., 2003).

Three basic assumptions underpin our analysis. First, the viability of a repository project requires that the affected populations trust the responsible public and private actors

and have confidence in the project in question (e.g., Kinsella, 2016; Lehtonen et al., forthcoming; OECD-NEA, 2003). Second, the media constitute a key player in enhancing or undermining trust and confidence, but also in exercising civic vigilance, acting as a “watchdog.” In doing so, the media constantly straddle the three key elements of the watchdog model of journalism, namely objectivity, factuality, and critical coverage (Jebriil, 2013). In seeking to strike a balance between objective reporting of “facts” on the one hand and critical scrutiny of those “facts” on the other, watchdog journalism mobilizes—in varying combinations—trust and mistrust, confidence and skepticism. However, the interaction between those elements varies according to the context, including the general trust and mistrust relations in the society in question: depending on the situation, mistrust and skepticism can either erode trust and confidence or be their essential prerequisites. The watchdog model is founded on the classical liberal conception of the power relationship between government and society (McQuail, 2005, p. 128), and hence on the mistrust-based liberal model of democracy with its pluralistic view of social power. While watchdog journalism has been blamed for sensationalism and indiscriminate critique (Clayman et al., 2007, p. 24) that can feed apathy and cynicism about politics (McNair, 2003) and undermine news credibility (Wang & Cohen, 2009), our primary interest lies in the differences in the manifestation of watchdog journalism in trust-based Nordic democracies on the one hand and mistrust-based liberal democracies on the other (e.g., Jasper, 1990; Kojo et al., 2020; Lehtonen & De Carlo, 2019; Montin, 2015; Puustinen et al., 2017). Although the watchdog model is generally “well received by audiences across Europe” (Jebriil, 2013, p. 14), and despite similarities between the Finnish and French journalistic cultures (e.g., the strong public-service broadcasting), we suggest that differences between mistrust-based and trust-based democracies mirror distinct citizen perceptions of what the watchdog role implies, its key elements of objectivity, factuality, and criticality, and what role trust, mistrust, confidence, and skepticism should play in journalism.

Third, although the mass media never fully determine the public opinion (Nisbet & Newman, 2015, p. 362), they crucially shape policy agendas and “issue frames” (de Vreese, 2005). Hence, media can either enhance or undermine trust and confidence as well as mistrust and skepticism towards RWM solutions and actors. Despite the rising importance of the Internet and social media especially amongst the younger generations (Matikainen et al., 2020, pp. 59–60), at the national level, the “traditional” media (i.e., press, television, and radio) still constitute a key source of information and agenda-setter concerning RWM (Hedberg, 1991, p. 59; Kojo et al., 2010, p. 173; Raittila & Vehmas, 2001, p. 10). The frames and framing processes, in turn, are conditioned by factors both internal and external to journalism (de Vreese, 2005). The former include in particular the editorial policy and political orientation of the newspaper (e.g., Carvalho & Burgess, 2005). Our choice of two newspapers with similar political orientation and role in their respective societies minimizes the influence of this variable. The variation in the civil vigilance exercised by these newspapers is, therefore, more likely to owe to external factors, such as the interaction between journalists and elites, the evolving relationships between the state and the civil society (de Vreese, 2005), the differences in the political communication culture (Doyle, 2011; Pfetsch, 2004), and the role of the respective national nuclear energy and nuclear waste “regimes.”

Frames and framing

According to Goffman (1986), a “frame” is a schema of interpreting reality. It provides a way of organizing the experience and describing the event in question, that is, making

sense of “raw” information, giving it meaning and coherence (Goffman, 1986). Through framing processes, societal actor groups select and emphasize particular aspects of the perceived reality, thereby shaping not only attention to specific topics, but also which problem definitions, interpretations, moral judgements, and/or policy recommendations come to prevail (Chong & Druckman, 2007; Entman, 2007; Nisbet & Newman, 2015, p. 362). Media frames organize information both for journalists and those who rely on them—the framing of an issue in the media shapes the ways it is understood by various audiences (Scheufele & Tewksbury, 2007).

In the existing literature, definitions of framing and suggested means for identifying frames abound (Vliegenthart & van Zoonen, 2011, p. 105, see also e.g., Kristiansen, 2017). There is no general “framing theory” that would exactly show “how frames become embedded within and make themselves manifest in a text” (Entman, 1993, p. 51). We adopt an inductive approach, relying primarily on the works of Gamson (1992) and Entman (1993). Endorsing these authors’ view of frames providing “thematically reinforcing clusters of facts or judgments” (Entman, 1993), we adopt their typology of four framing functions. However, we extend framing to cover not only problems but also other kinds of situations, events, undertakings, and occurrences (Goffman, 1986; Vliegenthart & van Zoonen, 2011). To identify specific issue frames relating to RWM, we analyze the news items related to the final disposal projects in Finland and France, searching for either explicit or implicit expressions of four framing functions, all of which do not necessarily feature in each individual text:

1. Definition of a situation, issue or problem related to the final disposal.
2. Diagnosis of causes or reasons for the situation as it is portrayed in the given news media.
3. Evaluation or judgement concerning the situation and possibly the actors involved.
4. Suggested course of action.

The next section provides a context to the Finnish and French RWM policy.

RWM IN FINLAND AND FRANCE

Finland

Four nuclear reactors, taken into operation in the late 1970s and early 1980s, currently supply one-third of Finland’s electricity. A fifth unit—a French-built European Pressurized Reactor, EPR—is scheduled to start regular electricity generation in Eurajoki in February 2022, after repeated delays, while a sixth reactor, by the Fennovoima consortium, is at a planning phase. The government and the majority of MPs have usually given their support to the nuclear power projects proposed by the utilities—owned mainly by the private energy-intensive export industry and the state. Successive governments have, since the 1980s, confirmed their commitment to the schedule established in 1983 and since the mid-1990s to geological disposal.

Internationally, Finland is often portrayed as an exemplary case of democratic and consensual governance of nuclear waste (e.g., OECD-NEA, 2003). Long-term preparation, clear definition of responsibilities, solid regulatory framework, and consistent implementation of the RWM management laid out in government decisions in 1978 and 1983 have been highlighted among the key reasons for the easy and nearly conflict-free advancement of the repository project (Lehtonen et al., 2020; Vira, 2017; Vuorinen, 2008). The repository is to become operational in the 2020s.

In reaction to legislative reforms banning waste exports and imports, the nuclear utilities, the state-owned company IVO (today, the 51% state-owned Fortum and Heat Ltd.) and the privately-owned TVO, established in 1995 a joint waste management company, Posiva, to implement the repository project. Until 1996, IVO exported its spent nuclear fuel to the USSR, whereas TVO had searched for a repository site since the 1980s. Local opposition in candidate municipalities had pushed TVO to pay greater attention to stakeholder involvement since the late 1980s (Kojo, 2009). However, a true milestone was passed in 1997–99, as Posiva organized an exceptionally long and participatory process of Environmental Impact Assessment (EIA), made mandatory a couple of years earlier. Four municipalities were considered, but Posiva had already shifted its focus to Loviisa and Eurajoki, the two nuclear municipalities, where it expected little resistance. Following assurances of safety and an agreement on a local benefit scheme, the municipal council of Eurajoki gave its approval for the repository project in 2000 (Kojo, 2009; Lehtonen & Kojo, 2019). This paved the way for an almost unanimous parliamentary ratification of a government Decision-in-Principle (DiP) in May 2001.

