



## SMITTE|STOP AND THE TECHNOLOGICAL MEDIATION OF CIVIC CONSCIOUSNESS

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Keywords	Abstract
Civic consciousness; digital contact tracing technologies; postphenomenology; value dynamism; mediated morality	Technology co-shapes interpretations of, and practices pertaining to, moral values and normative frameworks. In this article, we explore the mediating role of the Danish contact tracing technology <i>Smitte/Stop</i> 's ['infection stop', Eng.] role in shaping the value of 'civic consciousness' [ <i>samfundssind</i> , Da.]. We empirically investigate through interviews with (non-)users how the meaning of the Danish notion of <i>samfundssind</i> , a compound word of society/civic/community ( <i>samfund</i> ) and consciousness/spirit/soul ( <i>sind</i> ) takes on contextual meanings in relation to <i>Smitte Stop</i> . We conceptualize two ways that <i>Smitte Stop</i> does this: by mediating intersubjective responsibility, where the civic is interpreted as other people of flesh and blood, one's proximal community; and by mediating between individual and the distant state, where the civic is the state and its authorities. Thus, <i>Smitte Stop</i> mediates the meaning of civic consciousness by putting at stake what the 'civic' is, and thus how one is 'conscious' for such a particular civic.

### Plain Language Summary<sup>1</sup>

- This study explores how a COVID-19 contact-tracing app in Denmark—called *Smitte/Stop*—changed the way people thought about “civic consciousness,” a Danish idea about putting society’s needs above one’s own. Rather than assuming people already share one definition of this value, the research shows the app influenced how the value was understood in everyday life.
- Through interviews with both users and non-users, the researchers found that people understood civic responsibility in two very different ways:  
(1) caring for and protecting people around them (friends, family, strangers), and  
(2) contributing data and cooperation to help the state manage the pandemic. The app acted as a bridge shaping both types of interpretations.
- Many participants felt that using the app was a way to show solidarity—helping to warn others, prevent spreading infection, and “take care of each other.” In this view, the app supported moral behavior by offering a practical tool to act responsibly. Others worried that the app might replace genuine moral engagement with an easy, superficial action. They feared people might rely on the app instead of actively checking in with or warning people themselves, reducing civic responsibility to a simple technical gesture.
- The app also made people think deeply about their relationship with government and data privacy. Some felt sharing data was a meaningful contribution to society, while others believed it required too much personal sacrifice or expressed distrust in how authorities might use their data. This revealed a tension between privacy and public good.
- Overall, the study shows that technologies like contact-tracing apps do more than aid public health—they also reshape social values and ideas of citizenship. The meaning of “being a good citizen” shifted depending on how people interpreted the role of the app in their lives, highlighting that technologies and values develop together.

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<sup>1</sup> AI-generated; author checked and approved.

## 1 INTRODUCTION

“We must stand together. We must take care of each other. But in a different way than we are used to. [...] Now is the time to stand together by keeping a distance. We are going to need *samfundssind*. We are going to need helpfulness. I want to give my thanks to citizens, companies, organizers, voluntary organizations – all, who up until now have shown, that is precisely what we have in Denmark – *samfundssind*” (Statsministeriet, 2020. Our translation).

The Covid-19 pandemic caused moral challenges and ‘value disruptions’ (Dennis et al., 2022), confronting societies with questions of individual and social values (Pesch, 2022). While some believed at the start of the pandemic that the crisis would lead to communitarian value changes (Nancy, 2020), others, with the benefit of hindsight, argued that the pandemic had the opposite, polarizing effect (Dennis et al., 2022). The Covid-19 pandemic also gave momentum to the development and use of existing as well as new digital e-health technologies, leading to an increased individual responsibility among citizens (Eriksen et al., 2022). Value concerns about Covid-19 technologies came into focus rapidly (Dennis et al., 2022), such as issues of data privacy related to digital contact tracing technologies (DCTTs), questions of fairness with immunity passports, or concerns relating to the health and safety of vaccines.

With the announcement of the pandemic state of emergency in Denmark on March 11, 2020, Mette Frederiksen, Prime Minister of Denmark, urged Danish citizens “to stand together by keeping a distance” and practice “what we have in Denmark – *samfundssind*” on national television. An unfamiliar word to most people entered the common discourse: *Samfundssind*, a compound word of society/civic/community (*samfund*) and consciousness/spirit/soul (*sind*). The word can be translated as ‘societal spirit’ or ‘civic consciousness’<sup>12</sup> (Lapina, 2020). According to the Danish Language Council, it refers to the act of “placing the interests of society higher than one’s own interests.” The origins of the Danish notion of civic consciousness can be traced to the Danish philosopher and political thinker Nikolai Frederik Severin Grundtvig (1783-1872). For Grundtvig, civic consciousness was a societal *Geist* that unified a nation and was thus required to constitute a people. To rule his people, the king had to ensure just laws and civic freedom, as well as civic enlightenment through education. Through enlightenment, the people could acquire the necessary civic consciousness, and “subordinate their special interests under the common good” (Damsholt, 1995, p.154. Our translation).

The value of civic consciousness was reinvigorated in the context of the Covid-19 pandemic, and the term frequently appeared in public debates on the politically imposed restrictions. Rather than a Grundtvigian political idealism, civic consciousness became associated with the socio-material practices of containing the spread of infection, and the responsibility of individuals and institutions towards upholding the social order.

As the opening quote from the Danish Prime Minister shows, a pressing concern at the outset of and during the pandemic was the need for citizens to engage civically, to practice civic consciousness – “that which Danes have” – to hamper the spread of the virus. The question concerning civic engagement and civic norms has a long tradition and has especially been considered in discussing the role of new technologies: Do new technologies *degrade* or *enhance* civic norms and engagement (Kligler-Vilenchik, 2017)? In this paper, we seek to explore through qualitative interviews with (non-)users of the Danish DCTT *Smitte/Stop* (‘infection stop,’ Eng.) the ways in which the value of civic consciousness manifests in the technological practices afforded by the technology, as a way of being ‘civically conscious’. By drawing on the

<sup>2</sup> We will here on out refer to *samfundssind* as “civic consciousness” for sake of readability.

postphenomenological interpretation of ‘value dynamism’ (Kudina, 2019; Kudina & Verbeek, 2018), we understand values to be mediated by concrete technological artifacts: abstract values inform the appropriation and practical use of technology and take on meaningful interpretations through the value-practices mediated by the technology. In short, we are interested in investigating the multiplicity rather than the essence of civic consciousness, with the research question being: How does Smitte|Stop mediate the value of civic consciousness? We conclude that Smitte|Stop mediates civic consciousness along two lines: intersubjective responsibility, where the civic is interpreted as other people of flesh and blood, one’s community; and by mediating between the individual and the state, where the civic is the state and its authorities. Thus, Smitte|Stop mediates the meaning of civic consciousness by putting at stake what the ‘civic’ is, and thus how one is ‘conscious’ of such a particular civic.

