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„Communicating (in) Epistemic Living Spaces - How Science Communication is Entangled with Early-Career Researchers' Ways of Living, Working and Communicating (in) Academic Research"

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1. Introduction

‘Imagine a cell is like an apartment. When you live in it for a long time, it gets cluttered and you need to clean it up every now and then. So the thing I am working on... it’s like the trash bag of this apartment. If you want to tidy up, you label everything that is supposed to go in the trash and then you bring the trash bag to the garbage room. Only in the garbage room of the cell, the trash gets recycled immediately…and this is the magic of Autophagy…’ This is how the supervisor of my Master’s project in Biochemistry, a PhD student, who was just finishing her Thesis, used to explain the topic of her PhD project to anybody who was interested. I was working under her supervision on my Master Thesis, so I started to use the same introduction if one of my friends or family asked me what I was doing in the lab all day. I always enjoyed those interactions because they made me go through the whole molecular process of the cell’s own waste-disposal system in my mind; and not just see the tiny little aspect I was working on in the course of my thesis project. Usually, this parable led to interesting exchanges. People would ask questions like, ‘How does the cell know what is trash?’ Or, ‘What if you label something wrong?’ Or, ‘What if the recycling machine is broken?’. Even though I , as an undergrad, did not always have the answer for these questions, the conversations always prompted me to carry the questions with me and discuss them with my colleagues. For my supervisor, such a conversation with an interested friend, sparked the idea of a new method for the detection of a special label for said cell-trash. I always asked myself, if she would have had this idea, had she not been talking to a friend about her research that day.

Six years later, I was not working as a researcher anymore. In fact, I had not touched a pipette in over a year, because I had decided to move away from research and turn to science communication professionally. In my capacity as a science writer for the communications department of the University, I was brooding over a press release together with a PhD student for her latest paper, which was due to be published soon in a prestigious journal. Her research was about a new function of a well-known receptor; a topic that I found fascinating, mainly because I had spent a large part of my career as a researcher on receptors and transport systems within the cell, but also nearly impossible to communicate to the press in a way that was appealing to a larger public. It was just so complicated and hard to break down. But I wanted to give credit where credit was due and so I decided to pitch the paper for public distribution. I had the thankless job of altering the PhD student’s original draft to the point of not being recognizable by her anymore because I had to cut all the technical terminology and all the biochemical processes that would interest nobody but a few fellow scientists. I kept asking her questions like ‘What is the

bigger picture here?', 'What would you use your Research for, can you give a real-life example?' and especially 'How would you phrase this if you talked to your grandma?'. For me this process was a lesson on how easily one gets sucked into the logics of science-media relations, but for the PhD student, this exercise of publicising a three-year process and confining it to the limits of a one-page word document was a completely different experience than she had ever had before. We struggled to find a common ground in the text. She struggled with the shift from scientific writing to writing from a larger audience because she had never written anything similar to it. In the end though, after the text was published and even picked up by one or two Austrian newspapers, she told me she was glad that we could work together on the press release because she could use more creative ways to describe the intricate mechanisms she had discovered (I do not know if her grandma read it, though).

Ever since I talked to my friends about cell-trash, in the numerous interactions I have had with scientists who communicate, both as a scientist and as a science communicator; and up until now when I ask researchers how they would explain things to their elderly relatives, I have asked myself if science communication not only has an effect on the audience, but also on the scientists who communicate.

With all its implications and pitfalls, communication has become an ever more important aspect in the world of science. When scientists communicate their own research to a wider public, either out of their own motivation, or as part of more organised effort, it demands a different way to think about their working process, their knowledge and the context in which they produce it. While there has been a lot of attention in the field of STS in the medialization of science, it's effects on the audience and, in turn, scientists' reactions to these practices, there is not much research on how science communication influences the scientist's ways of experiencing and living their lives as researchers within their epistemic community; on their views about themselves and their careers. To shed more light on this process, I accompanied a science communication project titled, 'Tea Time with Researchers', which was organised independently by a group of early-career researchers and aimed at communicating cutting-edge biomedical science projects to senior citizens. Through the theoretical lens of *Epistemic Living Spaces*, I conducted interviews and ethnographic research with all the participants in the science communication project and analysed social media posts and blogs related to the project. The resulting body of research is located in the space between epistemic cultures and science communication. It builds on previous research on the topic of *Epistemic Living Spaces* of early career researchers working in the biomedical field in Austria, and aims to expand this body of knowledge with the aspect of science communication. The analysis of the interviews, the

ethnographic- and online material collected about the four participants in my case study reveals four different, multifaceted living spaces which nevertheless share common prevailing traits, motivations and narratives. I could retrace how, through the execution of their own science communication project, the scientists start to form their own narrative, identity and collective as researchers and communicators by both incorporating well-established traits and narratives of their epistemic surroundings, resisting others and communally creating new ones. Finally, I managed to identify three key changes to the participant's *Epistemic Living Spaces* regarding the way the researchers/communicators conceive and plan their research interest, their career and how they see themselves in the face of the epistemic system they inhabit. Based on these findings, I lay out potential suggestions on how to enable early-career researchers in the formation of a resilient and fulfilling *Epistemic Living Space,* as well as an epistemic system that accommodates these newly identified sensibilities with the help of science communication.

2. State of the Art

The topic of science communication in *Epistemic Living Spaces* touches on two major research areas within STS, namely research on science communication and research on the development of current academia, in other words on epistemic culture. At first glance, the two areas do not have much in common but at a closer look, there are many connecting elements. In the following chapter, I will provide an overview over each topic before going deeper into elements of what connects the two areas of research and what is especially relevant in terms of my research interest.

2.1. Science Communication

The field of science communication is a vast and multidisciplinary one. In the following chapter, I will give a brief overview over the development of science communication as a discipline as well as a research area and describe how it was influenced by different models and encouraged by different stakeholders. In a second step, I critically discuss the perceived linearity of the field and present studies which focus on contemporary science communicator's views of the public and their motives to communicate. FInally, I underline the importance of collectives and roles for scientists when they engage in communication with the public.

2.1.1 From Deficit to Dialogue to Ecosystem and Beyond

As long as people have been engaging in scientific pursuit, they have also communicated their research to the public. From the carefully selected audience of 'gentlemen' who witnessed Boyle's air pumps in action (Shapin & Schaffer, 1985) to the efforts of Louis Pasteur and his networks to harness his microbes to 'pasteurise' the French public (Latour, 1988), science has always been communicated to certain publics one way or another. One major institutional push for public outreach of science was initiated in the early 1980s in Great Britain. Amidst a period of social unrest and uncertainty, public trust in science and institutions was falling dramatically. To compete against this waning trust, in 1985 the Royal society issued a report, titled 'Public Understanding of Science' (Bodmer, 1985), which determined the general direction of science Communication - in the UK and beyond - for the next decades. The report explicitly calls for scientists to engage in science communication on the premise of a knowledge deficit, or a knowledge gap, on the side of the public. This perceived knowledge gap results on the one hand in lacking public support for matters of science and technology in general, and on the other an

incapability of the public to make informed decisions without adequate scientific knowledge, for instance regarding science policy. Scientists, on the other hand, even though they have retreated from public debate due to the lack of support, are conceived as willing to 'educate' the public (Sturgis & Allum, 2004). The general assumption, and also the underlying rationale for more science communication of the Bodmer report is therefore, that if people were more educated, public support for science would rise and people would make decisions on the basis of scientific reasoning. Also in the US, scholars called for the need of 'scientific literacy' in order for policy decisions to be taken: "if this communication is to continued and expanded so that the science policy process can function effectively, there must be an audience capable of understanding both, the substance of the arguments and the basic processes of science" (Miller, 1983, p. 46). This basic understanding of a knowledge gap that *just* needed filling in order for the public to make better decisions, would determine the basic characteristics of science communication for a long time. Well until into the 2000s, this *deficit model* was the premise for most science communication efforts (Seakins & Hobson, 2017). However, it was already criticised early on for its linearity and ineffectiveness by STS scholars like Brian Wynne (1992a; 1992b; 1995) or Stephen Hillgartner (Hilgartner, 1990). They argue that in this model, the information flow is only conceived as one-way and that the role of the publics is merely a passive one which should not have any influence on science whatsoever. Also, the notion of knowledge of the Deficit model was criticised as being too narrow and uniform. For instance, controversies, local knowledges, and other reasons for the public to refuse scientific knowledge are not taken into account in the deficit model.

In the face of public controversies in the 1990s like the BSE crisis and the debates over GMOs in agriculture, also mainstream science communication started to recognise the shortcomings of the deficit model and acknowledged the "mood for dialogue" (Trench, 2008, p. 120), which had already been there for some time. The emerging *dialogue model* aimed to harness the benefits of greater public involvement in decision making and policy processes of scientific and technological issues: The information flow between science and the public was no longer seen as unidirectional and the participation and feedback of the public to science was encouraged and facilitated with different formats. Also the perception of 'the public' changed somewhat in this new model. Laypeople were no longer conceptualised as being incapable of providing valuable input but rather to be able to make decisions and give advice to scientists; but only after a deliberative process together with science, meaning after scientists have provided the information that the public requires. Hence, the new focus of science communication in the heyday of the dialogue model was to facilitate this dialogue and participation process. Deliberative formats, like the Danish citizen conferences were established to work towards

consensually oriented debate on scientific controversies (Seakins & Hobson, 2017) and implement policies based on this deliberation process. However, the participatory model, especially the deliberation concept, in which decision making is achieved only if there is consensus on an issue, also has its shortcomings and was criticised by several fields of research. First of all, it harbours some residual assumptions of the public being in need of the 'correct information', which are in most formats provided by the organiser in a top-down manner, usually already with an outcome in mind (Trench, 2008). Another critique aims at the deliberative process itself and its implication for scientific citizenship. In an idealised space, deliberation happens in a hierarchy-free manner but in practice this can never be achieved as hierarchies outside of the group and - often unconscious - biases cannot be left at the door when entering a deliberative format. Additionally, as mentioned above, the way how these formats are organised, also has tacit governance effects on the process. Hence, the format inevitably favours certain views of science and the public over others, often those that are in agreement with the organisational body's aims and structure. Because of its orientation towards consensus decisions, the deliberative process is especially unfavourable towards minority views that don't hold much discursive power, and who might be affected more by certain policy decisions than the majority who are dominant in the deliberative process (Árnason, 2013; Phillips, 2011). Hence, also the dialogue model of science communication and the discursive formats which were fostered by it also have had their shortcomings.

Since the turn of the millennium, not only science communication and outreach efforts themselves have multiplied and diversified, but also research on science communication has gained a lot more influence and traction, in the field of STS, as well as with practitioners. Also the perspective on science communication as a discipline of academic research, and especially the perceived linearity of the field, turning from deficit to dialogue has been questioned[1](Irwin, 2006). At the same time, research on science communication has been broadened by taking into account different disciplines like media studies (Rödder, 2012; Weingart, 1998), political sciences (Chilvers & Kearnes, 2016) or education sciences (Baram-Tsabari & Lewenstein, 2017; Tytler et al., 2021). Notably, a large part of emerging concepts surrounding public understanding of science and the practice of science communication are heavily influenced by STS research in various ways. There are some fundamental frameshifts in the conceptualisation of science communication caused by STS, which are persistent throughout these different concepts. First and foremost, under the influence of STS, science and the public are no longer seen as separate entities but as parts of the same larger society. This especially shifts the view on scientists and their role in the interaction with the public in contrast to the deficit- and the dialogue model. In the

[1] As will be discussed in the next section in greater detail

former, scientists are conceptualised as impartial providers of scientific information whereas in more recent models, they are seen as active citizens with viewpoints, biases and networks of their own (Michael, 2002). Other notable impacts of STS research include the growing acknowledgement of the diversity and amorphous nature of science communication (Bucchi & Trench, 2021; Davies & Horst, 2016), as well as closer attention to the particularities of science communication, such as the temporality and materiality of interactions (for instance Michael, 2002). Also immaterial aspects, like affective and relational interactions and most notably emotions, have been more and more in the focus of contemporary research on science communication (Davies, 2014, 2019b; Zahry & Besley, 2021). Hence, in the stream of contemporary science communications, there are many small currents. In this context, conceptualising science communication as an 'ecosystem' in which a multitude of interactions are taking place simultaneously shaping each other in a symbiotic, or even antagonistic manner, help to grasp the complexity of the subject while not losing track of the particularities of single interactions: Contemporary science communication "is an ecosystem, where there are many and various forms of life, interacting with each other through multiple means. We have also suggested that no single analytical or theoretical approach can do justice to this diversity. No one methodological lens can be used to look at every kind of science communication from university PR to science theatre or science blogging. Instead, scholarship of science communication needs to draw on different disciplinary and conceptual traditions and resources." (Davies & Horst, 2016, p. 214).

In summary, science communication, as well as research on science communication, initially framed as starting from a deficit-model-assumption and moving to a more dialogue centred approach, has expanded and diversified in the last years. It has become an 'ecosystem' in which numerous interactions take place. To research a specific niche in this ecosystem, one has to both look at the particularities and allowances of said niche and choose the ones research methods accordingly while keeping in mind the influences and interactions with the rest of the vast ecosystem.

2.1.2 The 'Grand Narrative' of Science Communication and the Deficit Model Lurking in the Shadows

In the previous paragraphs, I have described the development of science communication from a deficit-model to a more dialogue-oriented process to a multitude of different streams and influences. This description suggests a rather linear development of the field. However, this narrative of science communication itself needs to be examined in a critical light.

In science communication, both with practitioners and researchers, there seems to be a “grand narrative” (Trench, 2008, p. 119) about the development of the field, starting from deficit and turning to dialogue and beyond. In many aspects, the description of this linear development is part of the story that the science communication community wants to tell itself (Trench, 2008). A closer look reveals that the development of the field is far less straightforward and unidirectional, and that many contemporary science communication efforts are still centred around a “framework of one-way transfer of information” (Davies, 2008), in other words a deficit-model approach. Several studies reveal the continuing prevalence of the deficit model in science outreach activities, especially when it comes to communication, done by the (natural-) scientists themselves (Besley & Nisbet, 2013; Davies, 2008; Ecklund et al., 2012; Grand et al., 2015; Simis et al., 2016). In group discussions with scientists and engineers, Davies (2008) found, that for the involved scientists, communication in a majority of discourses to the public in principle is still “silently constructed as being about what science has to say”, implying that both, the public is not seen as being able to provide valuable input into the communication process and that communication to the public is framed as in danger of being misinterpreted or misused. However, amongst this main tendency to hold a deficitary assumption of the public, there are secondary discussions amongst some of the scientists, which frame communication activities in a more nuanced way, emphasising the complexity, different contexts and framing the communication efforts rather as a debate by the scientists. Notably, mainly scientists who had already some experiences in outreach activities seemed to engage these secondary discussions. According to Simis and colleagues (2016), there are multiple reasons for scientists to retain this concept along the lines of the deficit model. Firstly, the emphasis on rationality and rational thinking of the natural scientist’s education prompts them to believe that the public would follow an argument, just because it is rational. Secondly, institutions favour communication along the deficit model because it is simpler to implement and therefore more cost effective. Thirdly, since most scientists lack training in communication, sensibilities about the audience or the delivery are not a given. For most researchers in the natural sciences, the public or society is still conceived as apart from the scientific community and not as part of society as a whole (one of the main premises of the deficit model). The authors also found that particularly scientists, who have negative views about the ‘soft sciences’, such as sociology, tend to favour the deficit model and communicate accordingly. Other studies (Golumbic et al., 2017) found that the same principle can apply to scientists engaging in citizen science. Even though scientists actively participate in citizen-science projects, many are not convinced that the engaged publics could make a meaningful contribution to their scientific research or are concerned about ethical issues or issues of data quality (Riesch & Potter, 2014). According to Golumbic et al. for the scientists

engaging in citizen science, the endeavour is predominantly seen as a vehicle to boost public support and secure funding. In other words, the scientists want to appear as engaging and dialogue-oriented towards the public but do not think that an exchange can be beneficial for their knowledge production.

Many of the studies that bring up the issue of scientists harbouring a deficit-model understanding of the public when engaging with it, point out similar solutions to this problem. Some argue for formal training of the scientists in science communication with a special focus on social science concepts (Golumbic et al., 2017; Grand et al., 2015; Simis et al., 2016), also with the help of professional mediators (Chilvers, 2013; Simis et al., 2016). What most studies suggest however, is more exposure of the scientists to different audiences - and more practice in communication activities (Davies, 2008; Golumbic et al., 2017; Simis et al., 2016), such as engaging in citizen science: “Exposing scientists to public engagement and citizen science concepts, especially at early stages of their scientific career, could help overcome barriers and encourage scientists to further engage the public in such initiatives" (Golumbic et al., 2017, p. 1). More exposure to science communication could potentially also lead to a more nuanced discourse in the scientific world about the audience and the very nature of science communication, giving more space to framing it rather as a debate, as complex and context-dependent, hence assigning more agency to the audience (Davies, 2008). However, even though the concept of more exposure equals more dialogue has been proposed repeatedly it has hardly been investigated in greater detail.

2.1.3 The Motives for Scientists to Communicate

In the last section, I have shown that many scientists still harbour “residual realist”- or deficit-model assumptions when they communicate to the public. At the same time, as described in the first section of this chapter, there has been a steep increase of science communication efforts within the scientific community and therefore scientists who engage with the public in one form or another. In this context, it is worthwhile to look at the different motives of scientists engaging in public communication, in other words, what drives them to communicate and what aim they want to achieve with their efforts. The following paragraph will give an overview over current research on this topic.

There is only a limited amount of studies that have looked specifically into the reasons why scientists communicate to the public. Most of the literature on this topic investigates the matter in a quantitative approach by surveying large cohorts of scientists (Anzivino et al., 2021; Besley, Dudo, & Yuan, 2018; Besley, Dudo, Yuan, et al., 2018; Besley et al., 2020; Besley & Nisbet, 2013, 2013; Dudo, 2013; Liang et al., 2014; Nisbet & Lewenstein, 2002; Rose et al., 2020; Yuan

et al., 2019; Zahry & Besley, 2021). Much less research has been done using in-depth qualitative or case-based approaches (Cerrato et al., 2018; Davies, 2013a; Loroño-Leturiondo & Davies, 2018; Martín-Sempere et al., 2008).

In general, the different motives of scientists can be divided into two main clusters, one is oriented outwards to the public, the other one is oriented inwards to the scientists and scientific community itself. The first cluster can be summed up by a sense of duty of science towards society, a desire to reach out to people and spread scientific knowledge, even though, as described in the last section, this is often done with a deficit-model assumption of the public. A case study of scientists, participating in a science fair in Madrid sums up these motives as follows: “the desire to stimulate the public’s interest in and enthusiasm for science, to increase the public’s scientific culture, and to enhance public awareness and appreciation of science and scientists" (Martín-Sempere et al., 2008, p. 349). Loroño-Leturiondo & Davies (2018), describe this with the term “social responsibility " that scientists expressed as their main rationale for communicating in focus groups. In this study, the scientists express that they consider it as their responsibility as a member of the scientific community to reach out to the public and create a positive response. They also feel responsible for the outcome of their engagement and the success of their communication endeavour, meaning, they express a sense of duty towards the public.

The second cluster of motives for communication is to achieve strategic goals within the scientific community, either for personal or political gain. This can be summed up with the term “stakeholder perspective” (Simis et al., 2016). For instance, scientists engage in outreach activities to gain better relationships with policy decision makers, and in turn secure better funding (Besley & Nisbet, 2013). A Canadian case study characterises PhD students, seeking science communication training and engaging in science communication, as pursuing science communication as an additional skill to achieve their career goals and be better fit for the job market, not only in the communication sector, but also as a research scientist (Daoust-Boisvert, 2022). Hence, scientists who engage in communication have different strategic incentives in mind when they engage in communication.

It is important to note however, that the two clusters are not mutually exclusive. A majority of studies on the subject show that the two motives, wanting to reach out to the public and gaining a strategic advantage within the scientific community, often conflate (Anzivino et al., 2021; Besley, Dudo, & Yuan, 2018; Cerrato et al., 2018; Davies, 2013a, 2019a; Merga & Mason, 2021; Rose et al., 2020; Yuan et al., 2019). For instance, a case study of Italian researchers engaging in voluntary outreach activities with children could discern both personal motivations of the participants, like acquisition of new skills and personal development, as well as a sense of

duty towards society and a desire to promote science (Cerrato et al., 2018). A large-scale survey study of scientists in North America lists the main objectives for communicating as a mix of social responsibilities and stakeholder motivated, namely “ensuring that policymakers use scientific evidence, ensuring that our culture values science, ensuring adequate funding for scientific research, helping people use science to make better personal decisions and fulfilling a duty to society” (Besley, Dudo, & Yuan, 2018, pp. 587–589). Hence, in most instances of science communication, both motivations, a desire to reach out and give back to society and the desire for advancement of personal goals, manifest in science communication activities alongside each other.

In summary, the motives of scientists to communicate can be separated into a sense of responsibility towards society and more stakeholder-oriented goals concerning their career or their influence within the scientific community and policy. However, it is less important to separate the two clusters distinctly: “as analysts, it does not make sense for us to try and decide whether a given communication effort is an altruistic diffusion of content or an exercise in branding (either of an individual or an organisation). It is often both of these—and probably more” (Davies & Horst, 2016, p. 57). The key is to rather see the different motives and rationales for scientists to engage with the public as implicitly intertwined and connected to the larger logics and dynamics of the scientific community and society at large.

2.1.4 Collectives, Roles and Identities Communicating Science

As described in the previous section, scientists have a multitude of intertwined motives to communicate to the public, which are in most cases a mixture between ‘social responsibility’ or ‘stakeholder-oriented’ reasons. In the same rationale, when communication happens, there are many underlying dynamics, values and norms, both from the part of scientists, as well as from institutions, that tacitly shape how science communication is conceptualised and practised[2]. Therefore, in the next paragraph, I will point towards the importance of collectives in science communication, the different roles that scientists take on when interacting with the public and the process of identity-building that comes with these processes.

When looking at science communication from an STS perspective, it is important to keep in mind that scientists do not communicate out of a social vacuum: “It is not just about scientists and their audiences, but about wider groups and collectives” (Davies & Horst, 2016, p. 57). Meaning scientists are always part of different groups and spheres of influence and embody and enact these different affiliations and relationships when they communicate. Collectives, in this context,

[2] The same is true for audiences, but as this thesis is about the scientists who communicate, the aspect of the audiences will not be discussed in detail.

can be their peers who are at the same stage of their career, researchers who are affiliated with the same institution or the epistemic field that the scientists do research on; but also of other social circles outside of the professional realm, like activist groups. Hence, If scientists communicate to a public, they do not just speak for themselves but also for all these collectives and communities. Even if they do not officially act as a spokesperson for these collectives, for instance when they participate in a science outreach activity, they tacitly embody them in every interaction with the public, which, in turn, feeds back on the collectives themselves and on their identity as scientists: “[Scientists’] public communication is not just about them and their audiences but about a community that they want to represent or demonstrate (or simply not embarrass themselves in front of)” (Davies & Horst, 2016, p. 65). These different collectives can exist alongside or even be mutually reinforcing each other in their values and aims, but they can also be at odds with each other and create a field of tension between different spheres of interest, which in turn creates tensions for the person communicating with multiple collective affiliations. A conflict of collectives that has been of interest in the field of research on science communication, is the tension between institutional science communication goals and cultures and the scientists’ objectives as communicators and/or researchers (Watermeyer, 2016; Watermeyer & Tomlinson, 2022; Weingart & Joubert, 2019)[3].

In addition to being part of different collectives, scientists can take on different roles when they communicate (Horst, 2013): They can speak as “experts" for their respective fields, in which they aim to disseminate information to relevant audiences, as “research managers", in which they communicate as stand-ins for a certain organisation or project and try to secure advantages for these, or as “guardians of science”, in which they speak for *Science* itself, meaning “science as a social institution (‘Science’ with a capital S)” (Davies & Horst, 2016, p. 64). Which one of these roles a scientist/communicator assumes in which circumstance and which ones they choose to assume, depends greatly on the situation. In any case however, by acting as a representative of any topic or cause, the communicators inherently identify with it and simultaneously are perceived by the audience as an identifier from the outside.

Hence, scientists never just speak on their own; but they also do not become what they are on their own. Because they represent different collectives and assume different roles when engaging with the public, communication is fundamentally important for the formation of scientists’ identities: “Science communication is used by scientists for many different identity-building purposes, in many different ways. It further relates to different kinds of communities” (Davies, 2021). Especially for younger generations of scientists, communication in

[3] This tension surrounding institutions and the larger institutional culture and the individual scientists will be discussed in greater detail in section 2.2.2.

different ways or forms, for instance via social media, has become an integral part of the formation of their identity (Baram-Tsabari & Lewenstein, 2017; Jünger & Fähnrich, 2020). In this process of identity formation, epistemic and societal narratives or narrative infrastructures (Felt, 2017a) play a role. Narratives and narrative infrastructures influence all the above-mentioned processes that contribute to the formation of a science communication event, as well as to the formation of a scientist's identity[4]. The embeddedness of scientists in different collectives - in- and outside of the epistemic community-, scientists' notions of the public and of the nature of science communication - whether it be oriented on a deficit- or dialogue- assumption-, the scientists' incentives for communication, and the different roles they assume when communicating, all have a tacit influence on how this identity is formed and performed in the arena of science communication (Davies, 2021; Davies & Horst, 2016). It is important to see this process is fundamentally relational, complex and performative. Collectives, roles and identities are never static, as both the scientists, collectives and audiences can shift in their composition and allegiances and can therefore not be considered as fixed categories (Davies, 2021). As a consequence, the process, how collectives, roles and identities are formed, depends greatly on the circumstances that a scientist finds themselves in, especially in their early careers (Mula et al., 2022).

One of the most important cornerstones of this process, which tacitly influences all these dynamics, is the institutions that the scientists inhabit: "Science communication is [...] inevitably related to organisational structure, reflecting its changes but also forming part of an organisation's storytelling about itself" (Davies & Horst, 2016, p. 74). Therefore the next sections will be dedicated to the process of how science communication is shaped by institutions.

2.2 Communicating (in) Epistemic culture

In the last subchapter, I focused on the field of science communication, and underlined several factors that contribute to a scientist's relationship with the public, as well as their self-understanding as scientists/communicators. As already mentioned, one of the most important influences on the formation of these complex arrangements is the institutional and epistemic setting that the scientists are embedded in. Therefore I dedicate the next subchapter to describing STS research on the epistemic culture of contemporary life sciences. I start by

[4] As narratives and Narrative Infrastructures are an important part of the theoretical framework of this thesis, the concept will be described in detail in section 4.3

describing how especially the biomedical sciences have changed in recent years before focusing on the topic of Institutional science communication. I will close the chapter by describing research on the effects of this institutional science communication on early-career researchers. It is important to mention that, while the larger trends that I describe can be seen in academia all over the world, I will describe the situation mainly from an Austrian perspective with a focus on the Life Sciences, as this context is most relevant for my empirical research.