DiP is not a license (e.g., Vira, 2017, p. 648), but instead a decision confirming that the project is in line with the overall good of society. However, the 2001 DiP was widely interpreted as a demonstration that the nuclear waste problem had now been solved (Raittila & Suominen, 2002). Posiva launched the construction of an underground rock characterization facility in 2004. In 2015, it obtained a construction license for the final “Onkalo” repository, to be built in granite bedrock, according to the Swedish KBS-3 concept (Vira, 2017). For an operation license, Posiva needs approval from the safety authority, STUK (Mäenalanen, 2019).

In public debate, the private-industry arrangement has been frequently portrayed as a national solution to the waste problem. However, this image crumbled as Posiva rejected Fennovoima's plan to dispose of its waste at Olkiluoto. Despite political pressure, Posiva did not give in, and Fennovoima had to start searching for a site for its own repository in 2016 (Kojo & Oksa, 2014; Vilhunen et al., 2019). The companies do collaborate, however, as Posiva's subsidiary, Posiva Solutions, delivers expert services to Fennovoima.

The Finnish regulatory culture in the nuclear sector has been characterized as “flexible, development-oriented and, as such, oriented towards gradual learning and refinement” (OECD-NEA, 2003, p. 12; see also Mäenalanen, 2019; Vira, 2017, pp. 649–650; Vuorinen, 2008) entailing close collaboration between the regulator and the license applicants (Litmanen et al., 2017). This culture is paralleled and underpinned by exceptionally strong trust among Finns in key RWM actors, and mild local and national opposition against the project. As many as 82% of Finns, locally and nationally, trust in STUK as a source of information (Kojo et al., 2012; Vilhunen et al., 2019). Currently, Eurajoki has a nearly symbiotic relationship with the nuclear companies essential for its prosperity and has been willing to fully delegate risk-related analysis to the safety authority (Kari et al., 2021; Litmanen et al., 2017). According to recent polls, an increasing number (about 50%) of citizens consider nuclear power as an environmentally friendly form of electricity production (Finnish Energy, 2019).

France

The nuclear sector has since the 1950s occupied a special place within the French state, as a major export sector enjoying wide cross-party support until the mid-1990s, that is, the emergence of the Green party as a significant political actor, a key actor in

the country's post-War modernization, and a source of national pride (Hecht, 2009). With 57 operating reactors supplying over 70% of its electricity needs, France is by far the leading nuclear nation in Europe. A highly problematic EPR project has been underway in Flamanville since 2007, expected to go on-line in 2023 at the earliest. The government is committed to reducing the share of nuclear in electricity supply to 50% by 2035.

The French repository project has a long and conflict-ridden history (e.g., Barthe, 2006; Blowers, 2016). The government set up, in 1979, the National Radioactive Waste Management Agency (Andra) to implement geological disposal. The relatively high trust in state institutions and engineering elites quickly deteriorated in the late 1980s, with the discovery that the authorities had downplayed the true extent of the Chernobyl fallout in 1986 (Ambroise-Rendu, 2018; Kalmbach, 2015), and following the vehement local opposition against Andra's site investigations in 1987–1990 (Barthe, 2006). To re-establish trust, the government declared a moratorium on investigations in 1990, reinitiated the search in 1991 to include three different RWM options, and opened the discussion to a wide range of actors (Barthe, 2006). The landmark Waste Act 1991 introduced the ideas of reversible geological disposal and community benefit schemes and led to the establishment of multistakeholder commissions, external evaluating bodies, and local information and liaison committees (CLIS). These added further complexity to the multilevel governance of the project.

Towards the late 1990s, local conflict erupted again, in the context of declining public trust in the governance of risk, and following the government decision to site the underground research laboratory (URL) in Bure. Local opposition in the other candidate communities soon turned Bure into the *de facto* only candidate for hosting a repository (Blowers, 2016). The 15-year period of “opening up” inaugurated in 1991 culminated in a mandatory public debate organized in 2005–06 by the National Commission on Public Debate (CNDP). Although even many of the observers critical towards the repository project acknowledged the democratic quality of the debate (Global Chance, 2006, p. 64), trust in RWM institutions suffered because long-term subsurface storage—an option introduced by the public debate—was excluded from the subsequent parliamentary debate preparing for the 2006 Waste Act. A parallel Act on nuclear transparency and security gave birth to a fully independent safety authority (ASN), assisted by the technical support organization, IRSN.

In 2010, the government approved Andra's proposal for the creation of the repository, Cigéo.² In 2013, the mandatory CNDP debate on Cigéo turned into a farce, following persistent obstruction by opponents (Blanck, 2017). In 2016, Parliament adopted a law specifying the details of the project, including those relating to the principle of reversibility. Although supported by most parliamentarians, departmental authorities, business organizations, trade unions, and mayors in the region, the project continues to generate controversy and has led to clashes between opponents and the police.

Andra plans to start construction in 2022, a pilot testing phase in 2030, and operation in 2035. Like in Finland, the financing for the project comes via taxes levied on the largely state-owned waste producers: EDF, Orano (until late 2017, Areva), and the national nuclear R&D agency, CEA.³ Unlike Finland, France has opted, for the time being, for reprocessing its spent nuclear fuel, with only the reused SNF considered as waste.

As many as 78% of the local population trusts in the safety of the repository and 63% in Andra as a source of information on the project (Ifop, 2016, p. 6). National-level surveys reveal a discrepancy between the strong (76.5%) confidence in the

competence of safety authorities and relatively low trust in their sincerity in telling the truth about nuclear risks (40% for ASN and 57% for IRSN; IRSN, 2017, p. 129).

DATA AND METHODS

HS and LM as the leading daily newspapers in Finland and France

Both HS and LM occupy a similarly central position in their respective countries' media landscape. HS is Finland's only major national daily newspaper and the second-most trusted news producer (after the public broadcasting company, YLE). It has a wide readership—17% of the population reads the paper and 27% the online version weekly (Matikainen et al., 2020, p. 19; Newman et al., 2019). HS declares itself politically independent. It holds, in international comparison, a unique position as Finland's uncontested number one nationwide newspaper shaping public agendas and public opinion. This position is further reinforced by its editorial resources overwhelmingly superior to those of its rivals (Jensen-Eriksen et al., 2019, p. 7). Like the Finnish press in general, HS has rather consistently supported nuclear power as a reliable source of baseload electricity vital for the country's energy-intensive export industry (Antal & Karhunmaa, 2018, p. 999; Haavisto, 2008; Teräväinen, 2014; Teräväinen et al., 2011).

LM is the most read daily newspaper in France. Its paper version is read weekly by 8% and the online version by 13% of the population. Officially independent, LM is often qualified as politically center-left. In a reader poll in 2014, 64% of the respondents qualified themselves as left-wing (Newman et al., 2019). However, earlier research has revealed significant intermedia consistency across French newspapers, LM, therefore, largely reflecting the general French media agenda (Blanchard, 2010, pp. 325–334; Brouard & Guideaudeau, 2015, pp. 148–149).