We take mediation to cover not only interpretations causally constructed by a technology but also to refer to interpretations enhanced, amplified, blurred, or distorted by technology. This study investigates more broadly what ‘civic’ and ‘consciousness’ refer to in Human-DCTT-civic configurations. We strive to describe how some people interpret ‘civic’ through the use of the Smitte|Stop app, and thus how they understand civic consciousness in specific Human-Technology-World relations.

In section 2, we introduce how the Covid-19 pandemic disrupted values, and likewise how new pandemic technologies co-shaped (e.g., amplified or blurred) perceptions and interpretations of values and what was considered moral behavior. Following this, we introduce our theoretical and methodological approach in sections 3 & 4, to conceptually account and empirically investigate how technologies co-shape interpretations of values and moral behavior. In section 5, we analyze our empirical results through the lens of mediated value dynamism. Section 6 concludes and discusses the results of the study.

## 2 SMITTE|STOP & CIVIC CONSCIOUSNESS

### 2.1 SMITTE|STOP: DEVELOPMENT & TECHNICAL DESCRIPTION

Alongside political moralization, nations across the globe developed ‘moralizing technologies’ (Verbeek, 2011) in attempts to counter the spread of contagion. Countries such as the UK, France, Australia, and Denmark developed DCTTs (Budd et al., 2020) - technologies envisioned as providing significant support to official contact tracing efforts, as well as other measures (Ferretti et al., 2020) to aid the centralized contact tracing efforts of the health authorities.

Contact tracing is a method of tracing persons who may have made interpersonal contact with confirmed infectious individuals (Pilny & Huber, 2021) and is the primary means for controlling the spread of infectious diseases and epidemics (Armbruster & Brandeau, 2007). ‘Traditional’ forms of contact tracing rely on knowledge of interpersonal physical interaction; however, self-reporting of recent face-to-face contacts is known to be severely biased (Farrahi et al., 2014) and cannot reliably identify proximate strangers (Kitchin, 2020).

In May 2020, an advisory board consisting of representatives from the Council of Data Ethics, the Council of Cyber Security, the University of Copenhagen, and the Danish Technical University was commissioned to advise the Danish Digitization Agency and the Danish Ministry of Health and the Elderly on the development of Smitte|Stop (Digitaliseringsstyrelsen, 2020).

On May 15, 2020, a political agreement was made on Smitte|Stop’s “principles, purposes, and technological solutions.” The ethical principles included that the app ought to be voluntary; data ought to be decentralized and anonymously stored on the user’s own smartphone and deleted after 14 days; that authorities ought not to have access to the data unless an active opt-in by the user was made; that the app ought to be compatible with other national DCTT-apps

eventually; and that the app would automatically be shut down when the app would no longer be necessary to use in connection with Covid-19 (Sundheds- & Ældreministeriet, 2020).

The private company Netcompany won the tender to develop the app in collaboration with Danish state agencies, authorities, and ministries (Martin et al., 2020). Smitte|Stop is built on a decentralized Google/Apple Application Programming Interface (API) 'Exposure Notification' and generates and exchanges 'Universally Unique Identifiers' (UUIDs) via Bluetooth-Low Energy transmission (BLE) with other Smitte|Stop users. A UUID is generated upon installation and is updated every 15 minutes.<sup>3</sup> Received UUID's from other users is retained for 14 days before being deleted.

If a logged UUID has been registered as belonging to someone who has since the encounter registered themselves as Covid-19 positive, the user gets a notification stating that they have been near an infected individual (Martin et al., 2020).

## 2.2 SMITTE|STOP & CIVIC CONSCIOUSNESS

Smitte|Stop's development and use foregrounded established normative interpretations of what one ought to do as individuals in society, and what ought not to be imposed on the individual by the government. New understandings of otherwise seemingly established values, such as privacy and responsibility, were rearticulated and practiced, while the value of civic consciousness reemerged center stage and gained newfound meaning with the new technological possibility of digital contact tracing. In a digitized pandemic, what 'is,' and what one 'can' and 'ought' to do (Swierstra & Waelbers, 2012) was co-shaped by DCTTs; infection is digitally traceable, individuals can be warned and warn others of potential infection,<sup>4</sup> and whether individuals ought to do so became at stake. By introducing a new technology that allows for individual human-technology associations to perform data-based contact tracing, normative assumptions were destabilized, making 'cold' morality and established values 'hot' by prompting ethical deliberation of their meaning (Swierstra & Rip, 2007).

Smitte|Stop rapidly became entangled in discussions on the individual's responsibility of keeping the spread of COVID-19 down. According to the Minister of Health and the Elderly, Magnus Heunicke, the purpose of Smitte|Stop was to help "trace contacts and thereby help to stop the infection chains of Covid-19virus," and that "We must take care of each other, and here the app is a concrete tool that I hope many Danes will start using." Tracing contacts and keeping the spread down were thus about caring for the common good. Expectantly Smitte|Stop was not only met with praise of how it could uphold certain values, such as care, responsibility, or civic consciousness, but also violate values. It was condemned as a 'technological fix,' reducing a public health problem to a technical issue, and was criticized for being too invasive, built on the assumption that Google and Apple would collect data responsibly. While, e.g., the Confederation of Danish Industry praised Smitte|Stop for its responsible design and protection of citizens' privacy, it was criticized by others for hindering its potential effectiveness, as more surveillance and data gathering, with less regard for personal rights regarding data collection, could potentially increase the freedom of the individual. In contrast to this assumption, the Danish engineering trade magazine Ingeniøren claimed that the state did not deserve this level of trust from its citizens and that there was not sufficient argumentation for the need for digital behavior regulation, as Danish citizens were already practicing "exemplary civic consciousness."

<sup>3</sup> This has since Martin and colleagues' article (2020) been reduced to 10 minutes.

<sup>4</sup> At least naively speaking. See Maccari & Cagno (2021) for a critical review and analysis on the feasibility of BLE-based DCTTs.

In the next section, we introduce the theoretical and methodological approach of postphenomenology to conceptualize the role of Smitte|Stop in co-shaping interpretations of civic consciousness. Following this, we analyze data gathered from interviews on how Smitte|Stop co-shapes (including amplifies or blurs existing) perceptions of what the ‘civic’ is and how one is ‘conscious’ of this.

### 3 THE TECHNOLOGICAL MEDIATION OF MORAL VALUES

Science and technology co-shape socio-cultural morals and value frameworks (cf. Swierstra et al., 2009) and put established norms at stake (Swierstra & Rip, 2007). The birth-control pill co-shaped re-valuations of homosexuality (cf. Mol, 1997), and anesthesia led to re-valuations of pain in surgery (cf. De Vries, 1993). While not having induced a “technomoral revolution” (Hopster et al., 2022), “uprooted value hierarchies” (Dennis et al., 2022, p. 8), or any radical re-valuations of all values, Smitte|Stop nonetheless lead to society-level discussions and valuations of the question concerning what it means to be a responsible citizen during a pandemic, albeit without reaching a definitive, stabilized conclusion.

