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# Framing engagement: expert-youth interaction in a PES event

**Sampsa Saikkonen and Esa Väliverronen**

ABSTRACT: *Previous studies on public engagement with science have identified various difficulties in the encounters between experts and lay people. However, there is a scarcity of research investigating expert-youth interaction. In this paper we focus on the interactive framings of an informal PES event. Based on a case study involving a climate change panel discussion and a simultaneous online chat, both aimed at young people, we discuss the multiplicity of framing. Further, we look for "misbehaviours" which challenge the rationality and norms of the event. Our findings indicate that the frame of deliberative participation is very fragile.*

KEYWORDS: *Public engagement with science and technology*

## Context

Public engagement with science (PES) and the fostering of dialogue between the scientific community and society have aroused considerable interest in the 21st century. Participatory processes are considered to be necessary for a more democratic involvement: the public needs to have the possibility to apply their knowledge and communicate about scientific issues [1, 2]. Many different forms and practices designed to encourage public engagement with science have been introduced. At the most formal end are consensus conferences, but many engagement practices, such as science cafés, are more informal.

However, in recent years, several studies in science, technology and society have raised critical questions about the success of these participatory encounters. It has been argued that most engagement projects have not gone beyond the epistemic basis of consensus formation or measuring public opinion [3]. Furthermore, most engagement projects are, in fact, very top-down and short-term exercises, which do not match their stated goals [4].

Case studies focusing explicitly on interaction within informal PES events, such as dialogue events or science cafés, have further revealed that the form of dialogue events favours the event speakers and facilitators rather than the audience [5], and that the events tend to privilege expert subject positions [6]. Kerr et al. [6, p. 407] have argued that "the format of these events also implicitly privileged consensus and optimism, and marginalized criticisms that radically challenged the purpose of the event, or the STM [*science, technology and medicine*; explanation added by authors] it concerned." Radstake et al. [7] have pointed out that online interaction between experts and the public needs active fa-

cilitation that opens the discussion up, as many tensions are bound to emerge in this type of social relation. They also note that facilitators need to focus on expert engagement — and not just public engagement — as scientists "tend to fall back on their professional expertise in an environment that is largely unfamiliar to them, and imagine a public that values their expertise" [7, p. 314].

Expert-youth interaction in PES events has not been widely investigated; however, some studies have been published recently. Mayhew and Hall [8] argue for the importance of seeking connections to the daily lives of teens for successful communication and interaction between scientists and teenagers in science café settings. Horst and Michael [9] give an interesting account of how teenagers subvert the very idea of a science communication installation by means of "idiotic" actions — that is, actions which make no sense (for the organizers and analysts) in the context of the science communication event — and how these types of actions make explicit the contingency and conditionality of the seriousness that is presupposed in the installation. In their research on school students' use of educational material based on genetics, Michael and Carter [10] have also noted students' use of irony in a focus group setting.

## Objective

The purpose of this paper is to utilize Goffmanian-inspired microsociological analysis to study the staging, framing and interaction in an informal PES event named *Climate change discussion panel and an online chat for young people* and held during the Science Forum 2011 in Finland. By using Erving Goffman's [11] concept of frame, we aim to clarify the interactive complexity of this informal public engagement event by focusing on the interplay of the actors, the different modes of communication and the coexisting interactive frames. As the concept of frame is used in various ways in different traditions and disciplines, we want to emphasize that in this paper we understand frames in Goffmanian vein as cultural-cognitive models which form the basis for the organization of experience and structure the perception and representation of reality. By interactive complexity we refer to the diverse, dynamic and layered nature of social interaction in different settings. As a mode of analysis frame analysis has the capacity to make explicit this complexity and to transcend the purely discursive level also by examining how the material contexts are related to social interaction.

Further, we will look for "overspillings" [12] during the event. These refer to breaks in the applicability of frames and their governance [11]. According to Michael "Overspilling" can be defined as various forms of unhoped-for (mis)behaviours. "Lay participants 'misbehave' in various ways — they 'overspill' the parameters of the engagement event" [12, p. 529]. Overspillings challenge and break the consensual and rational through refusal, disruption, irony or carnivalization. By identifying overspillings, it is possible to clarify how the boundaries of frames are governed and broken. Furthermore, it tells us about the normative assumptions and underlying expectations of the different actors involved in the event. Given the explicit promotion of the event under analysis

as participatory and interactive, we were particularly interested to investigate how these types of interaction *ideals*[1] actually guided the interplay of participants and modes of communication within the event.

## Materials and methods

The climate change discussion panel and online chat took place in Helsinki at the Science Forum (Tieteen Päivät) in January, 2011. The panel was held in the cafeteria of the main building at the University of Helsinki and lasted about an hour and a half. Young people were the target audience for the event — a specific age group was not defined by the event organizers. Excluding the four panelists and two hosts (one online host and one face-to-face host), about 40 people of all ages were present, but only a minority of the event participants present at the cafeteria were actually young people aged approximately 15 to 25 years.

