Understanding the Boundaries between Policymaking and HCI

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ABSTRACT

There is a growing body of literature in HCI examining the intersection between policymaking and technology research. However, what it means to engage in policymaking in our field, or the ways in which evidence from HCI studies is translated into policy, is not well understood. We report on interviews with 11 participants working at the intersection of technology research and policymaking. Analysis of this data highlights how evidence is understood and made sense of in policymaking processes, what forms of evidence are privileged over others, and the work that researchers engage in to meaningfully communicate their work to policymaking audiences. We discuss how our findings pose challenges for certain traditions of research in HCI, yet also open up new policy opportunities for those engaging in more speculative research practices. We conclude by discussing three ways forward that the HCI community can explore to increase engagement with policymaking contexts.

CCS CONCEPTS

• **Human-centered computing** → *Field studies.*

KEYWORDS

Qualitative studies, Research impact, Think tanks, Public policy

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1 INTRODUCTION

Over the last decade, frameworks have begun to be developed to assess the impact of academic research to society. Researchers working in academic institutions are increasingly under pressure to disseminate their work beyond their immediate research community [2]. While the ways in which impact can be achieved are diverse — and the notion of impact itself is highly contested — informing public policy is seen as a key way of translating research into practice. This typically involves the use of evidence generated by research to support and influence the extensive set of laws and regulations that are active on a local, national, or international level.

The value of engaging in policy contexts is apparent in the field of Human-Computer Interaction (HCI) [4], where researchers are increasingly engaging with policymakers to inform them about the impact of digital technologies on society and politics [6, 31, 50, 55, 64, 70]. It has been noted that HCI researchers, working in a cross-disciplinary and critically-minded field, are particularly well-positioned to inform areas of public policy [2, 47]. Researchers have also discussed undertaking activities to gain experience of policymaking practices. These have included: work placements and graduate courses [49, 52]; submitting policy briefs [70] and even working as policymakers [23]; as well as critically investigating the formats used for policy documentation by redesigning them [60]. These attempts to inform policy can be seen as an indication of a growing interest in the SIGCHI community to inform policy, as a means to achieve real-world impact and improve people's quality of life [48]. Nevertheless, recent discussions have highlighted the difficulties that

researchers face when translating research into policy [49]. These are part of general tensions in policymaking and not specific to HCI; in other fields, researchers openly discuss the challenges of informing policy with their research outcomes [14, 20, 21, 56, 57]. Our research aims to stimulate similar discussions on evidence and policymaking processes in HCI. Furthermore, we set out to understand the ways in which researchers and policy professionals go about influencing public policy around technology, and identify ways for HCI researchers in particular to engage in policymaking processes.

In order to develop a more in-depth understanding of the processes of policy informing for HCI communities, we conducted a qualitative study with researchers who work to inform public policymaking. We interviewed 11 expert participants, including four HCI researchers who have proactively engaged in policymaking, and seven professionals working at think tanks and similar organizations that have a remit to translate research findings and evidence to fit policymaking processes and inform governmental decision making. Through our interviews, we aimed to understand the opportunities and difficulties of engaging with policymakers for the research community, and the strategies and tactics that individual researchers and research teams had used to shape policy. Our analysis of the interview data highlighted two interrelated discourses in policymaking for the HCI research community. First, we found that what is considered 'evidence' in policymaking is nuanced and poses particular challenges when looking ahead to long-term futures. This is specifically problematic when developing policy for emerging technologies that have no track record of their socio-technical impact. We found that policy-informers explore several approaches to envisioning plausible futures, partly informed by interventionist, experiential and speculative research. This leads to the second point of discussion: while policymakers are expected to "understand the benefits of user-centered and experience-based design, including why and when it might be used" [37], participants experience difficulties in fitting the outcomes of such design-led approaches into evidence formats that lead to policy decisions.

Through our study we came to understand how these tensions in policy processes present opportunities and challenges in two key areas for HCI research when positioning itself as a policy engager. First, we highlight how the increased focus on research impact, and the preponderance placed on quantified evidence, can be a challenge to large sections of the HCI community that focus on highly contextualized and situation studies of technology design and use. However, we offer ways forward for the HCI community, building on recent debates around the formation of knowledge across and between diverse studies and translating these into policy narratives. Second, we discuss how understanding the growing role of design in policymaking can help us to identify how speculative and design-led approaches within HCI can be adapted to fit policymaking processes that inform the development of sociotechnical policies. Third, exploring collaborations with think tanks can help us to make use of the mediating value of such organizations and increase the policy relevance of our work and its visibility. For the latter, we envision roles for organizational bodies in the field of HCI and aim to contribute to discussions around the development of the evidence base of HCI research, which we will explicate later in this paper.

2 HCI AND PUBLIC POLICYMAKING

As a highly applied field of enquiry, HCI is well placed to translate generated knowledge to practice. A core concern of HCI is understanding the implications of digital technologies on human life, and ensuring that technologies bring positive benefits to citizens. Many researchers in the field have sought societal impact by focusing on socially-engaged research, working closely with communities and civic organizations [1, 3, 27, 61, 74]. Furthermore, HCI researchers have long been at the forefront of philosophical and ethical discussions of what it means to be human in relation to technology [10, 39, 43, 53, 65, 75]. Core to these discussions has been an acute awareness of the politics of technology design [5, 61, 81], with HCI researchers in participatory traditions often advocating for the viewpoints of potentially marginalized groups. As a field, HCI is also highly future-oriented — where emerging technologies are put into dialogue with human needs and values [50], or indeed their impacts are speculated on in relation to imagined future contexts (e.g. [34]).