While a great deal of literature on the relationship between citizenship, civic norms, and new media is concerned with civic, democratic, and political engagement through the Internet and social media (cf. Bennett, 2008; Kittilson & Dalton, 2011; Cohen & Kahne, 2012; Schmidt, 2014; Kligler-Vilenchik, 2017), the Covid-19 pandemic however required a different form of political and moral engagement, namely a form of citizenship that called for citizens to engage civically in ways that would prioritize the health and safety of the population. Moreover, we contest that not only traditionally labeled ‘media technologies,’ such as television, radio, and social media, co-shape interpretations of civic norms, but also technical artifacts such as hand sanitizers, and facemasks – and specifically in the context of this study, digital contact tracing technologies – mediate perceptions of responsible civic behavior. In this regard, we view media in a broader sense, which was already present in the works of media theory’s godfather Marshall McLuhan, namely as any technical artifact that mediates human activity, from television mediating the human access to and perception of world affairs and politics to the lightbulb that mediates leisure time at home (McLuhan, 1994). As has also been shown in the context of DCTTs in the Netherlands and Belgium, these technologies ought not to be seen neither a “messiah or a destroyer of Covid-19 management” but as complex socio-technical configurations that help to shape moral concerns (Kudina, 2021, p. 43) and that understanding the complexity of the socio-cultural ethical and moral landscape becomes increasingly important to understand (a lack of) public appropriation, trust, and acceptance of Covid-19 tracing apps (van Brakel et al., 2022). In short, civic norms, morality, and the technical specifications and use of Covid-19 apps cannot be pried apart but must be seen as co-constitutive of each other.

In this paper, we draw on the postphenomenological theory of technological mediation to conceptualize the role of specific technologies in shaping experience and action (Verbeek, 2005), as well as morality and values (Verbeek, 2011; Kudina, 2019). Postphenomenology offers conceptual tools to empirically study the interaction and appropriation between humans and technology, e.g., ‘mediation’ of perception and actions (Verbeek, 2005) to understand the role of new media and civic norms. Moreover, postphenomenology adds a dimension to the question of whether civic norms are enacted, enhanced, neglected, or reliant, etc. Postphenomenologically speaking, technology not only enacts but can also co-create new avenues and turns (Verbeek, 2005; Latour, 1994); postphenomenologists assert that technologies and humans are co-constitutive of each other, thus ‘civic perceptions’ must be understood as related to technological mediation.

Postphenomenological scholars conceptualize technologies as multistable (Ihde, 1990; Rosenberger, 2014), e.g., technologies can have different contextually meaningful

interpretations and uses (e.g., a hammer as a tool or paperweight), and as mediators of human experience and existence (cf. Verbeek, 2005), e.g., technologies help shape humans' experiential and existential access to the world. Rather than being mere instruments, technologies play a profound role in how humans are phenomenologically present in the world: "What humans are and what their world is receive their form by artifactual mediation. Mediation does not simply take place between a subject and an object, but rather coshapes subjectivity and objectivity" (Verbeek, 2005, p. 130. Original emphases).

Technological mediation also plays a role in shaping morality (Verbeek, 2011) and values (Kudina, 2019). The goal of Peter-Paul Verbeek's seminal book *Moralizing Technology* (2011) can be interpreted by reading the title as to 'moralize technology,' revealing technologies' moral significance, and by extension how 'technology moralizes' humans, revealing the mediated nature of moral subjectivity.

Recently the postphenomenological account of moral mediation has been expanded to account for the mediated nature of moral values: technologies "also mediate the value frameworks, whereby values both guide people in decision-making (about technologies) and appear to be mediated by these same technologies" (Kudina, 2019, p. 52). Kudina's exemplary case study of the dynamic character of values is on the relation between Google Glass and privacy, showing how notions of privacy emerge as people anticipate new practices of using Google Glass (Kudina & Verbeek, 2018). The study demonstrates how "abstract moral values [...] that guide and inform us in daily behavior require contextualization and substantiation in view of new technologies" (Kudina, 2019, p. 54). Thus, Kudina's work returns postphenomenology to its Deweyan-pragmatist roots and suggests that values are to be understood as open-ended, open to revision, are ends-in-view that guide human actions, and manifest in concrete situations (Kudina, 2019, Ch. 3). Values are thus not just products of mediation (cf. Verbeek, 2011, p. 163) but inform human appropriation of technology, while being mediated and specified in turn through concrete practices. Kudina's Deweyan approach to values thus suggests not to inquire into the ideal and universal nature of e.g., justice, responsibility or courage, but rather how people in fact value such values, and how they matter in concrete contexts in specific points in time (Kudina, 2019).

## 4 METHOD: STUDYING TECHNOLOGICAL MEDIATIONS

In studying the mediated character of civic consciousness and how Smitte|Stop played a role in human morality, we situate our research within the recent postphenomenological empirical (re)turn of moving beyond studying 'what things do' (Verbeek, 2005; see Verbeek, 2016, pp. 190-191) and instead towards empirically studying the 'dynamics of technologically mediated morality' (Verbeek, 2016, p. 196) and the empirical study of mediated value dynamism (Kudina, 2019; Kudina & Verbeek, 2018). While postphenomenology has been criticized for its empirical deficit (cf. Aagaard et al., 2018), the move has aimed to 'make human-technology relations speak' (de Boer et al., 2021, p. 407), by putting the 'mediated subject to the center' and "[study] how humans make technologies [ethically] relevant" (Verbeek, 2016, p. 192). The empirical study of how technological mediations become appropriated vis-a-vis value dynamism thus allows us to investigate the 'ethics from within' in the practice of Smitte|Stop by studying the 'dynamics of technomoral change' (Kudina & Verbeek, 2018, p. 297). That is, how do the technological practices of Smitte|Stop play roles in co-shaping morality and values, and how do they become embedded in questions of how to act and live?

## 4.1 INTERVIEW

To understand the lived experiences with, and the ethical appropriation of Smitte|Stop, we sought to gather lived experiences from (non-)users of Smitte|Stop by the means of in-depth qualitative, semi-structured interviews.

We interviewed ten people between the end of March and the end of April of 2021: seven of them had downloaded the app; two out of three who had not downloaded the app had decided so as a moral choice; three had gotten a notification; none had used the app to report their own infection. We decided to interview both non-users and users, as non-users are important to study regarding the moral implications of technology (Kiran, Oudshoorn & Verbeek, 2015), as they are often influenced by its implications (Smits et al., 2022).