The crisis of the “traditional” media has strongly affected both newspapers (Flamino, 2016; Jensen-Eriksen et al., 2019, pp. 370–379, 413). However, as many as 71% of the Finns consider the HS news coverage as reliable (Matikainen et al., 2020, p.19). LM has maintained its position as a “newspaper of record” (Flamino, 2016) and as the most trusted news producer in France (Newman et al., 2019, p. 20), shown to have played a central agenda-setting role in the French media landscape also with respect to nuclear policy (Blanchard, 2010; Brouard & Guideaudeau, 2015).

A recent survey placed Finland as the country with the highest citizen (59%) trust in the news media, while France (24%) was near the bottom of the scale (Newman et al., 2019, p. 20).⁴ In both countries, this trust has been in decline, in France most recently due to the “Yellow Vest” protest, with journalists being attacked for “being part of the establishment” (Newman et al., 2019, p. 20).

Data collection

A search was performed for news articles published in HS and LM between January 1, 2005, and December 31, 2018. During this period, nuclear energy was highly present on the French and Finnish media agenda, reflecting the possible French-led nuclear renaissance and new nuclear reactor projects in Finland (Brouard & Guideaudeau, 2015; Szarka, 2013; Ylönen et al., 2015).

For **HS**, a search on the newspaper's own online database was conducted, with the following search terms: nuclear waste, final disposal, Posiva, STUK, and

radioactive—using the root forms of the words in Finnish (ydinjät, loppusij, Posiva, STUK, and radioaktiiv) to capture their different declensions.

The initial search resulted in a corpus of 1624 items, subsequently narrowed down by removing the items that

- were not true news items (referrals to actual news items, chronicles, etc.)
- addressed another type of waste than spent reactor fuel (military waste, low and intermediate level wastes, contaminated materials, etc.)
- referred to transport, storage, reprocessing or dumping of waste (unless the item itself referred to actual final disposal).
- did not concern final disposal in Finland.

Of the remaining news items, only 135 articles with the Finnish final disposal project in a relatively significant role were chosen for analysis.

LM articles were collected via the Europresse database, including articles published both in the paper and electronic versions of the newspaper. Applying Boolean search operators, the following keywords were used: radioactive waste (déchets radioactifs) OR nuclear waste (déchets nucléaires) OR Andra OR geological disposal (stockage géologique) OR dumping of waste (enfouissement des déchets) AND ASN OR *IRSN*. The objective was to capture all articles relating to RWM, as well as those that mentioned safety authorities but only in connection with the disposal project. The Prospéro sociolinguistics software,⁵ designed for the analysis of large text corpora (e.g., Chateauraynaud, 2003), was used to further narrow down the primary corpus of 1731 articles. This was done in three steps.

First, all those articles in the primary corpus were included in which the “principal actors”⁶ included various versions of the terms “radioactive waste,” “Andra,” and “Cigéo” (the name of the disposal project). This resulted in a secondary corpus of 252 articles.

Second, the primary corpus was submitted to a different type of selection procedure, identifying articles containing any of the following four alternative combinations of entities:

1. ASN and radioactive waste.
2. IRSN and radioactive waste.
3. ASN and Andra.
4. IRSN and Andra.

Combining the resulting 237 articles with the 252 obtained at the first elimination round resulted in a corpus of 438 texts (once doubles had been removed).

Third, the corpus of 438 texts was narrowed down to a total of 210 articles by selecting only those in which the entity radioactive waste (including its varying declensions) was a “principal actor.”

Analysis of the data

The frames were identified qualitatively in the news articles (Buhr & Hansson, 2011). The procedure combined close reading, that is, “the mindful, disciplined reading of an object with a view to a deeper understanding of its meanings” (Brummett, 2019) and a hermeneutic approach, whereby a progressive deepening of understanding of the phenomenon is acquired via a series of consecutively revised interpretations moving

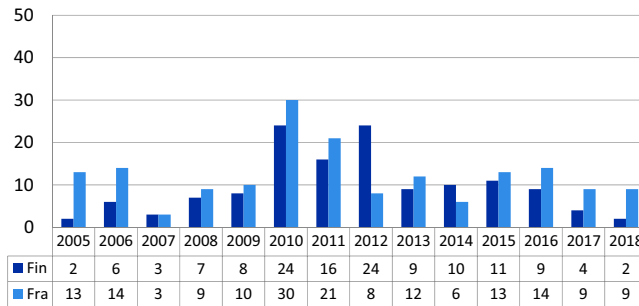


FIGURE 1 Narrowed data set in HS and LM. HS, Helsingin Sanomat; LM, Le Monde

back and forth between the specific and the general. The first phase of close reading also allowed further narrowing down of the French corpus to 171 articles, via the elimination of nearly identical doubles, and articles in which the French repository project was only in a marginal role.

The analysis was guided by the objective of identifying expressions of framing functions (see section *The conceptual framework* above) and examining how these combined with each other to form framings. We explored the frames as they emerged from the material, identifying the key problems, events, situations, and undertakings addressed in the texts. The several iterative reading rounds allowed us to continuously re-examine the texts, refine our interpretations of frames and frame categories, and reinterpret the texts in light of the new categorizations (Figure 1).

RESULTS

This section presents the frames identified in HS and LM news reporting, via a search for either explicit or implicit expressions of the four framing functions outlined above in the second section: 1) definition of the situation, issue, or problem; 2) diagnosis of causes; 3) evaluation; 4) suggested course of action. This analysis led us to identify the diverse expressions of trust, confidence, mistrust, and skepticism as central structuring elements in both newspapers.

Helsingin Sanomat (HS)

Analysis of the Finnish corpus revealed six frames (see Table 1). The dates in brackets refer to the publishing dates of articles that illustrate the frames in question.

Confidence in the governance of the project

The first frame manifests significant confidence in the governance of the project, and trust in the responsible actors. The news items describe that the project is advancing well, close to the schedule established by the government in the early 1980s (16/10/2009)—a timetable that leaves plenty of leeway for dealing with possible complications (e.g., 16/03/2005; 25/04/2006). This prominent and relatively unambiguous frame is present throughout the corpus, but over time becomes somewhat overshadowed

TABLE 1 Summary of frames and frame elements in HS (Finland)