2.2.1. Changes in Academic Institutions - Academic Capitalism and Hyper-Competition in the Contemporary Life Sciences

Economic forces of globalisation, new means of communication and an increasingly neoliberal logic seeping into all domains of life, have not stopped at academic institutions. These dynamics were evident already in the mid 1990 with scholars analysing the mechanisms of "academic capitalism" (Slaughter & Leslie, 1997). In the course of new economic developments also science - and especially the life sciences - has undergone a considerable orientation towards marketization (Mirowski, 2011), trust in numbers and rankings and a growing dominance of 'New Public Management' practices in research institutions (Burrows, 2012; Espeland & Sauder, 2016; Hazelkorn, 2011). In this context, the shifting practices of valuation have fundamentally changed the way institutions are structured: "within institutions, increasingly, only those academic activities count that can be counted, whereas others are attributed less importance, need more work to make them visible or are even neglected" (Felt, 2017a, p. 53). These tendencies have not only changed the way institutions are structured, they also have a tacit governance effect over the way research itself and the research community are structured. In the following paragraph, I will describe a few of these dynamics in greater detail.

Amongst the main changes resulting from this new mindset is a growing 'projectification' of research. A larger and larger proportion of public funding is no longer given to institutions directly, but rather goes through funding agencies[5], who evaluate project proposals and award research grants to the research groups themselves. In a majority of cases, such grants have a limited timeframe, which leads to an increase in project-based employment of researchers. The projects get assessed through metrics and indicators, such as successful grants and publication impact. Hence, together with the growing power of metrics and evaluation, this 'chronopolitics' (Felt, 2017b) provides a rigid temporal- and material regime, especially for early-stage research careers. As the pace of research, discovery, publication and funding is considerably accelerating

[5] There is also a mounting influx of private money into research, but this topic would be too vast to discuss here. In Austria, more than 50% of the global research and development investments derive from private funds (Svensson-Jajko, 2022)

the pace of scientific discovery, the timeframes for research become shorter and shorter. This is especially felt by researchers in the postdoctoral stage of their career (Müller, 2014), who often get employed from one short-term contract to the next[6]. Another hallmark of the recent changes in academia is a growing internationalisation of the scientific workforce. While the growing international collaboration in scientific research offers many advantages, it is often also a source of anxiety for researchers because mobility and international experience have become a requirement for building a solid academic career (Felt, 2009; Loveday, 2018). Again, employability across different national contexts and often disciplines requires metrics to compare different candidates. This in turn again has tacit governance effects on how junior researchers plan their careers and their research.

Factors like growing project-orientation, reliance on metrics and strategies of new public management and a growing internationalisation have been the main contributors to a rigid spatio-temporal and material framework in which especially early stage-researchers need to manoeuvre. But one particular aspect especially contributes to young researchers' insecurity and anxiety: Even though research activity overall has grown considerably in the last years, the number of tenured positions in Universities and other research institutions has stagnated or even decreased. Because of this tempo-structural bottleneck, most of the personnel who engage in knowledge production consist of temporarily employed, highly mobile junior researchers who compete for very few permanent positions; the journal *Nature* referred to this as a "Postdoc pile up" (Powell, 2015). This imbalance causes a state of "Hyper-competition" (Fochler et al., 2016) between the early- and mid-stage researchers, which causes an ever more narrow definition of what aspects are valued in a scientific career and what aspects are not. Especially researchers at the postdoctoral stage express this narrow definition of value and success: "the worth of individuals is defined by their ability to succeed in competition based on productivity in terms of acquiring internationally accepted and transferable tokens of academic quality, that is, indexed publications, grant money and recorded citations" (Fochler et al., 2016, p. 196).

Due to these narrow valuation practices, the "hyper-competition" between the researchers, but also the competition between research groups and entities for projectified funds, elevates the need of visibility for scientists and institutions alike, both within the scientific community, as well as to the outside. Therefore, in the next sections, I will take a closer look at the growing efforts of

[6] An Austrian (and German) particularity in this context is the so-called 'Chain Contract rule (in German Kettenvertragsregel)'. This paragraph in the University law states that researchers can be employed with temporary contracts for a maximum of 8 years. After that, they either get a permanent contract or they are not allowed to work at the University anymore. The problem is, that due to projectified funding regimes, Universities cannot offer permanent contracts for all the temporary employees. For instance, the University of Vienna issued 70 permanent positions for 2700 temporary contracts since the implementation of the rule (Illetschko, 2021).

institutions to heighten their visibility to the public and the growing push for scientists to promote and communicate their research.

2.2.2. Changes in Institutional Science Communication - the Struggles for a Place in the Sun

Even though it has not been the focus of many studies, the role of institutions in science communication is key to understanding many of the practices of contemporary science communication (Schäfer & Fähnrich, 2020). In recent years there has been a considerable increase of science communication activities promoted by institutions. Most Universities and Research Institutions nowadays have communication departments where they employ communication specialists, not only for the dissemination of research to the media and the public, but also to engage in strategic communication, for instance devising PR campaigns or engage in stakeholder relations-building on behalf of the institutions (Scanu, 2006). This professionalisation, in context with the above described mechanisms of marketization of research in general, leads to several changes in the conceptualisation and execution of science communication under the lead of scientific research institutions and Universities: “If the pressures of contemporary market-driven ideologies are re-shaping science, they are also reshaping science communication” (Davies & Horst, 2016, p. 126). Most notably, these changes include a shifted thematic focus, a focus on interdisciplinarity, relevance and excellence[7] (Davies & Horst, 2016; Felt & Fochler, 2012; Fochler et al., 2016), echoing the changes of the epistemic system that Nowotny and colleagues (2004) call “Mode 2” science or knowledge. Besides this shift of content, there is also a notable shift on the personal focus of science communication, meaning *who* is talked about and who gets the credit for scientific discoveries. Under the influence of institutions taking over science communication in a professionalised manner, the focus shifts from the individual scientists’ to the institution; meaning when a University’s press department communicates, the success is framed rather as an achievement of the University, rather than an individual scientist or a certain discipline (Marcinkowski et al., 2014; Peters, Brossard, et al., 2008b). Hand in hand with this shift comes a new class of professional science communicators, often with a background in the natural sciences, who has started to emerge in the science communication landscape and takes on an intermediate role between the organisation and the

[7] The effects of this new mode of telling stories about science on the scientific community and especially early-career researchers is discussed in detail in section 2.2.4.

realm of epistemic research (Davies & Horst, 2016), even though a considerable part of science communication is still being done by the researchers themselves[8].

Hence, not only science and research itself but also science communication is increasingly subjected to the new logics and dynamics described in the previous sections. This also has an effect on the researchers, who have a desire to reach out to the public and engage in science communication. Therefore, in the next section, I will go deeper into the relationship between communicating scientists and their institution and the tensions that surround scientists' involvement in science communication.

2.2.3. The Tensions between Institutional Science Communication and Individual Scientists - a Conflict with many Layers

In the last section, I described some of the changes of contemporary institutional science communication. But what are the effects of these changes on the researchers who engage in communication? Many case studies, which investigate these dynamics between communicating scientists and their institutions, point to an interesting conflict: On the one hand, science communication efforts are explicitly desired and pursued by institutions, for instance in the form of outreach-events, but on the other hand, scientists, who are willing to engage in communication efforts are met with a multitude of hindrances and obstacles by the very same institutions.

A major reason for these hindrances are practical obstacles like the lack of proper resources, training, support and mainly time for communication activities (Davies, 2013b). In other words, engagement in science communication takes a considerable amount of temporal, material and intellectual resources from individual researchers, which is often at odds with the pressure that the scientists are facing in the current epistemic system. Watermeyer, (2016) describes this as "incongruence of organization and expectation", meaning that public engagement is by nature continuous and context specific, which is at odds with the new organisational and managerial practices of contemporary academia. In order for scientists to engage in communication activities, institutions would need to provide not only opportunities to communicate, but also adequate resources, training and, above all recognition or incentives for scientists to engage in communication (Cerrato et al., 2018).

However, the conflict does not only play out on a temporal/material level but seems to be rooted deeper in the epistemic understanding of science communication. Several studies show that the appreciation of scientists engaged in outreach activities, from institutions as well as the scientific community for these efforts seems to be less than for other types of epistemic

[8] A quantitative survey study of scientists's incentives for outreach states that "98.3% of respondents participated in at least one science communication activity over the year (Rose et al., 2020, p. 1275)

engagement (Peters, Heinrichs, et al., 2008; Rödder, 2012; Rose et al., 2020; Watermeyer, 2015, 2016). One reason for this could be that in the epistemic community, too much involvement in public outreach can be perceived as negatively correlated with scientific expertise in the field[9], even though this tendency seems to have lessened in recent years (Liang et al., 2014; Martinez-Conde, 2016; Peters, Brossard, et al., 2008a).

It is important to note that, the above described obstacles that scientists are facing, both on a practical level, as well as on a symbolic and epistemic do not exclude one another, they are rather mutually reinforcing. This is shown in the context of a large case study from Italy describing this feedback mechanism as follows: “Because the personal commitment of scientists in SiS[10] activities, conflicts with the recognition that they do not have the time, or, rather, that they should take time away from their "real" activities: doing research. Interaction with the public becomes a task to be delegated to others or is a marginal occupation compared to the 'core business' of doing research” (Casini & Neresini, 2012, p. 59).

Research which examines the role of institutions in this constellation more closely (Marcinkowski et al., 2014; Marcinkowski & Kohring, 2014), comes to somewhat different conclusions about the reasons, why institutions are often a hindering factor for scientists’ aspirations to engage in communication: In many instances, institutions do not *a priori* hamper scientists’ efforts to communicate, but push them to a certain way of communication, which serves first and foremost the institution’s needs and not the scientists’. Hence, the obstacles that the scientists run into while communicating might also derive from a mismatch between the scientists’ aims of reaching out to the public and/or and forwarding their own career, as discussed in the previous subchapter, and institutional goals of representation and public relations. In other words, the push towards institutional science communication creates a mismatch between the scientists who engage in communication and their respective institutions regarding the overall goals and views on science communication and outreach.

The mismatch of communication objectives between scientists and their institutions and the practical and symbolic obstacles with which scientists are faced with if they want to engage with the public, hint towards deeper structural issues in the epistemic system when it comes to the valuation and evaluation of science communication. Many of the studies, which problematize these conflicts, point out that there is both, a lack of- and a need for an evaluative framework for both institutional and scientists’ communication activities. (Casini & Neresini, 2012; Cerrato et al., 2018; Neresini & Bucchi, 2011; Watermeyer, 2016; Ziegler et al., 2021). Especially for early-career researchers, who suffer the most from the narrow path of academic valuation in

[9] This phenomenon is often called the ‘Carl-Sagan-Effect’ (Martinez-Conde, 2016).
[10] “Science in Society” (SiS)

terms of career development (Rose et al., 2020), this lack of institutional framework for science communication is often a major obstacle for engaging in outreach activities with the public, even though they are in principle supported by institutions.

In the last sections, I have shown research on the push towards institutional communication, its effects on the circumstances in which the epistemic community itself communicates, and especially how early-career researchers are affected by these dynamics. But it is not only the form of science communication, which has an influence on young researchers, but also its content. By governing the stories that are told about science, science communication influences the next generation of scientists (Felt & Fochler, 2013). In the next section I will present this mechanism in greater detail and present research on what effects these science stories have on the researchers themselves.

2.2.4 The Science Stories We Tell - How Science Outreach Influences Early-Career Scientists

In the previous sections I have hinted at the growing need for scientists and institutions to be visible and how communication efforts are subject to a growing market-logics. I have shown some of the effects of this growing market-orientation and globalisation of science on the research landscape, as well as on science communication done by institutions. and pointed towards the institutional pressures that communicating scientists are facing, as well as the mismatch of institutional science communication and scientists' aims and motivations. But what are the effects of these newly emerging logics on the stories that are told by science communication? While a considerable amount of research has been done to investigate the effects of the changing focus of science communication on its audiences, there is much less research on the effects of the shifted focus of science communication on the scientists themselves. Landmark studies in this area (Felt & Fochler, 2012, 2013) point out several effects that the stories told about science, both by the media, as well as in the form of institutional science communication, have on young researchers' working practices and career aspirations. As a theoretical lens, they utilise the concept of *Epistemic Living Spaces* (Felt, 2009), which provides an in-depth and multidimensional understanding of scientists' ways of interacting, knowing, living and working with and within their epistemic surroundings[11].

Firstly, the authors describe the process that they term "press-packaging of science" in other words, "to communicate one's research in a brief form adapted to and attractive for a

[11] The concept of *Epistemic Living Spaces,* which is also the main theoretical lens of this thesis is described in detail in section 4.3

specific public" (Felt & Fochler, 2012, p. 142) and its effects on the scientific community. Scientists, often with the help of the institutional PR departments, present their research in a way that they can harness media coverage to secure public support and funding. This process is closely intertwined with the political sphere: "policy attention was thought of as following at the media's heels" (Felt & Fochler, 2012, p. 142)[12]. A good relationship with the media (and therefore politics) makes the researchers more independent from funding bodies because they can establish their own narrative aside from short-term promises of project proposals. This press packaging of science leads not only to a closer association of science and the media, but also heightens the need of justification for science to be socially relevant, to solve current issues of society. The danger in this process is that the constant need for communication and justification of research leads to an "Economy of Promises" (Felt & Wynne, 2007), meaning an inflationary use of promises and a rethorics that is heavily focused on discoveries and breakthroughs and leads to a misconception of the real-life research process: "Storytelling about science participates in the creation of a rather specific and often quite narrow imaginary of research, one of a fast and successful enterprise, where science is in control and provides solutions to clearly defined societal problems" (Felt & Fochler, 2013, p. 11). However, promises in research inevitably cannot always be fulfilled and, as a consequence, this leads to less public trust in science. Most scientists recognise the aspects of inflationary promises and narrow images of scientists to be problematic. But despite this, they contribute to the spread of these narratives, not only by interacting with the media but also by participating in - often institutionally organised- science outreach activities like open labs and the 'glossy brochures' (Felt & Fochler, 2013) which are produced by institutions to attract young people to science.

Consequently, the authors outline that this story told by scientists, in turn, has a huge influence, particularly on the next generation of researchers: "Telling stories about science in the public realm has an important impact on society, but also on science and in particular on the next generation of scientists" (Felt & Fochler, 2013, p. 11) In other words, aspiring early-career scientists use the image, originally intended to be delivered to the public, as blueprints for their own scientific careers. This has several consequences for the junior researchers. Firstly, this image influences scientists in their career choice. Subfields that are deemed more attractive by the media and gain more attention and coverage attract more people and fields who are perceived in a critical way, for instance research on GMO plants in the Austrian context, have problems attracting young researchers. Secondly, the focus on excellence leads to a distorted image of the research community: A career within academia and doing research on a level of

[12] Here the Austrian context is important. In a small country with a relatively small research community, single scientists, especially if they are media-savvy, can have a considerable influence.

excellence is communicated as the only worthwhile occupation; anything less is seen as inferior by the young scientists. Furthermore, failures and detours in scientific careers are hardly ever the subject of media coverage about science. This overly idealised notion of a linear career path is hardly attainable in real-life scientific careers.

All these factors lead to the young scientists thinking that they are doing something wrong, that they are not good enough for a scientific career if they experience anything that goes beyond the strict linearity of the science stories that are circulated. Apart from being a source of anxiety for the young researchers, these idealised narratives inadvertently omit the negative aspects of contemporary academic life, which are described in the first section of this subchapter. Many scientists, especially at the postdoc level, express that they were "critical about the fact that even most undergraduate students are not aware of these issues when choosing a PhD, let alone pupils who choose a certain line of study" (Felt & Fochler, 2012, p. 149). Hence, the "Science Stories we tell" do not only stem from a direct reaction towards the media but are learned, rehearsed and propagated within the epistemic culture and, in turn, exert a normative power on epistemic culture as a whole, but especially on early career scientists. The proposed solution to this issue is the establishment of a "storytelling ethics", in which anyone in the scientific system, who tells stories about science, be it institutions or the scientists themselves is aware of this problem and takes care about the stories they tell*: "*in a world where science and technology have become so powerful. Telling stories about science means much more than simply giving a correct account or an attractive presentation to convince members of the public. It is about choice, about what stories are being told and which ones are left out, and in that sense also about which kind of science we frame for which kind of society" (Felt & Fochler, 2013, p. 11).

2.3 Research Gap: Taking a Closer Look at Science Communication in *Epistemic Living Spaces*

In this literature review, I have given an overview over development of science communication as a discipline with an emphasis on how the field itself tells its story from a deficit-model to a more dialogue-oriented process. I presented research that is critical of the linearity of said development and showed that until today many science communication efforts harbour residual deficit-model assumptions about the public. I then took a closer look at the different motives for scientists to engage in communication activities, emphasising the simultaneity of different incentives be it altruistic or stakeholder-oriented, and finally presented research on how scientists are always embedded in different contexts and collectives when they communicate, which contributes to the formation of their identity as a scientist. In a second part, I

described the multiple challenges that especially early career scientists face in contemporary academic institutions and connected this to the practices of institutional science communication and its implications for scientists who communicate, namely that there is a multi-dimensional conflict between scientists engaging in communication and their respective institutions, which potentially hampers science communication activities. Lastly I described the mechanism of “Press-Packaging" science in greater detail and laid out the effects this practice has on early career researchers’ perception of their place in the epistemic community, in short, on their *Epistemic Living Space*. Throughout the chapter, I have already hinted at several gaps in the literature which I hope I can address with this thesis.

Most case studies who research science communication (Bensaude Vincent, 2014; Chilvers & Kearnes, 2016; Davies, 2019b; Horst & Michael, 2011; King et al., 2018; Martín-Sempere et al., 2008), look at top-down organised events and organisations, like science festivals and other outreach activities, mainly organised by institutional science communication. There is much less literature on communication events that are organised in a bottom-up manner outside of institutional frameworks. By looking at an event, which is self-organised by early-career scientists, I try to add this facette to the existing literature and contribute to the literature from several different angles: Firstly, in the context of the changing ecosystem of institutional science communication which, like scientific research itself, is increasingly subject to larger market logics (Davies & Horst, 2016), it would be interesting to examine, if the same logics also apply to communication activities, done by scientists within the epistemic system but outside of institutional boundaries. Secondly, Felt & Fochler, (2013) describe how the stories about science, streamlined through institutional science communication, influence the career aspirations and the identity of early-career scientists. It would be interesting to examine how early career-scientists take up, propagate or refuse these narratives about science and the scientific community when they decide to engage with the public on their own terms, outside of institutionally directed science communication. Thirdly, a considerable body of research points to the difficulties of scientists practising science communication in the institutional context, on a practical and on a symbolic level (Cerrato et al., 2018; Davies, 2008), as well as in the conflict between the scientists’ aims of communication and institutional goals of representation and public relations (Marcinkowski & Kohring, 2014). In this context, the influence of engagement outside the institutional communication objective on the development of the scientists’ own career aspirations and views about the epistemic culture is not well researched but would be worthwhile of closer attention.

There is also a gap in the research on the motives and identity building of early-career in the context of informal communities and collectives. Horst and Davies (2016) describe how

scientists never communicate as individuals but always act as representatives of different collectives, taking up different roles on behalf of Science itself (Horst, 2013). Additionally,it has been shown that the process of forming a scientific identity is highly dependent on the context, surroundings and circumstances, which a researcher inhabits (Davies, 2021). The role of institutions in the formation of these collective identities is well researched (see for instance Felt, 2009; Rödder, 2020). There is much less research on how collectives and peer-to-peer networks shape the communication output of early-career scientists and how they form connections and collectives through science communication.

In the context of the changes of current epistemic culture in the biomedical sciences, and their narrow valuation practices and career models, which are especially felt by early-career researchers (Fochler et al., 2016; Müller, 2014), more context-specific, qualitative research needs to be done on how young scientists' engagement in science communication fits into this arrangement. Additionally, some literature on the conflict between individual scientists and institutional science communication calls for the establishment of new indicators which can better account for science communication activities in the current epistemic system (Neresini & Bucchi, 2011; Watermeyer, 2016; Ziegler et al., 2021). It would be worthwhile to look deeper into the applicability of this and what implications this would have on the scientists, who practice science communication and on their views on career outlook, and the epistemic community.

Lastly, some case studies researching the remaining prevalence of the deficit model of current science coureach activities, suggest that exposure to communication activities might prompt scientists to re-think deficit-model-preconceptions about the public (Davies, 2008; Golumbic et al., 2017; Simis et al., 2016). It would be interesting to add to this research in an in-depth, qualitative manner. By investigating early-career scientists at different levels of exposure to science communication, I try to address this in the context of my case study.

In summary, a closer look into bottom-up-organised science communication involving scientists embedded in the epistemic system, of different career levels, with different experience and exposure in science communication, might be a valuable addition to the existing literature concerning the influence of science communication on scientist's views about science itself, about the scientific community and institutions and about their own careers.

3. Research Questions

As described above, this thesis tries to contribute to the fields of science communication and epistemic culture and to expand the field of research on *Epistemic Living Spaces* adding the aspect of science communication. In order to do this the thesis revolves around the main research question:

MQ: What influence does science communication have on the *Epistemic Living Space* of a scientist?

The theoretical lens of *Epistemic Living spaces* allows me *to* look beyond the scientists' identity in a multidimensional context which encompasses the spheres of influence in- and outside of the immediate epistemic surroundings and the narratives that shape a scientist's life, identity and place in the epistemic community. In order to grasp these multiple dimensions in the context of science communication, I expand the main question with three subquestions, focusing on different aspects and practices of a scientist's life in which the different dimensions can manifest.

SQ1: How does the act of communicating one's own research influence the scientists' views on the practice and the purpose of their own research?

It is not the norm that scientists get a lot of contact with people who are directly affected by their research. Breaking down and explaining one's research to an audience, might lead them to critically evaluate some of the practices and values of their own epistemic research, which are normally taken for granted.

SQ2: How does the act of communicating one's own research influence the scientists' career planning and outlook on their future in the epistemic system?

Through science communication, scientists get in contact not only with different audiences but also with different career outlooks on the epistemic culture they inhabit. Science communication might lead scientists to evaluate their position in the epistemic system differently.

SQ3: How does the practice of communicating influence a scientist's views on the scientific community, and their place within it?

Communicating scientists might experience different circumstances and a different standing within their epistemic community and the collectives that they inhabit in contrast to their peers

who do not communicate. I want to find out if this is the case and how this manifests in the scientists' lives

The above-mentioned gaps in the existing research and my research questions are addressed by qualitatively investigating a specific case study, in which scientists communicate their own research in a self-organised science communication project called “Tea Time with Researchers", which I had the opportunity to accompany from an early stage until it was paused indefinitely. Answering the questions at hand with the aid of this case study firstly calls for a holistic theoretical approach. Therefore, in order to gain a comprehensive picture of the interplay between identity, motivation, narratives, institutions and collectives, I will utilise the concept of *Epistemic Living Spaces* (Felt, 2009). Accompanying a case in real-time, additionally opens up many opportunities in terms of methods. Close observation of the participants and their output in several forms can be used as an addition to in-depth qualitative interviewing in order to do justice to the holistic approach of the concept of *Epistemic Living Spaces*. In this approach, these three areas, the case itself, the theoretical lens and the applied methods cannot be treated separately. Therefore, the following chapter provides an assembly of the case study from these angles. It starts with an in-depth description of the science communication project, followed by the theoretical lenses through which it is approached and an account of the methodology that was used to make sense of the data collected in the course of the Tea Time with Researchers project.

4. Assembling a case Study: *Epistemic Living Spaces* and Communication

In the previous chapters, I have given an overview over the current state of research on current developments in academic practices, with a focus on the contemporary biomedical sciences and science communication as a field of research, as well as an institutional practice. In this context, I pointed out a research gap at the interface of science communication and scientists' *Epistemic Living Spaces.* In order to address this research gap, I aim to assemble a case study from the material that I collected as well as from the sensitising concepts in whose light I plan to conduct my analysis and the methods I used in several instances of material collection.

The following assembly of my case study consists of four parts. In the first one, I will give an overview over the case study, the setting and the main actors. In the second part, I will reflect on my role in this research project and lay out the concept of *Situatedness* (D. Haraway, 1988), which has been a crucial part of my empirical material and my analysis. I critically address both my own role in the science communication project and my way of analysing the collected material. In the third part, I will describe the main theoretical lens through which my analysis is sensitised, namely the concept of *Epistemic Living Spaces* (Felt, 2009) with a special focus on how I utilise it as a *method*. In the fourth and final part I will reconstruct some instances of material collection while at the same time giving a deeper insight into how the material was collected, in other words into the methods that I used. The approach of merging empirical material with theoretical influences, methodological remarks and reflections should emphasise both, the multimodality of my research material as supported by the holistic theoretical lens of *Epistemic Living Spaces*, as well as the case-centred standpoint I assumed during material collection. With all these conceptual and methodological insights of my assembly, I want to draw out the four participant's *Epistemic Living Spaces* and situate the role and the effects of science communication in them in the following Analysis chapter.

As already mentioned in the previous chapters, in order to examine the interplay of science communication and *Epistemic Living Spaces*, I accompanied the development and execution of a self-organised science communication project, in which scientists communicate their own research work. The collected material consists of qualitative interviews with all participants, ethnographic observation of planning sessions as well as one communication event itself and analysis of social media posts about the event. An overview over the case study will be provided in the following section.

4.1 Introducing the Case: Tea Time with Researchers

"I mostly had a mind to spend time with seniors. [...] more from my social desire, I wanted to spend time with them. And then it suddenly came to my mind: Why don't I try bringing this together with Science Communication and try out a format of my own.
(Q1_Transcript_Interview_Merida, Pos. 258)

'Teestunde mit Forschenden' or 'Tea Time with Researchers' was a series of science communication events that took place at irregular intervals throughout the year 2020. It was organised by a PhD student and science communicator, Merida[13], and the aim was to communicate and discuss cutting-edge research to senior citizens, a target audience that is often neglected by science communication efforts (Brookfield et al., 2016).

To get in touch with this particular demographic, Merida chose a retirement home in the second district of Vienna as the location for the interaction with the senior citizens. The particularity of this residence is that It has a focus on openness to the public and always welcomes outside initiatives and projects for their residents. Merida, the organiser, stresses this in the interview:

"The [Retirement home] also desires this, that it is sort of permeable; that many people from the outside can come to the inside"
(Q2_Transcript_Interview_Merida, Pos. 318)

Volunteers regularly plan leisure events which are also open for senior citizens, who do not live in the home. Those outside visitors get informed by a mailing list or via one of the district's pensioners clubs. Hence, this particular retirement home was an ideal location trying out a new concept for a science communication project.

The concept, as it was first intended, is simple. Merida, the organiser, accompanied by various guest-scientists of different disciplines, visits the retirement home on a regular basis. She and her guest talk about up-to-date research to senior citizens. The whole event is set up to be very informal and throughout the experts and the senior citizens share tea and pastries, provided by local cafés. Importantly, the invited scientist's field of research should have a direct connection to the senior citizen's life, for instance, the first two guest scientists worked in the field of biomedical and translational research. The organiser of the project, who is a researcher herself, takes on the role of the moderator while the invited scientist is the expert who explains their research. This expert presentation should not be seen as a lesson but is encouraged to take on

[13] Anonymisation is a delicate subject in my case study. The project and the participants appear by name in the social media-and blog posts and they all were very open to having their person associated with the Tea Time project. When discussing the anonymization strategy before the interviews and ethnographies, all of my participants did not see this as being problematic. I still decided to anonymize them in the Thesis by changing their names and removing any identifiers in social media posts.

more creative forms such as theatrical performances or storytelling. In the second part of the event, the researchers and the seniors engage in a question session. The emphasis of this should be to thematicise the influence of research on the lives of the senior citizens.