In the recent years, researchers have started to highlight through thought pieces [48] and workshops [11, 24] the space between HCI and policymaking during the development of socio-technical regulations. These papers not only highlight the impact HCI can have on public policy, but also the influence of public policy on the work of HCI researchers. These authors discuss the implications their research has on specific policy topics [27, 50, 55, 64] while also reporting on the personal experiences and lessons learned from such engagements [24, 47]. For example, as part of the project #Blockchain4EU [45], HCI researchers collaborated with the EU Policy Lab. Through the making of speculative design prototypes they explored the 'industrial transformation' blockchain technologies might bring, while giving them insight on what the 'policy dimensions' of such technologies might be [44].

While there are apparent opportunities here for HCI research to be fed into policymaking contexts, there are also struggles. With a growing focus on evidence in policymaking comes a greater reliance on academic research to reduce the potential for politics and ideologies to shape decision

making in relation to public policy [8, 69, 84]. However, at the same time it poses questions about what we mean by 'evidence', what forms of evidence are considered more valuable than others, and indeed whether certain disciplines are more or less well placed to inform evidence-based practices. This may pose specific difficulties for the field of HCI; although well-placed to defend the rights and advocate for the needs of citizens in reference to socio-technical regulation [50, 71], it is a diverse field, bringing together many different disciplines, different conceptualizations of evidence, often approaching similar topics from radically different positions [32, 58, 83]. This has led several different groups of authors to highlight how the history of HCI is one where the topics being studied are increasingly fragmented [67], that citation practices and building on top of work is less common than other fields [62, 85] and indeed that the diverse contexts, methods and ways of knowing in HCI mean the field drifts without a strong underlying knowledge base [42].

As such, the interdisciplinary endeavor underpinning HCI can also be a challenge to shaping policy in an era of evidence-based decision making. Rodger et al. highlight that different forms of evidence are valued differently, emphasizing a "practical need to fit evidence" to the contemporary practices of evidence-based policy [64, p.2426]. Wang's work focuses on the complexity of developing policy around wicked problems that are often investigated in HCI research (using the specific example of 'smart cities') and calls for an understanding that this 'hinders' the progress of policy [79]. Thomas et al. take a public policy focus in discussing environmental policy in the field of HCI, and identify a particular challenge for HCI researchers to read "well outside" their research focus and discipline to become aware of the "relevant terms, methods and debates" that are relevant to their policy brief [71, 6989]. A further challenge facing HCI in reference to policymaking is that it is a global field, and indeed the issues that researchers address and the technologies that are studied span international boundaries. Lazar, in his reflections on engagements with public policymaking in the United States, reflects on the challenges this poses, as much policymaking is generally bound by and limited to individual nations [47].

Our research builds on these recent debates in the field of HCI by setting out to examine, in more depth, the boundaries between policymaking and HCI. We set out the policymaking context for our study in the following section.

Evidence-Based Policymaking in the UK

Our research has been conducted in the United Kingdom (UK), where there has been a strong focus on evidence-based policymaking (EBPM) over the last 20 years. EBPM was first introduced in the UK by Tony Blair's 'New Labour' Government that was in power between 1997 and 2007. EBPM was one of many measures introduced by this government to 'modernize' processes of governance, and was a proactive response to public concerns that much regulation and policymaking by previous governments were ideologically driven and shaped by corporations [80]. EBPM was introduced across all areas of policymaking in the UK [41, 69, 80] — from community and society to science and innovation — and calls for rational decision-making based on "what works" in contrast to ideologically driven decisions [26, p.276]. Core to EBPM is the conduct of and building on research in every stage of the policy development process to (i) result in a policy document that explains and defends the decisions with evidence and (ii) describe the intended change triggered by that particular policy decision. As noted, transitioning to EBPM does not come without tensions. What constitutes evidence and which research approaches in EBPM lead to useful evidence are critical discussions amongst policymakers and policy researchers. For example, the quantitative evidence that results from scientific methods is often favored over qualitative evidence [68]. However, inclusion of the latter might provide the richness of data needed to account for the full spectrum of demographics and their characteristics, and thus enable more balanced decision-making [57]. In parallel, it is questioned whether the search for evidence is always necessary, and whether policy problems need to be understood in different ways first [19]. These discussions provides impetus for investigating how to improve practices and broaden the range of evidence used in policymaking.

Although for the purposes of this paper describing the policymaker's professional role in detail is too complex (the policy professional development framework identifies 18 skills for policy professionals in the civil service to have [37]), there are some core aspects of the EBPM process that have implications for the success of a policy. Given its complexity and the reality that it does not take place in a vacuum (policy development is influenced by "power, people and politics" [80, p.23]), researchers in the field of public policy have developed simplified models of policy development phases. One such model is the *"ROAMEF-cycle"* [72, p.9], which was developed by HM Treasury [38] and is used by a great variety of different Governmental departments in the UK. In overview: after developing and setting the rationale (R) for a (change in) policy and establishing the objectives (O) that the policy should achieve, multiple versions of policy decisions are appraised (A) and supported by objective analysis. Once the policy is implemented, the changes that result from these decisions are monitored (M), evaluated (E) in relation to the objectives of the policy, and supported by objective analyses. Finally, these decisions are provided with feedback (F) on whether or not the policy is achieving the intentioned change. Although every phase is different, each of these includes elements of 'evidence', 'politics' and 'delivery' [37, p.18].

In addition to the civil servants that work as policy officials (of which it is estimated there are 18,000 in the UK [36]) a large external network aims to inform and influence the multiple interactions in the public policy development. This network ranges from think tanks, policy labs, universities, research institutes, to charities, advocacy groups, lobbyists, and more [26]. Furthermore, the success of a policy brief is determined by whether it is picked up by a Member of Parliament, who might then go on to advocate for it. As such, while much of EBPM exists to remove ideologies shaping policy, the complexity of the process, the sheer number of actors involved, and the priorities of the politics at the time, all feed into whether a policy brief will be successful or not.