The Science Forum includes various activities, such as lectures, exhibitions, debates, discussions, planetarium shows, Youth Day, Science Night, books and prizes. The current format of the Forum is a festival which consists of some 300 events taking place over five days and one night. In recent years, the various events of the Science Forum have garnered a total audience of about 15,000. The theme of the 2011 Science Forum was *Science and Everyday Life*.

Four panelists were invited to the event by the organizer, The Committee for Public Information, which is an expert body attached to the Ministry of Education and Culture to advance research dissemination and science communication. Three of the panelists were experts in climate change issues: a researcher (HT) from the Finnish Meteorological Institute, a researcher (JL) from the Finnish Environment Institute and representative (TK) from Demos Helsinki think tank. The non-expert panelist (SSL) was a girl from an upper secondary school.

An internet chat was integrated into the event so that young people could also participate in the discussion via Internet Relay Chat (IRC).[2] It was also possible to follow a real-time video of the event over the internet. In the IRC discussion there were two moderators present, and 16 pseudonyms took part. Contrary to the panel the online chat managed to reach the main target group, young people (e.g. students from upper secondary school). This multimodality of interaction — the combination of face-to-face and virtual discussion within one event — was a main criterion for selecting this single case to be analyzed. It also makes this case a relatively unique one in a PES context. This type of multimodality enabled us to analyze how different modes of interaction relate with each other, and how communication and social relations differ between varying modes

[1] Emphasizing (civic) participation, dialogue and/or interactivity — alongside privileging rationality and discourse at the cost of ignoring other modes of communication and forms of interaction — are characteristic normative features of many PES activities and traditional, social scientific understanding of PES, and mainly emerge from the wider paradigm of participatory democracy (for a critical account, see [12, 31]).

[2] The IRC channel for the event was provided by the NGO: the Mannerheim League for Child Welfare.

of interaction. Previously, much of the analysis on informal PES has focused either on face-to-face interaction [5, 6] or on internet-mediated dialogue [7].

The panel and chat were designed to combine as an interactive, dialogical discussion event. This was explicitly promoted in the Science Forum's program information, where it was mentioned that the audience had the possibility to participate in the discussion either face-to-face at the cafeteria or online.[3] However, it should be noted that there is no strong tradition of organizing public engagement events in Finland [13], and the hosts at the caféteria or the online moderators were probably not specifically trained to facilitate this kind of public engagement event. Most likely the idea of including this type of an event to the 2011 Science Forum was to introduce more dialogical, participatory events to the overall selection of events within the Science Forum — and to see how the event goes.

We used two types of data collection: observation and a questionnaire. Our observation methods included direct observation of the event (and analyzing a field report written on the basis of any observations made), and observing both the video tape of the event and the internet chat after the event's conclusion. By describing our observations as direct we simply want to emphasize that we had no participatory role in the actual event or the organizing or planning of it. The video-taped and internet chat material were collated/transcribed for analysis.

The questionnaire aimed to provide some background information about the panelists and the audience and their opinions of the event specifically and of PES activities in general. The questionnaire forms were available at the event and people were asked to fill them in by the end of the discussion. Both hosts, three of the panelists — all of the expert panelists — and nine of the audience members filled in and returned the questionnaire. The form consisted of questions and statements about communication, engagement and learning during the event. The questionnaire data are used only as background material, as the focus of this study is on qualitative analysis.

In his book *The Presentation of Self in Everyday Life*, Goffman [14] laid the ground for his dramaturgical analysis of social interaction. Employing the metaphor of theatre and its practices, Goffman aimed to analyze interaction in terms of a play, focusing on staging, roles, scripts and actors' relationships with their audience. He made a distinction between "front stage" where the action takes place and the audience is a part of the performance, and "back stage" where the audience is not present. Controlling what the audience sees is fundamental to this drama, so performers work hard to maintain the division between front stage and back stage [15]. This division is an important part of what Goffman calls "impression management", presenting oneself in a way that creates specific impressions in the minds of others.

In *Frame Analysis* [11], Goffman further developed his analysis of social interaction. His main argument was that cultural representations could be analyzed as frames, which are specific ways of organizing experience. Thus, frames are concepts that structure the individual's perception of reality. "Frames are a central part of a culture and they are

[3] The authors of this paper, were not in any way involved in organizing, planning or facilitation of the event.

institutionalized in various ways" [16, p. 63]. Thus they are collective, not individual, although individuals make use of frames in social interaction with others. Frames "provide meaning, determine what is relevant and irrelevant when considering certain actors, issues or events, and suggest appropriate behaviour" [17, p. 103] and refer "to a sense of what activity is being engaged in, how speakers mean what they say" [18, p. 207]. By using the concept of frame as an analytical tool our focus in this paper is to analyze what goes on in interaction, how different actors change and use frames and how these frames contribute to this interaction between actors.