Frames	Definition of a situation, issue or problem	Diagnosis (causes)	Moral judgment	Remedies
Confidence in the governance of the project	Project proceeds largely on schedule	Thorough and persistent work No surprises. Realistic timetable	Overall progress has been good and the timetable leaves room for dealing with complications	Implicit: No need for significant changes
Confidence in the integrity of the disposal concept, trust in Posiva's diligence	Repository's ability to contain the threat posed by SNF	Possibly faster-than-predicted copper corrosion; the effects of new ice ages	Copper corrosion is not an issue Finnish bedrock is among the most stable in the world. Potential problems have been anticipated	The project can proceed as planned
Confidence/skepticism concerning communication towards future generations	The problem of informing future generations	The extremely long time during which waste remains dangerous How to reliably communicate warning?	Communication can be difficult because language and meanings change. But might be better not to communicate, to avoid intrusion	No hurry. The present generation constructs the repository; future generations decide on its possible closure
Confidence/skepticism concerning nuclear power as part of a clean energy future	Is nuclear power an environmentally friendly energy source?	Low emissions but big waste problem. May hinder the deployment of other energy technologies	Ambivalent: "irresponsible" choice or the "only real available" option?	Nuclear and renewables should not be set against each other
Cracking trust between the companies	Disagreements between companies on the disposal of Fennovoima waste	Onkalo originally presented as a national solution, but Posiva actually tends to its owners' interests. Legal uncertainty on whether the state can overrule Posiva	Both parties to blame; Posiva for rejecting the "national solution," and Fennovoima for not having explored other options	Co-operation is necessary – Posiva's knowhow should not be wasted. Co-operation could take several forms
Confidence in Finland as a forerunner	Finland's international role in the nuclear waste management sector	Leading countries: Finland, Sweden, France. Parliamentary decision and local support backing up the project; Close co-operation with Sweden	Finland is likely to be first to start final disposal, and a leader in expertise on repository mining	Be proud of (and disseminate information on) the virtues of the Finnish project

by reporting on nuclear new-build and cross-company relations concerning final disposal. The articles underline the thoroughness and persistence of the work undertaken and rehearse Posiva's statement that no real surprises have emerged (25/04/2006). The newspaper concludes that preparations towards the construction phase have advanced well, with Posiva having already completed about a half of the excavations by autumn 2015 (13/11/2015). HS recalls key historical and future milestones of the project (16/03/2005; 29/12/2012). Most articles take it practically for granted that the project can proceed as envisioned. The frame reflects confidence in the ability of the authorities to set up a feasible long-term timetable, and of Posiva to keep up commendable performance over time. Safety is attainable, thanks to Posiva's high competence, and because there is time for ironing out the wrinkles—and even for technology to develop (16/03/2005).

Confidence in the integrity of the disposal concept, trust in Posiva's diligence

This frame concerns the final disposal concept's integrity over extended periods of time, that is, the ability of the repository to contain the long-term threat posed by SNF. Although a few news stories mentioned uncertainties regarding the speed of copper corrosion, referring to Swedish research suggesting that the rate of corrosion might turn out to be much faster than expected (19/12/2012; 28/12/2012), most reporting related to this frame concerned the repository's ability to withstand the effects of future ice ages. HS underlined that the Finnish bedrock is among the most stable in the world (e.g., 23/05/2010; 03/03/2012) and that according to STUK, possible problems (e.g., water pressure changes, fracturing) have been identified and appropriate solutions designed (23/05/2010). HS evokes Posiva's arguments that “whatever happens above ground, whether an ice sheet or warmer conditions, it will not affect the conditions underground” (15/06/2018), and that the Swedish findings on copper corrosion do not constitute a concern, because test conditions significantly differ from those in the repository (28/12/2012). Just as in the previous frame, safety is seen as attainable and the project can proceed as planned. This framing reflects trust in Posiva's diligence, competence, and willingness to fulfill its responsibilities and successfully implement the needed safety measures.

Confidence/skepticism concerning communication towards future generations

The frame concerning communication towards future generations relates to the problem of informing distant future generations about the long-term radiation risks from the repository. HS describes the difficulties of reliably communicating far into the future, so that future generations would correctly understand the warning, despite the inevitable changes in languages and meanings attributed to signs. The newspaper notes that reproducing facial expressions might constitute a nearly universal “language” (26/09/2006), but in a later article suggests that it might be best not to communicate at all, in order not to attract the attention and curiosity of potential intruders (16/05/2010). HS recognizes the difficulty of designing appropriate warning signs, and the fact that several countries are working towards this objective, but recalls Posiva's statement that the final choice on closing the repository will be made by future generations (08/05/2010). This framing entails ambiguities and tensions between

partly contradictory views, notably those (a) calling into question the very possibility of informing distant future generations, (b) evoking possible solutions, and (c) questioning whether the problem exists at all, at least in the near-to-medium term. HS expresses trust in Posiva's ability to schedule its actions appropriately, and to address the issue of long-term communication if and when necessary. Here we find a link with the first frame, *confidence in the governance of the project*, which underlines that the project timetable allows leeway for managing possible complications.

Confidence/skepticism concerning nuclear power as part of a clean energy future

As part of this frame, HS frequently evokes nuclear energy's standing and image as a clean energy source, specifically with the nuclear waste issue in mind. It juxtaposes nuclear power's low greenhouse gas emissions and role in mitigating climate change on the one hand, and dangerous, long-lasting wastes and possible adverse effects on the development and deployment of renewable energy on the other. HS furthermore notes that decisions regarding energy sources affect also global sustainability and safety—hence, the frame connects with that of Finland as a forerunner country (section *Confidence in Finland as a forerunner*). This frame does not provide a definite judgement of the situation. The articles report largely, but not exclusively, on standpoints of different parties and politicians relating to nuclear new-build. The claims range between one that describes the use of nuclear power as irresponsible (e.g., 14/05/2010) and another that sees nuclear power as the only option in the current situation, notably in view of climate change (e.g., HS 21/03/2006). The frame is somewhat clearer on the advocated course of the action, with several articles suggesting that nuclear and renewables should not be pitted against each other (e.g., 13/12/2009; 15/07/2010; 04/12/2014). The frame is ambivalent in that it expresses both skepticism concerning nuclear power as part of a clean energy future—especially because of the waste problem—and confidence in the possible compatibility of nuclear with renewables, at least as a bridging technology on the path towards a cleaner energy system.

Cracking trust between the companies

Nuclear new-build plans prompted this highly prominent frame concerning the possible collaboration between the companies involved. HS describes how Fennovoima, the nuclear operator established in 2007, had assumed that Posiva would agree to host in its repository the SNF from Fennovoima's future reactor. However, Posiva persistently refused to consider this option. HS notes that despite having originally presented the repository as a national solution, Posiva later insisted that the situation had changed such that the company was primarily accountable to its owners, that is, TVO and Fortum. HS reports on the quarrel between the companies throughout the years and on occasion notes that the authorities had evoked the possibility to force Posiva's hand (10/01/2013; Kojo & Oksa, 2014). HS recalls that a wide range of governmental and parliamentary bodies, including the safety authority, recommend or even demand collaboration between companies, but at the same time notes that these demands do not imply that a shared repository solution would be indispensable. The newspaper stresses the importance of maintaining know-how but refers to STUK's statement that there is no reason why it would be safer to have only one repository instead of two (11/03/2012). HS mentions Posiva's argument that

Onkalo could reach its safe capacity limits (07/10/2011) and a statement from the Minister of Economic Affairs that the number of repositories was not an essential question (10/01/2013). As the discussion progressed, HS gave increasing coverage to perspectives underlining the need to explore different options and possible forms of collaboration. However, in 2016, when Fennovoima and Posiva Solutions signed an agreement on the delivery of expert services, HS underlined that “Posiva still does not promise to take Fennovoima's nuclear waste but will help find a suitable site.” Later, the newspaper also reminded of repeated statements from the then Minister of Economic Affairs that disposing of nuclear waste in one place “would be in line with society's best interest” (22/06/2016). As late as in 2018 (15/06/2018) HS reported that a joint repository had been Fennovoima's plan all along—a solution preferred also by the government but resisted by Posiva.