The whole concept was conceived by the organiser Merida, a then-first-year PhD student of a translational research institute, based at a large hospital in Vienna. She has a background in Neurobiology, as well as considerable experience in science communication[14]. Even though Merida is also involved in institutional science communication, this particular event was organised entirely as a voluntary project out of her own interest to work with senior citizens (see quote at the beginning of the chapter). The event itself, as well as the planning with the guest experts is done in her free time; all the co-organisers contribute on their own initiative and without compensation. However, Merida stresses that even though the project is organised independently, she has the permission and support (although not financial) of her own research institute to do the project and recruit fellow scientists. The fact that she works in a very applied medicine field helps her to recruit the experts.

According to the organiser, the topics of the Tea Time events should fulfil two criteria. On the one hand, the research should be explained by those who actually do it, i.e. the researchers themselves, not their superiors or specialised communication experts; already the name 'Tea Time with Researchers' indicates this. She wants to give the experts room, not only to explain their research, but also to counteract a certain image, that the public has of researchers in the natural sciences:

"it's about comfort… about human warmth, which is not counterintuitive or incompatible with the 'cold, hard world of natural sciences'"
(Q3_Transcript_Interview_Merida, Pos. 345)

The second prerequisite of the communicated research is that the topics should be oriented on the life and interests of the senior citizens themselves. Ideally, it should be the audience, who makes topic suggestions and the organiser's role is to provide them with the fitting expert:

"The underlying idea is absolutely that we get to the point where they tell me what they want to hear"
(Q4_Transcript_Interview_Merida, Pos. 360)

Both aspects are crucial for a facilitation of dialogue between the scientists and the researchers, an objective that the organiser continuously stresses; in the interview, as well as in the planning sessions with the invited scientists.

The senior citizens are explicitly encouraged to talk and interact with the scientists, make connections to their own lives and share their "*experiences and hopes"*

[14] More on Merida and all the other invited experts in chapter 5.1

(N1_Announcement_poster_TT1). Hence, It is especially important that the communication and the learning works in both ways, that there is a dialogue between the researcher and the senior audience and that both sides should profit from the exchange. The initiator stresses this objective in a social media post that she published after the first Tea Time:

"I am happy to have learnt quite a bit from them about how they perceive our field"
(N2_Document_Analysis_LinkedIn_posts, Pos. 3)

Even though Tea Time with Researchers was planned as a regular event, the Covid 19 pandemic and the necessary contact restrictions, especially in retirement homes, prevented a regular scheduling. In the beginning, Merida planned monthly visits but had to pause for over 6 months in the summer of 2020. All-in-all, three Tea Time events could take place; the first one in March 2020 with the topic of Radioactivity in Biomedicine, the second at the end of July with the topic of wound healing and how researchers work with cells in the lab and the last one in August with the topic of Gender Medicine. My research accompanied the planning of the last two events and I could additionally visit the retirement home with the organiser and the third invited scientist for the last Tea Time to date. My main material for analysis consists of qualitative interviews that I conducted with the organiser and all three invited guest experts. I also used my ethnographic notes and analyses of social media posts about the event as additional sources.

The ongoing pandemic in the end brought the project to a standstill with a very uncertain future. The organiser did not host any more events after the fall of 2020 (the main reason for this besides the pandemic, is a lack of time). However, she is very open to people utilising her concept and starting their own Tea Time in different locations. She presented the concept at a conference, as well as in an online publication, where she actively encourages people to take up the project.

4.2 Situatedness - Researchers Researching Researchers

I have to note that [Merida] and I have a lot in common, even more so than I have with the other interviewees. We have a very similar epistemic background and both felt the need to engage in communication during our career as scientists.
(N3_Field_notes_interviews_online _ethnography_summary, Pos. 58)

With an overview over the case study in mind, I want to dedicate this section to *Situatedness.* I want to discuss my reasons for choosing this particular project, but also my reasons for asking my research questions in the first place and, most importantly, I want to lay out how my previous life as a biomedical researcher and my current career as a science

communicator shape my particular vantage point on this project. With this exercise on situating myself into the research process, I want to reflect on my approach and my relationship to the scientists I am doing my research on and compare my findings to my lived experience as a researcher. The guiding influence in this line of thinking is Donna Haraway's work on *Situated Knowledges* which I will briefly sketch in the next paragraph.

The starting point for establishing *Situated Knowledges* is the need for a new way of grasping and dealing with our world's *reality* and *objectivity* "in the belly of the monster, in the United States in the late 1980s" (D. Haraway, 1988, p. 581). She, and other feminist scholars[15], like Sandra Harding (1986), recognise the problem that the conceptualization of scientific knowledge is trapped in a dilemma: Especially early STS research has shown that knowledge and scientific 'facts' are not merely un- or discovered but constructed in a social process (Latour, 1987) and that the specific perspective that created them (western, male, white), is hiding these origins behind the 'god trick' (Haraway 1988, p. 581). However, the move of reducing all pursuit towards grasping reality and producing knowledge to a power struggle (Bloor, 1991 [1976]) and a desire to delimit the sciences (and scientists) from the non-scientific world (Gieryn, 1983) is only of limited use. Haraway's main criticism is that, while the Strong Program (Bloor, 1991 [1976]) and the concept of Boundary Work (Gieryn, 1983) do point out the flaws in the established system, they do not offer a way out of the dilemma of still recognising the social process - and the power behind - scientific knowledge while still being able to "get to know the world *effectively* by practicing the sciences" (D. Haraway, 1988, p. 577) which is needed in our current technoscientific world. This problem is especially pressing for those that are already at a disadvantage: "It has seemed to me that feminists have both selectively and flexibly used and been trapped by two poles of a tempting dichotomy on the question of objectivity" (Haraway, 1988, p. 576). Haraway reconciles this dilemma with adapting a different standpoint: *Situated Knowledges.* Seeing the world from a partial perspective, *situating* one's knowledge in a a specific context, offers a way in between retaining a claim of *reality* without pulling the *god trick* and hiding behind claims of superior and impartial knowledge: "We need the power of modern critical theories of how meanings and bodies get made, not in order to deny meanings and bodies, but in order to build meanings and bodies that have a chance for life" (D. Haraway, 1988, p. 580). In this spirit of building new knowledge from a vantage point, claims about the world and and the pursuit of knowledge, only becomes valuable, if the vantage point from where it is claimed is taken into account. This makes the subject and the object of research intrinsically connected and from this perspective, the researcher is more responsible for their research:

[15] My casse study does not have an explicit feminist background, nor is gender the main focus. "However gender, as a major ordering principle of society (with all its implications and struggles), runs throughout the study like a red thread" (Felt, 2009, p. 21). This is also true for my case study.

"Feminist objectivity is about limited location and situated knowledge, not about transcendence and splitting of subject and object. It allows us to become answerable for what we learn how to see" (D. Haraway, 1988, p. 583). In this new way of being objective, accountability is key. We as researchers, be it sociological or biomedical, are always responsible for the object of our research. We have a responsibility towards the objects we study because we are connected to them through our specific vantage point. This ultimately makes us extend more care and be more reflective about the subjects and objects we are researching and might prompt us to see even larger connections.

There was a pivotal moment in my research career where I realised that partiality, being involved and connected as opposed to being "immoral" and "omnipotent" (D. Haraway, 1988, p. 580) is an asset rather than a disadvantage, even for a biochemist. I was involved in a medical screening project, where I tested all available cancer drugs on patient samples. Our main goal was to connect certain mutations in the genome to susceptibility to certain drugs but on the side, we were feeding back the data of the single patient samples to the oncologists who treated them. The experimental setup itself was pretty standard so I was not particularly excited to do it until one day I met one of the oncologists who told me that the sample she handed over was from a three year old patient and the tumour was not providing enough cells to do the analysis. At this moment, I realised that all of this time, I was working with real people, not just cell suspensions, and that the way I do my research could have consequences for an actual person. I had known that before but I had never realised that connection on a deeper level and so from this day on, I made sure that all the patient samples were treated with extra care. I made this set of experiments a priority. All because I felt a connection to the cells in my culture dish, and to the patient they had belonged to. In a similar spirit, during the work on this thesis project, I felt a deep connection to the scientists I was interviewing. Three of my four interviewees work in the field of translational biomedical research[16], very close to the one I was working in. We are all female and similar in age. We were socialised in the same competitive academic ecosystem and we are all resisting it in our own ways. I recognised many of my interviewees personal struggles and the systemic background that causes them. I could comprehend their passion and their motivation despite the obstacles and, last but not least, in the interviews, I recognised many of the narratives that are circulating and shaping the scientific community and that also affected - and still affect - me as a researcher. I could emphasise on a deeper level because I had *lived* many of the experiences that my interviewees were disclosing. Hence, already early on, I realised that I can not be a neutral observer, I cannot - and do not want to - pull the 'God Trick' in this case study. Not only because I am too close to my subjects, but also because my findings will directly

[16] Meaning the research is trying to bridge scientific discovery and application on patients.

influence my current work as a science communicator. I want to make sure that I reflect on my specific vantage point, not to discredit my research as *biased,* but to make clear that my deep entanglement with the subject and also the *subjects* of my research can be harnessed to gain deeper insights into the mechanisms I want to reveal. Therefore, throughout the remaining thesis, I will insert at times my vantage point and lay out how it connects to the findings.

To reflect these entanglements also on a conceptual level, I chose a theoretical lens that accommodates the partial view while still taking into account multiple other factors that can shape a scientist's life. For this and for other reasons, I choose the concept of *Epistemic Living Spaces* as my main theoretical lens because it draws its strength exactly from its partial, person-centred, perspective and takes this view to arrive at broader principles. In order to reconstruct narratives, mechanisms and ultimately templates for action from these perspectives, they first need to be placed and contextualised. In the next chapter I will go deeper into the aspects of the Theory of *Epistemic Living Spaces* and lay out how I plan to utilise it for the analysis of my case study.

4.3 *Epistemic Living Spaces* as a Method - an ever Changing Account of Researcher's Lives

In order to gain a multidimensional image of the effects of communication on the life of the scientists in my case study, I utilise the concept of *Epistemic Living Spaces* established by Felt, (2009) and Felt & Fochler (2012*).* This concept highlights the multidimensional space in which scientists operate, make decisions and make sense of their lives. It is about "researchers, how they live in academic research, how they inhabit the different cognitive and material landscapes and participate in giving shape to them, how they organise their social, spatial or temporal environments and are organised by them" (Felt, 2009, p. 18). Hence, *Epistemic Living Spaces* tries to grapple with the multiple dimensions of a researcher's life and about the constantly changing possibilities that open up - or are closed down - to them. Analysing scientists' lives within this framework can provide insights into the intricate mechanisms, "which mould, guide and delimit in more or less subtle ways researchers' (inter)actions, what they aim to know, the degrees of agency they have and how they can produce knowledge" (Felt, 2009, p. 19), and in turn, give a better understanding *how* and *why* scientists operate in a certain way.

Just as the scientists themselves do not live and work in a societal vacuum, also the concept of *Epistemic Living Spaces* itself is informed by many strains of STS and STS-adjacent

theory.In the early development, Felt (2009) points out the influences that have shaped this theory. Those are the all overarching idioms of co-production (Jasanoff, 2004), situated knowledges (Haraway, 1986), boundary work (Gieryn, 1983) and epistemic cultures (Knorr-Cetina, 1999), which built the framework of understanding the researcher's worlds and guidances. In addition, the concept of new Modes of Knowledge production or Mode 2 science (Gibbons et al., 1994; Nowotny et al., 2004) and by extension theories about particular aspects of epistemic culture like the trust in numbers, the tacit governance of metrics and excellence, what Power (1999) calls the "audit society", help to situate the researchers' lives into the contemporary academic system. Similar to the concept of *Epistemic Living Spaces* is the idea of *Knowing Spaces*. According to Law (2017), everyone (also non-scientists) inhabit a certain space, which determines what can possibly be *known* or which knowledge is considered as worthwhile and useful and which one is not. Thus, Knowing spaces "set more or less permeable boundaries to the possible and the accessible" (Law, 2017, p. 47).

Felt and Fochler define *Epistemic Living Spaces* as " researchers' individual or collective perceptions and narrative re-constructions of the structures, contexts, rationales, actors and values which mould, guide and delimit their potential actions, both in what they aim to know as well as in how they act in social contexts in science and beyond" (Felt & Fochler, 2012, p. 136). This definition has several implications. Firstly, *Epistemic Living Spaces* expand the concept of Knowing Spaces in as they focus not only on how a researcher can know something, but how they (can) act and live in the space, defined by their epistemic and societal surroundings; "they comprise the sphere of action in which a researcher sits, and which defines their imagination of what is possible" (Davies, 2020, pp. 101–102). Hence, they include not only passively acquired knowledge but also active ways of sensemaking, of establishing connections, of planning the future and many other different practices in the epistemic area. Additionally, the fluidity and multidimensionality of this concept allows for the inclusion of dimensions and interactions that go beyond the space in which science is practised, in other words, "focusing on the perspective of the researchers, which allows us to grasp the subtleties of the 'personal' and how it gets entangled with epistemic and more structural elements" (Felt, 2009, pp. 20–21). This space beyond an epistemic career, that is,a feature in every scientists life, is equally important for the formation of the space in which they find themselves in as researchers because the two spheres have a constant influence on each other: "we want to move away from narrowly focusing on the core knowledge-producing activities, and to direct our attention to the many different ways of living in a field both in its more global dimensions as well as its local reconfiguration" (Felt, 2009, p. 20). Lastly, the concept also includes the ways in which researchers perceive the epistemic structures that surround them and in turn, the way in which those structures permit, hinder or

govern certain actions. This includes very real allowances like time, resources and physical space, which permit or delimit researchers' room for actions in their epistemic surroundings, as well as less tangible factors like circulating stories, rumours, valuations or frustrations: "Using epistemic living spaces as a framework for the exploration of scientific experience, in that this conceptual tool exactly presents science as something that is dwelt within in mundane as well as esoteric ways." (Davies, 2020, p. 112). The multiplicity and simultaneity of these mundane and esoteric categories will be discussed in more detail in the next section but it is important to stress, that even though these categories are separated for analytical purposes, as will be laid out in the next sections, it is important to always see them as deeply connected. This way we can capture the deep intertwinedness of personal lives, epistemic institutions and epistemic practices, the stories told and the politics within them.

Already from its first conceptualization (Felt, 2009), the notion of *Epistemic Living Spaces* has not only been used as an abstract concept but was intended as a practical instrument for getting a better handle at analysing real-life situations that researchers find themselves in: "Epistemic living spaces are not static or final. They are a conceptual tool for investigating the lived experiences of scientists rather than a landscape to be comprehensively mapped" (Davies, 2020, p. 102). First and foremost, the concept serves the very practical needs of understanding how and why researchers act the way they do and how they see themselves in the world they inhabit. By seeing the science communication effort as one aspect of a larger *Epistemic Living Space*, which in turn has influence on other regions of this space, I try to add a facet to a more holistic picture of current academic research and the space that young researchers inhabit and navigate. With this and my situatedness in mind, in the next three sections, I will describe my approach to the concept and lay out how I have made use of it in analysing my case study with a special focus on placing science communication within this space.

Multiplicity

The first step in utilising *Epistemic Living Spaces* as a method is to grasp the interconnectedness as well as the constant flux of situations and dependencies that it calls for: As already mentioned above, if we want to trace *Epistemic Living Spaces*, we need to "move away from narrowly focusing on the core knowledge-producing activities, and to direct our attention to the many different ways of living in a field both in its more global dimensions as well as its local reconfiguration" (Felt, 2009, p. 20). While not explicitly mentioned in this quote, also temporal regimes and changes thereof play a crucial role in the greater mindset of the concept. This togetherness, heavily influenced by the idiom of co-production, is crucial for grasping " the

intertwinedness of the personal, the institutional, the epistemic, the symbolic and the political" (Felt, 2009, p. 19). However, in order to get a foot in the door of this vast space, we need to define analytical categories on which our analysis can hinge before putting them back together. Felt and Fochler (2012, p. 136) define five of these dimensions, along which they reconstruct the multidimensional epistemic living space: “Epistemic living spaces can be characterised along at least five dimensions: an epistemic, a spatial/material, a temporal, a symbolic, and a social dimension. While making a distinction between these five dimensions makes sense for analytical purposes, at the same time they are inextricably intertwined”. For analysing my empirical material, these five dimensions provide a basis in order to grasp the multidimensional aspects of the scientist’s lives. I will analyse all the collected materials of my case study along these dimensions in the following way: First and foremost, they serve as base categorizations for the coding of the conducted interviews. But in a more abstract sense, they are also helpful as guidelines along which I interpret the instances of ethnography as well as analyse the spatiotemporal and the symbolic embeddedness of the social media posts that the participants published about the project. The main focus in all of these analyses is on science communication. I am especially interested in how the practice of science communication manifests itself in all of the above cited dimensions; the allowances that this practice gives, but also calls for and especially in the changes that the act of science communication might cause in my participants.

Subjectivity

Keeping in mind the multidimensionality already points to the second important shift in perspective by utilising the concept of *Epistemic Living Spaces:* namely its subjectivity. If we want to grasp the multidimensional space that a scientist inhabits, we have to start from the scientists themselves. We have to reconstruct their lives, not from a birds-eye view or as an outsider, but we should rather put on their metaphorical labcode and walk a mile in their shoes. In other words, we need to understand how they themselves see, evaluate and make sense of their lives and their research: “This concept directs our focus to the room for manoeuvring researchers perceive that they have in performing research, following their ideas and reflecting on them, arranging the private and the professional realms and engaging with societal issues” (Felt, 2017a, p. 54). In my case study, this approach provides an especially interesting analytical opportunity for two reasons. Firstly, by interviewing several scientists on different career levels and with different exposures to science communication, I can contrast their perspectives and get a sense of what their perceived room for action and development is within the larger epistemic culture. Secondly, by starting from the respective different perspectives, I can also carve out what aspects, spaces

and obstacles they share; which corners of the *Epistemic Living Spaces* they might co-inhabit and co-produce. The science communication event at the centre of my case study can be conceptualised as a shared space where these differences and similarities are negotiated, acted out and made sense of. Especially the Ethnographic observation of the planning sessions are helpful to re-trace these mechanisms and will hopefully give me a better insight of how the act of communication itself, but also the act of communicating together changes a scientist's *Epistemic Living Space.*

Narratives and Narrative Infrastructures

Sharing experiences and exchanging viewpoints creates common stories, which if repeated and rehearsed over time become common narratives. This is the third crucial aspect and perspective shift in the concept of *Epistemic Living Spaces.* In the life and formation of a scientist, the narratives created around the profession are hugely influential, and act as sense-making devices (Czarniawska, 2022; Felt, 2017a): “Narratives are not only seen as a way of sharing meaning in practice, but also as participating in the constitution of a broader sense of direction, value and purpose of academic work, in the reconfiguring of individual and institutional identities, and in the enabling and constraining of researchers’ actions” (Felt, 2017a, p. 51). Hence, by being part of the larger scientific community, all scientists are inevitably shaped by and are in turn shaping narratives circulating within it. Needless to say that narratives are not limited to epistemic culture but play a fundamental role in society as a whole[17]. Scientists are not just shaped by narratives circulating within their community but are also influenced by cultural practices, values and narratives circulating in society. Felt (2017) calls this exchange of wider and more specific narratives “narrative infrastructures”. Especially in my case study, It is important not to lose sight of this co-productive relationship between larger societal narratives and more community-specific ones when researching the common narratives circulating in science and science communication. By starting from experiences, viewpoints, values and priorities, that my interviewees might share, I can recreate larger narratives circulating about science and science communication. In the next iteration, I can examine how my participants might take up, propagate, or resist those narratives. Because of my specific situatedness in the case I can also draw from my experiences and compare the narratives of my interviewees to the ones that shaped my own conceptualisation in research. With this, I want to get a glance of the narratives and narrative infrastructures that are the framework for my case study.

[17] In social science research, the focus on the stories that are told and how these influence our behaviour is often referred to as the ‘narrative turn’. See for instance (Czarniawska, 2004).

Again, a special focus is on the place of science communication in all this. Especially in this realm, where science meets the public, narrative infrastructures play a fundamental role. Both, for how science is perceived by the public, but also for how the scientific community positions itself in contrast to the public[18]. I can draw conclusions from my interviewees perspectives about science communication and their perception of 'the public' and 'science' in general and again, in a second step see how they make use of these narratives and where they might resist them.

By following the multimodal material of my case study, consisting of interviews, ethnography and analysis of social media-and blog posts, I am able to retrace the narratives and narrative infrastructures that surround it. The science communication project can be conceptualised as the space in which the researchers actively perpetuate, refuse, or even actively construct narratives on their own in real time. These commonly constructed narratives, communicated to the public, then in turn contribute to the larger narratives of science communication, of science and of society at large. With the analysis of my case study, I aim to determine the narratives that are underlying the Tea Time project and which stories the participants want to convey, both to their audience, but also to their peers and ultimately to themselves to make sense and form a narrative of their own. To answer this question, I will focus on two thematic clusters. Firstly I want to investigate narratives surrounding science communication in the context of the scientists' home-institutions. Reconstructing these narratives is crucial for understanding the image that the participants have of the epistemic system they inhabit and how they see their room for action in the realms of career and personal development, thus providing a basic understanding for addressing my second and third subquestions. Secondly, I will look into narratives surrounding the science communication event itself. I will look into the issues of what kind of science is considered appropriate to communicate to the public and how the participants deal with controversial topics. With this, I aim to find out, if the scientists/communicators of my case study conform to prevailing narratives and narrative infrastructures about science communication, for instance if they engage in "press packaging" their science (Felt & Fochler, 2013), or if they actively resist them and try to develop their own narratives. By using this approach, I want to address my main research question and retrace the genesis of the scientists' own narratives about themselves as science communicators and scientists and see how this might have an influence on *Epistemic Living Space;* in all of the multiple dimensions that the concept includes.

[18] Of course, there are no absolute categories for "science" and "the public" as they can never be fully disentangled. but from the perspective of the science communicator it makes sense to set both categories apart.

In summary, through the lenses of multiplicity, subjectivity, narratives and narrative infrastructures, I try to reconstruct the *Epistemic Living Spaces* of the participants of my case study. A special focus is on the role played by science communication within this space and on the changes that the communication project might cause in the participants' *Epistemic Living Spaces*. In order to be able to account for these aspects, in the next chapters I will dive even deeper into my case study in the remainder of this- and in the following Analysis chapter. Firstly, I will reconstruct the single instances of data collection and connect them to the methodology I used. Turning to data analysis, I will subsequently focus on the participants of my case study and reconstruct their respective *Epistemic Living Spaces,* taking into account the *multiplicity* and *subjectivity* of their perspectives. From this, I want to extract the similarities and differences in their accounts and crystallise the *narratives* about science and science communication that they are shaped by and that they shape together with their science communication project. Finally, drawing from this material, I will focus on the different influences of science communication on *Epistemic Living Spaces.*

4.4 Material Collection- an Assembly of Events

The empirical research of my Case Study surrounds the science communication project 'Tea Time with Researchers', which I could accompany with different qualitative research methods. In the previous section, I already hinted at the conceptual call for multiplicity of the concept of *Epistemic Living Spaces*: "[the scientists] aim to express their agency through the diverse kinds of work— e.g., actions they take, resistances they express, alternative stories they tell— they invest in shaping their epistemic living spaces from within in ways to make them worth inhabiting" (Felt, 2017a, p. 55). This also invites for a multiplicity of methods for gaining a comprehensive understanding of a scientist's *Epistemic Living Space*[19]*.* With this in mind, in the following sections, I describe several instances of the multimodal material collection process while presenting my approach to conducting empirical research in further detail. By combining these two aspects in the methodology section I want to deliver a "Natural History Chapter" (Silverman, 2017) in which I recreate my decision making- and research process. Figure 1 shows a time axis of all events where I could collect empirical material and connect them to the different methods that I used. The temporal aspect is crucial in my case study because of the multimodality and interdependence of the different qualitative research methods that I used.

[19] The pitfalls of multiple methods will be discussed later in this chapter

Therefore it is important to keep in mind the linear progression of material collection. However, in the following sections, I will not provide a strictly linear overview over all the instances but I will rather group them along the different methods that I used, namely conceptual work, document analysis, ethnography and finally my main method, semi-structured interviews.

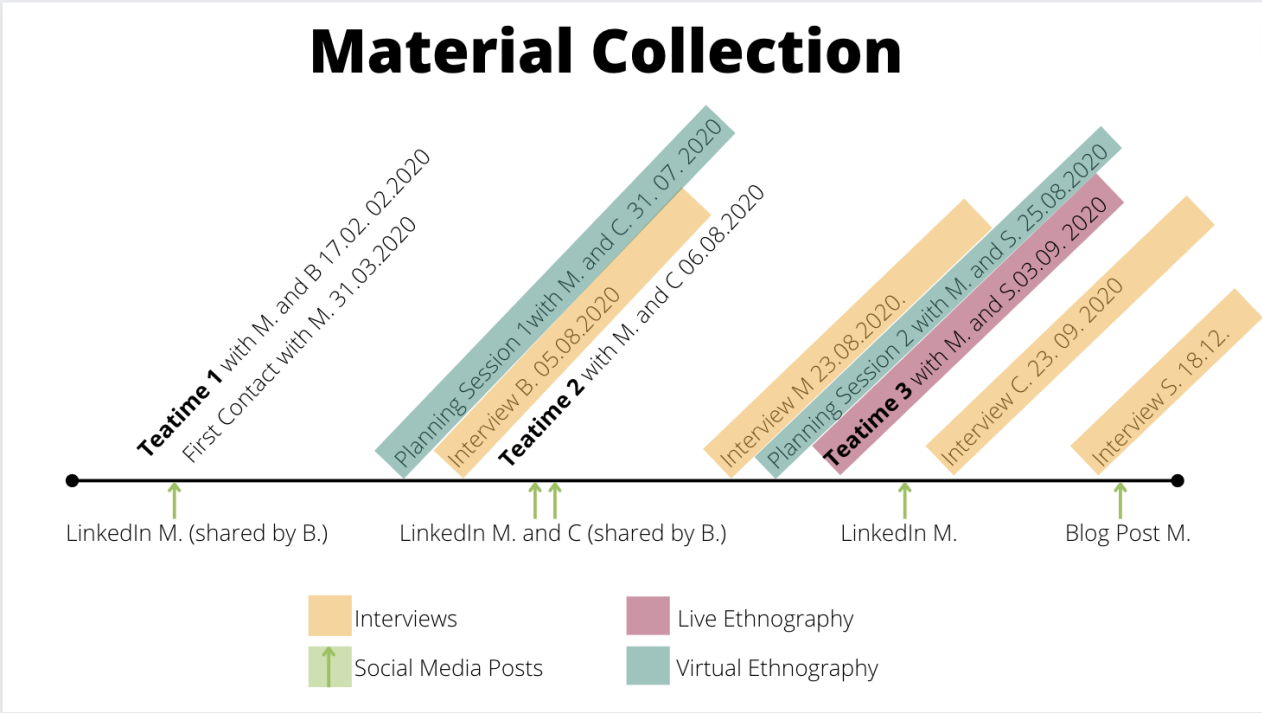

Figure 1: A time-axis of the year 2020 with all the instances of data collection of the case study "Tea Time with Researchers"

Despite this method-centred account of my research process, I still want to maintain a temporal logic. Therefore I will dedicate the next paragraph to the conceptual work that needs to be done before the start of every research project. I will reconstruct the process of settling on a research question and the road to finding a starting point for Theory, as well as Methods.