Think Tanks and Public Policy

A key feature of the EBPM landscape over the last 20 years have been 'think tanks'. Think tanks have been referred to as"idea brokers [...] engaged in multi-disciplinary research intended to influence public policy". [26] They are generally forward-looking, often working on cutting-edge and emerging developments in their fields of interest, while acting in the space between research and policy communities. While both the geographic location and type of think tanks differs largely between one think tank and another, it is worth highlighting some specifics of UK think tank practices.

In parallel to the motivation of UK government to develop EBPM, the 'traditional' British think tanks [25] "aim to provide objective information and evidence on issues [to] influence the ideas of policymakers, irrespective of which political party is in government or regardless of the dominant intellectual framework or paradigm prevalent at any particular time" [26, p.44]. Think tanks are considered one of the three biggest actors to influence public policy in the UK, next to political parties and 'organized interests' [26, p.30] — groups of people that have organized themselves in, for example, unions and associations around a particular interest. As such, think tanks are regarded as one of the four major inroads for researchers to influence public policy (together with influencing Members of Parliament (MPs), government, and political parties) [30].

Think tanks are especially of interest to this research, as they provide an example of organizations that span the boundaries between research, practice and Governmental public policymaking. They often conduct their own research, but also work closely with academics or build on published literature to develop recommendations to feed into policy briefs. As 'idea brokers' they are interested in change, and have developed practices to feed these ideas into EBPM processes as well as respond to contemporary critical debates that exist within policymaking. Because of this, think tanks provide a valuable site for investigating the ways in which evidence is gathered and constructed in policymaking processes, and for exploring the opportunities there may be for HCI researchers — who similarly work between the boundaries of evidence from the now to shape the future — to have a greater involvement in EBPM.

3 RESEARCH APPROACH

In order to more fully understand existing practices for bridging HCI research and policy, we conducted a study of professionals working at the intersection of academic research and policymaking.

We initially conducted seven semi-structured interviews with think tank employees and advisors (see Table 1). As noted in the previous sections, think tanks play an important role in bridging academic research and policymaking processes. 'Credible' think tanks [7] are considered experts by media, have access to reputable networks [7], and are appealing to funders. They need to operate as 'boundary workers' [54] — developing approaches that enable them to 'be' policymakers as well as researchers. Functioning as 'knowledge brokers' [22] as well as 'practice brokers', professionals within think tanks need to develop an understanding of what it takes to practice both professions. Interviewing staff from think tanks enabled us to reflect on how HCI research may become valuable for policymakers, as well as help us understand the culture and ethos that comes with policy engagement. Given how policymaking processes differ worldwide, we choose to focus on UK traditions of policymaking in order to contextualize our study. Through prior background research, the lead author had maintained a catalogue of operating think tanks that detailed: whether they were partisan or non-partisan; were technology-oriented or not; their geographical location; and their funding models. From this list, seven UK-based, non-partisan, think tanks were selected for studying in more detail. We recruited participants who worked in think tanks that took differing approaches to policy engagement. This included those working: as civil servants reporting to MPs and ministers (P7); as independent bodies situated in government offices (P1); as independent bodies located outside of government but engaging directly with policymakers and MPs (P4, P8); or as independent bodies engaging in policy influence through public engagement (P6). None of the think tanks had a single domain of focus, and therefore all aimed to inform multiple domains across public policy; however, all except for one (where P4 worked) had a focus on digital technology. Two of our participants were staff of an international think tank platform, which does not aim to influence policymaking but supports think tanks in their practice (P3, P5). However, both also had experience of working in UK-based think tanks.

We also conducted four further interviews with HCI researchers who have published on policy engagement as part

of their research practice or have been engaged in policy related issues in their research (also detailed in Table 1). These participants were selected based on the different approaches they take to engage with policy. One of the interviewees had primary experience informing corporate policy (P9) and two had experience in informing public policy on national levels (P2, P11). One additional HCI researcher was chosen based on his work that engages with communities (P10).

Interviews were conducted in a semi-structured format, which focused on inviting participants to talk about: how they first started to engage in activities related to policymaking; their motivations for working in these spaces; and their various strategies, techniques and approaches to using insights from research in policymaking situations. We placed emphasis on asking participants to explain specific instances where they had developed or changed their practices, and the challenges they faced in bridging research and policy. The open-ended structure of the interviews resulted in varied duration. Interviews were generally around an hour long, with two extremes of 30 and 110 minutes in duration.

Data Analysis

Analysis of data was guided by Thematic Analysis [16]. The interviews resulted in $12\frac{1}{4}$ hours of audio-recordings, which were transcribed verbatim. Initial codes were developed by the first author through a close reading of each transcript and an open coding process, which was continuously reviewed by the second and fourth authors. The interviews were coded and, often, sections of text had multiple codes assigned to them. The codes were grouped into preliminary themes (e.g. 'nature of tech') which were given short descriptions. These preliminary themes were reviewed and developed into more detail through the writing of memos [18]. Through discussing the memos with the fourth author, patterns were identified across the preliminary themes and memos, and findings were further consolidated. This resulted in two core themes and a total of five sub-themes. By no means do we claim to provide a complete and comprehensive account of every process for developing or informing public policy or the tensions that exist in these practices. Instead, we remain conscious of the individual voices and perspectives that constitute our participant group, and provide a descriptive account of these. Through this qualitative analysis approach, we are able to share the stories that illustrate the nuances and developments in practices of policy informing that have resonance with and implications for HCI research.

4 FINDINGS

In the following sections, we discuss our findings around; 1) what is considered 'evidence' in policymaking, and; 2) how evidence is communicated to make it of potential influence.