The interviewees have been pseudonymized in the analysis and will be referred to as CL, BS, AS, EN, HJ, LL, SJ, PT, ML, and HN. Nine out of ten interviews were conducted in Danish, the last in English. All quotes are our translations. This resulted in approximately 10 hours of interview material. The informants were recruited through Facebook posts in the authors' social (media) networks. The post had the following wording:

I am interested in people's use of the Danish contact tracing app Smitte|Stop. More specifically I am interested in speaking to people who have either gotten a notification telling them that they have been in close proximity to an infected person, or conversely, have used the app to notify others about their own infection. Or perhaps people who have downloaded the app and have neither gotten a notification nor used it to warn others yet. I am also interested in speaking to people who have consciously decided NOT to use the app, due to e.g. privacy concerns or for other reasons. I am wondering if any one of you have used the app in this regard or perhaps know people who have. If you would like to share your experiences, or perhaps know someone, please do get in touch with me. (Our translation).

Participants were between the ages of 25 and 60, from the greater Copenhagen area. Four identified as women, five as men, and one as gender non-conforming. Most of the participants had completed, or were in the process of completing, a master's-level education. Due to the pandemic restrictions at the time, the interviews were conducted online or by phone. Before the start of the interview, the informants were reminded that the interview was being recorded, that they had the opportunity to remain anonymous, and that they could withdraw their consent at any time. The interviews were conducted within a two-month period, as they were needed as input for a master's project with a tight deadline. For this reason, the authors agreed on ten interviewees as a pragmatic choice within the constraints at the time.

The interviews followed a semi-structured interview guide, structured to lead the interviewees at the beginning of the interview to reflect on reasons why they downloaded the app (or chose not to), how they used the app (only those who had downloaded it), how they interpreted the notion of civic consciousness, and how the app and civic consciousness might be related. The interview technique otherwise allowed and encouraged the interviewees to move beyond the prepared questions.

Table 1. Interviewees

Pseudonym	Age	Gender	Downloaded Smitte Stop y/n	Notification y/n	Self report y/n	Date
HJ	20-30	Male	n	n	n	29.03.21
CL	30-40	Male	y	n	n	29.03.21
PT	50-60	Female	y	n	n	30.03.21
EN	20-30	Non-binary	y	y	n	30.03.21
AS	20-30	Male	y	n	n	31.03.21
BS	20-30	Female	y	n	n	31.03.21
LL	20-30	Female	n	n	n	31.03.21
SJ	20-30	Male	n	n	n	31.03.21
ML	20-30	Male	y	y	n	12.04.21
BN	50-60	Female	y	y	n	20.04.21

## 4.2 ABDUCTIVE CODING

The coding process followed closely the ‘abductive coding’ process (Vila-Henninger et al., 2022). A precondition for abductive reasoning is the socially cultivated ‘ways of seeing’ and the cultivated (academic, theoretical) positioning and training of the researcher (T Timmermans & Tavory, 2012). We entered the case generally and the interviews and coding specifically already ‘couched’ in the postphenomenological approach (Aagaard, 2017) - something that may have introduced bias in the interviewing and coding technique (Smits et al., 2022). Thus, we neither coded the interviews inductively nor ‘grounded’ (Glaser & Strauss, 1967), nor completely deductively, that is, ‘testing’ the theoretical framework on the data to figure out if Smitte|Stop in fact does mediate the value of civic consciousness. Rather, we approached it abductively within the postphenomenological framework. Thus, it was not a question of “how do technologies mediate values” (Kudina, 2019), but rather “how does Smitte|Stop mediate civic consciousness.” In this regard, we take it for granted that technologies do mediate values and work from this assumption to explore empirically through theoretical heuristic lenses how Smitte|Stop mediates civic consciousness as a value. As “[a]bductive analysis specifically aims at generating novel theoretical insights that reframe empirical findings in contrast to existing theories” (Timmermans & Tavory, 2012, p. 174), our abductive reasoning and analysis thus aim at developing a (soft) ‘theory’ of civic consciousness, that is, in light of mediated value dynamism to theoretically account for ‘how’ the value can be interpreted and practiced in its multiplicity.

Thus, our abductive inference was characterized as exploratively working ‘with’ the theory as ‘sensitizing notions’ (Blumer, 1954) in thematizing, coding, and categorizing the data. We will argue that postphenomenology’s mediation theory, with its epistemological pragmatic anti-foundational ambition and commitments to providing revisable knowledge of contextual case studies (Rosenberger & Verbeek, 2015) offers a suitable middle-range theory, that is, empirical-philosophical descriptions that places itself “between highly abstract theory and the multitude of minuscule substantive studies” (Glaser and Strauss, 1967, p. 97), fitting for such an abductive approach. Moreover, postphenomenology with its pragmatist roots does not seek to positively verify phenomena, but rather to provide provisional and reasonable theoretical descriptions that are open to revision (cf. Aagaard, 2017).

Postphenomenology thus provides the conceptual heuristics to explore technologies’ role in shaping ethical, social, political empirical phenomena (cf. Rosenberger & Verbeek, 2015), with

an empirical ethos closely related to Latour's ethnomethodological stance that it "is us, the social scientists, who lack knowledge of what they do, and not they who are missing the explanation of why they are unwittingly manipulated by forces exterior to themselves and known to the social scientist's powerful gaze and methods" (Latour, 1999: 19).

Practically, the coding of interviews followed an iterative and comparative approach (Glaser & Strauss, 1967) of identifying themes, meaning units fitting the theme, then providing a summary of the theme based on the quotes, then reading the next interview and going back to compare the themes established in the preceding interview, and so on. Moreover, we shared results and working papers among academic peers at research meetings and conferences – a crucial part of any abductive process for theoretical production (Timmermans & Tavory, 2012, p. 179).

The first coding process resulted in three overarching themes: 1) Technological Presence: What is Smitte|Stop? How is it present in the lifeworld of its users? How do users use Smitte|Stop? Why do some people not use it?; 2) Responsibility: What is civic consciousness? Is using the app a practice of civic consciousness? What is the relation between the value of civic consciousness and other values such as privacy and data security?; and 3) Trust & Privacy: Do users trust the app? Do users trust that the data will be used responsibly? What is the significance of privacy and data security? In this process, we returned to the interviews and compared the commonalities and contradictions between the interviewees in relation to the three identified themes.

Finally, through the abductive and iterative process of interviewing, coding, categorizing, and revisiting former coded phenomena to re-code and forming new themes, it became clear that civic consciousness was most interesting to pursue, and how this value was related to other identified values, such as privacy, security, trust, and responsibility (themes 2 & 3), and influenced by how the informants appropriated the technology (theme 1 – less so in relation to how it was present in their embodied, everyday experience, which it was not for most if not all informants). Thus, from the coding of the empirical material and in dialogue with the theoretical framework, we developed two overarching themes and five sub-themes that emerged from the data collection and coding process:

- 1) Civic consciousness as relations of intersubjective responsibility (section 3.1),
  - a. Solidarity (section 3.1.1)
  - b. Commodified morality (section 3.1.2)
- 2) Civic consciousness as relations between citizen and state (section 3.2)
  - a. Providing data for the good of society (section 3.2.1), Dual contract (section 3.2.2), and
  - b. Value trade-off (section 3.2.3) (see Figure 1).