As an analytical-methodological approach frame analysis of social interaction is, of course, a method of interpretive sociology. The specific frames that we as analysts construct are used to make explicit and clarify the characteristic features of social interaction taking place within the event. As a mode of analysis frame analysis also requires continuous theoretical reflection in relation to the empirical materials. Basically our analysis method in this paper is a theoretical reading of the empirical materials [19] by utilizing the central concepts of the conceptual apparatus of Goffmanian frame analysis as *analytical tools* which guide our reading and interpretation of the materials. In this way we can construct ideal-typical frames which make explicit what was going on in the event at the level of social interaction and also to examine how the materiality of the event is related to the social interaction.

When considering overspilling, it is relevant to introduce one more concept that we utilize as an analytical tool — keying. Keying refers "to the set of conventions by which a given activity, one already meaningful in terms of some primary framework, is transformed into something patterned on this activity but seen by the participants to be something quite else" [11, p. 43–44.]. Keying also involves mutual awareness and thus it is "not just individual but unavoidably social" [20, p. 371].

By utilizing the concept of frame as an analytical tool, we also aimed to look at how institutions and materiality are reflected in social interaction within the event. As Moore et al. [21, p. 513] point out, "the shape of rooms, the embellishment of buildings, the existence of a café, and even the way people dress play a role in evoking frames." Focusing on frames, then, offers a level of analysis that can transcend the *purely* discursive level, where much PES analysis is still focused, and possibly unearths something novel about the interactive complexity of informal PES events.

In the following analysis we first explore the staging of the event, i.e. the setting of the physical location and other important material and organizational arrangements. In the second part of the analysis we describe the interactive frames employed in the event, analyze how they related with each other and discuss what this means for social interaction. In the conclusion we focus on the wider theoretical and practical implications of our analysis.

## Analysis and findings

### *Staging of the event*

Staging involves the physical layout of the event, including furniture, equipment and other elements which contribute to the roles and acting of the participants, the relation of the panelists with the audience, as well as the overall atmosphere of the event. Further, the dress code and ways of addressing the panelists and audience are important.

The idea behind informal PES activities — like science cafés — is that laypeople feel more comfortable in informal settings, like cafés and bars, which are not devoted to science. While public lectures in academic settings easily direct interaction towards an educational mode, informal settings could, at least in principle, allow more immediate and dialogical ways of communication. This was, perhaps, the reason why the climate change panel was arranged in a café. Paradoxically, however, the café was situated in the academic setting of the Science Forum and the university. Some of the people present were there to have coffee and left during the activity, so it is difficult to know how many people had actually come *just* to participate in the event. Furthermore, the café, which in this case was open to anyone and not just for the event participants, was essentially a liminal space of sorts. Some people listened to the discussion for a while when they were queuing, but then left, and some of the people present were reading newspapers or even chatting during the event.

The four panelists were seated in front of the audience, behind a desk, with the two hosts, whose task it was to facilitate the discussion. Although this is a traditional way of staging a discussion event when there are invited speakers present, it creates an apparent divide between the panelists and hosts on one side and the audience on the other. The way that the event was staged indicated that a performance was taking place — the panelists were performing to the audience.

The theatrical staging was further highlighted by the fact that there was only one microphone at the event and it was not given to the audience members when they posed questions. Instead, one of the hosts repeated the questions using the microphone. This method of staging did not encourage dialogue; as all the conversation was intermediated by the hosts, it instead contributed to a question-answer sequenced discussion. This observation of the event was confirmed in our questionnaire. One of the audience members posed this question: “Why was the microphone not given to the audience?” The difficulty of taking part in the discussion for the audience present in the cafeteria was also reflected in their responses to the first statement in the questionnaire: “It was easy to take part in the discussion.” While the three expert panelists and both of the hosts agreed with the claim, four out of nine of the audience members disagreed.

Another important element in the staging was the way in which the relation between the face-to-face meeting — the panel — and the simultaneous online chat was organized. During the event, there was a small screen from which one could follow the online chat. However, it was placed behind the panelists, so it was quite impossible for them, or the audience, to directly follow the chat. In Goffmanian terms the online chat was hidden, at

least partly, to the back stage. The relation between the online chat and the front stage panel was controlled by the other host of the panel, whose task it was to pick and read questions posed in the online chat to the panelists and the audience.

Considering the combination of a face-to-face discussion and a virtual chat in relation to staging, there are also more fundamental issues to notice. While the discursive style of communication in IRC actually mimics face-to-face spoken language [22], IRC is essentially a dramaturgically weak medium because of the lack of non-verbal behaviour, and thus IRC communities have to compensate for this dramaturgical weakness with various methods, including verbalizing physical cues so that their peers can interpret their behaviour [23]. Evidently, then, to follow and understand an IRC discussion successfully, one has to understand the somewhat codified communication and interaction native to IRC. Furthermore, the interlocutors in IRC are seemingly anonymous to outsiders (although identifiable by their pseudonyms), but within the community the interlocutors might know each other — or at least know how certain pseudonyms behave in the community — and even have feelings of friendship, responsibility and similar towards each other [23]. Cyberspace is a prime environment for many forms of playful expressivity — a domain in which many activities are subversive or carnivalesque [24]. Interaction on IRC also requires a certain speed of response, encourages affective expression, often entails witty replies and may allow participants to play with the conventions of social interaction [23].