Conceptual Work - Defining a Research Interest and the No-Gos of a Case Study

As a biomedical researcher working in the lab, I had been engaged in several ways of science communication, from the mundane ones that every researcher is engaged in, like telling your parents *again*, what it is that you *actually* do, to more organised forms like participation in outreach projects. I had always been very eager to communicate and many of my peers were the same. In the Introduction chapter, I already told the anecdote that a colleague of mine developed

the idea for a new method by explaining it to a friend in simple words. This exchange between the scientist and the person they communicate with, for me, was a prime example of how the scientific- and the 'outside world' can mutually benefit from an exchange. Thinking about this exchange, I was asking myself if this happens also in more subtle and mundane ways when a scientist communicates, if communicating your research does not just give you more ideas but also changes the way you *work* as a scientist. This exchange that I had witnessed could also just have been a one-off and things like this usually do not happen to scientists. But as scientists, we always say that anecdotal evidence does not equal scientific knowledge, so I decided that I wanted to look into this mechanism in a more systematic manner and dedicate my thesis to this process of scientists communicating their own research.

Approaching the topic of science communication from the angle of the scientists was especially interesting to me not only because I could empathise with their point, but also because science communication as a research subject more often takes on the perspective of the audience. There is much less research about the scientists who communicate than about the audience they communicate to. By approaching the topic from this angle, I assumed I could add a new facette to the already existing body of research on science Communication.

With this preliminary interest in mind, I was looking for sites and potential interview partners. Because I was well-connected to the research community in Vienna, I knew many scientists who engaged in science communication but I wanted to approach the selection of my empirical site in a systematic manner. I specified three prerequisites that were important for me before settling on a potential research site. Firstly, I wanted to accompany a single - and ideally monothematic- science communication project involving several scientists. The reason for this was that my interests were not on the side of the audience and neither were they about the content of science communication. So by trying to eliminate these variables from my equation, I thought that I could better compare different scientists while not having to account for different means of communication and different audiences. Secondly, I did not want to do a retrospective study. I rather wanted to accompany the development of a project and see how ideas and practices develop and change in real time. In order to grasp the real-time process, a combination of different qualitative methods of data collection seemed appropriate, namely doing Interviews as my main data source while accompanying the project with ethnographic research[20]. However, there is a drawback to applying multiple methods in one research project: The more methods you apply, the more techniques you have to learn, which complicates the research process and takes more time, or as Silverman advises students on the topic of mixing qualitative methods: "Take this path only if you seriously want to complicate your life and, perhaps, end up having passed

[20] I will talk more about my approach to both methods later in this chapter.

the time limit for delivery" (Silverman, 2006, p. 53). Hence, "if you choose to use multiple methods, you must have a clear rationale for why this is the best approach for your project" (Jensen & Laurie, 2016, p. 16). As mentioned above, my main rationale was to fully concentrate on one single case study and from that, be able to shed light on my research question from different angles. Different methods require different skill sets, but they can also reveal different aspects of an issue. This approach should not lead to what Silverman (2006) problematizes as "triangulation", in which one method serves as a form of corrective for the other; to 'reveal the whole picture'. My rationale for using different methods was not to verify my participant's accounts but rather to look at how they put their ideas, their views, their way of thinking into practice and see how narratives are deployed and formed in the course of the Tea Time Project. In order to achieve this, I felt the need to accompany every instance in which this was happening and apply the adequate methodology for each different situation: I used interviews with the scientists to learn more about their perspectives and to see their lives from their point of view. I also observed how their views and standpoints translate to practice during planning gsessions and the communication event itself with ethnography. And finally, I analysed their social media posts about the event to see how they wanted their peers to perceive the event. With this methodological toolkit, I aimed to get a multidimensional image about the *Epistemic Living Space* that the scientists inhabit. The third prerequisite of my case study was that I should not have any personal relations to the scientists I was doing my research on. The reason for this was that I recognised the issue of my personal connection with my research question already early on to avoid the pitfalls of what Jensen and Laurie call *Insider Research*, this is when "a researcher conducts their study with a community to which they already belong" (Jensen & Laurie, 2016, p. 51). I knew that I had to account for the possible pitfalls of this as well as possible. For instance, avoid professional disagreements, not make assumptions based on somebody's role in an institution or interpreting their accounts in my own way, rather than listening to their perspective. I also had to reflect on my inherent ties to the research project and the community I was doing my research on and providing it with theoretical backing[21]. So considering my inherently deep entanglement into my field of research, I did not want to complicate the research process further by interviewing people that I personally knew. Hence I was on the lookout for a project that met these three criteria and I was very lucky to come across 'Tea Time with Researchers', which met my main criteria: The organiser and the guest speakers of the communication project were of a similar background and all events were supposed to take place in the same retirement home. It had just started and more events were already in the planning phase. The small drawback was that the first event had already taken place but this was close enough for my purposes. Last but

[21] Which I have done in the previous chapter

not least, I did not know any of the scientists involved in the project personally, as I had gotten M's contact from a fellow STS student.

For following my case study, the 'Tea Time with Researchers' project, I had decided to utilise and generate multiple sources of data. My main method was Interviews with all the participants, but I also conducted ethnography during the planning sessions of the event, as well as on the event itself. A third method I used was the analysis of social media posts surrounding the event, which proved to be a valuable data source, especially for the first 'Tea Time' event, which had already taken place before I could join. In the following section I will describe in detail the impressions from this first event through the lens of these social media posts and explain my approach to analysing them.

Document Analysis of Social Media Posts and the first Tea Time Event

As stated above, I could accompany the project from an early stage on. The first contact with Merida, the organiser, was established two weeks after the first Tea Time event had happened. For her, his event was important as it would decide the course of the whole project. In our first conversation, she referred to this first encounter with the senior residents as her "pilot experiment" where she wanted to see if the idea works on principle. In the Interview afterwards she stated that this first trial had exceeded her expectations and *" that it set an interesting precedent " (Q5_Transcript_Interview_Merida, Pos. 274).* As a topic for this event, she chose her own research field, radioactivity in diagnostics, and invited Meg, a postdoc colleague of hers, who is a radiochemist. The title of this first tea time event was 'A Radiant Future' When she told the senior residents about her work, Meg slipped into the role of Marie Curie (with corresponding self-made costume) and gave a historic account of nuclear chemistry, followed by an explanation of her own research in nuclear diagnostics and the outcomes for diagnostic practice. Merida took on a double role as moderator and expert who asked questions but also delivered some explanations. In the following questions session, the senior citizens shared their experiences with diagnostics but also, to the surprise of the scientists, contributed expertise knowledge about the subject (one was a retired nurse and one was a retired radiation technician), as well as their experience as patients. Merida underlined this dialogic focus in a blog post she published on a German science Communication Blog. In this blog post, she underlined, what she as a communicator could learn from her audience and how she had not anticipated this profound exchange:

> *"...that I could talk about our research to a first-hand witness, I had never imagined!*
> (N4_Article_M_SciComm_magazine, Pos. 4)

“Again, I am overwhelmed and thankful, how open the seniors share their painful experiences with us!
(N5_Article_M_SciComm_magazine, Pos. 16)

This and similar posts on social media served as material for my analysis, but I mostly used the online material to prepare the questionnaires for my main method, the qualitative interviews with the participants. Especially in the case of Meg, the first interviewee, this was very helpful as I could not get to know her beforehand via Ethnography. The Tea Time Project was accompanied by several Social Media Posts, both by Merida and by one invited guest expert and consisted of posts in the network ‘LinkedIn’, which is for professional networking, and a blog-post about the Tea Time project in a German science communication online-magazine. Having all these materials as standalone data, as well as sources for the interviews, contributes to a multifaceted perspective on the Tea Time Project.

The first ‘Tea Time with Researchers’ event was also the one that generated the most social media response. Merida posted a picture of her and Meg in costume, surrounded by their audience. This picture was shared by Meg, as well as Jane, the second invited guest scientist. With the positive impressions in mind, Merida had already decided before our first contact, that she would continue the project and make it an independent series. But the Covid19 pandemic and the first lockdown forced her to stall the project. The scheduled meetings for developing the concept for the second ‘Tea Time’ together with the C, the invited guest scientist, were postponed to the summer months.

Digital and Live- Ethnography of the Planning Sessions and the Tea Time Event

In July 2020, after a longer pause caused by the pandemic, the planning for the second Tea Time, which was supposed to happen at the beginning of August could resume. All the planning meetings were held online, whereas the ‘Tea Time’ events themselves were held in presence. Hence, in order to collect data for both, I had to conduct two different types of ethnography with their respective drawbacks and advantages.

The first time during the project, where I could sit in on a meeting and collect data in a systematic manner was the planning session for the second Tea Time event. The meeting took place on Zoom and I made use of the possibility to record the whole meeting (after I obtained consent to do so). This enabled me to re-play and use several approaches to data analysis[22]. In

[22] More on these approaches in the next sections

contrast to the planning sessions, I could not record the Tea Time Event itself[23] and had to rely on my notes. I knew beforehand that recording in these conditions would be difficult. Therefore I took much more detailed notes from the get-go. As a guideline on how to conduct ethnography, I utilised the introduction by O'Reilly (2009), especially the chapter on field notes. I made sure to not only record what was happening, but to also record the general feeling of the place and the event from my perspective. This included observations about the messiness of the preparation and the event itself and how surprised I was by that but also notes about the dynamics during the presentation, how the scientists talked to their audience, how they shared biographical information about themselves etc..The material generated from this ethnography was fundamentally different from the online material I had collected during the planning sessions but the purpose was also a different one. In the online-meetings I was mainly interested in the roles and dynamics between the scientists, but also in what narratives they share and develop together. The main objective of the observation of the 'Tea-Time' was to see how these plans and narratives are put into practice and what image of science and scientists was transported through the communication project. So, because of the different objectives, but also because of the different allowances of these two ethnographies, they revealed different insights into my research questions.

Besides gathering material for analysis, I mainly utilised the collected data as explorative material for my main method, the qualitative Interviews. For three of my four interview partners, I could collect ethnographic material before conducting the in-depth interview. This was beneficial for my research process for several reasons. Firstly, I could adapt my questionnaire, as I already had some general information about their career and of their other activities. I could also ask clarifying questions that arose during the Ethnographies and, lastly, I was no complete stranger to them when I sat down with them one-on-one. This might have facilitated the conversation, especially in the beginning of the interviews and we could move into an in-depth conversation more quickly.

Interviewing the Scientists/Communicators

The main method with which I accompanied the Case Study was conducting qualitative, semi-structured interviews with all participating scientists of the 'Tea Time' project. As a methodological guideline for this type of qualitative research and for practical tips, I used Jensen & Laurie (2016); for theoretical and conceptual reflections, as well as for guidelines on interpreting the data, I used the works on qualitative research by Silverman (2006, 2017). Again,

[23] I tried to make an audio recording but the event was held outside and so the audio quality was not sufficient.

due to the pandemic, the practicalities of the four conducted interviews were varied. Two of the four interviews, Meg and Merida, were held in-person; whereas the two others with Jane and Nani were held online. Contrary to the instances of Ethnography, the objective, as well as the setting between online-interviews and interviewing in person to me is not very different, so I will not go deeper into this aspect. As already mentioned, prior to the interviews I already got to know most of the participants via Ethnography. The exception is the first Guest scientist Meg, who I got to know during the Interview for the first time. I took these particularities into account when I devised each questionnaire individually. Some core-questions, like the ones about career planning, or the experiences during the 'Tea Time' I kept constant for all of my four interviewees but I added individual questions to each questionnaire who would fit better to my research questions, which also underwent some changes in the course of the data collection process[24]. This open-ended approach to my research- as well as to my interview questions allowed me to flexibility adapt to emerging findings and recurring topics in the course of the interview process.

The main focus during the interviews was to try to understand the Scientists' position and views in order to reconstruct their *Epistemic Living Spaces*. I wanted to put a special focus on the participants' reflection on their different roles as scientists and as communicators. For this, I divided the interviews into three main parts, each dedicated to a different aspect of their epistemic lives, before inviting them on a reflection in the fourth and final part. I started the interview by asking questions about biographical details; the scientists should get comfortable with telling me something about their lives. Then the conversation went on to questions about their daily routines, their creative process and on their general views about the epistemic environment that they inhabit. The third part was focused on their role as science communicators, starting with the experience of the tea Time event in particular and continuing with their views on science communication in epistemic culture in general. In the final part, I wanted to focus on the reflection about the effects of science communication on their particular *Epistemic Living Spaces*. I tried to devise open-ended questions, which could prompt thoughts in many different directions. I furthermore structured the questionnaire in a way that it would start from personal experiences (their career, their experiences during the communication event,...) before moving on to discussions about more general topics (the 'system', the role of science communication in society). I also invited the participants to small thought experiments ("What advice would you give to your cousin who is thinking about entering a degree program in Molecular Biology "). Finally, I wanted to invite the researchers to compare their daily practices before and after the communication event, which should have ideally prompted a reflection of the changes of science communication on their *Epistemic Living Space* in general. I tried to facilitate this process by

[24] All questionnaires, as devised before the respective Interviews can be viewed in Annex C

inserting my insider-knowledge about the epistemic system and my life as a researcher into the interviews: “self-reflexivity alone cannot compensate for general lack of insider knowledge and lived experience. Together, self-reflexivity and insider knowledge enrich the experience of research practice and can occur on multiple levels” (Devotta et al., 2016, p. 665). The approach that I adopted for utilising my insider knowledge inspired by the concept of the “reflexive peer-to peer interview” (Fochler et al., 2016, p. 181), in which the participants of the interviews are invited with different strategies to reflect on their role in the system as a whole and get interviewed together with a peer. The concept is not fully adapted, in the sense that I only did one-on-one interviews and most of the time still maintained the position of an interviewer. But when deemed appropriate, I would assume the standpoint of a peer, who knows the ins-and-outs of the scientific system. In order to enable the interviewees to feel at ease and prompt reflection. In order to achieve this, I also made sure to fully disclose my background in the biomedical sciences to every participant. However, I was careful not to nudge the participants not too much into a direction that would only reflect my standpoint and not theirs.

Another consideration I had to keep in mind when planning the data collection was the timing of the interviews. In order to retrace the effects on knowledge production and self-image of the participating scientists, I had to interview them after their respective appearances as experts in the ‘Tea Time’ project. Also an interview immediately after the event would also not be ideal, as I wanted to give the participants time to reflect on their role and maybe notice changed practices or perceptions. Therefore, I interviewed the three invited guest scientists one to three months after their respective appearances in the ‘Tea Time’ event and the organiser shortly after the second event.

Data Analysis

Not only the material collection from several sources needs its own approaches, also the different types of materials need to be analysed according to their own allowances. It is challenging to respect these particularities, while at the same time obtaining data in forms that can still be compared amongst each other. In the following paragraphs, I will detail the data analysis process for each of the three methods and in the end, I will reflect on how I can compare the data from the different sources.

The initial approach I took to analysing the social media posts surrounding the Tea Time with Researchers was inspired by Critical Discourse Analysis (CDA) (Khosravinik & Unger, 2015; Liu & Guo, 2016). Critical Discourse analysis is a very wide field, that is hard to give a clear definition to but the aspect that I want to apply is to look not only at the material at face-value but rather focus on the relations that lie behind it. The content of the post, the wording, the invoked

images is of equal importance than questions about the perceived audience, what are the specific reasons for presenting and framing the project in a certain way and what are the allowances of posting about the project at a specific time. In other words, I tried to look at the power relations that are revealed by the online presence of some of the scientists in the Tea Time Project. I admittedly do this in a less strict way than is usually demanded by CDA, in the sense that the prerequisite for thinking along the lines of CDA is always that there is an imbalance of power. In my case, the focus is not on the imbalance, but more on the social relations. A second caveat of my analysis is that the social media posts alone would not provide a complete image of the communication project as standalone material. The main reason for this is that not all the participating scientists created social media posts about the event. However, combined with the other methodological approaches, the various social media posts about the event might provide further insight into the social dynamics and relationships of the participants.

The analysis process of the Ethnography sessions differed on whether I conducted the ethnography online or offline. I would take notes during the online-calls but most of the analysis was derived from when I replayed the recording a second time and did a thorough analysis of the discourse and the relations between the two. I did not make a full transcript, as I did in the interviews, but I coded the whole conversation using two levels. On the one hand, I would describe the action/content of the conversation and on the other I would focus on the social dynamics of the people involved. Just like in the analysis of social media posts, this technique was inspired by critical Discourse Analysis, not only paying attention to what was said, but also to the social relations and dynamics behind the conversation. However, again, I did not follow the Critical Discourse Analysis dogmatically. I did not code the whole conversation in light of different power dynamics, I rather used it to sensitise my perspective and broaden my view to look behind the statements of the participants.

For analysis of the interviews, which I consider as my main source of material and which provided a majority of the data that I will present, I found the CDA approach not entirely fitting to my objectives. I found that CDA was lacking the person-centred aspect, meaning by employing CDA, the analysing person assumes an outsider-perspective which might stand in the way of recreating my participant's *Epistemic Living Space.* Hence, In order to grasp the world through the eyes of my interviewees, I assumed a constructivist, Grounded Theory approach (Charmaz, 2014; Rapley, 2016). I engaged in several rounds of coding of the different types of material[25] and utilised the initial codes as source material for further fieldwork. For instance, I used the coded ethnography data to devise questionnaires for the participants.

[25] I re-coded the Ethnography and Document Analysis Material, but kept both interpretations alongside each other as they reveal different insights into the material.

In all of the coding- and recoding work it was crucial not to lose focus and see the material through the theoretical lenses of *Epistemic Living Space*s and *Situated Knowledges*[26]. My situatedness in the epistemic community of the Austrian life sciences helped me on the one hand to understand and follow up on certain codes and references that the participants brought up during the interviews, for instance when they talked about their day-to-day research. On the other hand, during the analysis process, I could single out certain common narratives that I also had encountered and shared as a scientist, especially when it comes to the epistemic system. Especially during this analysis step, I needed to be careful that I do not impose my own narratives upon my interviewees and just utilise my specific insights as a vantage point. Regarding *Epistemic Living Spaces,* the main challenge of this particular theoretical lens was to not lose the grasp of its Multiplicity while analysing the material along its several dimensions. For the interviews, in a first iteration, I coded the transcripts using the Software 'MAXQDA' using the dimensions of the theory as defined by Felt and Fochler: "an epistemic, a spatial/material, a temporal, a symbolic, and a social dimension" (Felt & Fochler, 2012, p. 136). Along these dimensions, I compiled a profile of each of my interview partners to get a grasp of the space they inhabit along these different dimensions. In a second step, in order to bring the multidimensional space together, I compared the coded segments of the four participants (all quotes with the same codes) and looked for emerging topics and for different viewpoints about certain issues, which I collected in the form of memos. The differences and similarities in these topical memos were used to compile an overview list of issues (Figure 2). With this list of issues, I went back to the original transcript and looked for quotes concerning the same issue that I had previously assigned to different dimensions. In this way, I could take into account the multiplicity of the *Epistemic Living Spaces* bringing the previously separated categories back together. A special Interest during this process was finding and describing the narratives and narrative infrastructures that are shared - or contradicted - by the interviewees. At this stage, the CDA analysis of the Ethnographies and the Social Media Posts was especially helpful in spotting how these Narratives are enacted or how they are framed by the interviewees.

B.	M.	C	S
THE SCIENTIFIC SYSTEM	SCIENTIFIC SYSTEM	The Scientific System from her perspective	Her approach to research and academia (outside perspective)
EPISTEMIC HIERARCHY	EPISTEMIC HIERARCHY	Epistemic Hieraerchy	Autonomy/Hierarchy
	Networking		
	LINGO		
(PUBLICATION) PRESSURE	PRESSURE	PRESSURE	Conflict
COMPETITION			
IDEALISM vs. The System	IDEALISM vs.The System		
"PURE SCIENRTIST" NEUTRALITY IN Communication	ACTIVISM		ACTIVISM
	DOUBLE ROLE: BETWEEN SCICOMM AND PHD	Her double role as SciCommer and PhD	
		KIDS	
INTRA Scientific Communication		Intra-Scientific communication	Science Communication as a means to an end
SCIENCE COMMUNICATION TO LAY AUDIENCE	COMMUNICATION TO THE PUBLIC	COMMUNICATION TO THE PUBLIC (teaTime)	
	INSTITUTIONAL SCIENCE COMMUNICATION	Institutional Science Communication	
	ARTS and SCIENCE		
	REACTIVITY TO AUDIENCE		
REASONS FOR SCIENTIS TO COMMUNICATE OR NOT	REASONS FOR SCIENTIS TO COMMUNICATE OR NOT	REASONS TO COMMUNICATE OR NOT	Reasons to communicate... or not
COMMUNICATION IS NOT ENCOURAGED BY INSTITUTIONS	COMMUNICATIOn IS NOT ENCOURAGED BY INSTITUTIONS	INSTITUTIONS DON'T encourage science communication	Science and the outside view
THE PITFALLS OF SCIENCE STORIES --> Medialisation done wrong	THE PITFALLS OF SCIENCE STORIES		
	Selling Science	Medialization of science	
		What is considered good science to communicate??	WHat is the right kind of Science for communication
CHANGES CAUSED BY COMMMUNICATION EVENT	Changes of SCIENCE COMMUNICATION	CHANGES OF SCIENCE COMMUNICATION	Changes of Science Communication

[26] I described my approach to using both theoretical lenses as a Method in section 4.2 and 4.3..

Figure 2: Overview over the topical memos from the four interviews. Darker colored topics were shared by more interviewees. White memos are unique.

When researching a topic and collecting material, it is often hard to find the right time to stop; to recognize when there is ‘enough’ material: “ At some point, you will need to make the decision to stop collecting data. There are really no hard and fast rules about when this should happen. Ideally it would be when you’ve had time to explore all the questions [...] and further rounds will not generate any substantial new directions.” (Rapley, 2016, p. 351). After I had accompanied three rounds of the ‘Tea Time with Researchers’ project, I felt that I could get to an answer to my main research questions and some topics that emerged from my material felt somehow saturated. However, it was not entirely my own decision to stop collecting material because my case study came to a ‘natural’ end due to the circumstances of the project. Even though it was planned to be a recurring event, the reality of the Covid 19 pandemic prevented most of the activity that Merida had planned after the third ‘Tea Time’ event. There was already a fourth guest scientist, who would have been interested in participating (a Neurobiologist who researches memory loss), however a series of lockdowns and practical problems eventually brought the whole project to an indefinite standstill. Merida still insists that she is willing to continue with the project (and is very open for other people to pick up the concept) but, no further events have taken place after September 2020. Hence, the case study can be considered as closed and the next sections will be devoted to analysing the material that I gathered.

5. Analysis

In order to uncover the prevailing narratives that surround my case study and uncover the ways in which science communication is embedded in *Epistemic Living Spaces,* I will first dive deep into the four participants' *Epistemic Living Spaces*, taking into account the Multiplicity and Subjectivity of their lived experience. Because this space could never be described in its entirety, I focus on the factors and allowances that are connected to science communication, how science communication is shaping the participant's space and how they are in turn shaped by the communication activity. In a second step, I single out the narratives and narrative infrastructures around science and science communication, which I could gather from my empirical research and finally, in a third step, I connect the findings to my research questions by focusing on the changes that science communication causes in the participants' *Epistemic Living Spaces*.

5.1 Four *Epistemic Living Spaces*

In order to talk about *Epistemic Living Spaces*-in-general, we first need to dedicate ourselves to *Epistemic Living Spaces*-in-particular. Examining a scientist's epistemic living space must always start from a "person-centred perspective" (Felt & Fochler, 2012). Therefore the first step in the analysis of my case study is to map out every one of my interviewees' *Epistemic Living Spaces* separately before diving deeper into the narrative structures that surround them. As discussed in the sections dedicated to theory and methods, I will closely follow Felt and Fochler (2012) in their definitions and dimensions of analysis: "Epistemic living spaces can be characterised along at least five dimensions: an epistemic, a spatial/material, a temporal, a symbolic, and a social dimension." (Felt and Fochler, 2012, p. 136). In the following paragraphs, I will give a brief overview over this fluid and situated mapping work and portray the participants of the 'Tea Time' project in the chronological order of my interviews. Regarding their lives as researchers, I will focus on the relevant topics of career, both in science and in science communication, mobility, working process, anxieties and conflicts and plans for the future. A second focus will be on their involvement and role in the Tea Time science communication project. In order to maintain anonymity, I will refrain from mentioning any personal details unless it is necessary for understanding of their *Epistemic Living Space.* The names of the participants have been changed for further anonymisation.

Meg - Senior Postdoc at the Crossroads and first-time Science Communicator

Meg is a chemist and works as a senior postdoc in the field of Medicinal Chemistry in an institute for applied biomedical research. Especially for Chemists, the field she is working in is considered quite niche, both because it is very adjacent to the biological sciences and it deals with quite a rare subfield of organic chemistry. Up until the interview, she has followed the academic career pathway quite linearly and has, apart from summer internships in industry, never worked outside of academia. She did her PhD in the same lab as her Master's thesis, which she got from a summer internship. After the PhD and a postdoc in the same group, she moved to Austria from a neighbouring country and continued working on her research topic in an Institute for applied sciences, which is connected to a large hospital in Vienna. Considering her career objectives, she sees disadvantages for her progressing in the academic career levels, on both the temporal, as welöl as the spatial/material level:

"Usually, you do two or three Postdocs and you do your PhD at another place where you studied. But yes, it is always advised that you do your Postdoc abroad. I am in Austria and that's not really abroad [laughs]"
(Q6_Transcript_interview_Meg, Pos. 193).

Hence, her pursuing two rather long-term postdoc projects, as opposed to doing several short ones, as well as in her limited mobility, never having worked outside the central-european space is seen as huge liabilities.

SHe also feels pressure of her occupation on a symbolic level. As a senior postdoc within her research group, she has many different responsibilities. She especially stresses that a prerequisite for being a scientist is resistance to pressure and frustration tolerance:

"There are different kinds of pressure. In science it is a fact that 90% of the things you do will not work. You need to know that"
(Q7_Transcript_interview_Meg, Pos. 52)

She pursues her own projects and does her own experiments and she likes to spend time in the wet lab. But due to her senior position, she has to actively make time for this type of work because her main responsibilities lie outside of the lab. She supervises Master- and PhD students, writes and reviews scientific papers and prepares proposals for research grants. She feels confident in her work and because of that she would like to get more autonomy from her supervisor:

"Of course I have my own ideas and at this point I think it is becoming unpleasant if things are dictated to me"
(Q8_Transcript_interview_Meg, Pos. 30)

Becoming more autonomous for her is not only a matter of personal preference, but also a matter of career planning. Ultimately, she states that her goal is to stay in academia, become a Principal Investigator (PI) and start her own research group. But she expresses uncertainty, if this is what she really wants or if she is just forced by the temporal circumstances: As a senior Postdoc in her mid-thirties, she is at a pivotal moment in her career. Due to legal circumstances concerning the funding of the institute as a whole, her postdoc has a definite endpoint about one and a half years after the interview was conducted. This puts her in an temporally pressured situation (one that is shared by many PostDocs her age), where she either gets a position as a PI in another institute or she switches into an industry position. So staying in academia for her seems to be less about pursuing her passion and more about following a predetermined blueprint, almost a social obligation:

> *"You have to aspire to a Habilitation and a Professorship. But this is also a stony path. And it can happen, and often happens, that people in their mid 30s have to move away from academia because of the Chain Contract law [...] and that they cannot continue working in academia and at 35 years old are left with nothing.*
> (Q9_Transcript_interview_Meg, Pos. 68-72)

In this line of thinking, she states that the odds of obtaining a PI position are very much against her, mainly due to her publication record. She sees herself at a disadvantage in this respect because her field of research is very niche and applied and therefore she cannot publish her research in high-impact journals.