Therefore, our analysis focuses on how the informants imagined using the app, the app's implications, and their reflections on downloading it. This approach is similar to Olya Kudina's analysis of imagined use of Google Glass and fetus sex selection technology (e.g., Kudina & Verbeek, 2019; Kudina, 2019), in that we do not only consider the phenomenology of embodied use and reflections thereof, but also the phenomenology of imagined and possible consequences, as well as decisions of not engaging in the technological practice.

## 5 TECHNOLOGICALLY MEDIATED CIVIC CONSCIOUSNESS

Empirical studies of citizens' perceptions and willingness to adopt DCTTs show that a significant element have been citizens' sense of 'civic duty' and 'collective responsibility' in pursuing 'the greater good' due to the 'moral intensity' of the pandemic (Williams et al., 2021), especially to care for one's community (Altmann et al., 2020). Moreover, the need for transparency of the state, and trust from individuals in the state have been noted as central concerns alongside safeguarding of privacy (Ødeskaug et al., 2023; Oldeweme et al., 2021; Jansen-Kosternick et al., 2021; Williams et al., 2021). Similarly, other studies have shown how DCTTs present trade-offs between security and privacy, with some users believing temporary surveillance is justified for public health (Wnuk et al., 2020). According to van Brakel et al. (2022), the Dutch and Belgian cases exemplified similar narratives in which the app was framed as a balance between privacy and solidarity.

In the following, we investigate how civic consciousness has become (re)defined in relation to Smitte|Stop. We began the interviews by asking the informants to reflect on the concept of civic consciousness. In the parts of the interviews where the general concept of civic consciousness was addressed, but not yet related to Smitte|Stop, we saw contours of a general understanding of civic consciousness as a morality of contributing to the benefit of society, corresponding to the general discourse on contributing to national well-being. However, following this, the informants were asked to reflect on the value of civic consciousness in relation to Smitte|Stop. Here, we began to see the dynamic nature of civic consciousness and Smitte|Stop's role in mediating particular meanings of the "civic," and how one is "conscious" of it.

We characterize two general ways that Smitte|Stop mediates social relations. We argue that Smitte|Stop organizes relations intersubjectively, e.g., by amplifying some informants' interpretation of the world as other people of flesh and blood that one can be contaminated by, and conversely, one can contaminate with Covid-19. On the other hand, it also organizes relations between (some) individuals and the state organs, constituting the individual's subjectivity as being a 'citizen', and the objectivity of the world as the 'state'. In short, the 'civic' that one is 'conscious' of was perceived as either that of one's community or the State; as Gemeinschaft (community) and Gesellschaft (civil society) (Tönnies, 2001).

The analysis is structured around these two social mediations, that is, two ways in which Smitte|Stop organizes relations between humans and their world: as intersubjective relations (section 3.1) and those between individual and state (section 3.2). In these sections, we then respectively analyze how the informants reflect on and evaluate the notion and practice of civic consciousness, that is, how individuals appropriate Smitte|Stop as a technology of civic

consciousness (or not). The structure of the analysis and the proposed forms of mediations are illustrated in Figure 1 below.

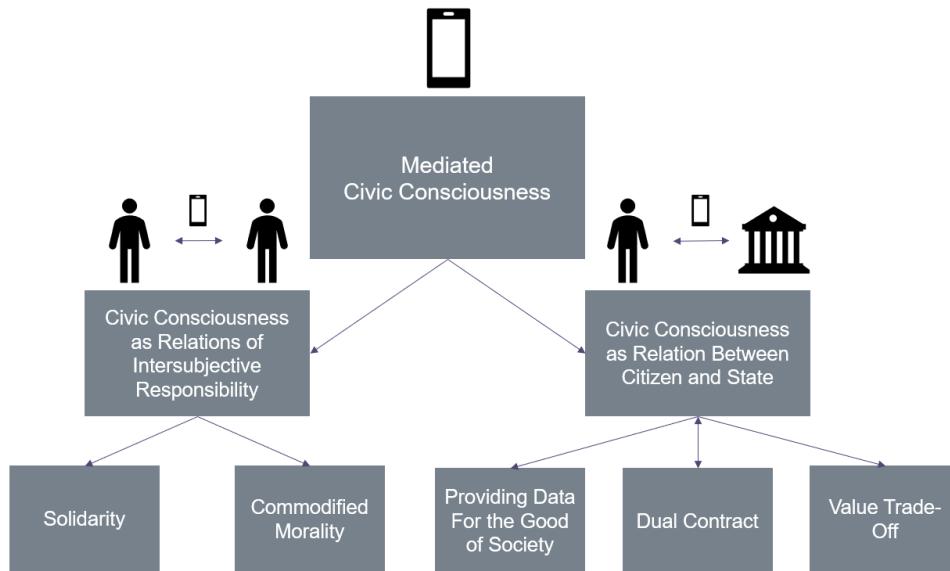


Figure 1. Visualization of mediated relations and meanings of civic consciousness

## 5.1 CIVIC CONSCIOUSNESS AS RELATIONS OF INTERSUBJECTIVE RESPONSIBILITY

It became clear that using Smitte|Stop, and its relation to civic consciousness was, for some interviewees, related to intersubjective relations, in the sense that the use of Smitte|Stop was interpreted as reflecting concern for the well-being of other individuals. This also implied certain practices, or as *ML* described it, a degree of “self-regulation”:

*ML*: “Civic consciousness is another word for what I call ‘social self-regulation,’ which is to regulate oneself after what other people do. I think you can call it that because you want to do something good for the community.”

Other interviewees criticized this interpersonal reading of Smitte|Stop for it potentially giving rise to a disengaged morality. In the following, we will present two conceptualizations based on reflections given by the interviewees on the mediated character of civic consciousness in relation to Smitte|Stop qua intersubjective responsibility: “Civic consciousness as Solidarity,” and “Commodification of Civic Consciousness,” with the former emphasizing the technology’s role in *enhancing* moral behavior, and the latter *constraining* or *impoverishing* moral behavior.

### 5.1.1 Civic Consciousness as Solidarity

We first examine the reflections given by the participants on how Smitte|Stop might enable solidarity with others. For instance, in the three excerpts below, when inquired into the relation between Smitte|Stop and civic consciousness, it was suggested that downloading Smitte|Stop was an act of civic consciousness, in the sense that it was about caring for others:

*ML*: “[Downloading Smitte|Stop] has something to do with wanting to help the majority, the society one is a part of. [...] It is not so much to help myself from potentially getting infected [...] It is more about the community.”