Table 1: A summary table of the total participant sample

Participants	Description
P1 (TT)	Think tank based at the Cabinet Office, London, but not part of the civil service. Focused on deepening the collaboration between 'officials and academics'.
P2 (HCI)	HCI researcher based at a think tank-like research group (US-based).
P3 (TT)	International think tank researcher and advisor, with experience working for non-UK based think tanks.
P4 (TT)	Employee of a traditional think tank aiming to influence across multiple public policy areas. Aims to inform across all parties, not London-based.
P5 (TT)	International think tank researcher and advisor and former employee of a UK-based think tank.
P6 (TT)	Employee of think tank that aims to inform policymakers directly as well as focuses on public engagement to inform them on policy issues.
P7 (TT)	Employee of a think tank-like body within the civil service that focuses on strategy development for policymaking on topics of technology.
P8 (TT)	Former employee of a London-based traditional cross-party think tank.
P9 (HCI)	HCI researcher with experience in informing corporate policy (UK-based).
P10 (HCI)	HCI researcher focused designing with and for communities (US-based).
P11 (HCI)	HCI researcher with experience in informing public policy (US-based).

What Recognized as Evidence in Policymaking

Evidence clearly plays a critically important part in policymaking. For both researchers and think tank staff, the collection, analysis and presentation of research data is critical. In conveying the legitimacy of recommendations and minimizing concerns that they are ideologically driven, the notion of evidence was tied to the importance of *"intellectual independence"* and ensuring *"research [...] is where everything rests on"* (P3, TT). The interviews highlighted the ways in which certain types of evidence, or data, seem privileged and are seen as more legitimate in policymaking than others. Types of evidence that are objective or 'hard' are seemingly preferred which, P7 (TT) noted, is partly due to:

> *"An organizational conservatism that, if people are trained in classical policymaking, they use the graphs and tables and things like that. [...] Generally, the success [of a policy] is measured in terms of GDP growth or hospital waiting times."* (P7, TT)

Such macro data — e.g. GDP growth or decline, or measures across an industry or sector — are core evidence that determine a policy decision and are used as a measure of its success. Therefore, when discussing what they meant by 'evidence', many of the participants described privileging large quantitative datasets, and longitudinal research, in shaping their policy facing activities.

Although quantitative research data sets seem to be privileged in policy contexts, as interviews progressed it became clear that these forms of evidence do not always suffice. Participants noted that there is an important role for qualitative and testimonial evidence, and an even stronger need to demonstrate how recommendations and advice may work in practice into the future. In the following sections, we report on the ways in which participants sought to expand notions of evidence in the policy informing activities, and the challenges and opportunities participants saw in processes of gathering new forms of evidence.

Capturing Citizen Voices in Evidence. In order to strengthen their arguments and improve their potential impact, participants spoke about their development of interventionist approaches for demonstrating that their recommendations work in practice. One of the think tanks used to conduct research consisting of two phases: Phase One is about researching the problem; Phase Two considers the potential solutions to that problem. More recently, the organization decided to create a new job position in their practice which added a 'third phase' to their projects:

> *"The third, six-month, phase is just about trying to make the solutions that we have identified in the second phase happen. [...] We engage at a community level to help communities. [...] Normally, we would finish at the end of the second phase, but here we have got a full six months just to [...] impart some of the knowledge that we have and some organizing tactics down to the local community [...] that will be able to lobby for this change to happen."* (P6, TT)

Through mobilizing and engaging with communities the organization gathers practical evidence, resonating with participatory approaches within HCI, which, amongst others, P10 (HCI) described in his interview. As well as P6, several of our participants had endeavored to try and bring this 'citizen voice' back into policymaking activities. Although the big picture presented in a quantitative account is likely to be considered objective by policymakers — or at least be the most persuasive — the voice and experience of *"the individual [citizen] is lost in the data a little bit more"* (P7, TT). P2 (HCI) described their approach to addressing this, through the gathering of further layers of evidence by facilitating representatives of communities to investigate a policy before it becomes affective:

> *"We don't know [how the policy] would affect different populations. We are not able to sit down and just think about it. What we can do is [...] facilitate the representatives of those groups in carefully examining the document and surfacing some of the short comings. Then, we can facilitate those short comings to be improved in the policy document before that document becomes to affect law."* (P2, HCI)

Despite the valuable insights gathered through qualitative research, most of the participants shared stories of experiencing difficulties in presenting these as evidence: *"How to use public engagement and public opinion as part of policymaking processes is a whole new kind of fish"* (P7, TT). Policymakers and policy-informers appear to still rely on conservative and established research approaches to guarantee objectiveness. As a response to this issue P8 (TT) saw a specific role for design: *"Changing policy through design. That is actually where design will say 'well actually, this policy doesn't really work, because we tested it.'"* (P8) As she continued to describe how the nature of problems change over time and reflected on the idea of policy is a practice of change, we discerned a particular challenge for understanding what is considered evidence when policy is to impact the future. In the following, we explore the role of evidence when taking into account the changing nature of policy topics in reality and over time. In addition to our analysis of the tensions that this creates in EBPM, we reflect on our insights from the perspective of participatory and interventionist approaches in HCI.

Temporality of Evidence. In an EBPM culture, being a 'blue-sky thinker' comes with negative connotations: *"There is an enormous criticism on think tanks of them being just blue-sky thinkers; 'you are way into the future'"* (P4, TT). Not only does this role negatively influence the ability to have impact, but *"funders were [also] leaving this blue sky thinking world and were much more focused on actual impact"* (P6, TT). Different opinions on this emerge, however, since policymaking is fundamentally a future oriented activity. As P7 (TT) notes: *"it is hard to imagine policies not having a future element to them"*. Policymakers *"need to cover the immediate need and then see ahead"* (P3, TT), as policies need to be resilient to the upcoming two years, five years, 20 years, etcetera. While evidence seems to push towards a focus on the past or, at best,

the present, to make decisions about the future, it is clear that the long-term impact of policy remains vital to policymaking. P4 (TT) talked about this in terms of considering the 'multiple horizons' of a policy:

> *"You need to look at those horizons. [...] It is not actually progressive to say; 'have a rotten time now. You will still have a rotten time in five years, but in 30 years it will all be great'. If you are a genuine progressive, you should not privilege future generations over the common one! But equally, you can't privilege the current generation over future ones."* (P4, TT)

As contemporary practices of EBPM privilege evidence delivered through 'intellectually autonomous' and 'rigorous' research, such multiple horizons must be developed with care. This is especially the case where they need to counter ideology-driven advice in cases where objective evidence seems unavailable. For example, P7 (TT) described a process of 'scrutinizing' multiple versions of the future to focus on 'assessing their uncertainty and plausibility':

> *"Map your dimensions of 'uncertainty'. [...] Construct those into scenarios and [...] look into the implications of those different [plausible] versions of the future world. [...] If we make [this] decision [...], does that work in all versions [...] or is there something contingent in the future? [...] We would have to change what we did in the past [or], if [it survives] the scrutiny in all versions of the future, you can be reasonably sure that [it is] resilient."* (P7, TT)

P2 (HCI) developed a similar approach that guides people in *"analyzing that very structured envisioning"* on technology to surface *"issues that regulators could hopefully start to think about"*:

> *"[Identifying] the range of stakeholders [of a technology], [including its] indirect users. [...] Then, we try to get them [to think] about pervasive uptake, [...] not just one user. [...] We also ask them about temporality. Not just 'this is today, or this is next week', [but] over a five or ten-year period."* (P2)

Through these excerpts, participants start to articulate the importance of carefully scrutinizing and evaluating the impacts of policy developments around technology at different points of time. Nonetheless, there does not seems to be a common tradition of bringing the different types of work together as a 'multiple horizon' study as a part of developing a narrative that informs decision-making. Design-oriented speculative approaches — which have growing presence in HCI research in recent years [82] — on the other hand, have been experimented with by several of our participants. For example, P7 (TT) told us about a project on ageing, in which speculative approaches were adopted to trigger new ways of thinking and to discuss scenarios of the future, leveraging the creative expertise from design:

> *"After a few attempts of trying to say what do you think about the future and not really getting any far, we commissioned some designers to come up with some photo-real images of the future that explored some of things we were interested in. [...] Using speculative design as a way of communicating different version of the future to different members of the public to try and get people's reactions to that."* (P7)

P7 noted, however, that while the team agreed that this approach *"was a much more powerful way of getting [people] to engage with the future"*, they struggled to fit this work into the framing of the current EBPM culture: *"[although] successful in a way, [it] was harder [...] how to use the evidence that came out of that project."* More speculative research for policy attracts attention noted P8 (TT) too, but it does not mean it triggers change:

> *"We did a project [...] about speculative design and prototyping speculative policy. [...] I mean it didn't change anything, but it did get picked up by quite a lot of places."* (P8)

Through our findings on the processes of gathering evidence, we came to see that preferred forms of evidence for policymaking present difficulties when aiming to involve citizens and shift to looking ahead to future situations. In response, our participants described their experimentation with participatory, interventionist, and speculative approaches that we also can find in HCI research to develop new ways of thinking about evidence and futures.

Communicating Evidence for Policymaking

Although evidence plays an important role in determining which policy decisions are made, generating the right kind of evidence in the right kind of format in itself is not enough. In the following sections, we consider in detail the work that is to be done by policy-informers (both researchers and think tank staff) to mobilize evidence-based advice for policymaking. Through our interviews it became clear that evidence needs to be communicated to the right person, at the right time, in the right context. Furthermore, stories from our think tank participants on how they collaborate with researchers highlight how many research fields beyond HCI focus on indirect communication with policymakers via intermediaries. Where many researchers appear to use the mediating role of think tanks between research and policy, in contrast, the interviewed HCI researchers primarily shared

stories of engagements that took place with policymakers directly to influence their ways of thinking (P2) or to provide them with evidence (P11).

Making Evidence Visible and Relevant. In the discussions around getting their work to policymakers, the participants described many factors that contribute to whether or not they are heard, seen and, potentially, listened to. It became clear in our analysis that mastering communication to raise their visibility with the right audiences requires a lot of time and effort and comes with difficulties and uncertainties. All of the participants described a focus on developing practices to communicate their advice efficaciously to the right audience at the right time.

Think tank researchers must work hard on their communication practices *"to show what they are and what they do"* (P3, TT), and use many different communication channels. Traditional forms of communication remain an important element:

> *"We send [letters] to members of the oppositions with a specific interest. [...] It is often those MPs who you are really interested in personally and who write back to you. [...] We go around and speak at every event we can get our hands on."* (P4, TT)

Think tanks also embraced the widespread adoption of social media in society and the 'liveness' of social media exchanges, which *"dramatically changed the way think tanks engage with their audiences and public"* (P5, TT). They described taking a pro-active approach in continuously getting their message visible in public locations.

Being visible to policymakers, however, is *"necessary but not sufficient for influence, [...] it doesn't mean that because you are visible or because the policymaker knows you, they are going to call you"* (P5, TT). Additional work is required to lead to change in perspective or an engagement with ideas. We found our participants to collectively express a core aim to get "in tune" with policy dialogues related to their research work. *"[When] you are in tune with different audiences, you can give better advice."* (P3, TT) Being *"very much aware of the politics of the now"* (P5, TT) means, according to the participants, knowing what work is relevant to policymakers, delivering that to them as soon as possible, while showing a clear understanding of the immediate pressures and priorities of policymakers in how and what evidence you present them. Part of the policy informing skill is to be flexible so that the communications remain relevant to the specific policy brief around which they revolve. One participant imagined a conductor to explain this ongoing process and the work it takes to maintain visibility and relevance:

> *"The [...] conductor, says 'we need a couple of publications'. [Waving his hand to an imaginary orchestra.] We want social media, more social media. [Waves again] [...] Fewer events, it is not working. [Pushes one part of the orchestra back.] Media, mainstream media, more social media! [Waving the orchestra to become stronger.] See, [...] you keep the music playing for as long as possible, because you can't predict when the window of opportunity will open. You have to make sure that the policymakers or the decision makers can hear your music. [...] The moment [the window] opens, they say 'ha! What was that song?"'* (P5, TT)

Evidence became relevant as a policymaker remembered 'the music' at the right moment. In this process, addressed many of the participants, it takes time to configure research to fit a specific area of policy. According to P2, this *"is a whole other area of complexity, [...] that goes back to [the differing] worldviews"* of academic researchers and policymakers. Although the evidence is the core of the communication, the audience and timing of the message often appear to determine the form in which it is presented. As *"there are many layers of policy and there are many layers of legislation"* (P8, TT) they have to negotiate the different audiences that have different remits, priorities and ways of working. This is work that requires much time and effort, and even though the HCI participants shared stories of how they engaged with policymakers directly, the think tanks participants made clear that this is a core focus of their practice as policy-informers.

Recipient Design in Reciprocal Policy Engagement. While some of the participants working at think tanks reported that they conducted their own primary research, the majority said they *"tend to collaborate with leading academics who have good reputations in the area that we are doing work in"* (P1, TT). They relied on them to *"provide reasonably well-informed, well-evidenced summaries of literature*", they *"use them mostly as guides of literature"* to generate evidence for policymaking (P1). Nonetheless, P5 (TT) states that one should not think that *"there is a linear relation between the research they do and the policy change*". Instead, evidence is constructed through reciprocal interaction. P11 (HCI) draws a striking comparison; *"they don't work on sort of drive-by; 'hey we have this article."'* The poorest practice, *"starts with the thinking: 'I am going to do this study and recommend this and this is going to happen tick, tick, tick"'* (P5, TT). Participants noted that, typically, when researchers first set out on their policy informing activities, they often assume the links between their work and policy issues are more transparent than they actually are. P11 (HCI) describes how he often has to explain that:

> *"when you [write] your research [down] in [an] article, mention the relevant laws. Not just say;*

> *'There is a law'. That is one of the biggest mistakes [...] Ok, well, which law? What is the law? [...] Be clear about the coverage of the law; who does it apply to? How many citizens in that country are served by that law?"* (P11)

This process, which several participants called 'recipient design', appears to be about understanding that as a policy-informer you have to bridge the gap between the different worldviews and ways of thinking around issues of policy-making in order to get your message across successfully. P2 (HCI) describes a meeting at which she participated with policymakers and designers on the topic of privacy by design that lacked such 'recipient design':

> *"There were a couple of designers [presenting] their design processes [...] Then the regulator policy-type person in the audience said; 'well can you just give me the specs, what are the requirements so I can write the regulation?' [...] The look on the designers faces [...] It was; 'that is not how design works, that is not how we evolve and develop technologies' and the regulators thinking it is something of a fix thing, that is like; 'tell me what it is and I can know what rules to write around it'. [...] Just silence, nobody knew what to say."* (P2, HCI)

As policy-informers do not aim to convince themselves but the policymaker, it is important to show an understanding of their ways of thinking. Policy-informers *"should understand what the policymaker is asking for and why they are asking for it. They should play by those rules and use their language"* (P5, TT). Therefore, like think tanks, researchers have to communicate in a way that policymakers understand and can relate to.

> *"It is the same issue but their relationship to it is very different, which means that the kinds of arguments you would make to change someone's mind either way, have to be different. [...] You connect around an issue, but not as a social group."* (P10, HCI)

Likewise, P9 explains the key role that the right level of detail plays in communicating messages to policymakers effectively:

> *"The think tanks in the city [London], they know recipient design. They know how to solve the recipient design problem, because they know who their audiences are. Part of [...] the problem of recipient design is; How much stuff does our client need? Is it long, is it short, is it quick, is it thick, is it comprehensive, is it narrow? [...] Think tanks knows [it] for every different task, every different audience, every different cluster, every different government department, politician, whoever is their client."* (P9, HCI)

It was apparent based on our participants' accounts, that the detail of the research data is necessarily consolidated and synthesized into 'relevant' summary forms. This is a process in which researchers and think tank staff can, according to our participants, collaborate closely. When policymakers engage with researchers, they *"are not coming to get a broad education"* (P2, HCI) on the topic of the policy issue. Think tanks can help to build and focus the narrative together with academic researchers, especially *"to shorten and simplify significantly and concentrate on the implications and firm those up."* (P1, TT)

Several participants voiced approaches for identifying what is relevant for the summary when informing at different stages in the policymaking process. They described more detailed communications in the later phases of the policy development process. P1 (TT) — who described working at *"research and development end of the spectrum"* — spoke about how they work to ensure relevance and precision in content at earlier stages:

> *"What we've done is a 'rapid review'. [...] Literally, in a slide saying here [is] some of the [...] literature and [...] a map saying here are some of the leading academics around the country operating in relevant areas. [Then,] how [companies] have approached [the topic] in their organization." If they manage to convince the policymakers to engage in a more "long-term program of work", they "do a 'deep dive' project from there. [...] Can it be a 20 or 30 slide pack on a specific question? With a round table seminars and other kinds of events"* (P1, TT).

Overall, policy informing as a communication practice is an interactive dialogue between policymakers, policy-informers, and researchers. It involves reciprocal interactions which take time to develop and maintain instead of being a one-off shot at success. Every time they reach out to a policymaker, the participants — both HCI and TT — described how they kept in mind that they are not convincing themselves but others. Therefore, they aim to present evidence according to the rules and language of policymaking in order to present it in a way that they understand and can relate to. The think tanks participants described their collaborations with researchers, showing how other fields of research often collaborate with think tanks in a reciprocal manner to use them as mediators to communicate academic research insights at the right moment, to the right people.