Confidence in Finland as a forerunner

This frame is not highly prominent, but it closely relates to frames *Confidence in the governance of the project* and *Confidence in the integrity of the disposal concept, trust in Posiva's diligence*, both of which highlight the achievements in Finland. The country is here portrayed as one of the most advanced in the field, alongside Sweden and France. HS evokes, for example, the close co-operation between Finland and Sweden (HS 13/11/2015), and notes that both are considered as world leaders in specific sub-areas—Finland on issues related to bedrock and geology of the repository (20/11/2008). The newspaper reminds us of the past political decisions underpinning Finland's forerunner position. HS cites the Director-General of the IAEA, who considers the Finnish repository as proof that final disposal is achievable, provided that sufficient political and societal support exists, and urges the international community to pay more attention to the Finnish project (23/08/2012). HS notes that unless something surprising happens, Finland will be the first to start final disposal (16/10/2009)—an achievement that Finns should be proud of (13/09/2017). Only minor doubts are raised, notably relating to the role of nuclear power as a part of a clean energy future (see section Confidence/skepticism concerning nuclear power as part of a clean energy future), and to the question of whether being a forerunner in other energy technologies might be more desirable.

Le Monde (LM)

Seven framings were identified in the French corpus (see Table 2).

Skepticism concerning the certainties underpinning the governance of the project

A frame cutting across most LM reporting reflects a lack of confidence in a “solution” to the waste problem. LM repeatedly underlines that no solution to the conundrum of long-lived high-level radioactive waste has been found yet, notably because of the numerous and persisting uncertainties. Waste is depicted, alternatively, as the nuclear sector's Achilles' Heel (01/03/2017) or as a concern that the sector has repeatedly overlooked. Uncertainties concerning safety, economics and financing, opposition movements, party politics, and energy policy at large (25/11/2011) are portrayed as

TABLE 2 Summary of frames and frame elements in Le Monde (France)

Frames	Definition of a situation, issue or problem	Diagnosis (causes)	Moral judgement	Remedies
Skepticism concerning the certainties underpinning the governance of the project	No long-term solution to the waste problem in sight	Complexity; pervasive Technical, economic, political, and societal uncertainties	France has not been able and willing to address the waste problem with sufficient seriousness	Reducing uncertainties via further R&D, political agreement, and greater openness
Skepticism concerning the chosen energy policy path	Little leeway for decision-making on the waste solution	Historical legacies, earlier choices and decisions; material, institutional, political, and cultural inertia/obduracy	Excessive "stubbornness" amongst the elites; past choices done without due regard for the future; inflexibility of key institutions	No simple and "good" solutions exist—must "live with" and "make the best of" the situation
Mistrust of the "nucleocracy" in charge of RWM governance	Long-standing mistrust concerning safety and procedural justice	Failed promises, lack of transparency, decisions made before public consultation	Lack of true democracy in NWM policy	Greater transparency, scrutiny by civil society
Skepticism concerning reversibility and intergenerational justice	Possibility of avoiding irreversible decisions; maximizing the choice available for future generations	The extremely long timescales of hazard; long lead times in planning and operating the repository; impossibility to ensure strict reversibility	Future generations' right to decide for themselves is limited by the irreversibilities created by today's choices	Consider alternative options (e.g. long-term interim storage); ensure true reversibility—also concerning decision-making
Trust and skepticism concerning technological progress	Ability of technological development to (help) solve the waste problem	Time and resources invested in further R&D; diversity of options explored	Possibilities exist and are being explored, but are they realistic?	Further investment in R&D on various RWM options
Skepticism concerning the maintenance of social peace and stability	Multiple dividing lines between and within the stakeholder groups	Contrasting ideologies, economic and political interests, risk perceptions, and safety assessments; mutual mistrust relations	The repository project is highly conflict-laden and therefore questionable	Civic vigilance, whistleblowers, independent appraisal
Skepticism and mistrust concerning French nuclear sector's global responsibility	Success, viability, and responsibility of a major French export sector	Political and economic weight of the French nuclear sector; French global leadership role	Heavy social responsibility; significant economic uncertainties	Slow down the decisions on waste management; (greater scrutiny of the French nuclear industry?)

inherent in the complex interplay between low, intermediate, and high-level waste management. LM highlights political decisions shaping uncertainty, notably those concerning (1) whether to continue the search for a “closed fuel cycle” (via reprocessing and fast breeder reactors) (13/07/2012), and (2) the future role of nuclear power in the French energy policy (12/07/2018). Waste-related uncertainties are frequently presented in association with topics of nuclear policy, waste transports (esp. to and from the La Hague reprocessing plant), and the French nuclear industry's international role and ambitions.

LM highlights safety-related uncertainties via notions such as “the impossibility of demonstrating safety” and an “ecologically risky” project, as well as by reporting on doubts concerning both the natural (geology, seismicity) and the man-made (repository design) barriers to radioactive releases. Disputes over the classification of waste (“recoverable material” vs. ultimate waste) directly relate to policy uncertainties, notably the objective of “closing the fuel cycle.” Cost and financing uncertainties appear repeatedly in reporting on the contrasting estimates by Andra, the waste producers, and the government's “compromise figures” (24/02/2006, 12/04/2006, 21/01/2011).⁷ Evoking the persistent citizen opposition, the newspaper argues that a solution to the waste problem is still a long way ahead. Disagreements between political parties—especially after the Fukushima accident, which brought into political discussion the notion of nuclear phase-out—are described as a further source of uncertainty (29/08/2012).

Skepticism concerning the chosen energy policy path

The previous frame, calling into question the certainties underpinning the project governance, is coupled with a seemingly contrasting frame that highlights the inevitabilities and certainties stemming from historical legacies. Where the former focused on **future** uncertainties, this frame stresses continuity and inertia stemming from **past** decisions. LM highlights the determination of French elites to pursue along a trajectory determined by the innumerable past decisions and policy choices. The newspaper suggests that, against the elites and the dominant policy doctrine, critical citizens have few choices other than open confrontation. Further inevitabilities stem from (1) the increasing urgency of managing decommissioning waste—which involves technical uncertainties especially concerning the waste from France's early natural uranium graphite gas reactors; (2) the inertia resulting from the existence of a “nucleocracy”—nuclear experts, civil servants and politicians trained to believe in the virtues of nuclear power; (3) the accumulation of waste—paradoxically, foreseen to accelerate as reactors are decommissioned; and (4) the unavoidably high costs of waste management, regardless of policy decisions. The waste legacy paved by innumerable past decisions is therefore something the country simply has to live with.

Mistrust of the “nucleocracy” in charge of RWM governance

This frame links with both of the two above-described ones. It echoes findings from earlier research on various dimensions of trust in France in general and in the nuclear sector in particular. LM reports on considerable mistrust and skepticism concerning the “nucleocracy,” procedural justice and legitimacy (e.g., participatory measures, court decisions), and long-term safety of geological disposal. The newspaper describes community acceptance as highly uncertain, because of the widespread suspicion towards the decision-making processes. Some articles deride the participatory

measures, describing these as debates on a “project whose parameters are essentially unknown” (27/05/2013), and whose outcome is perfectly predictable: the project will go ahead, and France will continue to rely on nuclear energy.