So, dramaturgically speaking, the audience taking part in the event via IRC was, essentially, a very different audience in comparison to that following the event at the café, and the social stage of the IRC environment was very different in comparison to the somewhat theatrical setting of the café. Consequently, the overall staging and preconditions of the discussions could be described as somewhat paradoxical, and dramatically interesting, to say the least. This type of dual-staging also made it very difficult for the hosts to intermediate and convey meaning between the virtual and face-to-face discussions because the audiences and modes of engagement were so different.

### *Frames of engagement: participation, theatre, education and play*

Based on our observations we analytically constructed four ideal-typical interactive frames: participation, theatre, education and play — that clarify and make explicit the characteristic features of social interaction and approximate the cultural-cognitive frames deployed in social interaction, and thus what was "going on" during the panel and the online chat.[4] Analytical construction is, of course, necessary as there can be no definitive account or description of — or any kind of direct access to — things that have to do with social action, such as the cultural-cognitive interactive frames deployed in social interaction.

[4] As analytical constructs the specific frames described below could, for example, be labelled or constructed a bit differently and do not anyhow constitute social interaction in informal PES events in general.

In the *participatory frame* the hosts, panelists and the public were encouraged to engage in a mutual exercise: to discuss the implications of climate change in everyday life. The topics of discussion varied from political and economic decisions to individual consumer choices. The aim was to encourage the public present in the café, as well as the participants of the simultaneous online chat, to participate in a discussion with the hosts and panelists. Interestingly, the participatory frame remained more as a normative, ideal-typical meta-frame of interaction as rational civic discussion. The participatory frame was evoked in the detailed program information for this event, but concrete efforts for facilitating audience participation *during* the event remained minimal; rather, as we demonstrate later in the analysis, the actual efforts from the (online) audience to participate were sanitized for the sake of "rational" discussion.

The second *theatrical frame* worked in a quite opposite way. Instead of a participatory dialogue, it evoked mainly monological performances from the experts to the audience. The hosts managed to engage the panelists but not the café audience, who remained mainly silent during the discussion. This was partly due to the material design and staging of the event.

In the *education frame*, (abstract) expert knowledge was communicated by the experts to the non-experts who were thought to need more or new kind of information, or who indicated a willingness to learn or know more about certain issues. Interestingly, the theatrical staging described above contributed to this framing.

Finally, the *play frame* was only evoked in the online chat. It was a consequence of the provocation by some of the participants who "misbehaved" by joking about and challenging the whole idea of climate change. The moderators of the online chat tried to switch the play frame to the education frame by reminding the participants "hey, let's behave properly."

Although the interactive frames are negotiated during the interaction, it is important to stress that the cultural-cognitive frames deployed in any interaction are not fully made up by the agents in the sense that they would come up with them during the event. Instead, they reflect structures of expectation [18], or, in more Goffmanian terms, the organization of experience.[5] Different "rules" and conventions of interaction apply within different interactive frames; they are cultural and mental models which guide participants with how to act in certain types of interactive situations. Several discourses may also be utilized within different frames. It is also important to note that, as Goffman [11] stressed, multiple frames may intertwine with each other and be utilized simultaneously. It is exactly this capacity of frame analysis to make explicit the multiple and layered nature of social interaction and its organization in different types of situations that is the main analytical strength of frame analysis of social interaction.

[5]The ontological roots of frame analysis were later clarified by Goffman when he stated in an interview that his view of frames is not a social constructionist view "in the sense that anybody can, at any moment, define the world around them. The world around an individual is, by and large, defined at any moment. It comes to be defined through society at large in a constructed way" [36, p. 342].

Different frames entail different interaction structures and modes of communication. While the participatory frame entails an egalitarian interaction structure between participants, the education frame entails an asymmetrical structure of interaction. The theatrical frame also implies a non-participative structure of interaction — the audience is meant to follow the performance and participate mostly indirectly by reacting to the happenings on stage. As Goffman [11, p. 125] has noted "the audience has neither the right nor the obligation to participate in the dramatic action on the stage." The structure of interaction in the play frame often mimics "real-world" interaction situations, and thus the degree of freedom for communication and social interaction within the play frame varies, as in "real-world" interaction. However, playing enables experimentation, and thus the actors may also subvert the mode of communication and structure of interaction, possibly making them simultaneously more explicit. The multitude of interactive frames identified indicates that engagement events are interactively complex and do not clearly operate within one, primary, interactive frame.

In the cafeteria, climate change was primarily discussed in the form of lengthy monologues by the experts, for example on the subject of climate change indicators, and without interruptions. This happened within the education frame, where the expert panelists had the role of educating the audience about the scientific and social issues related to climate change. Interestingly, the whole discussion began with a very scientific expert monologue by HT, indicating an educational understanding — especially by the facilitators — that a precondition for meaningful interaction would be some sort of scientific introduction about climate science:

**Host (face-to-face):** ...let's get the panel started. We are going to discuss here what climate change is about and how it can be observed [...] HT *has promised to give a short presentation* on how climate change can be observed.