For all these reasons, during the interview, she stresses more than once that if you work in academia, you need an 'exit strategy' or a "*Plan B"* (Q10_Transcript_interview_Meg, Pos. 68) in case you cannot obtain a permanent position at a University or a Research Institute. Hence, even though she likes her current work and would like to stay in academia, she has the feeling that her achievements are not enough to be able to obtain a permanent position. Therefore she is actively on the lookout for alternative careers.

A stark contrast to the bleak outlooks on her future in academia and her views on the epistemic system was her participation in the first Tea Time' with Researchers. Besides her appearance as a guest expert she has had no previous experiences with science communication. She states that she is used to presenting her work on a professional level, for instance when she presents at conferences, but has never had any direct interaction with a lay audience. She stresses that she was quite new to the situation and that communicating in this way needs a lot of practice. But given the chance to present her research in front of a lay-audience, she felt a social obligation as a scientist to do so:

"*Because research is always supposed to serve society and of course it is our duty to give back to society. And Merida's Tea Time event, she started this initiative, so I was excited to do it"*
(Q11_Transcript_interview_Meg, Pos. 18)

In this regard, Meg emphasises that Merida was the driving factor behind the whole project and that she could learn a lot form Merida's experience, as a science communicator as well as an organiser, by participating in the event with her.

Merida - Communicator, Scientist, Networker and Initiator of the Tea Time Project

Meg's account of Merida being a very skilled and experienced communicator is confirmed by several empirical data, both from ethnography, as well as from her social media presence. For instance during the planning sessions for the Tea Time events, Merida takes the lead in the conversation, as well as in the planning of content and form. I repeatedly took notes of her expertise during these meetings:

"Merida already seems to be so experienced with talking to different audiences that she feels comfortable making the judgement on the go (other people might not be so confident).
(N6_ethnography_planning_Tea Time2, Pos. 11.4)

"Again, Merida is very professional (like in previous planning sessions). She makes clear that she is the one that has the final say, even though she explicitly invites input.
(N7_ethnographyI_II_planning_Tea Time3, Pos. 9.4)

The interview with Merida, which was conducted between the second and the third Tea Time event, confirms her experience in science communication that she has acquired despite her young age. She is a trained Molecular Biologist and studied in a neighbouring country of Austria. When she was a graduate student, she already started working as a freelancer in science journalism and wrote articles, mainly for University publications. In 2016 she started to engage in activism surrounding the "March for Science"[27]. Through these organising and activist activities, she first got in contact with the science communication 'Scene' and has been a part of it ever since:

"Through this [the March for Science] I kind of got into this Scene of Science Communicators. Because it is more or less the same people, who are engaged in the research community for something to change.
(Q12_Transcript_Interview_Merida, Pos. 26)

[27] The "March for Science" was a series of worldwide demonstrations in reaction to the inauguration of the Trump administration, which by many scientists was perceived as hostile towards the international and collaborative ethos of science and evidence-based policy making (Durnová, 2019)

A side effect in the social- as well as in the epistemic dimension of this connection to the science communication community was, that she was able to network with science communication institutions and research institutions in the course of conferences and meetings. At first, she used this opportunity to explore science communication as a career. After finishing her studies, she did various internships in science communication institutions and initiatives, amongst others an art and science gallery and a national agency for science communication. After one year in institutional science communication, she felt that she did not want to fully move into science communication and away from research just yet. So she was on the lookout for a PhD position, which still allowed her to pursue her interests in science communication. She met her future PhD supervisor at a conference for public engagement in science, organised by his institute. She describes the meeting and their plans as follows:

“M: Through this [the meeting] I got to know the head of the [Institute]. And we thought it would be interesting if I would do my PhD with them. In the natural sciences but next to it I would communicate and include patients.
K: Is this a position that the [Institute] was already advertising or did you kind of create your own PhD position?
M: I would say the latter.
(Q13_Transcript_Interview_Merida, Pos. 54-58)

Hence, the PhD position that was offered to her has a focus in research but it also has a strong communication component. This particular position suits her background because she intended to switch between the two subjects. When she was communicating, she felt the need to do actual research and vice versa. However, at the end of her first year (the time of the interview) she states that she sometimes feels that the concept does not work out well in practice and that she feels torn between her two roles, mainly due to temporal and epistemic constraints:

“I now speak against myself but if you want to do everything at once, you are not able to do it well, you cannot work as accurately and [laughs]... you have to concentrate on something.
(Q14_Transcript_Interview_Merida, Pos. 168)

During the interview, her discomfort about her double role manifests at several points when she is asked about her daily practices. In a conversation about the science outreach activities she is involved in for her institute in passing, she complains about how little time she has for communication:

"It means a lot of effort and I am starting to realise, I mean it was agreed on that I take part in these things [science outreach activities] and I like it and I am good at it. But in this case, I realised that this is just too much these days!
(Q15_Transcript_Interview_Merida: 124)

When asked about how she plans and executes her experiments, she stresses that she has sometimes very limited temporal and material resources to carry out the things that she has planned to do in the course of her research project, especially when it comes to wet-lab work:

"[My research work] is suffering from this multiple role that I am playing. Especially doing new things or even… In principle everything is planned already, … I don't fail at the planning stage, I fail at doing. It is my responsibility to stand in the lab and do stuff.
(Q16_Transcript_Interview_Merida: 86)

Additionally, she has the feeling that her double role also holds her back not only on a temporal, but also in the epistemic dimension because she has problems pursuing both her careers, scientist and science communicator. But despite these problems she does not see her double role as a fundamental conflict on a symbolic level:

"Identity-wise, I don't think this is a problem at all! I think there are many congruences in the sense that both things are facettes of creative work [...] But the structural [issues] and the time are huge problems!
(Q17_Transcript_Interview_Merida, Pos. 373)

She sees her future career after finishing her PhD neither in scientific research nor in practising science communication/journalism. After finishing her PhD, she plans to move more into a managing role for cultural activities, not necessarily limited to science-related topics. However, she stresses that she does not want to lose contact with the world of science. What interests her most, would be to work at the interface between art and science, just like she has done in one of her internships.

Her science communication project 'Tea Time with Researchers' was born out of a desire to engage in voluntary activities with senior citizens and less from a desire to communicate her research[28]. Especially in the beginning of the project, the science communication aspect for her was only secondary and the social aspect was in the foreground:

"My motivation is definitely that they [the senior audiences] are also voters and that they have to participate in society and have to get the chance… to keep pace with the times
(Q18_Transcript_Interview_Merida, Pos. 290)

Starting from this activist perspective, she had the idea to add her expertise in science communication and develop her own format. She also saw this as an opportunity to develop her skills and communicate to an audience that she had not had the chance to interact with. As the project became more concrete, the science communication aspect became more and more prominent, also because Merida started to advertise the format to her peers in science communication and planned to present it at conferences. Hence, even though the activist spirit of the project was still there, as the project moved beyond that in the sense that it also served as a

[28] A detailed account of the 'Tea Time with Researchers' project can be found in section 4.1.

means to advance Merida's career as a science communicator. This aspect is not unique to the 'Tea Time' project. Generally, Merida publicises all her communication projects in several ways, for instance she is very active in the professional social network 'LinkedIn' and has posted every project she has been involved in. So even though her desire to do science communication still derives from an activist incentive and is an important part of her *Epistemic Living Space* in the symbolic and social dimension, she also sees and uses her activities on a very material level, namely as possibilities to advance and sharpen her profile in a professional context. From the gathered data, it is not clear which one of the two aspects is more important for her but it is important to note that she does not see a conflict of interest in these different incentives.

During the interview, she always describes her activities and projects in the context of the network that she is forming. With this move, furthering her own career goals is framed more as an automatic side-effect and less as a deliberate action. When asked about the future of the 'Tea Time' project and her immediate next steps, she answers as follows:

> *"On the one hand, I am looking forward to telling the Science Communication community about the project. And my hope in this is to awaken the interest for this particular target group. The other thing is that I want to do it in a more collective manner, so I don't have to be the one who is solely responsible.*
> (Q19_Transcript_Interview_Merida, Pos. 322)

The importance of building a community is also evident in the particular way she represents herself and her projects in the social media posts. She never sets herself at centre-stage but rather mentions the other people and institutions involved, her gratitude towards them and what she could learn from the audience (in this case the senior citizens, to whom she always expresses deep gratitude for sharing their stories and expertise[29]). She is also explicitly open to other science communicators or scientists using the Tea Time as a blueprint for activities in other places, emphasising the social nature of her engagement:

> *"I mean in the end [...] it would not be a problem for me if somebody is interested in the project and wants to realise it in a different city and wants to collaborate with me. It's not about… I don't want my name to be on it forever and ever.*
> (Q20_Transcript_Interview_Merida, Pos. 326)

In order to make this easier for other communicators, she gives a rather detailed list of tips and instructions on how to realise this particular project in a different place in a blog about the event on a German science communication website (N8_Article_M_SciComm_magazine, Pos. 1,13,14,17-22). So she frames the copying of her work rather as a compliment than as an insult. This collaborative self-image is definitely also an asset in the science communication community.

[29] See for instance: N2_200819_Document_Analysis_LinkedIn_posts, Pos. 3; N15_Document_Analysis_LinkedIn_posts, Pos. 25; N16_Article_M_SciComm_magazine, Pos. 16

So in summary, Merida, even though she struggles with her double role mainly in the temporal dimension, does a good job at combining her material interests and career objectives with realising meaningful projects on the social and symbolic level. But whatever the motivation for her multiple engagements in science communication, the community and networking aspect are always in a very prominent position.

Jane - Science Communicator despite the Odds

Jane is not a typical PhD student. Even though she works at the same cluster of institutes as Jane and Merida, her circumstances are very different, already on a spatial and material level. She is the only one of the interviewees who does not live in Vienna, but in the Austrian countryside. She also has two kids which she got at a relatively young age. The institute, where she does her PhD, is located in a regional capital, in which, compared to Vienna, the research landscape is very small. The resources and the reach of her institute are very limited. Jane studied Biotechnology at a University of Applied Sciences, with a focus on green Biotechnology. She chose these studies because she wanted to do something practical, but already from the Bachelor's on, she was more interested in medical research than in plant biotechnology. She did her first internships, as well as her Master's thesis, in a company that coincides with her current field of research. Already before finishing her thesis, she was alerted to a PhD position in her current institute. In Austria, students who obtain an applied science degree usually do not go into an academic career and pursuing a PhD with her degree is considered quite exotic. So for Jane with her interest in both medical and basic research, getting offered a PhD position was considered a very lucky shot:

"At the end of my Master's the Jackpot came! [...] In principle, it was the only PhD position that will ever exist in my region in exactly my research field"
(Q21_transcript_interview_Jane, Pos. 7)

She started her PhD in 2012 and in the fall of 2020, when the interview was conducted, after eight years, she is still in that same position. She is close to finishing but still needs to publish one paper and write up her thesis. She acknowledges that in the epistemic world, this is considered a temporal abnormality and even though she had two kids relatively early in her PhD but does not see that as a reason for her taking so long:

"On the outside, I often say, or others often say, yes I had two kids during that time and therefore that's o.k., right? Kids are always an excuse for everything! But for myself, I know that I was only gone for four months with each kid and that therefore this is not the reason!
(Q22_transcript_interview_Jane, Pos. 9)

During the interview she did not give any explicit reason for her overly long stay but from her accounts of her daily working process and her plans, I could gather some possible reasons that prolong her project, which span multiple dimensions but mainly spatial/material and epistemic ones: Firstly, she works with a very specific type of primary patient tissue which is processed only in the hospital she works at (hence the unique PhD opportunity). However, working with primary material is always a challenge for biomedical researchers since the material is limited, sources are unsteady and experiments typically take much longer than with model systems[30]. Working with these types of cells is also notoriously difficult and needs a lot of practice and manual skills. Secondly, like Merida and Meg, she works on a very niche topic of applied medicine and so there is not much possibility of publishing in high-impact journals. For Jane the pressure is even higher because her PhD project is so specific and applied, that publishing her work in any academic journal is hard. To ease the publication pressure, her institute decided to affiliate her with a different university because the home university of her working group had publication standards that were unattainable for her to ever finish her PhD. But despite that, getting her work published has been a major struggle for her. There is also a spatial/material component that slows down her work: The rest of her working group, including her supervisor, moved to Vienna in the middle of her PhD. Her working space is tied to the patient material she obtains from hospital in her city, as well as to her family which she cannot and does not want to move. Since she is the only one left in her city to work on the topic, she does not have any on-site supervision nor any support structure, like lab technicians or administrative staff, to support her. Therefore, a considerable amount of her work time is taken up by doing administrative tasks like ordering lab material. In addition to all these factors, the main activity that slows down her research is her considerable involvement in the institute's science communication.

She is the responsible person for a large part of her institute's science communication and outreach activities, a role that ultimately brought her in contact with Merida and the 'Tea Time" project. She started doing science communication for her institute by taking over a relaunch of the website five years after she had started her PhD because she went to an informatics high school and knew basic web design. She calls this work, and that she is still doing her "pet-project" (Q23_transcript_interview_Jane, Pos. 34). She states that the main reason she liked the work was mainly a social one as this was the first time she could interact with the other groups at her institute and feel less isolated being located in a different city. What had started with the homepage, branched out over time and now she writes press releases, news articles for

[30] I can confirm this from my own experiences with working with patient material that it is notoriously unreliable and doing a PhD based solely on this type is considered a liability.

print and online media[31], coordinates social media accounts and communicates with media representatives. In summary, she became the institute's informal PR department, all the while doing her PhD. Recently, her institute offered her the position of communications manager also in title and she is officially employed part-time in this role, making her material struggle less pressing. However, this is not recognized by her PI, who would still like her to work as a full-time PhD student, which again creates tension on a temporal dimension:

"Already now [Supervisor] sees this differently. She knows that I have a 10 hours-30 hours split position [10 hours for research; 30 hours for science communication] but she thinks it won't be like this in practice. In reality, I should keep on doing everything for [my PhD project] and only do communication if I have to. This is the same problem as taking free-time because it is hard to define what you 'have to' and 'need to' do! So delimiting this will be a challenge!
(Q24_transcript_interview_Jane, Pos. 243)

In terms of doing research for her PhD project, she states that her PI does not give her a lot of freedom in her decisions, even though she has become an expert in her niche, hence also feeling very constrained in the epistemic dimension. Jane highlights the achievement that after 3 years of working together *"she sometimes listens to me if I suggest things"* (Q25_transcript_interview_Jane, Pos. 73). Also the lack of flexibility of her supervisor, especially that she is sometimes overly diligent, for instance when it comes to approving manuscripts, is seen as a hindering factor:

"She does not mean badly, but she does everything, also for herself 110% in the sense that everything is done in an exact manner. It only gets published if everything is perfect. Nobody in science does that.
(Q26_transcript_interview_Jane, Pos. 88)

Despite these fundamental struggles, Jane does not see this rigid hierarchy and diligence as solely negative. She acknowledges that, unlike some of her fellow PhD students, she gets a lot of guidance from her supervisor.

After she finishes her PhD, she would like to stay at her institute and work full-time in science communication. As mentioned, she already has a part time position for this role but at the time of the interview, she doubted that her institute would pay her full time to do this. Even though she acknowledges that the institute-head is thankful of her contribution, she has the feeling that her work is still somewhat undervalued:

"I think, at this point he [the head of the institute] realised for the first time how much I am really doing and that this is worth a lot on the free market. If you find an institute that is willing to pay.
(Q27_transcript_interview_Jane, Pos. 226)

[31] Including Austria's largest newspaper the "Kronen Zeitung"

Considering alternative careers, like science journalism, she feels very constrained due to her family situation. She never explicitly states this as a negative but acknowledges that if she had more spatio-temporal and more social freedom, she would make bolder life-decisions. But in any case, if given the opportunity, she would, ideally want to stay in her institute as a science communicator:

"At least I have my niche. I have my niche of research topics and research structures that I know well, and I feel comfortable in it.
(Q28_transcript_interview_Jane, Pos. 233)

Her institute is part of the same larger institutional structure, where Merida does her PhD. They got to know each other through an outreach activity. When Merida asked her to be a guest expert she was very excited, even though participating in the event for her was logistically more difficult than for the other guests. She had to travel to Vienna and take one of her children with her due to issues with childcare. Already in the planning session, C suggested incorporating her daughter in the event and making her show the posters to the senior attendants (which was a great success). During the planning session, I especially noted Jane 's willingness and understanding of how to make herself and her research topics more relatable to her audience and the importance of the social dimension when it comes to science communication:

"Jane has a real interest in making her topic interesting; she knows that if she involves her daughter, the event automatically becomes more relatable. Not everyone would involve their children in such activities. This shows also how passionate she is about showing her work. Can her role as a public speaker, communicator and and as a researcher even be separated (→ Q for interview)?
(N9_ethnography_planning_Tea Time2, Pos. 11.11)

When asked about this, the different roles of communicator and scientist for her are easy to reconcile on a conceptual level, but it is difficult for her to manage on a practical level for two reasons. Firstly, there is the question of resources, her struggle to reconcile the two positions on a temporal and on a material level:

K: … You do science communication and you are a researcher at the same time. Are these two roles hard to reconcile or is this easy for you?
J: It is often hard to reconcile! Ever since I've been doing the communication for my institute, I have been wearing two heads, I have two bosses. On the one hand the boss-boss [sic!] who wants me to communicate and on the other hand my PI who wants me to be in the lab."
(Q29_transcript_interview_Jane, Pos. 171-173)

Besides the practical struggles, she also mentions the fundamentally different woking mode of communication and research activities on a spatial and social level:

"The lab world is often… it is quiet, it requires you to be patient, sometimes it is the same thing for hours and hours and you are often alone. Science communication, on the other hand, is fundamentally social.
(Q30_transcript_interview_Jane, Pos. 183)

Hence, just like Merida she does not see a symbolic conflict of Identity in her different roles but rather a temporal and material incompatibility of doing and communicating science.

Nani - Strategic Communicator of Controversial Topics

From all four participants of the 'Tea Time' project, Nani is an outlier in many ways. First and foremost, she is not a biomedical researcher. She has a background in the humanities and studied Philosophy and Gender Studies at the University of Vienna. She works at a Viennese University, the *alma mater* of Merida, as the head of the Gender and Diversity Unit where she leads a team of 7 people. Nani's main occupation is supervising the various activities and campaigns of the unit and, most importantly, she engages in strategic planning together with the University's governing body. Additionally she organises lectures to medical students on the topic of gender medicine, where she invites guest experts and also teaches herself.

Unlike the other interviewees, she does not do any academic research work, in the sense that she conducts research and publishes in peer-reviewed journals. However, for her work, she does collect data in a methodical manner, evaluates them and utilises them for her strategic planning, as well as for internal publications or communication to the public:

"We do have publications, but in this regard, it is just difficult… Because we have a rather critical approach and the major part of our work is to look where the [University] could be better in terms of equality and anti-discrimination. Therefore our results are often very specific and often the devising of measures is the important step and not the publication of results.
(Q31_transcript_interview_Nani: 12)

Besides this utilitarian approach to research, she even stresses the importance of large parts of her research not to get published because the results are often very sensitive. Hence, there is not so much a purely epistemic interest in her research. She sees the research work she does as the basis for her - and the University's - strategic decision making not as a standalone interest, hence is not as exposed to pressures of the current academic system concerning career development, mobility and publication[32]. This is unlike the other interviewees, who, despite working in the field of applied biomedical research, are still embedded in an academic system with all pressures in the temporal and material dimensions that come with it.

As an epistemic outsider but institutional insider, she has many differential views on the biomedical research community, compared to the other three interviewees. When asked about

[32] These pressures are described in the Literature Review in section 2.2.1.

her standpoint towards the pressure and struggles that many biomedical researchers are facing, she dismisses them to a certain degree:

“There are other, more pressing problems than to complain about the research system, which is extremely well funded by the state, where a lot of money flows for a lot of people, there are other people who don’t have such comfortable jobs and they don’t feel so sorry for themselves.
(Q32_transcript_interview_Nani, Pos. 103)

While she acknowledges the differences in culture between her field and the natural sciences, from her Philosopher's perspective, or her *"Philosopher's arrogance"* as she calls it repeatedly[33], also during the planning sessions, she does not perceive scientific research as overly complex or intimidating. According to her, a major part of being a scientist is performed in the social and symbolic dimension, maintaining an air of reverence, while often deliberately making things more complicated[34]. She perceives this tendency, which is for her mainly exclusionary, as the main flaw of epistemic culture (of the natural sciences) and as one of her main motivations to do her work:

"This is my main reproach to Science. That it keeps to itself; it excludes certain types of people. And it is very important for me that it does not stay like that. Also for myself
(Q33_transcript_interview_Nani: 143)

From a philosopher’s perspective, she sees her work on gender issues within the larger system the University hospital as inherently critical towards science rendering her position not without conflict. Her role in the larger organisation is to point out structural, as well as personal injustices, which often invites social conflict with the University establishment. However, Nani does not see conflict necessarily as a negative; she often rather seems to seek it out in order to pursue her objectives:

“I understand my job is to be critical. I would never see myself as somebody who works in conformity with the system, never! [...] And this is a very small niche!
(Q34_transcript_interview_Nani, Pos. 89)

Even though she acknowledges that there is a lot of conflict in her work, she largely sees this conflict as productive and she feels that she and her work is valued in the University, creating a strong incentive for her on a symbolic dimension; in her own words:

But honestly, I can deal with it [conflict] very well. And they have to deal with a bit of science-critique.
(Q35_transcript_interview_Nani, Pos. 85)

She sees communication as a large part of her work, even though this does not usually include science communication to an outside public *per se*. Her main communication activities are internal, to different stakeholders and employees of the University. Hence, her main

[33] For instance: *“But maybe this is my Philosopher’s arrogance. I don’t find most topics too complex, so that they would intimidate me [laughs] (Q95_transcript_interview_Nani, Pos. 96)*
[34] She uses the word “Inszenierungskulisse”. There is no translation for the word, that does it justice.

communication activities can be characterised as institutional but the focus is not the research itself but the measures she draws from it:

"I communicate all the time! If you break it down, the main part of my work is communication. But the focus is not on the research results, they are always 'More Equality', there is not much more original to find but the confirmation of the same thing in other regards. And I am always occupied with communicating that, to generate support and to form alliances
(Q36_transcript_interview_Nani, Pos. 49)

According to her, the difference between science communication and the kind of communication she does is that if researchers communicate, is an addon to the research, it does not change their research if they communicate or not, whereas for her, communication is both, an integral part of her work, and an important tool to achieve her goals. In order to make her agenda heard, she needs to communicate well.

"I believe I am in a special position compared to many other researchers. I think of my job as mostly political! In the sense of starting and implementing changes in my organisation. For this, research and communication are both just means to an end. [...] It is not like this, researchers often have the understanding that they first do research and then, as an add-on, they communicate.
(Q37_transcript_interview_Nani, Pos. 136-137)

Because her work is so symbolically charged and agenda-driven (and maybe also because of her epistemic background), she emphasises the importance of self-reflexion and context in her work.

"I find self-reflexion crucial. Always reflecting on what we are doing, where we are going, what is our aim and can we even do it or is this in some way counterproductive. And it is always important to be ambivalent and contradictory
(Q38_transcript_interview_Nani, Pos. 160)

Her participation as a guest-expert in the 'Tea Time' event was a pleasant experience and very motivating for Nani. In general, she is not very experienced at speaking to a lay-public and so she felt very comfortable in the more passive role of the guest, during the preparation of the event, as well as in the event itself.

Her main takeaway of the 'Teat Time' event was that she was surprised about the high interest and that particular audiences asked particular questions:

"I was surprised that there was so much interest [laughs]. And yeah…. Then I was also surprised that a man was present, who asked lots of questions, as far as I can remember. Because it is usually a woman's topic.
(Q39_transcript_interview_Nani, Pos. 127)

This surprise about the interactive nature of the project and the two-way learning experience caused her to reflect on the merits of communicating to different audiences. She acknowledges that, by communicating, she often gets new inputs that might change her perspective. Besides

changes of her own perspective, she attributes a considerable symbolic value to communicating with the public. For her, communication is a key element to accompany change and alert people to needs and injustices.The only possibility of persuading people comes with communication:

> *Change, real change and not imposed in an authoritarian manner, always presupposes something akin to understanding and to voluntary actions. This only happens through communication. I can impose a law in my company, I don't know, a quota of 40% women. [...] But sustainable change is only achieved once people realise it is good that it is like this.*
> (Q40_transcript_interview_Nani, Pos. 149)

So Nani, even though she is rarely engaged in science communication *per se*, she still is a constant communicator of the research-based issues that she is passionate about, mainly in a social and symbolic dimension. Science communication in this respect, for her is a means to an end, albeit an important one.

5.2 Narratives and Narrative Infrastructure Surrounding the Case Study

After providing an insight into the participant's *Epistemic Living Spaces,* in the next section, I will focus on the narratives and narrative infrastructures that circulate, are taken up, that are reproduced or resisted in the participants' *Epistemic Living Spaces*. As already described in section 4.3, narratives "allow us to understand researchers' geographies of reference" (Felt, 2009, p. 51). This includes circulating narratives in the scientific community and around the communication event and larger narrative infrastructures, which go beyond science and reach into society as a whole, but also the narratives that the participants form *for* themselves and *about* themselves. It is important to note, that all described narratives are not relevant for all participants, nor does it mean that all participants share the ideas, transported in these narratives. On the contrary, in some cases, prevailing narratives were actively resisted by the participants. However, as all interviewees are part of the same larger organisation, a cluster of research institutes focusing on applied biomedical research, and, with the exception of one participant, all have a similar epistemic background, a comparison in this specific case study yields valuable insights of narratives circulating within their scientific community. Another noteworthy point is the contrast between how narratives are described in the interviews and how they are - or are not - put into practice, in the planning and execution of the science communication project. The contrast between the narratives and the actual practices is worth

examining more closely, especially in the context of science communication because in the interaction, the scientists bring the narratives about science and the life of a scientist to the public. In other words, “they aim to express their agency through the diverse kinds of work— e.g., actions they take, resistances they express, alternative stories they tell— they invest in shaping their epistemic living spaces from within in ways to make them worth inhabiting“ (Felt, 2017a, p. 54).

In the following section I will describe the narratives surrounding science communication that emerged from my case study with an emphasis on how narratives are passed on, contradicted and how they are put into practice during the science communication project and further elaborate on, how the participants take up and integrate these narratives into their *Epistemic Living Spaces.* I start by compiling narratives surrounding science communication in the context of institutions and the epistemic community, and continue with narratives surrounding the “Tea Time with Researchers” project in particular and science communication in general.