LM relays the widespread allegations about the opacity of the nuclear industry and the sincerity of authorities. Examples of the former include lack of information on the waste transports between Areva's reprocessing facility at La Hague and its foreign clients, and the contrasting repository cost estimates (4/12/2014), while the presumably exaggerated job creation estimates by the powerful Ministry of the Economy exemplify the latter (06/12/2014).

Plenty of space is given to the arguments of opponents that boycotted the CNDP debates 2005–2006 and 2013–2014 and denounced the consultations as a “parody of democracy,” a “masquerade,” claiming that the project had already been decided. Rehearsing the arguments of the opponents, the newspaper argues that Andra agreed to initiate the repository project with a 5-year pilot phase merely to ensure that the project will indeed go ahead, albeit at a slower pace. LM offers a controversial interpretation of the findings from a sociology Ph.D. thesis, claiming that this undermines the credibility of Andra's safety demonstration procedures and hence also the Agency's sincerity. LM evokes the broken promises of the project promoters: that several URLs would be constructed, and that community approval for an underground research laboratory in Bure would not automatically mean approval of a repository (14/09/2005, 15/04/2006, 26/05/2007). Several articles report on what antinuclear activists and Green Party politicians condemned as attempts by the government to sneak the repository project through the backdoor, via amendments to general, nonnuclear, legislation—often in early morning hours in parliamentary sessions (12/02/2014; 04/12/2014; 06/12/2014; 10/07/2015). Either implicitly or explicitly, LM stresses the vital role of critics and citizen movements in ensuring safety and democracy.

Skepticism concerning reversibility and intergenerational justice

While the frames relating to *mistrust of the governance certainties* (section *Skepticism concerning the certainties underpinning the governance of the project*) and to *the chosen energy policy path* (section *Skepticism concerning the chosen energy policy path*) implicitly address temporality, this frame does so explicitly, evoking the very long-term risks and dangers. Intergenerational justice is addressed via repeated reference to “the most dangerous wastes,” and to the estimated total waste amount (80,000 m³) and persistence of danger over extremely long time periods (27/03/2015; 27/12/2017). The articles endorse the notion of reversibility as the backbone of the “new French doctrine of nuclear waste” (24/06/2008)—designed to maximize the choice available for future generations—but doubt the practicability of that very notion. Numerous articles report on opponents and experts who portray reversibility as an illusion, the nuclear lobby's way of “selling” the project to the public. Intergenerational justice emerges also in relation to the financing model: how best to avoid passing the costs onto future generations? No clear response strategies are suggested within this frame, beyond the general call for further R&D (see section *Trust and skepticism concerning technological progress*).

Trust and skepticism concerning technological progress

Promises and doubts concerning technological development appear under varying guises. LM repeatedly stresses the need for further R&D on a range of waste

management options, alongside geological disposal. The newspaper is more ambivalent on other topics, such as the future of reprocessing, closing the nuclear fuel cycle, and ways of ensuring that future generations can pursue a range of technological options. LM justifies its call for R&D on interim storage by intergenerational equity and trust in technological progress: citing a leading critic of geological disposal, Bernard Laponche (polytechnician, formerly at the CEA), the newspaper suggests that long-term interim storage would “buy” time and enable future generations to come up with a technical alternative superior to geological disposal (see the previous frame, *Skepticism concerning reversibility and intergenerational justice*). The articles remind us that the call for R&D on interim storage, invoked in the public debate 2005–2006, was subsequently discarded without much explanation.

The technological developments required for closing the fuel cycle—fast breeder reactors and transmutation of waste—are central in this frame (07/02/2005; 17/03/2005; 22/03/2010; 21/01/2011; 14/01/2012). They appear especially in 2010 when the government decides on the construction of the Generation IV “Astrid” prototype reactor, expected to considerably reduce the generation of the most harmful waste (esp. actinides) (03/04/2010). However, LM highlights the outstanding challenges and uncertainties. Referring to a Court of Auditors report, the newspaper evokes changes in the “technical, economic, and political context” that can at any time call into question the development of Gen IV reactors (16/07/2010).⁸

Skepticism concerning the maintenance of social peace and stability

This frame underlines the multiple conflicts around the repository project. In doing so, the frame is close to the one relating to *mistrust of governance certainties* (section Skepticism concerning the certainties underpinning the governance of the project). Key among the many evoked dividing lines distinguishes the powerful “nucleocracy” from the numerous but weaker project opponents. The conflict between the Green party on one hand and the ruling Socialists and Conservatives on the other is described as a source of political uncertainty. The internal disputes amongst the nuclear advocates are also mentioned: amongst the Socialists on the Waste Bill (15/04/2006); between Socialists and Conservatives over the appropriate financing mechanisms (12/04/2006); between Andra and the waste producers over the cost estimates (21/01/2011; 13/06/2016); and between EDF and Areva over reprocessing (19/01/2010). The portrayal of the safety authority, ASN, and to a lesser extent its expert arm, IRSN, as the “watchdog” of the nuclear sector foregrounds the increasingly tense regulator-operator relations. The confrontations between the opponents and police are described, usually from the perspective of the opponents (22/02/2018). Several articles report on legal battles (27/03/2015; 01/03/2017), including those over the legality of waste transports (16/01/2013). This frame has also a temporal element, notably in articles underlining the longevity of the “historical opposition,” the recent arrival of a new generation, and the determination of the opponents that perpetuates the conflict (22/02/2018; 23/02/2018). One article title underscores the persistence of conflict over time by rhetorically associating the concept of “long-lived waste” with that of “long-lived conflict” (11/07/2016). Critics and opponents are typically portrayed as vital whistleblowers, whether these be anti-nuclear NGOs alerting to the risks of waste transports, the safety regulator surveilling Andra, vigilant parliamentarians blocking attempts to sneak the repository project into general legislation, local opponents reminding of the dangers of reprocessing, or the Court of Auditors revealing uncertainties related to costs and financing.

Skepticism and mistrust concerning the French nuclear sector's global responsibility

Some articles evoke France's international role in the development of the nuclear industry and waste management. Linking to the frame concerning the governance uncertainties (section *Skepticism concerning the certainties underpinning the governance of the project*), the argument that no solution exists in France is underpinned either by negative examples from abroad or by those from Finland and Sweden, whose success could not be reproduced in France, where conflicts and mistrust of authorities are widespread.

The global responsibility of France is frequently evoked. LM cites again Bernard Laponche who warns that an operational repository in France would open a Pandora's box, inciting other countries and industries to follow the example. This could turn the geological disposal of various types of toxic and hazardous waste into an international norm. The choice of reprocessing—and the controversies over the associated international waste transports—is portrayed in terms of the French nuclear industry's global responsibility and its uncertain future in international markets. An article reporting on public protest against Areva's reprocessing plant project in China indirectly suggests that the French nuclear industry exports might undermine democracy in the country.

DISCUSSION: FINNISH CONFIDENCE—FRENCH MISTRUST AND SKEPTICISM?