**HT:** Thank you. Indeed, for beginners I thought of *a short review* on what could be indicators of climate change... [*A monologue of several minutes on climate change indicators follows*].

While the face-to-face discussion was free of provocations or counterarguments, in the IRC, climate science was contested:

> 12:09 <RÄJMA> [*moderator*] Hullari: how do you think climate change is nonsense?
> [...]
> 12:09 <Hullari> räjma so that it is claimed that the weather is warming up and couple of last winters have been damn cold
> 12:10 <Hullari> I think the changes in the climate are totally dependent on the temperatures of the sun
> 12:11 <RÄJMA> [*moderator*] that entails the increase of extreme weather conditions
> 12:11 <Hullari> lolol

Here, the individual with the pseudonym "Hullari" utilizes a scientific discourse and brings up a common climate denialist's argument that climate change is merely caused by changes in the temperature of the sun. Hullari's *commentary* about the occurrence of cold winters was also picked up by the online host. However, it was transformed from a statement into the form of a *question* so that the provocative denialist argument was actually ignored. Thus, a provocative comment was sanitized before being introduced to the panel, so that the play frame presented in the chat was not taken into the face-to-face interaction:

**Host (online):** In the chat there is discussion about the issue that if climate change is happening, then why have the two last winters been so cold? So, that kind of a *question*...

Questions — and especially answers to them — of course serve a pedagogical purpose, and thus this type of interaction operates within the domain of the education frame, while the kind of contesting but playful commentary described above actually in a way comes closer to the idea of participation and engagement — at least in the Mouffean, agonistic sense (in which affect and conflict are important elements of civic engagement) [25], as provocations in online spaces can also work as " tools for intensifying an agonistic space that seeks to draw out and multiply interaction or reaction and extract responses" [26, p. 215]. Provocative commentary about climate science — even in the form of evidently denialist arguments — does have the potential to open up discussion on complex epistemic issues in the context of climate change. In terms of social interaction egalitarian discussion about epistemic issues would operate more in the domain of the ideal-typical participatory frame than the education frame.

On some occasions it also seemed that when the non-expert panelist (SSL) — a young girl clearly chosen to represent young people in the discussion — tried to operate within the participatory meta-frame of the event by utilizing a deliberative discourse, the expert panelists were still operating within a more educational frame. For example, at one point SSL tried to open up a discussion on uncertainties related to knowledge about climate change and the difficulty of finding truly reliable information:

**SSL:** Yesterday I bumped into a video called Ilmastogate [*Climate gate in Finnish*], which was available at YLE Areena or broadcasted on YLE [*Finland's national public service broadcasting company*], which questioned the whole climate change. It was claimed that some IPCC professors have totally explained e.g. earth's warming in some way of their own, which cannot be scientifically proven. It is really hard to think about what is the *correct view* to that issue [*refers to climate change as a phenomenon*] and where can you find *reliable information*, because a video like that made me really deeply think about if it [*climate change*] is really true then [...] I am under the impression that the IPCC is quite a big thing, at least when it comes to this climate change. And if there have been some people who have confused it, or not like lied, but claimed that, or given wrong information, then what one can trust is somehow very uncertain.

In their comments to this, the expert panelists explained that dissent about climate change exists in part because of the complexity of the issue and in part because of commercial interests. As the television program was brought into the discussion, all the expert panelists wanted to show how the media can distort the reliability of knowledge about climate change:

**JL:** Here the question is also about the fact that in the public sphere, issues are easily polarized, which is not necessarily based on the views of the scientific community, but more on what is viewed as a news topic which sells and then the news are built around that.

**TK:** . . . *in the media* [*these issues*] are sensationalized, which make questionable the very strong scientific agreement that climate change is a serious threat.

Considering social interaction, the period of discussion described above is indicative. Despite the participatory meta-frame of the event, the expert speakers wanted to clarify societal issues related to climate change knowledge within the education frame, a very intuitive interactive frame that experts — especially ones involved in educational activities– are used to utilizing when talking with young people about climate change. However, keeping up the education frame was not just up to the expert panelists and hosts, because while trying to deliberate, SSL also simultaneously evoked this frame herself by using such expressions as "correct view" and "reliable information", seeking clarifying *answers*.

It would also be misleading to assume that the participatory frame and education frame are totally dichotomous interactive frames. Despite aims for egalitarian (civic) dialogue, informal PES activities can be considered as involving elements of informal, mutual learning [27, 28]. Evidently, then, participation and education intertwine in social interaction within PES events. However, while there is a fundamental continuity between these two interactive frames, paradoxically, this continuity also creates interactive complexity because of the different interaction structures and epistemic implications that these frames entail. The interaction structure of the education frame is more hierarchical and the actors utilizing this frame are fundamentally not epistemic equals, while the participation frame necessitates interactive, communicative *and* epistemic equality between actors. Rethinking social interaction within PES events by utilizing the concept of frame enables us to make explicit that communication and interaction patterns might not be only explained by power relations or any kind of intentional interactional insensitivity of the actors involved, but by the simultaneous realization of multiple frames entailing different interaction structures and epistemic implications.