Science Communication and Institutions - Love the Game but Hate the Players

One of the main factors which influences a scientist’s *Epistemic Living Space* is the institution they work in. Institutional culture, embedded in larger *Epistemic Culture,* material, temporal and spatial allowances, intellectual allowances, infrastructures, institutional support, funding regimes - just to name a few -, are crucial to understanding the narratives which are born in this context. Many narratives about institutions are shared by the interviewees because they share many aspects of this cornerstone of their *Epistemic Living Space:* As already mentioned, all participants in my case study are employed by the same cluster of institutes, and have, with the exception of one interviewee, a similar epistemic background. Therefore, since they are part of the same wider Austrian research ecosystem, many narratives about living and working in this academic setting, which have already been identified by previous studies (Felt & Fochler, 2012; Fochler et al., 2016; Müller, 2014), resonate with the participants[35]. They also reproduce some narratives concerning the influences and propagation of institutional science communication (Felt & Fochler, 2013) and of the motives of scientists to communicate with the public (Besley, Dudo, & Yuan, 2018; Besley & Nisbet, 2013; Cerrato et al., 2018; Davies, 2013b; Dudo, 2013). Last, but not least, many of the shared narratives and experiences points to a paradox in institutional science communication (Casini & Neresini, 2012; Davies, 2013b; Marcinkowski & Kohring, 2014):

[35] Many of the reported narratives also resonate with my experience as a researcher as I have worked at the same campus (although not the same Institute) as the participants. I contribute these experiences and how they influence the analysis throughout this section in the form of footnotes.

In academic institutions, communication efforts are on the one hand encouraged, but on the other hand, in practice, scientists, who are willing to engage in communication activities are met with obstacles and resistance from several sides. In the following section, I will describe how these narratives, and additional ones identified during the interviews, are picked up and expressed by the participants and lay out how they affect the participant's *Epistemic Living Spaces.*

The Temporal Regime of Academic Research is Counterproductive to Science Communication

All the scientists that participated in the 'Tea Time' project, agree that there is too much pressure in the system. This pressure has several dimensions - material, symbolic and social - but especially the temporal narratives surrounding a scientific career were brought up by all the interviewed scientists. The narrative, that as an early-career researcher, you have to achieve certain things at a certain time or else you are not competitive anymore, resonated with all of my participants but more so with those that have been in the system for longer. Especially for Meg, the senior Postdoc and for Jane, the long-term PhD student this temporal regime was a source of anxiety:

"I am definitely not competitive anymore as a scientist! In terms of output and in terms of how long it has taken for me to do my PhD. This made me extremely anxious!
(Q41_transcript_interview_Jane, Pos. 88)

How does science communication fit into this temporal regime? The short answer to this is that it does so with great difficulty and requires a considerable amount of effort and work from the communicators. The two scientists that were more deeply involved in science communication activities, Jane and Merida, both mention that they feel more temporal pressure because of their engagement in communication activities and that their time dedicated to research and communication respectively is oftentimes hard to reconcile. Again, this pressure seems to be higher, the more you progress in your career. Jane, in her 7th year of PhD, feels it more than Merida, who is at the end of her first year and just starts to feel the mounting pressure of her double role. An important point is that both express the lack of institutional framework for their double roles. They have the feeling that their output gets compared to PhD students, who only do research but at the same time also to full-time science communicators. This leads to a feeling of inadequacy on both ends:

"There is no concept of doing a little bit of both at the same time. This means you have to decide for one side and make this your main project. And then you get compared with the output and the speed of all the others, that just do research or that just communicate. But if you are interested in something in between, there is no framework that supports this and no measure. You rather get compared with those who don't do anything else by default. And that elevates the pressure!
(Q42_Transcript_Interview_Merida, Pos. 376)

Hence, the rigid temporal narrative of an academic science career not only makes science communication activities less appealing because the scientists think that they lag behind their peers on a temporal/material level, there is also no alternative narrative on an epistemic level, which allows scientists to engage in communication and be scientists at the same time. Due to this missing narrative, the participants of the case study feel that they have to decide at some point for one of the two occupations.

The findings that the science communicators suffer under the temporal regime of early-stage research careers confirm several previous studies about the temporal and social pressures of early career researchers in the Austrian life-science community (Felt & Fochler, 2012; Fochler et al., 2016; Müller, 2014). In addition to that, my findings show that there is no room for a middle way between doing science and doing science communication. The participants of my case study, who engage more deeply in communication feel overtaken on both sides by their peers who dedicate their professional lives solely to one of the two fields. This lack of alternative career models, which go beyond the linear development, is rooted deeply in the setup of the academic career models, which hardly leave any room for developing alternative skills besides research professionalisation, for instance in the course of a PhD program. There is also hardly any official recognition or valuation for participating in such programs, even though they are often set up by the institutions themselves, confirming previous case studies (Casini & Neresini, 2012). In short, there is little to no room for alternative narratives for scientists who, in addition to doing research, want to pursue science communication within their epistemic career. If institutions would leave more room for activities outside of the lab and allow for alternative narratives about career development and temporality, it would slow down the pace of research, but it would ultimately prompt scientists to develop a more diverse set of skills, which might be as important for the development of their *Epistemic Living Space.*

The Material Regime of Resource Allocation - A Zero-Sum Game?

So far, I have described how science communication can only be reconciled with an academic career with great difficulty in a temporal dimension. In this context, it is worthwhile to take a closer look at the reasons for the temporal constraints and where the perception of the rigid focus on doing research stems from. In my case study, all of the interviewed scientists point

out that this already happens at the personal level with their Principal Investigators (PIs) and not so much on the level of the institution. Meg, for instance points towards several efforts of her institute to train the scientists in communication and similar soft-skills but it is often frowned upon by direct superiors:

"[our umbrella organisation] has a sort of career centre, they offer workshops for communication, leadership skills, grant and proposal writing and so on. And it happens that if we want to attend one of these courses, which lasts like half a day, that they [PIs] say, 'no you should rather be in the lab'

(Q43_Transcript_interview_Meg, Pos. 146-147)

Even Merida, who has the communication aspect embedded in her PhD project, feels that her communication activities are not supported by her supervisor in practice. As already mentioned in the description of her *Epistemic Livin*g *Space*, she expressed that combining the two roles has been hard for her on a daily basis and that she does not get any practical support from her supervisor/PI. One of the reasons for this is that he might be more interested in public relations than in science communication:

"Yes, as I said, my PI is the head of the institute and he has an interest in public relations, this also has to be mentioned! [...]
It's about marketing of the institute
(Q44_Transcript_Interview_Merida, Pos. 136-140)

All of the other scientists clearly state that they don't communicate because of their supervisors, but despite them. Especially Jane meets a lot of resistance in her communication activities:

"There were attempts by my group leader to prohibit me from doing science communication but thank god that didn't work and I actively resisted that because it is important for me that I do science communication.

(Q45_transcript_interview_Jane, Pos. 173)

The reason for PIs to prevent science communication is unanimously agreed upon by all interviewed scientists. They think that PIs don't want their students to engage in activities pursuing their research projects, because it pulls away resources from their research activities. Time not spent in the lab is time lost. Meg sums this up with the statement, that every activity outside of doing science is perceived as laziness by PIs:

"M: I know that our PIs are extremely against it [Science Communication]!
K: Really, why?
M: Because you do not stand in the lab during that time, and you do other things instead and you are lazy… So every time that you do not spend in the lab is very bad!
(Q46_Transcript_interview_Meg, Pos. 142-144)

Hence PIs perceive that, communication and similar activities, pull away resources from research activities in several dimensions: First and foremost in a temporal and material dimension. But, more deeply, there is a social and an epistemic dimension. Early-career Scientists also have to spend not only their time, but their intellectual, mental and social resources in the lab and science communication distracts them from doing so. The underlying narrative in this way of thinking is that all these resources in the epistemic system are finite and that allocating them to different areas is a zero-sum game. Meg expresses criticism towards this by stating that if she were a PI, she would be more permissive than her current PI when it comes to science communication:

"I don't know, if it would be 20% of the working time, I would say, yes, do it. Because the students do… and you never calculate this… they cannot work all the time. They anyway do something different in between. This is human! And in that case, they might as well do something that they like, right?
(Q47_Transcript_interview_Meg, Pos. 144)

Jane also questions this zero-sum narrative by describing her passion for microscopy of histology slides, which she also uses for her communication activities, for instance during the Tea Time. Because this is such a creative activity for her, she is more motivated to do these experiments:

"One creative aspect of my work is Histology, but just as a byproduct. It is these pictures with all the colours of the different stainings. On that, I like to spend a little extra time to observe, [...] just because I like it"
(Q48_transcript_interview_Jane, Pos. 68)

Hence, the scientists who actively engage in communication, unlike their supervisors, do not see resources like time, motivation and mental capacity as a zero-sum game, on the contrary, being more involved in activities that deal with science in a more creative way, like producing artistically appealing microscopy pictures, or engaging in science communication might elevate the care and productivity that goes into doing science[36].

An important caveat in this context is that even though the zero-sum narrative, shared by the group leaders, appears in all the interviews of this case study it does not necessarily mean that the PIs are the ones to blame for the status quo[37]. For the interviewees, their PIs might be a

[36] This topic will be discussed in greater detail in section 5.3
[37] Nor is it the objective of this case study to assign blame to anyone.

stand-in figure for the system as a whole because they are their direct supervisors. As early-career researchers, the participants of my case study, don't have the lived experience of their PIs. The PIs, from their perspective, might have their own reasons for acting defensively towards science communication[38]. The data that I gathered in the course of this case study are not enough to draw a valid conclusion on this specific issue. It would be very interesting to hear the perspective of the PIs on this in a followup study.

The important take on this clear assignment of 'blame' according to the PhD's and Postdocs of my case study, is rather that the early-career researchers perceive that their superiors – maybe as stand-ins for the system– do not support them if they choose to pursue activities that are not directly connected to scientific research. The supervisors adhere more to the narrative, that the resources in the system, be it in the temporal, material, epistemic or social dimension are finite and it is their role, to make their students focus on what they deem is important. For the early-career researchers however, the resources are not finite and their allocation is not a zero-sum game. Ultimately, they feel that time spent communicating science is not necessarily time lost in the research process.

The Social Regime of Communication-Hierarchy - First the Merit, then the Creativity?

In the previous section I described that the stakeholders, who effectively see that research is being pursued (i.e. the PIs), are very much opposed to science communication done by their subordinates and that the allocation of material, temporal, social and epistemic resources, is seen as a zero-sum game. Therefore scientists, which are still early in their career, are discouraged from engaging in science communication on a practical level, even though there is a growing demand for outreach activities in contemporary academia. To grapple with this paradox, the participants of my case study shared the perception that science communication in particular, and creativity in general, is seen as distributed in a hierarchical manner. In short, the system has different allowances for different people. Merida sums up the perceived hierarchy as follows:

[38] In my daily dealings as an institutional science communicator, I can confirm that many PIs are reluctant to allow their PhD students to engage in science communication projects. However, in my experience, the picture is more nuanced. First of all, some PIs are very willing to allow engagement and even approach me with their own projects. Secondly, while it is true that the main reasons for reluctance from the side of the PIs are due to material/spatial/temporal concerns, they also might not agree with the format, the overall framing (for instance if the project is not connected to their name but just associated with the department or the university) or the target audience of a proposed project. But, as I never collected data in a systematic manner, this can only be coined as an anecdotal addon.

"The system is like this, that the ones who can be most creative, are at a stage in their career, where they don't stand in the lab anymore, but hand out the projects. The execution is done the ones that are still fresh in the system.
(Q49_Transcript_Interview_Merida, Pos. 172)

This means that the higher up you are, the more creative you can be. People who are still fresh to the system, often might have new Ideas but they do not have the allowances to follow up on their ideas[39]. The same is true for science communication. Merida perceives - and is critical towards - this narrative, of first having to have achieved a certain level of reverence or credibility in your scientific field, before being able to engage in science communication:

"If I think of a PI, then it is also that you first need to establish yourself a little bit as an early career researcher. People who do it themselves as a PI, who look for dialogue themselves, and are engaged are of the opinion 'you have to arrive at the point that you can allow yourself that'
(Q50_Transcript_Interview_Merida, Pos. 144)

Besides creating tension between students and their supervisors, this narrative of a hierarchical distribution of allowances for science communication, leads to a very practical problem, namely that early-career-scientists might never be able to find a point in their career where they can acquire and practice communication skills in a system where science communication becomes ever more important. If scientists can only start communicating when they have achieved a certain career level, it might be hard to acquire the skills to be able to do so on top of the added requirements that come with advancing a career in academia, like grant writing, budgeting, and managerial skills. However, because communication is becoming more and more important, mid-to late career researchers might lack these crucial skills when they are needed.

Institutional and Intra-scientific communication - Please Leave out the Bad Stuff

Communication for the participants of my case study, is not limited to extra-scientific communication, meaning taking science to a lay audience. All of the interviewees found that communication within the scientific system and across disciplines is equally important and therefore a substantial part of their *Epistemic Living Space*. The point of intra-scientific communication is especially important for the interviewed scientists who have been in the system the longest, Meg and Jane. Both expressed concerns about the lacking communication between scientists, but also between disciplines:

[39] My data show that this does not only apply to science communication but also to experimental planning and trying out new methods, as expressed by the senior Postdoc Meg: *"Now that I am in my third PostDoc year and I have my own Ideas and I sometimes find it unpleasant if things are always predetermined"* (Q94_Transcript_interview_Meg, Pos. 30). But this would be the subject of a different study.

"I don't know, you spend so much time doing science and you spend so much time working that I believe you get a little isolated from everything else.
(Q51_Transcript_interview_Meg, Pos. 191)

Hence, communication between scientists often does not just happen and the interaction on a social level usually needs to be prompted (for instance by networking events), encouraged or at least not hindered by scientific institutions. Jane feels the same problem of being isolated, but unlike Meg, as a part-time communications officer, she has the possibility to actively promote a dialogue within her institute, for instance by facilitating networking activities in her institute. She states that, 70% of her communication work is internal communication and that facilitating intra-scientific communication for her, is as important for the epistemic community as external communication:

"Thirty percent external and 70% internal communication is matching what I have found out [to work well]. That plenty of internal communication is also important, in order for something to be meaningful
(Q52_transcript_interview_Jane, Pos. 235)

Hence, intra-scientific communication, in various forms, is seen as positive by the interviewees. Also on an institutional level, scientists - especially at the early-career stage- are encouraged to talk to each other when it comes to exchanging knowledge and expertise. The narrative of positive intra-scientific exchange resonates deeply in the participants. But at a closer look, not every type of communication is wanted or facilitated by institutions: For instance, when talking about why scientists do not have a stronger lobby when it comes to demanding better working conditions, Meg attributes this mainly to institutions hindering this type of communication:

"K: Do you think it is more of a system failure than a failure of the single scientists that nobody talks to each other [in the context of day-to-day-struggles]? What would you say?
M: I think it is not encouraged that we talk to each other
(Q53_Transcript_interview_Meg, Pos. 194-196)

The point, that institutions only desire a certain type of intra-scientific communication which serves foremost their public relations, and actively discourage communication which could potentially have negative impacts is also raised by Jane. She states that in her internal communication work for the institute, she is not free to talk about issues, like being overworked or publication pressure. Alternative narratives which are more critical towards the epistemic system mostly spread via internal and informal networks. Social media ('Science Twitter') can be facilitators for expressing those criticisms:

"it is always about the project and the progress that you make, and not about the person behind that, who might have worked themselves to death…On the other hand on Twitter this has always been a huge topic"
(Q54_transcript_interview_Jane, Pos. 119)

Besides social media, I could witness the formation of such internal and informal networks, in which also negative narratives are discussed, during the planning sessions of the Tea Time when the participants' conversation drifted off from the project planning towards other topics. For instance, Merida and Jane, who are part of the same research institute but did not know each other very well before the Tea Time project, engage in many informal conversations about various aspects of their *Epistemic Living Space,* both connected to science communication, but also connected to epistemic practices and more general issues. They share their experiences and give each other advice. During the ethnography, I noted down some topics of this informal networking practice and what they signify:

"Jane tells the story of how she wrote a children's book about tissue culture (!!) Merida is very excited and gives practical advice about finding a publisher
(N10_ethnography_planning_Tea Time2, Pos. 11.21)

"Chit-chat about 'lab voodoo' and common practices in the wetlab (→shift to personal talk again quickly)
(N11_ethnography_planning_Tea Time2, Pos. 11.36)

"Personal talk about how cool internships are for early stage researchers, share experiences adn tips about this (N12_ethnography_planning_Tea Time2, Pos. 11.38)

"Jane talks about a previous communication project (→ Wants to signal that she knows her way around sci comm and share her enthusiasm)
(N13_ethnography_planning_Tea Time2, Pos. 11.40)

"Talk about childcare and home office (how great it was for Jane) and their family organisation (who works, who stays home etc.)
(N14_ethnography_planning_Tea Time2, Pos. 11.42)

What we can take from these accounts is that intra scientific communication is an integral part of the scientific community, for scientists as well as for institutions[40]. In theory, institutions are very interested in allowing and facilitating an exchange between the scientists, for instance in the form of conferences or networking events. In practice however, only certain formats of intra-scientific communication, namely those that serve the institution's needs or boost its reputation, are encouraged and devised by institutions, confirming the findings of Marcinkowski & Kohring (2014), not just for communication towards an audience but also for intra-scientific communication. Hence, narratives pushed by institutions that shape intra-scientific communication efforts, leave little room for scientists to talk amongst each other about less

[40] This of course being one of the most fundamental parts of Science's self-understanding starting with the Mertoinian norm of science being 'communist' (Merton, 1973)

favourable topics from the institution's point of view, like working conditions, mental health or publication pressure, touching both, the temporal, spatial and material dimensions, but also the social and symbolic. This might not only affect scientists' views of what is deemed an appropriate topic for intra-scientific conversation but, by omitting negative aspects of science and research, the narrative might be taken up as a blueprint of how science and research ought to function, meaning that intra-scientific communication only consists of success stories, inexperienced scientists might shy away from talking to their peers about failure and propagate this narrative further[41].

The communicating scientists of my case study navigate this space by devising a dual strategy when it comes to peer-to-peer communication. On the one hand, they comply with the Institution's narrative when they communicate on the institution's behalf, for instance, when they take part in networking events. On the other hand, they form alternative channels and networks of communication outside of institutional boundaries in which they feel that they have more autonomy to talk about adverse issues and find peers who might face the same problems. In this context, engagement on social media, but mainly the informal networking activities during the planning and execution of the Tea Time project act as important platforms, where the scientists can share alternative narratives, as well exchange advice and viewpoints. Hence, the involvement in the Tea Time with Researchers project could constitute an informal and self-organised network, where the scientists of my case study could give rise to alternative narratives outside the institutions' narrow concept of what scientists are supposed to talk about amongst each other.

Institutional Science Communication and Science Outreach - Where is the 'Storytelling Ethics'?

In the last section, I described how institutions push their own narratives in the space of intra-scientific communication and prevent alternative narratives and conversations amongst the scientists. I already hinted at the tacit governance effects that this communication practice might have on scientists, which are new to the epistemic community and engage in intra scientific communication. Previous studies (Felt & Fochler, 2012, 2013) have shown that also science communication directed to an extra-scientific audience, has tacit governance effects on science itself. They analyse the many different effects that the practice of orienting research towards the media has on the way science is done but especially direct our attention on what influence these

[41] A similar mechanism has been researched in the context of science communication towards the outside (Felt & Fochler, 2013) and will be further discussed in the next section.

science stories in turn have on the next generation of scientists[42]. In the next section, I want to build on these observations and situate my findings within them. I start by highlighting instances where my interviewees felt impacted by the narratives derived from this process and the products of 'press packaging' science and continue with their reflections on the process of medialization and how they see their role as communicators within this system and in their own bottom-up science communication project.

Felt and Fochler (2012,2013) talk extensively about the discrepancy between how careers in science are communicated and how careers unfold in real life. The depictions of scientists in the "glossy brochures" (Felt & Fochler, 2012, p. 133) of image campaigns by institutional science communication and the mass media get used by early career researchers as role models to which it is increasingly hard to live up to. All of my interviewed scientists independently confirmed that in one way or the other, they had fallen victim to this mechanism. For instance, when asked about the short-term employments and the famed "Kettenvertragsregel"[43] that is a pivotal turning point in a PostDoc career, Meg expresses her frustrations about the rule and that she had wished somebody would have told her this at the beginning of her scientific career:

"M: People can't continue working in academia and with 35 they are left with nothing!
K: And nobody told you this before?
M: [laughs sarcastically] NO!
(Q55_Transcript_interview_Meg, Pos. 72-75)

Another aspect that the scientists wished to have known sooner concerns the high workload demands and the notion that as a junior scientist you have no right to voice criticism. Jane, for instance, expresses that resisting this narrative was a long and hard process for her.

"'Love what you do or leave' I always agreed with this, I was completely committed to this! If somebody else complained, I always thought 'don't drag me down!' But the older I get, the more I think, complaining a little bit is not all that bad and you have to… you can love science and not find everything ok.
(Q56_transcript_interview_Jane, Pos. 128)

Merida sees these two narratives, following an idealised career image and not feeling the agency to criticise grievances, as connected which ultimately leads to disappointment. Many scientists who follow the narrative of a very linear career pathway and don't feel that they have the power to express criticism, lose their motivation on the way - even though she has not experienced this herself yet.

[42] A detailed account of their research is presented in section 2.2.3
[43] A law in Germany and Austria, which prohibits subsequent short-term employment at Universities for more than 8 years.

"I just see it in my peers, that this career path, which is supposed to be a linear one, gets pursued until it is not possible anymore and the passion is lost.
Q57_Transcript_Interview_Merida, Pos. 411)

When the scientists in my case study are asked to critically reflect on their role in this process, the two experienced communicators recognize this mechanism and their involvement in it. Both Merida and Jane, who have designated roles in their institution's science communication efforts, confirm that the above-mentioned misconceptions and misleading images are mostly propagated by the communication strategies of their respective institutions, which spread the distorted image of scientists, the scientific process and careers in science. Some examples of this miscommunication are the focus on the knowledge and discovery, rather than the researcher, as well as the choice of people who get to tell the stories:

"It's always about the project, about the discovery or the progress, not about the human being behind it who might have worked themselves to death"
(Q58_transcript_interview_Jane, Pos. 119)

"Who is it that gets interviewed? Young researchers only get interviewed for internal things like prizes and stuff. But for the newspaper or the likes it's always the PIs that get asked again and again"
(Q59_Transcript_Interview_Merida, Pos. 407)

As institutional science communicators, contributing to their institute's communication efforts, Merida and Jane do reflect on their own contributions to the process in a critical manner[44]. Especially Jane, who struggles with the harsh working conditions, questions her way of doing institutional science communication. But ultimately, she does not feel that she has any agency to change that:

"K: Do you think as a science communicator you propagate this image a little bit?
J: I am sure that I am at least a part of it, that the topic [of being overworked] is not brought to the table. Because If I write something, I write about 'hey, we got this award' or 'hey, we found this new method for the treatment of so and so..' But it is never about `Hey, we all can't take it anymore!'[…] I would never be allowed to do that. Maybe sometimes I participate by bringing it up on twitter. But this is click-activism and Click activism does not help anyone!'
(Q60_transcript_interview_Jane, Pos. 123-124)

Hence, Jane does not feel that within her role as science communicator, she would have the freedom to tell different stories about science and scientists. A large part of this might be the

[44] This is an issue that I also struggle with as an institutional science communicator. In day-to-day communications, which are mostly focused on publicising research projects, there is hardly any room for alternative narratives besides scientific 'success stories'. Not just because they are not desirable by the institution, but also because they would not be picked up by the media due to their limited news value.

inherent insecurity of her position, her struggles with her double role[45] and mainly lacking leeway from her institution.

Merida struggles less with her role within the system and has a much more pragmatic approach towards institutional science communication. In this respect, she shares many of the motivations for science communication which can be summed up with the term “stakeholder perspective” (Simis et al., 2016)[46]. Unlike Jane, she does not mention constraints to her work as an institutional science communicator, but rather stresses the need for institutional science communication in the context of a wider society in which different entities compete for limited resources. In this context, efficient science communication for her, is a way for scientific institutions to gain more legitimacy and therefore more resources:

"Also research needs to sell itself somehow. It is always about, where does the money come from because when you get down to it, in science there does not need to be a product in the end. This is the freedom that research has to have; that it is exploratory. And this is why I find it an incredibly smart thing to enter a dialogue with those who profit [from research]...in order to market it. Even though wanting to market research is not the prettiest of motives but if it causes the emergence of a dialogue, then it is still think it is ok to do it.
(Q61_Transcript_Interview_Merida, Pos. 368)

Interestingly, she justifies the material rationale for science communication with the positive byproduct of institutional science communication facilitating a social dialogue between research and those who might profit from it. A large part of framing her institutional science communication this way is the nature of her activities. Unlike Jane, they consist less of *selling* science stories of their institute to the press and more of facilitating a dialogue between different stakeholders, but this approach is also tangible in the science communication projects that she organises in private. The strategy of making allies in affected people by exciting them for science is to some extent also present in the approach she adopted in the Tea Time project. However, serving a self-interest for the advancement of science is not her main rationale for her doing the communication project. In the context to her own science communication endeavours, she states more altruistic reasons for her engagement with the senior citizens, which are comparable to reasons previously described in previous studies (Loroño-Leturiondo & Davies, 2018; Martín-Sempere et al., 2008)[32]. When asked about her main rationale for organising the Tea Time with Researchers, she states several reasons like facilitating the seniors' participation in contemporary society, learning from their experience, and last but not least changing the image of science and scientists themselves:

[45] More on that in Section 2.1.3
[46] The categorisation of different rationales is described in Detail in Chapter 2.1.3

"it's about comfort… about human warmth, which is not counterintuitive or incompatible with the 'cold, hard world of natural sciences'"
(Q62_Transcript_Interview_Merida, Pos. 345)

This, and other statements in the LinkedIn posts, which express the two-way dialogue and her gratitude to the senior citizens (N15_Document_Analysis_LinkedIn_posts, Pos. 25), as well as the blog post she writes about the event (N16_Article_M_SciComm_magazine, Pos. 16), point towards more altruistic reasons for the science communication activities that she organises outside of her respective institution. Hence, in contrast to her role as an institutional science communicator, where she mainly feels the need to pursue the interests of her institution and - as a proxy herself-, within the Tea Time project Merida can turn to more altruistic motives of doing science communication, like focusing on dialogue or human warmth when talking about science and research. In this way, in collaboration with her fellow scientists, she not only develops alternative narratives about science that she transports to her audience and her peers, she also starts to establish a practice, that Felt and Fochler (2013) call "storytelling ethics". In the course of Tea Time with Researchers she and her fellow communicators have more freedom to choose the topics, which they bring to the audience: In the Tea Times that were being held, they do so with great care and deliberation, focusing on the human side of science, the scientists behind the facts and the topics that matter in the senior audiences' lives, but also with topics that should challenge them[47].