*EN*: "Well, I realized that I had not downloaded it, because I did not want to 'face' the consequences, if it told me that I had been in close contact with someone. When I had finally understood it, then I could not see it as anything but irresponsible."

*CL*: "It is to take care of each other, and among other things also downloading the app. The more people who have it, the more people may also be helped."

The excerpts suggest that the decision to download Smitte|Stop became ethically relevant in relation to the informants' everyday morality, in that it has introduced new concerns of what it means to be responsible during a pandemic. It is expressed as something you do not download for your own sake, or for preventing one's own infection, but for practicing solidarity for one's community, for instance, in "wanting to help the majority" and "to take care of each other." For instance, for *EN*, Smitte|Stop was at first appropriated with fear of having to "face the consequences," but over time, it became apparent that it was irresponsible not to use it. Seemingly, Smitte|Stop plays a role in co-shaping a perception of moral responsibility towards others, and with this, the informants relate to the value of civic consciousness as about taking care of one's community. This moral act was thus translated into the act of using Smitte|Stop. The excerpts thus suggest that Smitte|Stop can mediate moral practices by being able to warn others or being warned oneself. Such concrete practices as implicitly alluded to were described by *EN*, showing how Smitte|Stop mediates moral decision-making. Below is an excerpt from *EN*, who received a notification prior to an important meeting with a friend:

I got it right before an important meeting where I had to be a lay representative for a friend. I did not feel safe doing that when it had told me that I had been close to someone. So, I did not go, and that was a shame because it was quite important for her to have me there. [...] I can't sit down, not with her nor in an office, at someone's workplace, where there can be a bunch of people, who come and go every day and possibly bring an infection. I cannot have that on my conscience."

In this excerpt, we see how Smitte|Stop can mediate civic consciousness in relation to concrete, moral practices. *EN* presents a moral dilemma of choosing to help a friend or take precautions towards strangers' workplace. While the technology co-constitutes a situation of moral decision-making (Verbeek, 2011), the excerpt also suggests how humans appropriate and value such technological mediations (Kudina, 2019).

### 5.1.2 Commodification of Civic Consciousness

In the preceding analysis, the informants expressed how Smitte|Stop might *enable* the value of civic consciousness. Civic consciousness, as a way to be in solidarity with other people, could be pursued by engaging in the technological practice of using Smitte|Stop. Smitte|Stop affords a way to act in solidarity, and the technological possibility to digitally trace contacts translates the act of caring for others into downloading and using Smitte|Stop. It thus provides a material answer to the question of how to live and act during a pandemic, while co-shaping the associated value in turn. Let us now turn to reflections given on how Smitte|Stop might *contradict* the practice of civic consciousness. For instance:

*AS*: "It is an extremely effortless way to pad oneself on the back, and say: there we go, now I have practiced civic consciousness. [...] Well, you download an app [...]."

*BS*: "You can hide behind it. [...] Well, it is [a] good idea. Because, let's say, you are infected and have been sitting on the train across somebody you do not know. One of my colleagues got tested positive this Friday, and he had been sitting at a table where he did not know the names of the others. What are you to do, right? It makes sense there. [...] [But] I do not think that it should be the primary form of contact tracing. You have a responsibility in reaching out to people whom you have been in close contact with."

The excerpt suggests that the use of Smitte|Stop might, in a seemingly ‘Borgmannian’ sense, ‘commodify’ the moral practice of civic consciousness. According to Borgmann (1992; 2006), our modern world is filled with “devices” that deliver consumable “commodities.” Rather than an engaged interaction with the world and other people, it is feared that Smitte|Stop affords a mere disengaged approach to the moral practice of civic consciousness; instead of being active in one’s community and social circle, the act is translated into simply entering into the app and making it do the work. It is thus perceived as an effortless way to “hide” or “pad oneself on the back.” Moreover, a relevant mediational point was suggested by *BS*, as the use of Smitte|Stop has its time and place in situations where the engaged way of practicing contact tracing would be futile, as, for instance, on the bus or after being with people one does not know.

The excerpts suggest that Smitte|Stop mediates civic consciousness by contradicting how it ought to be pursued; by taking responsibility for others, by having a proactive and engaged moral attitude, instead of simply delegating one’s responsibility to the technology, and count that it carries out one’s moral duty.

Hitherto, we have seen how Smitte|Stop plays a mediating role in shaping civic consciousness as being concerned with the moral responsibility of taking care of other people; what one is ‘conscious’ about is the civic-as-community. Thus, ‘consciousness’ is mediated by Smitte|Stop as being about care for other people and their health, by taking the proper precautions of limiting the spread of contagion. Smitte|Stop was both seen as a technology that could *enable* this value by being able to be warned and warn others of potential infection, but also as a technology that could *contradict* the value, by affording a disengaged, superficial way of practicing civic consciousness.

## 5.2 CIVIC CONSCIOUSNESS AS THE RELATION BETWEEN CITIZEN & STATE

In the previous section, we argued that downloading and using Smitte|Stop can be seen as organizing relations between individuals. By making potential infections visible for oneself or others, it could enable a practice of civic consciousness concerned with caring for other people.

In the following, we will present three conceptualizations based on reflections given by interviewees on the mediated character of civic consciousness in relation to Smitte|Stop qua the relation between individual and state: “Civic consciousness as providing data for the good of society,” “Civic consciousness as dual contract,” and “Civic Consciousness as value trade-off.” Here, we explore the ways Smitte|Stop appears as a mediating boundary between individuals-as-citizens and the state, thus adding a ‘vertical’ mediating role of Smitte|Stop in contradistinction to the preceding ‘horizontal’ mediation elaborated in the previous section.

### 5.2.1 Civic Consciousness as Providing Data for the Good of Society

Through the interviews, we saw how Smitte|Stop could mediate moral perceptions and practices pertaining to the ‘civic duty’ of individuals toward the state. Here, civic consciousness took on a character of not directly being about intersubjective responsibility, but about the relation between authorities and users of Smitte|Stop:

*BS*: “If they can use the information they are collecting now, if they can use it in the long term, God forbid that a Covid-19 2.0 would happen, [...] then I would be more than happy to help with it.”

*HN*: “It might be an extra support to what one already does. [...] So I thought that it can contribute in one way or another with a form of statistics. [...] that might give a better overview for somebody who sits centrally [...] that could benefit from it”

Here, we see a description of civic consciousness that is highly contingent on a data-based technological infrastructure. The excerpts suggest that Smitte|Stop can mediate a practice of civic consciousness concerned with producing valuable information for state authorities. The data produced could potentially be used for “Covid-19 2.0,” and by using the app, the central contact tracing authorities might more easily trace contacts. Moreover, *HN* suggests that using Smitte|Stop is not directly about caring for others, but “an extra support to what one already does,” suggesting that other more ‘physical’ measures such as social distancing etc., are more appropriate practices of caring for others, where Smitte|Stop is more ‘indirect’ in that it is about helping authorities, who might then in turn help those in need.