5 DISCUSSION

As we expressed in the background section of this paper, there are several tensions within what is considered evidence in EBPM. Throughout the findings in our paper, we have reported on our analysis of the experiences and reflections shared by our participants related to this topic. It is clear that working between the boundaries of research and policy formation is complex and messy work, requiring individuals and their teams to be very visible to policymakers, to have a good grasp of existing evidence bases beyond just their own research, and to continuously iterate how they frame and articulate their work to different policy audiences. We saw how EBPM itself is contested both as a process and what constitutes evidence, and the difficulties our participants experienced when experimenting with new approaches to, and forms of, evidence. Our findings offer a range of challenges for HCI researchers, and the field as a whole, in terms of increased engagement with policymaking in an evidence-based culture. However, it also brings opportunities. We discuss these in the following three sections, focusing on how HCI researchers might (i) develop specific angles to their work to provide policy relevant research insights, (ii) share examples of practices and methodological approaches with policymakers and informers, and (iii) harness the potential of professional societies and advocacy organizations to develop communities of practice around evidence and policy in HCI.

Bringing Together HCI's Knowledge for Policy

We saw in our interviews that a core principle of EBPM, and indeed the work of the think tanks that aim to engage with EBPM processes, is the generation of evidence that is seen to be robust, certain and rigorous in nature. Although our findings also highlighted the ways policymakers and informers experiment with gathering forms of evidence that are more diverse in nature — capturing citizen voices as evidence, and scrutinizing scenarios of the future — large-scale, macro-level, quantitative research are still privileged. While the biases towards or against certain forms of research and knowing are open to deep philosophical debate — which we decided not to go into in the interviews nor this discussion (and is beyond the scope of this paper argument) — they do speak to significant difficulties for HCI research. Through our interviews, we came to understand that there are two strands of experimentation taking place within policymaking. These strands compare strongly with traditions within HCI research communities. As a response to a preference for quantitative evidence, policy-informers aim to capture citizen voices as part of their policy advice. As a human-centered field, HCI research has a similar pursuit to ground its research in carefully conducted contextual inquiries of existing practices and use. Indeed, many articulations of the history of HCI as an intellectual field narrate its shift towards more strongly advocating for human agency and more bottom-up, participatory forms of engagement [9]. This has encouraged a focus on understanding the contexts and situations within which technologies are used and experienced. While there have been recent debates by members of the SIGCHI community on growing the 'scale' of research conducted in the field (e.g. [17]), many studies involve relatively small numbers of participants (in the context of policymaking, at least). And in many ways, that is the field's strength — disseminating rich accounts of human experience in relation to digital technology use, and in-depth evaluations of alternatives to the applications, platforms and things that already exists in people's lives. Yet, this contextual orientation in HCI is also critiqued from within the field, inasmuch as it can lead to greater fragmentation of research [67], fewer opportunities for building on top of work to other fields [62, 85] and, indeed, that the diverse contexts, methods and ways of knowing in HCI means the field drifts without a strong underlying knowledge base [58]. Implied in some of these arguments are deep-rooted divisions in the disciplinary basis of HCI as a field (e.g., as an engineering or as a human science) and the validity of certain traditions and disciplines over others. Therefore, it is very easy to recognize some of the difficulties participants expressed in relation to working with qualitative, testimonial and citizen centric forms of evidence in EBPM with the field of HCI as well.

Therefore, there is a grand challenge here for HCI if it is to position itself better in relation to policymaking processes: how might we generate an evidence base that is taken to be "robust" and "certain", without altering the human-centric and nuanced accounts of technology design and use that underpins the field?

We believe there are two routes forward here, based on our study findings. First, while it may be difficult for individual studies to locate themselves in the wider policy sphere, there are opportunities here to consider the strength of bringing diverse studies together under a policy relevant topic or issue. Synthesizing studies is a critical component of developing a policy brief; but also drawing potentially diverse sets of studies together may also be a benefit of HCI maturing as a field [33]. Ways forward for bringing work together go from grand re-envisionings of what HCI is for (e.g. [59]), to drawing together existing knowledge to define 'strong concepts' [42] and attempts to illustrate qualities and sensitivities across design work (e.g., as in Gaver and Bower's use of annotated portfolios [15, 40]). Our findings highlight the critical importance of these latter examples, where pursuits in bringing diverse examples of work together strengthens knowledge either across the field or within specific research labs. As such, the strength of HCI's evidence base may not lie

in individual studies but in synthesizing them into one policy narrative. Indeed, building an argument together might not only make a stronger policy case and benefit the societal impact we achieve with research done in our community but may also bring together HCI's knowledge to develop its growing evidence-base on which future research can build [33].

Second, and on a more practical note, researchers in the field might greater appreciate the value of collaborating with think tanks in order to come to policy-relevant narratives as well as growing understanding of how to communicate HCI research to make it relevant in policymaking processes. As we recognized that the type of evidence produced in HCI is situated in the midst of a greater discussion on what constitutes evidence, the challenges that come with communicating this evidence at the right time, to the right people might be too time consuming for academic researchers. Indeed, it is a job and a field of research all to itself. Instead, as other fields of research too have made use of the mediating practices of think tanks, HCI could consider grounding long-term relationships with think tanks and organizations alike to make their evidence relevant and visible to policymakers. Based on our findings there is some potential here for these to be highly reciprocal engagements — one might imagine many of the action-oriented and interventionist approaches taken in HCI as being highly valuable to think tanks requiring greater engagement with the prototyping of ideas and initial evaluations and evidence around policy recommendations.

Building on this, we also see an opportunity for HCI, as an applied, practice-led and future-oriented field, to collaborate with policymakers to develop new practices within policymaking that are open to new forms of evidence. We discuss this further next.