In the first cluster of narratives surrounding institutions, which I retraced in this chapter so far, I first described the multi-dimensional institutional regimes that constrain the early-career scientists from engaging in science communication, consisting mainly of temporal and hierarchical hurdles. I pointed towards the effects that these constraints have on the participants' Epistemic *Living Spaces* and to the allowances that they feel they have within this space. I looked more closely at the tacit governance effects of narratives, which leave little room for alternatives, circulating intra- and extra-scientific communication, again laid out how they tacitly shape the participants' *Epistemic Living Spaces* and define their room for agency. I concluded with two of my participants' critical reflections of their role within the system and described how, through devising their own science communication project, the organiser of the Tea Time project, together with her guest-scientists, are able to establish a different narrative than the one they feel that they can communicate in their role as an institutional science communicators. In the next section, I will pick up on the topic of the Tea Time science communication project and dive deeper into the narratives that are circulating or forming in the context of the participant's engagement in their own science communication project. By following these narratives, I want to

[47] More on that, and how this works out in practice later in this chapter.

retrace how the bottom-up science communication effort shapes their *Epistemic Living Space* and their Identities as scientists/researchers.

Bottom-Up Science Communication - Constructing a Narrative of your own

So far, I have described the four participants' *Epistemic Living Spaces* and pointed out narratives connected to science communication and institutions. In this section I will point out narratives that the participants develop in connection to the practice of science communication, perceptions about their audience and through that, the shaping of their identities as science communicators. In the first section, I will look into the different normative narratives of my participants about the role of a scientist who communicates, how they are *supposed to act,* how their relationship to the public *ought* to be defined and draw out, how these narratives get picked up -or are resisted - by the scientists who participated in the Tea Time project. In a second section, I will look more closely at the assumptions and narratives about audiences and how they shape the content of the science communication event. In order to exemplify this, I follow a controversial topic from its conceptualisation to its delivery and finally its uptake by the audience. By doing this, I aim to point out prevailing narratives about audiences and content, see how they shape the instances of science communication and, in turn, how engagement with the audience changes the assumptions and narratives of the scientists/communicators.

The Role of a Scientist who Communicates - from Deficit to Dialogue and back

The self-understanding of a scientist's role, and therefore the role of science, in science communication has a tremendous influence on the way science is communicated. Audiences are conceived and approached differently, depending on whether scientists see their role as a communicator in merely transporting the facts or educating the public, if they see their role in entering into a dialogue with the public or if they aim to convince them as allies for the scientific cause. But these different views do not only have an effect on how the communication activity is planned and carried out, they also point towards larger narrative infrastructures about society and science in general, that the participants might hold. In the following paragraphs, I analyse the narratives that my participants share in this respective by using the the different models of science communication, the deficit model on the one hand and the dialogue and more activist assumptions on the other[48], as categories.

[48]An overview over this development in the field and the contributions of STS to the different models can be found in the first sections of the Literature review.

In general, the participants of the Tea Time project hold very different views about their roles as a science communicator. For instance Meg, whose involvement in the Tea Time project was the first contact with science communication, assumes a classic 'deficit model' approach (Bodmer, 1985), which is still predominant narratives when it comes to communication, especially amongst the natural sciences (Simis et al., 2016). During the interview, she stresses multiple times that scientists who communicate their research should not and usually do not have an agenda. She sees herself more as just transporting the facts to a lay-audience. Scientists in her view should inform but not take decisions themselves. Her understanding of the public is that if people would be provided with the 'correct' information, they would come to the 'correct' conclusion and that it is the role of science to provide such information. She uses the controversial topic of nuclear energy to illustrate this:

"M: But as a scientist, this is not my responsibility to transport an opinion, I have to stick to the facts. Of course I have an opinion but it is not about that!
K: Do you believe you can strictly separate this? Your opinion and the facts?
M: I believe that a lot of the opinions that you have are based on inadequate knowledge of a topic… no I phrased this wrong. So, SOME opinions are based on that you do not deal with a subject in a deep enough manner, especially when it comes to nuclear power.
(Q63_Transcript_interview_Meg, Pos. 98-100)

Hence, for Meg as a first time science communicator, both in terms of how she views her audience, but also how she sees herself as a communicator and scientist, the linear or deficit model of science communication is still the prevailing one.

Nani, has a different approach and different exposure to science communication, both because of her epistemic background and because of the audiences she communicates to. Her main communication activities are within her institution, meaning she communicates her research mainly to medical students and scientists who work within the research institutes of the hospital. She has very little experience in communication science to the outside. In her communication directed to the scientists of her organisation, sher assumes a "*feminist*" and a "*science critical*" (Q64_transcript_interview_Nani, Pos. 143) perspective. She explicitly states that for them to understand her approach and collaborate in her - and the University's - aims in terms of gender equality she needs the scientists and University establishment to critically reflect on their practices[49]. For this, it is necessary that firstly she enters into a dialogue with the scientists, but also that she communicates not only her research, but also the activist approach towards it. However, when asked what role she would take on if she were an academic researcher communicating her work, she assumes a different standpoint by clearly separating her current

[49] Her main criticism being that science is exclusionary as well as scientists often employing the 'God Trick' to hide their interests behind the notion of objectivity.

strategic and activist views on communication from the approach she would apply to to communicating science in an academic context:

"*I think the default mode is that scientists are doing research and communicating is the add-on. For me, it is more that I have an aim - more equality - and I have several tools to achieve this at hand. [...]*
K: Do you think this is due to your epistemic background or is it the same with natural scientists?
N: I think it is more due to my position! I think Gender Studies scholars, who are not like me in an applied position, they would write in the same way as the natural scientists
(Q65_transcript_interview_Nani, Pos. 137-141)

When it comes to communication to the outside, she is usually not very eager to enter a dialogue with the public. She states that she finds it important but is often reluctant to engage in it herself.The main reason for this is that her research topic is very controversial:

"Usually scientists can communicate topics which are not controversial and do not trigger so much resistance like mine. And it is not always pleasant to have the same discussions over and over again. I find this to be very tiring
(Q66_transcript_interview_Nani, Pos. 64)

So for Nani, even though her role - and therefore her communication activities - within her institution inherently take on an activist position, this does not imply that she has the same views towards science communication to the public. On the contrary, in a purely academic context, she argues that she would assign less importance to communication and would rather communicate her research as an add-on than assume an activist position. In addition, while she generally finds science communication, also in her field of research, important, she does not often engage in a dialogic process herself and to some extent does not trust her audience to engage in a meaningful dialogue. In this respect, she seems to have a " residual realist" (Chilvers & Kearnes, 2016) assumption of her audience and her views are similar to Meg in being more akin to the deficit-model than to a dialogue-centred or activist approach when it comes to communicating to the public.

The other two participants who are more experienced science communicators, especially Merida, already start from a clearly dialogue-oriented perspective toward the public. Already the setup of the Tea Time event, as conceived by Merida, explicitly invites a dialogue between the scientist and the senior residents. The invitation to the first Tea Time, which was sent out to the Senior Citizens, Merida already invites the participant to "*tell the researchers about their experiences and hopes"* (Announcement_poster_TT1_N1). Additionally, during all the planning sessions[50] Merida stresses the need for dialogue during the events and already tries to preempt possible questions from the audience. In her Linkedin posts, as well as her blog post, she

[50] See for Instance: N18_ethnography_planning_Tea Time2, Pos. 11.5 and N19_ethnographyl_II_planning_Tea Time3, Pos. 9.23

stresses how much she could learn from the senior citizens when she communicates her scientific research

[Merida] stresses how much she has learned from the expertise of the audience (professional as former radio technician/nurse and lay as patient!!). She acknowledges the new viewpoints that she was made aware of ("I am happy to have learnt quite a bit from them and how they perceive our field") → DIALOGUE model!!
(N17_Document_Analysis_LinkedIn_posts, Pos. 6)

Hence, a framework of dialogue with the audience in the context of the Tea Time Project is inherent in her self-understanding as a communicator, as already briefly mentioned in the context of developing a 'storytelling ethics' in the previous section.

When confronted with the question of what ought to be the role of a scientist in communicating their research, i.e. weather scientists can be impartial and just communicate the facts, she assumes a contrary standpoint to the deficit model and therefore to the viewpoints of Meg:

M: It [Science communication] has a political dimension!
K: Yeah? And if critics would say that this is not your responsibility as a scientist? What would you say then?
M: I would ask myself, whose responsibility is it then? Because I know what I need in order to be able to work well [...] You need some people who tell [the politicians] what we need and how we can negotiate this with society, finding a consensus [...]. That was also the topic of the protest march in 2016, that you cannot separate research from politics. And it was also about this reputation that we have, of not being political, of distancing ourselves from society.
(Q67_Transcript_Interview_Merida, Pos. 294-298)

Hence, Merida does not just assume a dialogue model but is very attuned to more current stakeholder- and activist assumptions about science communication, similar to the ones already described in previous case studies (Anzivino et al., 2021; Besley, Dudo, & Yuan, 2018; Besley & Nisbet, 2013; Davies, 2019a; Merga & Mason, 2021). Especially in this context, it is important to note that the activist incentives are not necessarily caused by the engagement in science communication. In Merida's case it seems to be rather the other way round. As described previously in the section of her *Epistemic Living Space*, she came in touch with science communication through her engagement in science activism, it could very well be that her activist incentives and understandings developed alongside her engagement for science communication.

In summary, a residual narrative of the deficit model[51] is still prevalent in some of my interviewees views on science communication while others view science communication from a more dialogue- and stakeholder-oriented perspective. In the context of my case study, involving two frequent communicators and two participants who have not much experience in science

[51] Current research on that can be viewed in section 2.1.2

communication, the participants of the tea time, who do not engage in communication, frequently express more deficit-model assumptions about science communication and in extension also about science and society in general, conforming to the narrative infrastructure that the science and the public are two separate realms with the public being in need for education. In contrast to this, the frequent science communicators both adopt a very dialogue-focused model, and also subscribe to many activist incentives behind it when they plan and execute their science communication activities. Hence, the role that the scientists/communicators of my case study assume and the image they have of the interactions between science and society is more critical/activist the longer they have been communicating their science, confirming suggestions made by previous studies (Golumbic et al., 2017). However, it is important to note in this context that this correlation does not necessarily mean causation. It could very well be that scientists, who are more keen on interacting with the public in a dialogic manner, are more prone to engage and to devise science communication activities which fit these assumptions. But in any case, both, a dialogic approach towards the audience and the desire to engage in science communication, do not exclude each other. On the contrary, they seem to shape each other mutually and in a productive manner.

Bringing Controversy to the Audience - How Narratives Shape Practices

In the last section, I showed that whether the scientists assume a deficit-or a dialogue oriented stance on science communication seems to be correlated with their level of involvement in different science communication activities. Which narrative is followed, does not only have effects on the self-perception of the scientists, it also has an influence on the scientist's connection to - and assumption about - their audiences. In short, the narrative infrastructures about the role of science and society in general influence the narratives and stories that are passed on to the audience during science communication. These narratives form in a twofold process. Firstly scientists/communicators assess the audience's motivation, willingness and capabilities to engage with science and the scientists according to their perceived room for action and secondly, they choose the topics they deem worthwhile and appropriate for communication accordingly. It is important to note that both steps of the process cannot be clearly separated because they reciprocally influence each other. The science communicator, as the mediator between the topic and the audience, shapes the interaction according to their perceptions of both the topic and the audience. In turn, the communicator is shaped by prevailing narratives about science and science communications which might have an influence on how they communicate. In the following paragraphs, I want to retrace this process and single out some of the narratives about audiences that the participants share and see how they can shape the conceptualization of

content, the process of the communication event and, last but not least, how they are turned into practice. I exemplify this process by following the conception, delivery and reaction to a controversial topic, namely the topic of Gender Medicine[52], within my case study.

The topic for the third Tea Time event, Gender Medicine, was chosen by Merida because she herself was interested in it, but also because she wanted to discuss a rather controversial topic with the seniors:

"My initial motivation was to pick up a topic that interests me. And one where I can look a little bit, how far I can go with the seniors. Do they refuse to talk about gender roles completely? I am also interested in what they have to say about their own experiences."
(Q68_Transcript_Interview_Merida, Pos. 333)

She stated this in the interview, which was held a few days before the planning session for the Tea Time event on Gender Medicine, that she was especially looking forward to the third Tea Time also because, unlike the previous events, she could approach the topic more from an outsider perspective. She did not know Nani, the invited Gender Medicine expert beforehand from her professional work. During the planning session for the third Tea Time event *(200825_ethnographyI_II_planning_Tea Time3)* the issue of the topic being a controversial one is discussed extensively amongst Merida and Nani. Initially, they discuss if they should bring up topics like there being more than two genders and that gender as a fluid concept. However, Nani is rather hesitant to introduce these concepts and suggests to focus more on transgender identities because this concept according to her more easy to grasp and more established in mainstream discussion while Merida argues that the main objective is to keep it simple. After some discussion, they decide to leave the aspect of social gender and transgender completely out of the picture. The following note I took during the planning session sums up the final decision to leave out the topic altogether:

Merida anticipates audience question: "Why is this gender thing even a relevant category?" Nani does not see this as a biomedical question (as intended by M.) but rather as a "classic philosophical question". She gives a very philosophical and long answer but assures M. that she will answer in a simple way during the event. She brings up again the topic of categorisation and Trans-Identities but says that she rather wants to stick to binary explanations. Merida brings the topic back to medicine [personalised medicine aside from gender identity] and is reluctant to include gender identity on a social level. Nani acknowledges the topic as "problematic" and she says it is better not to mention it. (→ interesting dichotomy about the differences in perception of the researcher and her audience. S. feels the need to "hide certain" advanced aspects of research in order to avoid controversies!)
(N20_ethnographyI_II_planning_Tea Time3, Pos. 9.26)

[52] Other controversial topics, for instance ageism and nuclear power were also discussed during the other Tea Time events and revealed similar mechanisms. But as the documentation in this case is the densest (I could conduct ethnography on the third Tea Time event), I will focus on one controversial topic.

Therefore, after discussing it several times during the planning session, they decide to focus on the biological aspects of gender medicine, namely how different biological sexes are affected differently by diseases. To depict the issue they use two classic examples of how sexes are affected differently by certain diseases[53]. Hence, during the planning session they gradually removed the controversial topics from the program, even though Merida, prior to the planning session, had conceived the event as a room for explicitly discussing controversial topics.

In this exchange, assumptions and narratives of both parties about their audience come into play. Merida wants to keep the issues clear and simple[54] and therefore resorts to topics familiar to her, rather than more complex issues of gender identity. In a way, even though she had stated differently during the interview, she ensured continuity and a coherent storyline of her communication project. The urge for simplicity might be derived from a critique she got for the last event, where the topic was perceived as too complicated for the seniors to understand. Nani, does not share the assumption that the topic would be overly complex but rather has the assumption that with a more age-advanced audience, the more controversial aspects of her research can not be discussed in an adequate way. This assumption seems to be rooted more deeply in a larger narrative infrastructure about senior citizens not willing to accept the current research on gender identities. During the interview with Nani, which was conducted after the Tea Time event, she expresses the feeling that scientists have more leeway to communicate their research than she has, because their research is often seen as more unproblematic. Research in her field, gender and diversity, on the other hand is often seen as spreading a political agenda, rather than being objective science. As already mentioned in the previous section, she is now rather hesitant to enter into a dialogue with the general public, because she has struggled so much with this in the past. So as a consequence, especially when it comes to ‘lay audiences’, she is reluctant to have the same discussions about sex versus gender over and over again.

This conflict of her wanting to avoid controversial topics while still engaging in a dialogue is solved with a compromise in which the topic of gender is introduced through the ‘hard sciences’, namely medicine in this way she can still introduce her research and potentially expand from there, while not setting up a conflict that she perceives will happen with the audience. In the interview, she states that she adopts this approach also in the context of her work at the University:

[53] The examples they choose are heart attack, which manifests very differently in biological women than in men and depression, which is often underdiagnosed in biologically male people.
[54] She uses the german term “niederschwellig” which can be loosely translated to low-key

"*It is not like all my colleagues here at the Medical University, except for my team, think that equality is such an important topic. Gender medicine more so, but only if you detach it from every political pretence [laughs].*
(Q69_transcript_interview_Nani, Pos. 50)

While she sees this as a problem in the context of the University she is working at, she does not necessarily think it as negative in the context of communication to the outside.

During the event itself, contrary to both communicators' expectations, the interest of the senior participants was much more focused on the societal aspects of Gender Roles than in the medicinal aspects and the discussion turned out to be more controversial than than they had expected, even though the controversial topics that were discussed were slightly different ones than those Merida originally had in mind. During the Tea Time I noted the unexpected turn that the discussion took after the topic had been presented:

"Seniors are more eager to talk about general societal aspects of gender like how boys are taught not to cry and why this is wrong/right (→ discussion). and the differences between a man's and a woman's struggles in a patriarchal society. And even more philosophical talks about life itself (One female participant said "You gotta be tough")
(N21_ethnographyI_III_Tea Time3_field_notes, Pos. 37)

"Short talk about economic factors of disease (brought up by a resident)
(N22_ethnographyI_III_Tea Time3_field_notes, Pos. 40)

This unexpected turn of discussion was taken up in a very positive light by Nani, who in hindsight was "*very surprised that there was so much engagement*" (Q70_transcript_interview_Nani, Pos. 127) from the audience. This might hint towards a change of view about her preconceived notions about the audience. In summary, the audience did not follow the narratives that both communicators had shared beforehand, it did not correspond to the narrative about senior citizens not wanting to discuss sensitive topics, as held by Nani, nor to the narrative of merely being interested in medical topics and not being able to handle complex connections, as being held by Merida. But this turn did not lead to an adverse reaction or conflict from the science communicators, they rather learned from the exchange and might implement a slightly different narrative in subsequent communication practices.

Other than changing practices, this instance of how Merida and Nani avoided controversy only to be faced with a different discussion is exemplary of how larger narrative infrastructures shape the science communication process: Because of prevailing narratives about certain audiences and format, temporal or material limitations the communicators tend to leave out certain things for the sake of brevity, clarity, or a more coherent story. These pragmatic delimitations lead to a diminished trust in the audience by the communicators to follow them to the more profound and more controversial aspects of the science they might want to

communicate. As a consequence, this leads to the tendency of avoiding controversial discussions in science communication for the sake of consensus or a ‘good story’.

In the second cluster of narratives surrounding the science communication activity of my case study, I have demonstrated that in the participants of my case study the exposure and experience of science communication has an influence on their self-understanding as scientists and their assumption about the role of the audience. In short, the more they get in contact with different audiences, the more of a dialogue or activist standpoint they assume when it comes to larger narrative infrastructures about science and society. Larger narrative infrastructures about audiences also influence the conceptualisation of science communication, which I could show in the second section of this subchapter. I followed the process of how a controversial topic is negotiated, planned, delivered and taken up by the audience of the Tea Time project. By doing this, I could demonstrate how narrative infrastructures about science, communication and society shape the content of science communication and how contact with an audience often leads to unexpected outcomes which might have an influence on the narratives which are shared by the communicators.

Throughout this section on narratives and the previous section, where I focused on the four participants’ *Epistemic Living Spaces,* I already laid the groundwork to answering my research questions. In the last section of this analysis chapter, I will use all the previously presented findings to directly address the research questions and lay out the changes of science communications to my participant’s *Epistemic Living Spaces.*

5.3 Changes of Science Communication to *Epistemic Living Spaces*

My analysis so far consisted of an in-depth description of the participants’ *Epistemic Living Spaces* focusing on their epistemic lives and their involvement in science communication and the Tea Time with Researchers project. In short, the cornerstones of these four *Epistemic Living Spaces* are: Meg, the senior postdoc and first time science communicator, who so far had a very linear career, feels isolated and anxious about her future in academia and therefore is looking for alternatives to the academic career path. Merida, the initiator of the Tea Time with Researchers project, is a first-year PhD student and very experienced communicator who

combines her personal interest in science communication, her altruistic and activist views with her career objectives by engaging in science communication and networking activities. Jane, the long-term PhD student who has a double role in her institute as an Institutional science communicator, does not feel competitive as a scientist but engages in science communication despite multiple difficulties. And Finally Nani, the gender and diversity expert in a large research hospital uses science communication within her organisation to achieve strategic means and is otherwise not very experienced with science communication to a lay audience. In the second section of this analysis, I presented a compendium of the narratives that surround the scientists and the communication project, as well as a description of how the participants take them up and are influenced by them in the context of science communication. I reconstructed how the temporal, material and hierarchical structures of the epistemic community and the narratives produced by them are counterproductive to practising science communication. These mechanisms are especially significant in the early stages of a scientific career, despite the elevated awareness from the side of scientific institutions to communicate and engage in scientific outreach. I also describe how the epistemic system surrounding the participants of my case study exhibits a very narrow regime of valuation when it comes to success in a scientific career. This narrative, and other organisational features, tacitly govern intra-scientific-, as well as extra-scientific communication and hampers topics whose scope goes beyond the narratives propagated by institutions, for instance thematising of workload or mental health. By creating their own spaces within the science communication project, in which they can develop alternative narratives, the participants of the Tea Time project exhibit more reactiveness and dialogue-orientation than they do in their roles as institutional communicators. By investigating the self-understanding of the participants as scientists and their perceived role in the Tea Time project, the hypothesis that more exposure to science communication activities and different audiences leads to less of a deficit-model assumption and more of a dialogue-oriented and activist- or stakeholder-perspective is confirmed. Lastly by following how, in the course of the third Tea Time event, a controversial topic was planned, delivered and taken up by the audience, I could show that larger narrative infrastructures and assumption about society influence the content and execution of science communication, and that, again, exposure to audiences can lead to changes in these assumptions.

With these findings in mind, in the last section of the analysis, I turn to answering the research questions I have laid out in chapter 3. I start by addressing the subquestions before turning to a larger discussion of my main question and its implications for the field of science communication in general and my own communication practices in particular.

More Reactive, more Applied, more Activist

SQ1: How does the act of communicating one's own research influence the scientists' views on the practice and the purpose of their own research?

The first research question speaks to the interviewees' views about their own research practice, the purpose of their research towards society and how science communication can change those views. From a methodological point of view, towards the end of the interview, after they had talked extensively about their lives as researchers and their experiences with the Teat Time event, I explicitly invited the interviewees to critically reflect on the potential changes that their involvement caused in their own way of doing and thinking about their research practices. With this, I aimed at comprehending the potential changes of science communication on their *Epistemic Living Space* in several dimensions[55]. I separated these dimensions into practical ones, like temporal/spatial/material, meaning into how scientists do their daily work in the lab, and more social/symbolic ones, like they assess the purpose of their research and its connection to wider society.

Firstly, when it comes to changes in mundane practices, I could find no changes caused by their involvement in science communication. When asked about how the interviewees do their day-to-day work, or how they approach planning or conceptualisation of their scientific research, all of the scientists stated that in their daily practices, meaning in the way they planned and conducted their research projects, they don't really experience any change because of their engagement in the Tea Time project. However, in contrast to the practice at the wet bench, the interviewees did perceive changes, both in the general direction of research they would want to pursue as well as in their views about the research process and the mode of interaction with the people, who are impacted by it. In a previous section, where I elaborated on the roles of scientists when they communicate, I have shown that the participants of my case study, who did not frequently engage in science communication, held a deficit-model assumption of their audience and of society in general, meaning they stated, that a scientist's role in science communication was to just provide the audience with facts and they will come to the 'correct' conclusions. Especially Meg, who had no previous experience with science communication held this belief. However, when invited to reflect on the changes of the communication event, for her this narrative seems to have changed somewhat with her involvement in the Tea Time. The most remarkable aspect of the event for her was that she entered into a dialogue with the audience.

[55] See Annex C for the full questionnaire.

Importantly, not only does this seem to have had a lasting effect on her as a scientist, she also feels more attuned to her audience's needs:

"K: Did this event [the Tea Time] have a lasting influence?
M: [long pause] I would say jes…
K: Can you explain?
M: In the end, it was a dialogue. I do not often interact with people affected [by my research]. So it gave me a lot of insight into what people want, what they worry about, etc."
(Q71_Transcript_interview_Meg, Pos. 125-128)

This statement hints that for Meg, already one point of contact with people who are directly affected by her research changed her views towards a more dialogic assumption about the public, but more importantly, it gave her a desire to be more reactive towards people's needs, even though from this one instance it cannot be said how long-lasting this effect might be. While she does not state that at this point, the interaction would change the course of her personal research objective, she stresses that on a general level, more frequent exchanges could be beneficial for the epistemic community of applied biomedical researchers to orient themselves and their research more towards pepoles' needs:

"If we talk more to each other, then Science finds out more about what is needed, what people really require"
(Q72_Transcript_interview_Meg, Pos. 172)

Also Jane, who is more versed at communication to the outside, stresses this utilitaristic feature of her communication activities:

"*[Communication changes] the perspective, taking a step back, seeing what is important, what is useful for the people outside of research"*
(Q73_transcript_interview_Jane, Pos. 194)

For merida, this elevated sensitivity towards audiences manifests in the planning sessions of the Tea Time project, where she explicitly asks them for topics they are interested in and is especially careful to include their experiences with the topics she plans to bring to them:

"It is my goal that I make it possible for [the seniors], more as a facilitator, that they get in contact with the researchers with whom they would like to talk
(Q74_Transcript_Interview_Merida, Pos. 360)

"M. ends with topic suggestions for the next time, seniors give lots of inputs.
(N23_ethnographyI_III_Tea Time3_field_notes, Pos. 41-42)

Jane also shows an elevated reactivity toward her audience. Already during the planning session, she repeatedly anticipates seniors' perceived needs and sensibilities. She wants to make the topic relatable to them and tries to think of several connections to elderly patients. In one instance, Jane describes her concern about bringing up the exact technique she is

developing because it can only be applied to patients under a certain age. She is afraid that because of that, the seniors might feel excluded from the current research and treatment:

"[Jane has] ethical concerns about telling the seniors about the age limit of the technique she is working on → "I hope they won't feel excluded" (→She clearly wants to talk about her research but also wants to make an interesting and relatable account. She is not sure how to reconcile this)

(N24_ethnography_planning_Tea Time2, Pos. 11.7)

In a second instance, she finds a relatable entry point, for the seniors as donors of her research material but, again is afraid to bring up the topic because of potential sensibilities:

"Merida: wraps up the explanation by setting the endpoint ("This is already a good end"). But Jane quickly intersperses by adding a connection to old people (as donors of bone material) ("old people actually play a big role in my research") but a the same time is afraid to talk about that because of sensitivities (old people's femur heads are available when they get their hip replaced).Merida thinks this would be a great entry point and does not share Jane's concerns. (→ [...] Jane wants to add an interesting fact to the story, at the same time she is not sure if they should tell it because of sensitivities)

(N25_ethnography_planning_Tea Time2, Pos. 11.31)

I noticed this process of elevated reactiveness from the communicators of my case study also outside the area of interaction between researcher and patient. Nani, for instance who describes, how she profits from her communication activities in terms of organisational learning through the communication of her research:

"K: If you communicate [your research], did it ever happen to you that you gain a bit of a new perspective on your own work?
N: That happens all the time! It becomes a process of Insight, where I continue to get new insights, see concrete things and why they are - or are not - the way they are. Why are these small structures like this, and not different? This is always very exciting!