Performance versus morality-relevant framings: Confidence in HS, mistrust in LM

The leading newspapers in Finland and France frame the issues concerning the safety of high-level radioactive waste disposal in highly distinct ways. In particular, the framings in HS and LM differ in the respective weight that they attribute to the dichotomies trust-mistrust and confidence-skepticism. This contrast shows clearly in the choice of the topics, attention given to RWM stakeholders and conflicts, and views concerning the history and future of the repository projects.

While reporting by HS reflects, on the first-hand, strong confidence in the repository project, and on the second-hand, trust in its promoters, LM framings instead display a lack of confidence, underpinned by mistrust between the various actors involved. A key difference between LM and HS is indeed the greater attention by the latter to the confidence-skepticism dichotomy, whereas LM focuses on the trust-mistrust dimension. In other words, where HS stresses “performance-relevant information” underpinning confidence in the repository project, LM framings more frequently evoke “morality-relevant information,” that is, the trust relationships between the involved parties (cf. Earle & Siegrist, 2006). HS frames emphasize confidence in the project, whereas LM expresses skepticism and reports on mistrust amongst the key actors. With few exceptions (the Posiva-Fennovoima waste conflict, and the role of nuclear power in a clean energy future), HS frames do not address the trust and mistrust between the key actors. When these do appear, core actors are depicted as trustworthy, dependable, and co-operative, with the safety authority as the ultimate guarantor of safety.⁹ Expressing confidence in the continued steady and successful advancement of the project in Finland, HS relays messages from the industry and the government—identified in earlier research as the most frequent

speaker groups in the Finnish press reporting on RWM (Kojo et al., 2020; Raittila & Vehmas, 2001). By contrast, LM framings show skepticism towards the governance and technical solutions—including the possibility of a solution acceptable to the various groups of society—reporting on mutual mistrust, both among the dominant actors and between the advocates and critics of the project.

In its portrayal of history, LM constantly reminds us of the ambiguous legacy of the past and uncertainty of the future, while HS underlines continuity, predictability, and certainty. The HS framings reflect confidence especially in the safety of the project, stressing the track record of the parties involved, and the consistency with which the previously established principles and strategies have been implemented. Earlier research has reported on similar “naturalization” in the Finnish nuclear-sector media discussion, which has portrayed plans, schedules, and technical choices as “natural” and predictable steps in a well-managed process (Raittila, 2002, p. 91; Teräväinen et al., 2011; Vehkalahti, 2015, p. 106). By contrast, LM frames the past experience in negative terms, highlighting the multiple irreversibilities that have narrowed down the choices available for the present and future generations, thereby undermining confidence in the project, its democratic legitimacy, and trust in the fairness of key actors. While conflict-oriented framings—common in media reporting in general (Zukas, 2018)—are largely absent from HS reporting, LM widely reports on disputes amongst the major political parties, institutional players, and between proponents, opponents, and critics of the other, often taking an implicit or explicit stand in favor of the latter. LM evokes the problematic aspects of the French nuclear industry's global dominance, whereas HS portrays the Finnish nuclear waste history as a success story, even inviting Finns to take pride in their global forerunner role.

As for the future-related framings, HS rehearses the government and industry argument that a repository spares future generations from having to tackle the waste problem, whereas LM evokes also a key dilemma: by burying waste in a repository, current generations deprive future generations of the possibility to decide what to do with the waste. Technological development is indeed one of the few aspects in which LM framings clearly display confidence, in stressing the need for further R&D to expand the choices available for future generations. Geological disposal is the only option considered in the HS frames, which give no place for further research on alternative technologies, despite calls for such R&D by, for example, Finnish environmental NGOs.

Explaining the differences between HS and LM framings

Explanations for the observed differences in framing between HS and LM can be sought in historically constituted power structures manifested in country-specific political and media cultures, and in the positions of the respective nuclear “regimes” in public imaginaries (Pfetsch, 2004). Earlier research has underlined the influence of powerful sectors in shaping the very construction of the stories by journalists, and in suppressing the emergence of alternative master narratives (Zukas, 2018, p. 14), including in RWM policy (Kojo et al., 2020; Raittila & Vehmas, 2001). The sources of such framing power are diverse and go beyond “hard” economic and political elements. Indeed, if the economic and political clout of the sector alone would determine, LM frames—in the highly “nuclearized” France—should be more trust- and confidence-oriented than those of HS. The differences are hence better understood in light of the contrast between the Finnish trust-based and the French mistrust-based political cultures and traditions. The former is characterized by trust in a strong state and

public institutions, as well as by the principles of common interests, convergence, consensus, and conformity (Alapuro, 2004; Stenius, 2012). Cole (2004, p. 47) has encapsulated the French mistrust-oriented political tradition in a set of continuities: “numerous blockages [...], ideological and abstract thinking, the persistence of class rivalries, a penchant for uncivic behavior, a deeply ingrained anti-political strain within public opinion, a distrust of those in authority, an inability to compromise or to conduct civilized face to face negotiations, and a weak sense on political efficacy.”

The position of the respective national nuclear energy and nuclear waste “regimes” in public imaginaries serves as a further explanation. In both countries, the nuclear sector has held a privileged position as a source of national pride and energy independence, buttressed by the consistently pronuclear government policy. Nevertheless, in France, this stability hides several ambiguities. The nuclear sector symbolizes not only the country's modernization, technological prowess, and economic prosperity (Hecht, 2009), but also a technocratic and secretive “Nuclear State” (Lepage, 2014). Consistently endorsed by the political elite, nuclear power has faced historically significant and continuous public skepticism (Brouard & Guideaudeau, 2015). The operator of the country's 56 nuclear reactors, EDF, incarnates at the same time the cherished public service tradition and a despicable nuclear technocracy (e.g., Gadault, 2013). Opinion surveys reveal similar ambivalence, with citizens expressing relatively high confidence in the competence but low trust in the sincerity of the country's nuclear safety authorities (IRSN, 2017, 129). In Finland, such ambivalence is virtually absent, nuclear operators being portrayed as vital players in the national export-oriented industrial policy (Teräväinen, 2014, p. 313; Teräväinen et al., 2011). Opinion surveys show high trust among citizens in the nuclear-sector institutions, especially the safety authority, but also in the operators (e.g., Kojo et al., 2012; Vilhunen et al., 2019), and relatively little public skepticism towards nuclear energy (Finnish Energy, 2019).

Consequences of the framings on policy and democracy

As for the broader impacts of the media framings on democracy, we suggest two alternative hypotheses for further research. The first one postulates that our findings show failure by HS and success by LM in their civic vigilance duty. The trust and confidence-oriented framings of HS could reflect and foster “unwarranted trust” (Warren, 1999)—trust as uncritical acceptance (Trettin & Musham, 2000, 411). Earlier experience from Chernobyl communication lends support to this argument: while the misleading communication by the authorities constituted a watershed in the French nuclear communication landscape, and made the media increasingly cautious of being perceived as a mouthpiece of the government (e.g., Ambroise-Rendu, 2018; Blanchard, 2010, pp. 135–136), the debate on the weaknesses in communication by the Finnish authorities was short-lived (e.g., Ennelin, 2003; Rautio, 2011), and the mainstream Finnish media soon presented nuclear power as a solution to climate change (Haavisto, 2008, pp. 274–275). If “telling the bad news along with the good”—the recipe suggested by Mays et al. (2003) for enhancing trust—appears unnecessary in Finland, does this not constitute a further demonstration of a weak culture of civic vigilance?