To a certain degree, the face-to-face and virtual discussions were quite separate. While the face-to-face discussion was mostly consensual, rational and based on a fairly monological question-answer model, the online discussion was evidently livelier and filled with misbehaviour, irony and affective dissent — overspilling the boundaries of rationality, consensus and serious form of discourse. However, as it was not possible for the panelists

to see or comment on the online discussion, and the communication that was intermediated was sanitized by the facilitators, much of the agonistic and affective commentary of the chat never even reached the panelists. Thus, an evident gap existed between the discussions, although many of the questions posed to the panelists originated from the IRC. The paces of the discussions were also different. While in the face-to-face discussion the panelists' comments lasted for minutes without interruption, in the IRC discussion, several short comments by different actors were made during a minute and many different points were handled simultaneously.

*Norms of reasonableness subverted — playing in virtual space*

Ignoring, dismissing and silencing the agonistic, affective and carnivalistic commentary online, at least partially stemming from the explicitly stated need to keep the discussion "proper", certainly did not foster dialogue between the young people and the experts. The reactions of the IRC moderators demonstrated that the evident "misbehaving" quite clearly overspilled the parameters of rationality and consensus they thought (or were instructed) to be important for proper engagement. The somewhat unsuccessful effort to sanitize the IRC discussion by the moderators is also a clear example of seeking to control the parameters of participation and maintain an education-oriented, disciplined discussion:

> 12:06 <RÄJMA> [*moderator*] what is climate change about? what can an individual do to stop it?
> [. . . ]
> 12:06 <sacc3-> what is climate change
> 12:06 <sacc3-> how can you stop it
> 12:06 <sacc3-> why is it coming
> 12:07 <RÄJMA> [*moderator*] *listen (:*
> 12:07 <Hullari> climate change is total nonsense ;F
> 12:08 <Hullari> its preferable to stop farting, it produces too much gas into the air
> 12:08 <Hullari> and one should also stop breathing, it produces too much carbon dioxide
> 12:08 <sacc3> the end of the world is coming Flee !
> 12:08 <Hullari> :D:D:D
> 12:08 <-Krisu-> [*moderator*] hey let's behave *properly*

On many occasions the misbehaviours in the virtual space could also be interpreted as employing playful counterstrategies, perhaps to lighten up the serious and rational mode of the discussion, or to resist the imposed control over their commentary and how to properly talk about climate change:

> 12:20 <RÄJMA> [*moderator*] one should eat domestic root vegetables and Baltic herring!

12:20 <SEKSIVAU> tuna is the best
12:20 <Hullari> one should not have children because they aggravate climate change
12:20 <Hullari> it is preferable to go extinct
12:20 <Hullari> ;F
12:21 <-Krisu-> [*moderator*] Hullari: hey let's stay within the limits of *reasonableness*, right? Let's chat *properly*, right?
12:21 <Hullari> well I am chatting properly, those are just my opinions so stup ;F
[...]
12:29 <SEKSIVAU> women cause climate change
[...]
12:30 <-Krisu-> [*moderator*] SEKSIVAU: on what grounds do women cause it?
[...]
12:31 <SEKSIVAU> women are so hot, which is the cause of climate change

Most of the commentary — and especially the misbehaviour — in the IRC was produced by just a couple of pseudonyms, which indicates their need to perform. While the deliberate confrontation, heckling and carnivalization of the issue are probably due to virtual identity building or social dynamics within the virtual community, these actions also challenge the rational and consensual mode of the discussion, thus breaking *both* the participatory and education frames by refusing to take part in the mutual exercise of rational deliberation. The fact that they were mostly ignored or countered by control further highlights the incommensurability of the discussion event's parameters of the "proper" and the dynamics of online discussion. Misbehaving, joking and confronting are ways of keying participation in the interactive frame of playing. The keying of participation in the play frame is a way to question the dominant structure of interaction and the serious mode of discussion. Many participants in the IRC also tried to chat "properly" about the topic, conforming to the educational understanding of the event maintained by the moderators. These participants remained respectful towards the moderators and received positive feedback from them, highlighting the fact that this sort of commentary was desired. However, in the overall stream of comments, this type of "proper" discussion about the topic was mostly flooded, and perhaps even partially prevented, by disruptive or distractive commentary:

12:52 <—iitu—> What if one already recycles and uses public transportation, what else can you do for the environment and to slow down climate change
[...]
12:53 <-Krisu-> [*moderator*] —iitu—: well it's already good if one recycles and uses public transportation
12:53 <Jefe> I won't give up my lifestyle for the environment, I'm a bad guy 8)
12:53 <Hullari> —iitu— go away from the computer and turn off the electricity and go to a cold shower

Considering the intended interactivity and public engagement, the most striking fact about the panel discussion was the fairly monological, question-answer structured interaction. Many of the questions, most of which originated from the IRC discussion, were answered by multiple panelists, but once posed, it was only the panelists who then discussed them. *Not even one* follow-up question or counterargument was made by the audience at the cafeteria. The host who facilitated the face-to-face discussion made no effort to foster a two-way dialogue between the audience and the panelists. Rather, she quite strictly focused on the subject, framing the event as education.