Civic consciousness, as mediated by Smitte|Stop, is here not seen as immediate interpersonal care for others, but rather ‘care’ as the impersonal generation of useful data for central authorities. Smitte|Stop thus enables a form of civic consciousness that is concerned with the ways in which the individual can contribute to the greater good, by being a ‘productive’ citizen, by delivering data. However, as they both suggest, Smitte|Stop is an extra tool in their practice of civic consciousness, and that Smitte|Stop enables a particular form of civic consciousness as data production.

### 5.2.2 Civic Consciousness as Dual Contract

The previous section suggested how Smitte|Stop constitutes a relation between the individual and the state, and how Smitte|Stop introduces new ways in which the individual can perform their civic duty in this relation. Here, it was articulated that engaging with Smitte|Stop was about producing or delivering data to state authorities. This relation was further developed by some interviewees who emphasized the responsibility of the state in such a relation. Here, critical concerns were directed at the concern of privacy, and the responsibility of the state in handling the data generated by Smitte|Stop:

*CL*: “I’m not saying that the urgency of the problem eliminates the concerns. [...] If anything, I would say that this really is the time to make things right. [It] is an entirely different thing if it is the state and public bodies that fuck up. So, I think the stakes in this sense are much higher, and the concern for doing things right, in terms of not turning this into some security breach [...] is even more crucial because this is really a time of testing people’s faith in institutions.”

As *CL*’s excerpt suggests, the moral intensity of the pandemic does not “eliminate the concerns,” and that a great responsibility lies on the shoulders of the state authorities. Now is the time for the state bodies to do “things right” and take responsibility, or else the public trust might erode. This relation between responsibility and privacy, of how individuals engage in mediated acts of responsibility in which data is generated and might become at stake, and how, at the same time, state authorities become responsible for handling such data, was further expressed in the following as a dual contract, reflecting the reciprocity of responsibility and trust:

*HN*: “Another thing is the data that the public has [...] because that is data that they protect for the community’s sake [...]. [You submit] your [data] to Statens Serum Institut<sup>5</sup>, and you have done that with civic consciousness [...]. [Considering] that you want people to show their civic consciousness, then you must also be careful with saying what it is that you use the data for, and how do we you protect you, and if you are exposed, who knows what, and so on [...]. There is a tremendous responsibility by being so registered [...].”

<sup>5</sup> ‘The State’s Serum Institute’ [Eng.] is a Danish sector research institute, which had a central role in research and surveillance on the development of Covid-19 in Denmark as well as in contact tracing.

Despite the seriousness of the situation, it is not an ‘anything goes’ situation, and the state still must uphold privacy, trust, and transparency. Now that citizens are potentially delivering personal data voluntarily in the name of civic consciousness through Smitte|Stop, there lies a great responsibility in handling it correctly and being transparent about it. Thus, the state bodies, in turn, too, must practice their share of civic consciousness in handling the data correctly.

### 5.2.3 Civic Consciousness as Value Trade-Off

Furthermore, for some interviewees, deciding to use Smitte|Stop became a question of potential value ‘trade-offs.’ The central question of this potential trade-off is how much the individual perceives the use of Smitte|Stop as potentially letting go of their privacy in the practice of civic consciousness.

Several of the people interviewed did not believe in the effectiveness of Smitte|Stop. They doubted the technical efficiency and believed that for Smitte|Stop to work it had to be unrealistically precise. Thus, one would be naïve to believe that using Smitte|Stop was a practice of civic consciousness, it was argued. This was moreover exemplified through the argument that other practices of civic consciousness were more appropriate:

*LL:* “I will be more than happy to take care of the elderly, and [the] chronically ill [...]. I will be more than happy to keep a distance, sanitize my hands, and wear a face mask for their sake. But I am not going to sell my data for their sake. [...] I am more than happy to do all these things to take care of others. That is the way I can practice civic consciousness.”

Here civic consciousness is tied to physical means such as taking care of the elderly, keeping a distance, etc., while Smitte|Stop is perceived as contradicting civic consciousness, due to the potential ‘sell-out’ of oneself suggesting that Smitte|Stop would lead to a violation of one’s own personhood, thus suggesting tension between civic consciousness and privacy as mediated by Smitte|Stop. Moreover, the potential value trade-off was in one instance, measured in a utilitarian manner of how much one could “sacrifice” and how much one could “gain”:

*SJ:* “Civic consciousness only works if it is voluntary. If it is forced, then we’re dealing with something totalitarian. [...] What is the effect? [How] much do you sacrifice, and what are the gains? Personally, to download that app, is [a] greater expense for me than not going out and seeing 100 people, right? [...] Now we might sound very skeptical, horrible, and conspiratorial, but the funny thing is, we abide by the rules.”

It is suggested that using Smitte|Stop, and accepting its inefficiencies and potential privacy violations is a greater “expense” than not seeing people. The perception that privacy would eventually be violated was further elaborated by *SJ* and appeared to be tied to the lack of trust in the government:

*SJ:* “What do you let go of? Can you trust that the data will not be passed on? [...] [The] amount of data people put up for free, for I do not know what, is concerning [...] I trust private entities more than I trust governments [...]. Some medical company is free to know that I had a cold when I was 16. That is not what this is about. It is about something greater than that [...].”

These two excerpts from *SJ*, and implicitly in the excerpt from *LL*, suggest how Smitte|Stop becomes ethically relevant and how values such as privacy and trust become entangled and at stake with civic consciousness in the valuation of Smitte|Stop – a similar dilemma as identified by Kudina (2021) in her study of the Dutch Covid-19melder. Because of a lack of trust in the government, and thus a perceived risk of privacy violation, Smitte|Stop is appropriated as a technology that contradicts the practice of civic consciousness, as opposed to the ‘analog’ practices, such as keeping a distance, wearing a face mask, and so on. Despite Netcompany

being a private company, and that one might be more trusting of “private entities,” the general concern is that the Danish government will not handle the generated data responsibly. This value trade-off was also formulated, however in contradistinction to the position articulated by *SJ* and *LL*, namely as a worthy trade-off:

*BS*: “There is something more important at stake. The positive effect is greater [...]. I just think that it can give so much, and if my position gets leaked [...]. That is not my greatest worry. [...] [...] I just think that if it can contribute to something good, and something good can come from it, then it really is not a concern.”

*BS* makes sense of the potential trade-off as being desirable, as the “positive effect is greater” and that if “something good can come of it,” then it is of no concern for her, as something “more important” is at stake, suggesting the moral intensity of the pandemic is greater than the potential personal privacy violations.