An alternative interpretation would highlight the distinct requirements and manifestations of civic vigilance in different political cultures. Following earlier research (Lehtonen & De Carlo, 2019; Montin, 2015; Puustinen et al., 2017) concerning the applicability of Anglo-Saxon planning and management approaches in the Nordic

countries, one could presume that mistrustful civic vigilance of the French style might backfire by undermining the crucial institutional trust that the Nordic democracies are based upon. The confidence and trust-oriented frames of HS can enhance cohesion and agreement around the idea that in taking responsibility for a national project, the local community merits the local prosperity and growth brought about by the project (Buhr & Hansson, 2011, p. 344). Underlining conflicts—such as the Posiva-Fennovoima disputes and the failure of the authorities to bring Posiva behind a “national solution”—might erode the foundations of a trust-based democracy, notably the solid trust in public and private institutions (e.g., Puustinen et al., 2017), with the administration often in a role as the “official” producer of public information (Ahva, 2010). It could also prevent the emergence of a local “pride-effect” and social ownership often considered as necessary for rendering the RWM problem solvable (e.g., Hunt, 2001, p. 222). According to this hypothesis, Finnish mistrustful civic vigilance would therefore be more subtle, appearing almost as a mere footnote to the general trust-and-confidence-oriented reporting. In a corresponding manner, civic vigilance in the French conflict-oriented political culture would necessarily require media framings constructed around confrontation and conflict.

Our empirical analysis does not validate or disprove either of these alternative interpretations, yet earlier research casts a doubt over the latter proposition. Research on Finnish media debate on nuclear power (e.g., Vehkalahti, 2015, p. 106; Ylönen et al., 2015) and RWM (Kojo et al., 2020; Raittila, 2002, pp. 89–90) has revealed a tendency in Finnish journalism to depoliticize nuclear debates, thereby removing them from public and democratic scrutiny.¹⁰ Finnish national-level journalism has been reluctant or unable to introduce new perspectives and elucidate the alternative political choices underpinning seemingly technical decisions (Kojo et al., 2020; Raittila, 2002). Crucially, although operating in an equally trust-based policy and media context, the Swedish press has adopted a noticeably more critical reporting style than its Finnish counterpart, for instance by openly spurring controversy over the weaknesses of the Swedish repository project—technically almost identical to the Finnish one (Kojo et al., 2020; Kuisma et al., 2019). The legal and institutional conditions in the Swedish nuclear sector are more conducive for the expression of civic vigilance than in Finland (Litmanen et al., 2017), reflected in the far more active civic vigilance by the Swedish municipal authorities and NGOs, as compared to their Finnish counterparts (Kari et al., 2021). Moreover, the Finnish trust-based civic vigilance may prove fragile over time, if unexpected technical problems or conflicts emerge, for instance, if the Swedish licensing process stalls and the on-going copper corrosion controversy spills over to Finland.

Further empirical research could explore the actual impacts of different types of civic vigilance exercised by the media, and the specific requirements of constructive civic vigilance in different media and political cultures. Further research should also examine the proximity between journalists and the nuclear sector stakeholders, exploring the interpersonal and institutional trust and mistrust relationships involved. To the extent that those relationships are in Finland closer and more institutionalized than in France, this proximity might also help to explain differences in media framings.

CONCLUSIONS: THE ROLE OF THE MEDIA AS TRUST-AND-CONFIDENCE BUILDER AND AS A WATCHDOG

On the nuclear waste issue, HS tends to reproduce government and industry frames, while LM plays a more conventional, liberal role as a watchdog and critic of the government and industry, cherishing its journalistic independence. Mistrust-skepticism-oriented

frames are considerably rarer and milder in HS than in LM. The differences between HS and LM are likely to reflect historically constituted power structures, country-specific political and media cultures, and the positions of the respective nuclear “regimes” in the public imaginaries. Although this article did not empirically examine the impacts of the framings on either policy debate or democracy at large, the findings help to elucidate the dilemmas facing the news media: how to engender the necessary trust and confidence in societal institutions, while also feeding the kind of mistrust and skepticism that are necessary for societal vetting (Zukas, 2018) and social framing of technologies (Buhr & Hansson, 2011)?

We suggest two alternative propositions for further research. The first assumes that HS indeed has failed to correctly fulfill its mistrustful watchdog role, has reinforced unwarranted trust and undermined possibilities for truly democratic debate on RWM, while LM—through its mistrust-oriented framings—has remained true to the watchdog role as underpinned by the principles of liberal, pluralistic democracy. The second would instead highlight the importance of national media and political cultures, and their implications for the watchdog model. According to this alternative reading, successful civic vigilance exercised by the media would take on a distinctive and more subtle role in the specifically trust-based Finnish journalistic and political context. Earlier research suggests that this second interpretation is possible yet unlikely. Legal-institutional arrangements in the Finnish RWM policy have been shown to reinforce the dominance of the central players and weaken civil vigilance (Litmanen et al., 2017), by for instance keeping out of the media agenda significant issues such as uncertainties concerning the corrosion of the copper canisters (Kuisma et al., 2019).

We suggest that country-specific political cultures and traditions shape the boundaries for the exercise of agenda-setting and framing power. From the point of view of the role of the media, as a source of national cohesion, trust, and confidence on the one hand and as a mistrustful, vigilant watchdog on the other, these politico-cultural specificities and the interaction between the media and political culture constitute a riddle worth further exploration. This is ever more crucial as the repository projects evolve, given the possibly significant changes in confidence in the repository projects, trust in key RWM players, and in the national media and political cultures.

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ENDNOTES

¹In this article, we do not specifically explore **distrust**, which can be seen as a phenomenon separate from mistrust—denoting the absence of trust, reflecting fundamental suspicion and cynicism (Lenard, 2008, p. 316), and loss of hope that the object of mistrust might prove trustworthy.

²Centre industriel de stockage géologique.

³The French state owns over 80% of the shares of EDF, the operator of France's 56 nuclear reactors, and more than 90% of those of the full-fuel-cycle nuclear company, Orano.

⁴Citizens who agree they “can trust most news most of the time.”

⁵Prospéro was used only for the French corpus, because the software is not capable of reading Finnish text.

⁶Prospéro defines as a “principal actor” an entity whose appearances in the text exceed a given threshold.

⁷The initial construction cost estimate of €15 billion was revised, first, to nearly €35 billion, and then brought down again—to a politically determined compromise figure of €25 billion.

⁸This is indeed what happened, in summer 2019, as the Astrid prototype reactor project was suspended.

⁹Indeed, also the host municipality, Eurajoki, relies strongly on STUK. On 27 August 2013, HS reported the chairman of the municipal council stating that “if it [STUK] considers the plan safe enough, the municipality takes the same position.”

¹⁰However, in the 1980s and 1990s, some newspapers sought to bring the construction of additional nuclear power onto the political agenda (Haavisto, 2008).

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