An inability to spot the dominance of the panelists was reflected in our questionnaire. Both of the hosts disagreed with the claim "The panelists dominated the discussion too much", while two out of the three panelists agreed. The intended interactivity was commented on sarcastically in the IRC as well, highlighting the fact that the chat administrators (moderators) did not understand the intended elements of interactivity and engagement:

> 12:19 <Hullari> why do I feel so stupid when the admins are talking with each other :D:D:DD

The event we observed was quite a novel — although not totally new — type of event in Finland, which means that the facilitators were perhaps not precisely aware of how to "do" dialogue. The Finnish science and technology policy culture has been characterized as exclusive-corporatist [29]. This means that the central stakeholder and interest groups, with scientific advisors and state officials, are regularly consulted in the regulatory processes, while citizens or civil society organizations do not have such a formalized role. Science and technology have been relatively unanimous, expert-driven projects in Finland and received little critical public debate compared to that in many other European and Scandinavian countries [30]. Debates about techno-scientific issues such as nanotechnology, medical genetics or genetically modified organisms have been rather modest. Thus, there is no strong culture for the upstream engagement of citizens in Finland [13].

## Conclusion and discussion

In this paper we have analyzed social interaction within an informal PES event by utilizing Goffman's concept of frame as an analytical tool to interpret social interaction. Based on our observations we analytically constructed four ideal-typical interactive frames to highlight the fact that in practice, social interaction within an informal PES event does not take place within one primary framework of interaction, such as the ideal-typical participatory frame. Rather, multiple interactive frames seem to emerge, intertwine and conflict. Interactive *dissonance* also occurs at many levels. The informality of the cafeteria as a physical environment and the promoted interactivity and possibility for audience participation were in dissonance with the theatrical staging of the event. Similarly, the virtual discussion took place in the informal space of IRC, but was heavily moderated.

Such dissonance easily activates multiple interactive frames, as it gets more difficult for actors to interpret what kind of activity they are actually engaged in.

Our analysis indicated, in particular, that the frame of participation is very fragile; other, perhaps more intuitive, frames seem to override easily the intended egalitarian deliberation ideal of interaction. It might also be the case that, especially in *expert-youth* interaction, more primary interactive frames, such as education, are activated. It is perhaps more comfortable to operate within an education frame for all participants if there is a vast difference in the actors' extent of knowledge or understanding about the topic under discussion. We do not argue that our findings would be generalizable in the sense that the specific frames we have described within this particular event would somehow constitute informal PES events in general — rather they are *analytical* constructs that capture and make explicit characteristic features of social interaction.

The main theoretical contribution of this analysis to literature on informal PES arises, then, not from any universal generalizations, but from rethinking and theorizing the complexity of social interaction from a Goffmanian microsociological viewpoint of framing. Especially our conception (and analytical elucidation) of the dynamic coexistence of different interactive frames within PES events might be an important theoretical conception for PES scholars — and possibly also for practitioners — to consider. By utilizing the concept of frame, we have also highlighted how the staging and design of events are not just material, but also have an effect on social interaction because they guide actors' perception of what kind of activity they are engaged in. In this specific case, the multimodality of the interaction — the combination of face-to-face and virtual discussion within one event — offered a valuable vantage point into how the *medium* used is reflected in the mode of engagement and social interaction generally.

We also argue that the methodological approach that we have utilized is fruitful for understanding the *actual* fragility of normative idealizations of social interaction within much of PES, such as privileging rational discourse and emphasizing *civic* deliberation [12, 31]. The advantage of using the concept of frame in rethinking social interaction within informal PES events lies in the fact that this mode of analysis is revealing when trying to identify how the underlying (normative) participatory ideals of interaction *actually relate* with other types of interactive frames and modes of communication. In this specific case study, it was particularly revealing how the norm of rational discussion was subverted in the internet chat and how the educational and theatrical framings in the cafeteria hindered participation and dialogue, despite the participatory meta-framing of the event as dialogical and interactive. Focusing on social interaction also helps us to understand PES events beyond the purely discursive level — a level on which much of the existing PES analysis is still focused.