In this section, we have examined how Smitte|Stop mediates the value of civic consciousness by constituting the “civic” as state, thus putting at stake the values of privacy and responsibility, and solidarity (Kudina, 2021). The “civic” that one is “conscious” for is the state and its authorities; the “civic” is not other people of flesh and blood, but the state’s organs that uphold the social order. What becomes at stake – what one is “conscious” of – in relation to this civic, is the question of what *duties* one ought to follow, and likewise, what sort of *duties* the civic has towards one as a citizen. Not only ought one be conscious of the civic, but the civic ought also to be conscious of the individual.

## 6 CONCLUSION & DISCUSSION

In this paper, we have studied the ‘ethics from within’ in the case of Smitte|Stop (cf. Kudina & Verbeek, 2018; Verbeek, 2016) and how mediated subjects of this technology have appropriated and given meaning to its mediating role. We have investigated how it has contributed to their everyday morality, by putting at stake what one can or ought to do (cf. Swierstra & Waelbers, 2012) showing how the ‘moral uncertainty’ of the Covid-19 pandemic has made people balance values such as privacy, trust, and solidarity in relation to a collective perspective (Kudina, 2021), informing the mediated constitution of civic consciousness. While DCTT’s have been shown to have dubious effects (Maccari & Cagno, 2021; Tupper et al., 2021; Keeling et al., 2020), we have shown how Smitte|Stop prescribes an answer to the question of ‘how to act’ in the case of receiving notifications, and moreover mediates questions of ‘how to live’ in a technologically mediated pandemic. Smitte|Stop thus robs the existing ‘moral routines’ pertaining to the question of how to act and live responsibly in a pandemic “of their self-evident invisibility” (Swierstra & Rip, 2007, pp. 5-6) and suggests new ways of upholding modes of moral behavior (cf. Kudina, 2019, p. 69). Our study has demonstrated how the abstract ethical values that guide people, become embedded in the technological practice of Smitte|Stop, thus demanding re-contextualization and substantiation considering the new technological possibilities (Kudina, 2019), making ‘cold’ morality ‘hot’ again (Swierstra & Rip, 2007). Seemingly, Smitte|Stop has introduced new practices of civic consciousness, but has at the same time re-contextualized the meaning of the value at stake. The aim of this paper has not been to take a normative stance and discuss whether Smitte|Stop might contribute to ‘good citizenship’ (cf. Kligler-Vilenchik, 2017) but rather to show how emergent technologies can contribute to the enactment of civic norms and practices, here specifically in relation to civic consciousness. Nonetheless, our empirical material suggests that users, in fact, do make such normative reflections in considering whether Smitte|Stop is an avenue for pursuing practices of civic consciousness.

We suggest that Smitte|Stop mediates the value of civic consciousness along two general lines. Firstly, Smitte|Stop mediates the notion of civic consciousness by using the technology as a

practice of intersubjective responsibility towards others. It thus expands the range of tracing by being able to reach people outside one's immediate contact circle, adding a 'mediated contact circle'. It adds a dimension of responsibility that goes beyond the immediate, physical responsibility of keeping a distance, wearing a mask, etc. Thus, civic consciousness qua Smitte|Stop might enable us to care for others as an act of responsibility on the 'micro-level,' i.e., potentially making one's own infection visible and getting tested to stop the passing of the infection or making it visible to others so that they might get tested.

Secondly, it organizes relations between individuals and the state, where individuals can contribute with useful statistics and data, and help the authorities in their tracing of contacts. Smitte|Stop thus mediates civic consciousness as the responsible act of the individual in contributing potentially valuable data for central authorities, i.e., showing responsibility or solidarity on a 'macro-level,' that goes beyond the immediate, intersubjective way of taking care of each other.

This paper thus adds a societal dimension to the recent postphenomenological scholarship concerned with value dynamism (e.g., Kudina & Verbeek, 2018; Kudina, 2019) together with the recent work by Kudina (2021) that has shown how individual values and rights become entangled with collective responsibilities in light of DCTTs, by presenting a preliminary conceptualization for understanding technology's role in mediating social ties. By examining the dynamic character of civic consciousness as respectively a 'community morality' and 'societal morality' mediated by Smitte|Stop, we have shown how civic consciousness takes on particular meanings contingent on what the 'civic' is perceived to be. Smitte|Stop thus co-constitutes a mediated relation to the civic-as-Gemeinschaft and civic-as-Gesellschaft, in which the technology reveals certain aspects of the civic while affording different ways of being conscious about it. It is here we primarily see the multistability of Smitte|Stop, as it mediates the 'social' both as the civic-as-Gemeinschaft and as-Gesellschaft, affording two overarching interpretations of the '(social) world' as mediated by the human-technology relations.

We have taken civic consciousness to be an abstract value, concerning the setting aside of personal interests under the common good (Damsholt, 1995), and explored how this value has been contextualized in relation to the use of Smitte|Stop, with a methodological focus on (post)phenomenological depth rather than breadth. However, our results bear similarities with studies of DCTTs in other countries. As previously mentioned, several studies have been conducted on empirical value conflicts on other national DCTTs (e.g., Ødeskaug et al., 2023; van Brakel et al., 2022; Wnuk et al., 2020). Similar to Wnuk et al. (2020) and van Brakel et al. (2022), we see how values, such as privacy and solidarity, become at stake. Another relevant study is Haltaufderheide et al. (2023) which likewise suggests a methodological grounding in the study of solidarity in relation to DCTTs, in that they argue similarly to us that such technologies afford the enactment of technologically mediated solidarity.

Our paper adds to this literature by taking a micro-perspective approach afforded by postphenomenology, and we show how value mediations take place in relation to concrete imagined as well as experienced technological practices. While studies such as Altmann et al. (2020) conduct cross-country surveys, our approach favors a closer qualitative approach where the individual's reasoning can be brought forth.

We hope that not only postphenomenologists will find this study's identification of how the Smitte|Stop app mediates different interpretations of the ethical value of civic consciousness. Designers of policy-relevant technology and policymakers envisioning technology as part of solutions to 'wicked' or 'postnormal' societal problems might also find it interesting because it illustrates how a technology can be politically and ethically ambiguous. Technology often becomes embedded in value conflicts, but in this paper, we argue that the values themselves become mediated in relation to technology. In the (hopefully unlikely) case that nation states

need to reintegrate DCTTs, designers and decision-makers ought to consider not just design for certain values, but also how values – expected as well as unexpected – might change in relation to the technology.

### Data Access Statement

Data supporting this study cannot be made available due to agreement with informants that audio recordings and transcriptions would be deleted after publication for sake of privacy.

### Contributor Statement

Kristian Holst Kristiansen: Conceptualisation, empirical work, analysis, revision; Tom Børseren: Revision, analysis

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The authors report no conflict of interest.

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