Policymaking and Futuring Practices

Although the previous section discussed a way forward to make outcomes of HCI research fit into currently appreciated forms of evidence in EBPM, we envisage another approach for the field to achieve societal change through policy engagement. Policymaking, and indeed much of the work of think tanks, is about change and the future. While we found there was a desire to look to the past, imagining futures also was a core component of their work: Participants working in think tanks shared stories on experimenting with speculative scenario-building to scrutinize different versions of the future to deal with the lack of historic facts or patterns.

While we saw a privileging of certain forms of evidence over others, it was clear in our findings that this was problematic for the participants. Especially when dealing with policy issues related to emerging technologies, historic evidence generally does not yet exist and research is often small and nascent — for example as indicated in the area of cybersecurity policy [73]. Yet the practices of futuring, stepping through scenarios, and speculating on what might be appeared to be still at odds with a conservative view of evidence and data. We might posit that there are abundant opportunities here for HCI researchers to bring their methods and techniques into the policy arena for, amongst others, envisioning and the practice of engaging with futures.

The think tank participants we spoke to often referred to what they do as boundary working — often operating at the intersection of different fields of research, different sectors of the economy and different governmental agencies. This speaks to, in many ways, the work of the HCI researcher. But more so, over the last several decades, HCI has not just engaged in boundary working [12], but the construction of boundary objects [63] that exist primarily to promote shared articulations of expertise and practices in design processes [28, 77]. While boundary objects have been central to cooperative and participatory forms of design, we also now see them be used in more speculative work that explores plausible futures. Indeed, speculative practices have gained significant attention and grown in popularity in recent years, as a means for critiquing existing [76] and upstream technologies [46], exploring social issues [13] or opening up avenues for future research [40]. We have also seen how speculative approaches hold value for imagining the implications for the adoption of technologies created by HCI teams [51]. Furthermore, while much speculative research has been kept within design teams, more recently we see how HCI researchers combine empirical studies and speculative approaches [29], or engage in what Wakkary et al. refer to as 'co-speculation' [78]. As these approaches mature, they provide a space where more traditional forms of evidence (in this case, qualitative accounts) are brought together with speculative materials and objects in structured ways that speak to the priorities of policymakers. While this would never respond to the privileging of large data-sets and quantified studies over experiential accounts, it does offer a way in for a growing number of HCI researchers to productively transfer their methods and practices into policy contexts; or indeed for the methods and techniques we develop and innovate on in the field to be adopted and scaled by those think tanks already engaged in EBPM activities.

Advocacy and Community Building around Policy

Our findings also highlighted just how hard and difficult engaging in policy is. It requires individuals and their organizations (e.g. think tanks) to be well known, to be responsive to calls for expert views and reviews, and to carefully negotiate the ways they communicate their research for those who might use it. Policy activities require ongoing dialogue, and indeed the nature of research itself may need to be guided,

shaped and defined by laws, regulations and emerging policy issues that governments are currently prioritizing. While there are increased pressures on individual academics to engage with these issues, and indeed have their research more explicitly shaped by governmental strategy [35], as noted, balancing such activities would be incredibly hard in practice and would be a new professional activity on its own.

While we have already emphasized the value that mediating organizations such as think tanks can bring to policy engagements by the HCI community, there should be an important role here for other intermediary organizations as well. A further way forward might be to involve organizational bodies for research fields — in our case SIGCHI, its local chapters, or national alternatives — to promote greater engagements with policy issues and to facilitate some of these activities on its members' behalves (e.g. the policy hub of British Computer Society in the UK [66]).

What could these activities look like? At one level, these might be Special Interest Group sessions or workshops that are focused on specific policy related issues. This might go from relatively basic activities such as sessions at already existing conferences that focus on policy related issues, to specific events that are driven by a policy need as part of its call for participation. It is equally possible to imagine a wide range of sessions that tackle some of the issues addressed in the previous two discussion sections: for example, workshops and activities that have the explicit purpose of reconciling deeper-rooted tensions around the validity of different forms of evidence in HCI research, and identifying opportunities to link and layer work with one-another. Equally, it might be viable for activities to have a very focused call for participation and involve reconciling existing research knowledge around quite specific topics to create policy relevant material. This could lead to professional societies taking up a role as 'guides to literature' that think tanks then make use of. What it means to be a 'guide' and what actions it might take for these bodies to make HCI research aware of its relations to policy are questions for further research. As a start, we expect that there might be value in bringing together think tank staff, policymakers and HCI researchers to determine narratives that HCI as a field can foreground to inform policy in the future. Reflection on these meetings could prompt the development of methods and tools to continue, in turn, the development of new policy narratives. Future research and practice should explore these pragmatic and structural opportunities, as much as the development of new policy informing practices among individual and teams of HCI researchers.

6 CONCLUSION

In this paper, we have reported on a qualitative study with think tank professionals and HCI researchers engaged in policymaking processes. We have done this with a view to understanding existing practices for informing policymaking, especially in a time of evidence-based decision making. We have highlighted the ways in which certain forms of evidence are often highly privileged, but also how this is problematized by the future-oriented temporality of most policymaking activities and the motivation to make policy development open to the voice of citizens. While these points of discussion present challenges within the policymaking and informing communities more generally, they have resonance with the HCI community in specific ways. At the same time these difficulties also bring great opportunities for both EBPM as within the HCI research community. In general, they present our community a chance to bring diverse accounts of research together, to more strongly value the forms of knowledge generated, and to harness the more speculative and co-productive modes of knowledge generation that are been innovated on by HCI researchers to become part of governmental policymaking processes. More specifically, when developing an adapted version of the 'multiple horizon' approach used by policymakers and informers — where evidence and policy recommendations must address the present and different time-points in the future — HCI researchers can play a distinct role in articulating the value of a plurality of discourses and forms of evidence grounded in the traditions of the different disciplines that it is formed of.

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