We find it especially important to recognize that even the kind of online commentary that appears to make no sense from the perspective of (normative) interaction ideals implicitly present in the design and practice of many PES events, makes perfect sense

from the perspective of actual micro-level interaction.[6] This kind of subversive and playful action is often negatively labelled as "flaming", that is, social acts which comprise such elements as hostility, increased emotionalism or criticism [32] or "trolling" — another common term used to describe disruptive or "harmful" online behaviour [33] — in the context of computer-mediated communication. However, as Patricia Lange [32] has argued, these subversive acts show how micro-social hierarchies and cultural norms are established, challenged and negotiated in social interaction. She argues that it is important to note that participants in (online) discussions actually often evoke supposed norms in such ways that can create the kind of micro-social hierarchies, in which the interlocutor who makes corrections to the others messages is displayed as higher in the hierarchy. From this perspective it becomes more understandable that, for example, the attempts to control or "police" communication in order to keep up a rational civic discussion by facilitators or moderators — based on certain socio-cultural norms often implicit in PES activities — can actually increase, or even cause, online behaviour which might seem "disruptive". Thinking about socio-cultural norms and micro-social hierarchies in the case of "disruptive" commentary offers, we believe, a more fruitful way to consider "flaming" and "trolling" for PES scholars or practitioners who think about, plan or facilitate online PES environments than, for example, the somewhat common view that trolls just look for reactions of any kind as validation to go on trolling, and for that reason they shouldn't be "fed", that is, respond to their messages [33].

Maybe especially in the case of more informal PES, in which there is no need to reach any kind of consensus decisions, the agonistic pluralist mode of engagement that emphasizes the importance of affect and conflict should also function more clearly as a starting point of the events (and their planning) than the deliberative mode of engagement which privileges rational civic discourse and often also consensus. Perhaps even more importantly we feel that more theoretical and analytical focus should be put on the role and meaning of play and humour when inquiring into PES in general, and maybe especially online PES. There might also be a practical point to this, as Horst and Michael [9, p. 300] have previously noted that "the professional need of science communications to avoid a perceived lack of seriousness might constitute a powerful factor in the design of engagement exercises and dialogue." Some less serious and more experimental and playful methods in the field of PES have already emerged — especially ones which are more art-based [34].

As a more practical implication of this paper, and perhaps related to our reflective discussion in the two paragraphs above, the findings of this research indicate that rather than focusing strictly on the subject, a sensitivity to different perspectives and modes of interaction seems to be crucial for effective facilitation of dialogue and opening up latent themes in the discussion. This study also indicates that such sensitivity might be especially relevant when the intended group to engage with science is young people. Mayhew and Hall [8] have also suggested that in the case of teens it is crucial for scientists to make

[6] Cf. [9].

connections to the teens' daily lives in their communication. Thus, it would seem that, especially in the context of expert-youth interaction, successful facilitation and dialogue require the facilitators and actors involved to be sensitive, even to seemingly irrational or "idiotic" behaviours that seem bound to emerge when teenagers engage with science [9]. In terms of actual social interaction — and the facilitation of it — this would mean that, for example, playful commentary by young participants should be viewed as a valuable way of opening up discussion, despite the seeming "irrationality" of this mode of communication. Furthermore, many of the inherently playful and subversive mediums of the online environment are probably very suitable platforms for *genuine engagement* with young people, as many of them feel comfortable expressing themselves there, and already inhabit these mediums frequently in their everyday lives.

The second more practical notion that can be drawn from our analysis is that the integration of virtual discussion and face-to-face discussion is by no means easy. Thus, when considering whether to integrate online channels into PES of any kind the specific logistics of how it is done should be carefully considered as many kinds of pitfalls exist [35]. Furthermore, the interactive *design* seems to have a major impact on how interaction goes on in practice.

Some practical suggestions can, perhaps, be made based on recognizing these matters. In the case of informal PES events we suggest three main ways in which to improve this type of multimodal engagement. First, it should be considered which kind of online medium to use — for example, some event-specific channels or forums initiated in a contemporary social media service would probably work better than channels which host more permanent communities, such as many IRC channels. Secondly, panelists should always be enabled to view and maybe also comment on the online discussion. And thirdly, the moderators should focus on facilitating and not merely on intermediating. Thus, the integration of the online environment to the face-to-face event should be conducted in a way that the moderators and facilitators are allowed to focus on fostering dialogue rather than restating things said.

Finally, it would also be useful to consider the "overspillings" during engagement events more widely within research on PES, as "there is a sense in which the participatory frame has been designed around the public (whether that be methodologically or politically). So, when a member 'mis-behaves' they do not move outside the frame of the participatory event (become an 'externality' or generate 'externalities'), rather they have transformed the event — it has become something else which the analyst subsequently strives to recover" [12, p. 546]. The seemingly irrational overspillings might reveal something relevant about the structure of interaction and modes of discussion within the event, and thus fundamentally about the event as a whole. The concept of overspilling also helps us analysts to be more aware of, and reflective about, our own implicit assumptions about social action [12]. Better theoretical understanding of social interaction within PES events might also help engagement practice — in particular by encouraging the consideration of elements such as the staging, design and facilitation of PES events more critically.

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## Authors

Sampsa Saikkonen is a doctoral candidate in the Department of Social Research at the University of Helsinki. He holds an M.Soc.Sc. in Media and Communication studies from the University of Helsinki. His dissertation investigates the expansion of expertise in the mediatized public sphere. E-mail: sampsa.saikkonen@helsinki.fi.

Esa Väliverronen is Professor of Media and Communications at the University of Helsinki. His research interests include media sociology, science communication and environmental communication. E-mail: esa.valiverronen@helsinki.fi.

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