(Q75_transcript_interview_Nani, Pos.154-155)

When asked about her learnings, the main mechanism for her is not acquiring new knowledge but to gain more insights about how her audience works. In the context of her position in the organisation this means that through interactions with different epistemic groups, she learns to assume the other person's perspective, and sees why things in her institution are the way they are. So, even though Nani's communication usually has clear strategic purposes, which she wants to pursue and clearly defines before engaging in communication, the exchange still leads to her adjusting her perspective and reflecting on her position within the organisation. She stresses that especially communicating to different audiences helps her in this process. Jane mentions an elevated reflexivity about her own way of working in the lab which she gains by interacting with her peers through her science communication activities. In her work as an institutional science communicator, she writes articles and press releases about the works of

other groups and can get an insight in how they organise their research group. Through communication, she gets a chance to compare the practices of her own group to the others:

"I always communicate different research and I get a lot of comparisons out of that. How do other groups do things? What do I do? How could I do things better? That is a big part of that and you don't usually engage with these questions so deeply"
(Q76_transcript_interview_Jane, Pos. 219)

Being attuned to other people's needs and feeling the need to react to them, is a prerequisite for the main change in perspective on their research orientation that the interviewees exhibited. The more engaged they were with science communication, the more they desired to orient their research objective towards applied research, meaning patient- and application centred topics. When asked, what direction they would want their own research to go[56], the experienced communicators stressed that one of the most important criteria for them would be that their research can immediately be applied to patients. According to Jane, it is often a problem with researchers, including herself, that they lose track of the purpose of their research and get carried away by questions of their own interest, and while she acknowledges that basic, interest-driven, research also has its value, for her personally, it has become more important to be as close to the application as possible. Importantly, the main reason for this is her communication activities.

"*If I could, if I had more influence, I would definitely move more towards this direction. That I do things, that are comprehensive, that people get why they are important and that are imminently easier to transfer to the clinic, than some interest-driven or methodical questions."*
(Q77_transcript_interview_Jane, Pos. 200)

As mentioned, this higher valuation of applied research is especially striking in researchers, who are more frequently engaged in science communication, and who already have a dialogue or activist oriented mindset about science communication - as I have shown previously in the analysis chapter.

Also for Merida it is important to work close to the patient's needs and requirements. But she frames the weighting between applied and basic research more as a societal, rather than a personal issue. The weighting between applied and basic research for her, is a constant negotiation process involving different stakeholders:

[it is important] that we are attentive towards what we do research on and what would really be important for the people. And that we somehow negotiate between this.
(Q78_Transcript_Interview_Merida, Pos. 365)

The question of which stakeholders get a seat at the table, who gets to decide the direction and purpose of research and what agency scientists have in this process, is a topic that Merida often

[56] I have shown in the previous analysis that all three scientists feel very little freedom to choose their own research because they get limited by their supervisors so this question was more a hypothetical one.

refers back to. As already described in the previous section of the analysis, she not only has a very dialogue-oriented incentive of science communication but also tends to harbour a very stakeholder-oriented view about the relations between science and society, meaning that scientists - as well as audiences- are stakeholders in the same society and need to negotiate between and for their different needs. Science communication and frequent interaction with different audiences, in her account, helped to develop this activist perspective:

My awareness is pretty sharp that there is an outside world, which in reality is not an outside world, but… research is embedded in the same world. I would say that I am aware of the societal and political dimensions that research has.
(Q79_Transcript_Interview_Merida, Pos. 401)

Not only has she developed these views through science communication, she also uses science communication to bring her view, that all stakeholders, including the people who are affected by research, should be empowered to participate in the societal negotiation process. When I asked her about the main incentives for starting the The Tea Time with Researchers project, besides wanting to engage socially and gaining experience in communication, her main reason for addressing senior citizens with her project was the following:

"My motivation was in any case, that also they are still voters and that they have to take part in the societal process and they get the chance… they have to get the chance to keep up with the times."
Q80_Transcript_Interview_Merida, Pos. 290)

Hence, her societal engagement is expressed and passed on to the audience, as well as her peers through the setup of the Tea Time project. Science communication not only strengthens these activist tendencies, it is also used as a vehicle to spread them even further in audiences and in peer networks.

In summary, while none of the researchers describe a change in the daily practices of their research, meaning in how they conduct or plan their experiments, all participants describe changes on a more conceptual plane. By engaging in science communication, the scientists develop a more reactive, more applied and more activist perspective on their own research and of their epistemic surroundings. Firstly, the interaction with their audience, already in a one-time appearance during the Tea Time event, but more so with frequent interaction with different audiences, makes them more attuned to other groups' needs and practices and causes themselves to orient their own practices accordingly. In other words, adding more facets to the social dimension of their *Epistemic Living Space*. This leads especially the interviewed scientists, who frequently engage in science communication, to wanting to pursue research which is more applied and closer to 'the clinic' i.e. to the immediate benefit of patients. Lastly, being more oriented towards society leads to an elevated sensitivity and a greater desire for them to include

the affected groups into the negotiation between science and society and to empower them to take part in this process. With more practice in science communication, it gets easier to devise formats, which can achieve that and, in the case of Tea Time with researchers, as a by-product also sensitise other scientists to take these more dialogue oriented and activist stances.

In this context, it is important to note two aspects of the specificity of my case study. Firstly, there might be a bias of the epistemic field. All three natural scientists that I interviewed work in a field of biomedical research which is by its nature close to clinical application and where the patients are present to a greater degree than in other fields of research, for instance through patient samples, applicant clinical trials or the location of their research institute within a hospital. Therefore, it might be easier for the researchers that I interviewed to imagine themselves researching topics that are even closer to the patients than for instance a researcher who works in basic research. Secondly, as described in the introduction of the case-study, the setup of the Tea Time is specifically about researchers, laying out the implications and impacts of their research and of science in general to the senior audiences' lives. This specific conceptualisation might have had a disproportionate impact on the impressions that the guest experts took away from their experiences. Different formats of science communication might have different outcomes in how the researchers reflect on their own research practices. It would be interesting to compare this case study with similar approaches and see if they come to different conclusions.

In the last paragraphs, some statements already point to the circumstance, that the researchers do not feel that they have a lot of freedom to decide on what topics they can pursue in their research. This speaks to the linear career paths and narrow valuation practices that I have described earlier in the analysis chapter. In the following section I will elaborate on this in the context of how science communication influences the interviewees' outlook on their career perspectives and their views on the epistemic community they are a part of.

Science Communication as Alternative to the Rigid Scientific Career Path and Narrow Valuation Practices

SQ2: How does the act of communicating one's own research influence career planning and outlook on their future in the epistemic system?

I have shown that through science communication the scientists of my case study wish to pursue more applied research, show more concern towards societal needs and, as a consequence, engage more in activist frameworks when interacting with society-at-large. But, in contrast to the participant's high motivation, the analysis so far, especially the description of their *Epistemic Living Spaces* and the narratives connected to institutional science communication

shows that there are many systemic obstacles in pursuing these objectives in the context of science communication and career development. As soon as the participants engage in science communication, they are met with hierarchical, temporal and social constraints, which are imposed in a top-down manner from their direct supervisors but mainly from the constellation of their epistemic surroundings. In the following paragraphs, I focus on the effects of these conflicts in the scientists' views on the epistemic system that they are a part of, on the changes that their engagement in science communication causes in the perceived room for action that the participants feel they have within this system in terms of finding their own place in the epistemic community.

As previously described in the Analysis, the two participants who are more engaged in science communication, Jane and Merida, describe how they suffer from their double roles, not so much on a symbolic or social level, but on a temporal and material one. The main problem seems to be the lack of institutional framework within their PhD for pursuing both activities at the same time makes them feel that they get taken over on both sides by people, who just dedicate themselves to either science or communication:

"*You get compared with the output and the speed of all the others, that just do research or that just communicate. But if you are interested in something in between, there is no framework that supports this and no measure. You rather get compared with those who don't do anything else by default.*"

(Q81_Transcript_Interview_Merida, Pos. 376)

Again, the structural and practical obstacles seem to be a major hindrance for scientists, who are interested in pursuing communication also in their careers. However, despite these obstacles, the participants who dedicate their time partly to science communication, clearly do not see their science communication activities as a stumbling stock in their career development. On the contrary, both interviewees stress that their involvement in science communication is rather an asset to their career trajectory. Jane, for instance, stresses with emphasis that she does not think that she is competitive as a scientist and that the only thing that is giving her an edge in the competitive landscape of the biomedical sciences is her skills in science communication. During the interview, after she gives a long account of why she feels that she is not successful in her life, she makes the following statement:

K: Do you really think that you are not successful?
J: Compared to the others? I mean, I don't have a lot of output, I still don't have a PhD, I… I do not stand out from the other scientists. Except for my science communication. This is the only thing for which I get the credit, and for which people know me more than through my [PhD project]."

(Q82_transcript_interview_Jane, Pos. 100-101)

This view is in direct contrast to the one of her supervisor who, as described in the section about Jane's *Epistemic Living Space*, is trying to prevent Jane from pursuing her communication career. When explicitly asked whether she thinks if her supervisor could have a point and if her communication activities have slowed her down in her PhD, she negates this and again, rather highlights the benefits of her communication work:

"I don't think this is true at all! I think my career has benefited from it, that people know me as Jane, who does all the communication. Because I think for them [supervisor], science is just science and this whole people component is just secondary, or you don't even need it. But in reality it is so important if you know different things and where you have access to and who knows YOU. I would never want to drop that!
(Q83_transcript_interview_Jane, Pos. 180)

While for Jane, the pursuit of communication is more of a personal objective, for Merida science communication is not only an asset to her personal career development, she rather stresses that she thinks science communication could be considered as an alternative career paths for some scientists in general:

"[Science Communication provides] more possibilities for professional development, how it.. How it could turn out."
(Q84_Transcript_Interview_Merida, Pos. 403)

Hence, entering science communication as a career avenue could, for many scientists, be considered as an alternative to the rigid narrative of a linear academic career, as propagated oftentimes in the scientific community. But in order to realise this path, they first would have to be exposed to some form of science communication activity. Merida tried - and failed[57]- to implement small incentives for her peers to start engaging in scientific writing, outreach activities etc. but she was met with resistance on the PI level, with the exception of her supervisor.

This principle of science communication opening up different avenues in terms of career outlook, especially for early-career scientists, is not only brought up by the experienced science communicators. Also first time communicator Meg starts to see new possibilities for her own career through her involvement in the Tea Time with Researchers project. During the reflection about the changes that her involvement in the science communication project caused, she mentions that she considers switching her career objective from an academic career to pursuing

[57] *"I would have liked to try to force everybody [both laugh]...'Just give it a try! Write something!' I proposed to implement a kind of Sci Comm duty, once every six months, that you have to write a , whatever, a facebook post, or whatever you want to…, a mini-text about your own work for the homepage, something very small.*
(Q85_Transcript_Interview_Merida, Pos. 160-164)

science communication. Importantly, she stresses, that this practice of conveying science to the public for her is considered a valuable and worthwhile practice:

"K: So this single event, did it make you want to do more in this respect? And pursue it in the future?
M: Science Communication, yes!
K: In your career?
M: Yes! Anyways, at some point I have to decide what to do with my life and I don't know,... taking apart scientific knowledge… explain and transport it to others. That I can imagine myself doing very well. I would find that meaningful
(Q86_Transcript_interview_Meg, Pos. 133-136)

Hence, already the involvement in the Tea Time project, together with an experienced communicator/scientist, caused a different outlook on career perspectives in academia for Meg. Again, it cannot be said whether this changes her career trajectory in the long run but her participation has exposed her to an alternative career path. While the perspective of turning to a career in science communication is still very vague for Meg, for the science communicators Jane and Merida it takes on more concrete forms. After their PhD, they would both prefer to dedicate their careers to communication, rather than stay in research or academia. Merida sees herself more in an organising role in science communication while Jane states that her ideal career would be to work as a full time institutional communicator in her institute.

In summary, I found that the involvement in science communication prompts the early-career scientists of my case study to see their career objectives more broader, more varied, and less set on the established life-science career narratives and valuation practices, which turn out to be unachievable for most. In short, the scientists feel more room for action within their *Epistemic Living Spaces* as it is broadened by these alternative models. This is one crucial factor for understanding the scientists' motivation to continue their engagement, despite the practical obstacles as they see it not only as a 'way out' in case their scientific careers fail but as a viable alternative which is worth pursuing. There are multiple reasons for this broadening of perspective but in the context of the interviews some are especially prominent. Firstly, as hinted by Jane, the communication activities give the scientists recognition beyond their academic achievements. This positive interaction might prompt them to pursue different talents outside the usual scope of the soft skills valued in research. Secondly, as hinted by Meg's statement, scientists might see communicating and reaching out to the public as a valuable practice which might quell a desire for more social interaction in scientists who often feel isolated in their epistemic community. Thirdly, scientists who communicate, both via intra- or extra- scientific communication might develop a larger network of their peers and other stakeholders which exposes them to role-models with different career trajectories.

This last aspect, the social network which a scientist is part of, both within the epistemic community and to the outside, is a very important contributor to the scientists' *Epistemic Living Space.* Therefore*,* the next section will be dedicated to the effects of science communication on the scientists' views on the epistemic community and how the practice contributes to their views on their place within it.

Science Communication as a Way out of Isolation and a Source of Self-Value and Motivation

SQ3: How does the practice of communicating influence a scientist's views on the scientific community, and their place within it?

I concluded the last section by arguing that science communication broadens young scientists' career outlooks partly by expanding their range of social interactions which opens up the question if this expanded range of interactions also had other effects on the young researchers' *Epistemic Living Spaces.* By engaging with the question the influence in the social dimension, I found that the expansion of contacts and interaction with many different groups in the course of science communication is not only beneficial for the scientists' outlooks on careers, but it influences, how the scientists position themselves within their epistemic community, their views on the interactions of science with society and their motivation to do research.

The first change that is caused by science communication, which I found in the social dimension is that the more my interviewees engage in science communication, the more connected they feel to their direct peers, and the more they have the feeling that they are cooperative towards them. Meg, the participant who had the least experience with science communication, states that a great problem for her was that she often feels isolated as a scientist. She thinks this is a general trait of the epistemic community she inhabits. In her view, this is not just an individual problem, but a more general trait as most scientists choose not to communicate, or even shying away from it:

M: Obviously scientists don't communicate among each other. Maybe you only become a scientist if you don't really like to communicate.
K: Do you really think that?
M: I don't know, but sometimes it seems like it.
(Q87_Transcript_interview_Meg, Pos. 183-185)

In contrast, Merida and Jane, who, due to their involvement in communication, are often engaging with scientists and audiences are of the assumption that most scientists are eager to

communicate and to collaborate with her if she wants to communicate their research on behalf of the institute. Jane explicitly mentions that the motivation of the scientists she is working with is generally very high:

K: Do you find the people who you interact with due to science communication are interested in taking their work to the outside?
J: Yes, Yes, Yes! I never experienced that someone was not grateful or glad that I am interested!
(Q88_transcript_interview_Jane, Pos. 211-212)

These two very different descriptions of the same epistemic ecosystem hint towards a fundamentally different perception of the immediate surroundings of the participants. When it comes to direct communication and collaboration with their peers, the interviewees seem to inhabit a rather different *Epistemic Living Space*. While Meg, who has not much communication experience, feels isolated and perceives other scientists as unwilling to communicate and cooperate, Jane, who engages regularly with their peers for communication purposes, feels the exact opposite. The interviewees who communicate on a regular basis seem to have a view of their immediate scientific community as being more of a collective and less as a competitive affair. This points towards the importance of regular interaction on a peer-to-peer basis, which in the case of this case study is performed through a science communication project, but might not be exclusively because of it. Scientists, who are eager to communicate might in general be more collaboration-oriented and outgoing than those who do not engage in communication, it depends on who you orient yourself towards. It would be interesting to research this further with a larger sample group and see what other factors contribute to a more collaborative mindset in scientists. But within the limits of my case study, I can conclude that the attitude with which you interact as a scientist/communicator towards your immediate surroundings has an influence on how you see the system, and, as a consequence, how you move within it.

The positive views about the willingness for cooperation and communication with their immediate colleagues and collaborators, interestingly stands in contrast to a more critical view of the interviewees on the epistemic system as a whole. All scientists, also the ones without communication background, emphasise the negative aspects of current academia, some of which I have described in the State of the Art chapter and in the preceding Analysis. However, the communicators attribute their critical views especially to their engagement in science communication. Jane states that she sees the system itself in a more critical light, mainly because she is in contact with multiple other scientists due to her institutional science communication activities:

J: I think I see [the system] more critically! Because as a scientist, you usually have only little perspective to the outside. Most of the people I only got to know through science communication. [...] I only got to know the whole system through Science Communication! Before,... you are in your own group-bubble and see only very little towards the outside! And I think this is also part of the reason why people let themselves be exploited, because they don't have… because they only deal with their own… They're only within their own bubble.
(Q89_transcript_interview_Jane, Pos. 203-205)

Again, the key to this more critical view of the system for Jane is exposure. Because they are exposed to a larger circle of different groups of scientists, but also to collectives outside of science, the scientists who engage in communication are able to see more facettes of the system they inhabit. By collaborating on different communication projects, they get to see different work environments and group-dynamics and be more exposed to their colleagues' struggles, needs and practices which they can compare to their own.

Besides the establishment of a more cooperative environment and a more critical view towards the epistemic system, the engagement in science communication is an important source of intrinsic self-valuation. Especially for Jane, who struggles the most with her double role between scientist and communicator, science communication is an important source of appreciation and self-actualisation and it has become an integral part of her Identity and her *Epistemic Living Space*:

"My science communication is the only thing where I am really myself and through which people also know me more than through my [research].
(Q90_transcript_interview_Jane, Pos. 101)

This statement is especially important confronting Janes struggles with academia and her temporal and material difficulties with her scientific research. Just like Merida, she tries to combine her career outlook and the connections she has built through her communication activities with her personal preferences and skills as a communicator, as I have shown in the first section of the analysis. Hence the communicators derive a lot of their self-worth and self-actualisation from their engagement in science communication, and less so from their activities as researchers, which they described with much less enthusiasm than their communication activities. One important factor for this might be the immediate feedback and recognition they get through their communication activities. For Merida this recognition comes from her audience, which she emphasises in her social Media posts about the Tea Time Event[58]. For Jane, a large part of it derives from the immediate feedback and recognition she gets from her peers when she publicises their research on behalf of her institute. This type of immediate feedback and recognition is rare in the everyday life of biomedical researchers, which is often characterised by failures and pressure to deliver results. Therefore it is not surprising that those

[58] See for instance N17_Document_Analysis_LinkedIn_posts, Pos. 3

who engage in communication orient themselves more towards the area in which they get more positive feedback when it comes to self worth.

Despite the interviewed scientists of my case study getting more self-worth out of their communication activities than their actual research, this does not mean that they are less motivated to pursue their research. On the contrary, I found that the communication activities of my interviewees are an important source of motivation for the scientists/communicators to pursue their scientific activities and to stay in academia. Merida explicitly states that if she would not be able to communicate her passion about science, and doing research to the outside, she would have chosen a different career:

"If I don't have the possibility to talk [about my research] to the outside, or to have an exchange with other disciplines, I lose my motivation. For me this is something fundamentally essential, that even motivates me to stay in the science system! If I had not discovered this, I would have pulled out a long time ago."

(Q91_Transcript_Interview_Merida, Pos. 365)

For Jane, science communication is not only seen as a refuge from her insecure PhD position and her existential anxiety, her communication work for the institute is a source of motivation to stay in her institute and keep sustaining her double role as researcher and communicator. This motivation partly leads her to do work for her institute that goes way beyond her tasks as a researcher and as an institutional communicator. In this context, the motivational aspect for her seems to be more important than potential material gains:

"... With this [science communication] I had an impact! For example, I designed logos and images and they were then used in proposals by completely unrelated people. They found them on the internet and kept using them, and I like that! I know this is one of these semi-things [sic!], technically you are not allowed to do it but it is ok for me! I am happy if I have an impact and something changes!

(Q92_transcript_interview_Jane, Pos. 92)

So for both communicators, science communication motivates them to stay in research and in academia and essentially enables them to cope with the previously described double workload that they face due to their engagement. Besides being motivated by communicating her science to the outside herself, Merida points to the structural implications of this motivational mechanism of communicating science. When asked about the benefits of science communication, she mentions the potential of science communication to motivate scientists in general as her first argument. She also stresses that a prerequisite for this is a structural allowance from the system or the institution to practice science communication on every career level:

"If you do it in a structured way, not that people have to do it as an add-on, which costs a lot of energy, but if you provide a structure for it, that young researchers can engage in communication then you provide support so that it does not get out of hand. And then, best case, they have more motivation because a PhD or a research project can be a thing where you have the feeling to be alone, with something… abstract, with an abstract task. And it can be very motivating to talk about it and to remind yourself 'Why am I doing this again?'... Anyways, I think this is something systematic."

(Q93_Transcript_Interview_Merida, Pos. 156-157)

Hence, talking to audiences could be a motivator, especially for early-career scientists and enable them to be more focused and passionate about their work and - as a consequence, more productive. Interestingly, as I have described in the previous Analysis, this view is diametrically opposed to the sentiments of the people higher up in the system, who do not view science communication in this way. The direct supervisors of most of the interviewees mostly see communication activities as pulling away temporal, material and intellectual resources from research. As a consequence, the system is built up in a way which leaves no room for these activities, confirming the observations of Felt (2017) also in the context of science communication. In contrast, according to the communicators, science communication does not make them less productive because they spend less time doing research but it rather elevates their output. It motivates them to go beyond the scope of their research and enables them to see their research in a different light and establish a different, more personal and passionate, connection to it. This way, the researchers who communicate can more easily become ambassadors and defenders of their research topic, in the same way that they can become stand-in figures and ambassadors for Science itself, as shown by Davies & Horst (2016).

In summary, I have shown that motivation, self-worth and a positive attitude towards the scientific community but also a more critical view of the science system are key-elements of the *Epistemic Living Space* of the science communicators in my case study. For many scientists, they might also be an important element to doing successful research, however it is harder to measure these symbolic and social dimensions compared to the more tangible dimensions like time spent in the lab or material output. A more permissive and versatile development of early science careers, which allows for such activities to take place, instead of hampering them, might enable the young scientists to sustain their motivation to keep doing academic research.

6. Discussion

Summary and Discussion: What are the Influences of Science Communication on the Scientists' *Epistemic Living Spaces*?

In the analysis chapter, I went from the personal circumstances of the participants of my case study through larger narratives - and even larger narrative infrastructures - surrounding their epistemic lives and their engagement in science communication to finally arrive at more general influences of science communication in these *Epistemic Living Spaces,* answering my three research questions. When it comes to answering my main question, what is the influence of science communication on *Epistemic Living Space*s I found that the answer is not straight forward. I realised during the analysis process, that just like *Epistemic Living Spaces* as a concept are by definition multidimensional, subjective and situated, so is the embeddedness of science communication within them. It manifests on various levels, in various situations and contexts and in various dimensions. These dimensions are both individual and collective, they influence each other and are in a constant flux. They might have a long-lasting effect or just be temporary flickers in a researcher's life. In short, my case study revealed that the influence of science communication on *Epistemic Living Spaces* is a conglomerate of all the small changes that derive from multiple circumstances, narratives and interactions in the process of communicating science to the public. I will therefore use the remainder of this first discussion section to sketch a picture of the many small findings of my research and situate them in the existing body of literature. But first, I want to address the questions of the specific context of the case study and its wider applicability.

After all, the case study surrounding the Tea Time with Researchers project is a relatively small one with just four participants, which I could accompany over the course of half a year. Such a small sample size, albeit investigated by using different qualitative research methods, with semi-structured interviews being the main source of data for the analysis, always brings up questions about the wider applicability of the findings that it generates. Indeed, I cannot say that my findings are applicable in all circumstances to all scientists, who communicate their research to a public. For instance, I do not claim that all involvement in communication prompts early-career researchers to choose a career in the applied sciences, or that all early-career researchers adopt a more dialogue-oriented view of the public, the more they communicate. But the objective of this case study was not to provide a catalogue of effects or a status quo of early-career researchers' relationship to science communication, but to look deeper into the

various small influences, that engaging with a specific audience has on the researchers' perceptions, on their ability to see things a certain way, on their relations within the communication project and on their views of the system that they inhabit; in short on their *Epistemic Living Spaces*. In the tradition of STS research on science communication and a case-based research approach, I ask myself: "'what is happening here?' In other words, STS fosters an exploratory, descriptive approach to science communication that prioritises understanding the practices and meanings of those involved in it in, and on, their own terms" (Davies, 2022). Hence, the results of my research process should be interpreted less as a static inventory, but more as what Felt and Fochler describe as "collectivized perceptions in order to analyze the changes, heterogeneities and fluidities in today's research landscape, and to link individual and collective experiences to more global systemic changes" (Felt & Fochler, 2012, p. 136). What this quote implies however, is that there are still conclusions to be drawn from all this contextually situated data, and that one can approximate the larger dynamics of the epistemic surroundings through the lens of the researchers' experiences. In my case study, this wider applicability is shown in the several narratives, which I could identify through the data generated from my research on the case and, to some extent, also from my own situatedness in the epistemic community. From the deep engagement in the single *Epistemic Living Spaces* and the resulting narratives, it is feasible to draw conclusions on larger constellations concerning the interactions of the participants with their wider surroundings and the room for action they perceive through their participation in science communication and through the various social connections they make in the course of the communication project. For instance, I could observe that the scientists of the Tea Time project, who frequently engage in science communication, have more connections to their peers and their audience. Through these connections, they see the system and all its pressures in a more critical light and, through the skills they acquire in their practice as science communicators, they feel more confident of finding a place for themselves in the epistemic system. Again, it is important to not lose focus of the situatedness of these results. The findings do not mean that this happens for every scientist in every instance of communication. But they point towards an epistemic system surrounding the case, which allows little room for connections outside the daily epistemic practices and in which scientists often feel isolated if they do deliberately engage in activities, such as science communication. With this understanding of the system, one can sketch out specific measures which could potentially improve the conditions that the participants suffer from. Hence, all the influences of science communication on *Epistemic Living Spaces* that I will come back to in the following paragraphs, are but an approximation, a snapshot of a moment in time of a small part of the current epistemic community of the Austrian Life Sciences. Nevertheless, all the influences provide a glimpse at the larger constellations and

dynamics that brought forward the four very specific *Epistemic Living Spaces* of my participants and can serve as a basis for suggestions on how to utilise their potential and improve their situation.

I started the Analysis by sketching the four participant's *Epistemic Living Spaces* with a special focus on their current place within the epistemic community and their involvement and role in the Tea Time. Three of the four interviewees are biomedical researchers and one is a gender and diversity expert, not involved in academic research. All researchers work in the same research institute in a very applied field of biomedical research, the gender expert works in the same large research hospital as two of the three researchers. Two of the researchers have already been in the field for a longer time, one as a senior Post Doc, the other as a long-term PhD student, while one is in a relatively junior state of her PhD. Most importantly, two of the three researchers, the junior- and the long-term PhD, are experienced in science communication while the two other participants had little experience with interacting with a broader public. Hence, already in the composition of my participants, the multiplicity and subjectivity of *Epistemic Living Spaces* is evident. All of the participants' *Epistemic Living Spaces* showed individual differences but also many similarities and recurring topics and grievances, which I could use to reconstruct prevailing narratives circulating within their epistemic ecosystem. Many of the topics that the researchers bring up in their own personal situation and many of the narratives are resonating in previous studies, which examine the situation of biomedical researchers in the Austrian Life Sciences (Felt, 2017b; Felt et al., 2013; Felt & Fochler, 2012, 2013; Fochler & Sigl, 2018; Müller, 2014; Schönbauer, 2020). Especially grievances like publication pressure, poor career outlooks in academia, the demand for mobility, limited autonomy and an inadequacy of (e)valuation systems were recurring facettes of the participants' accounts of the epistemic system that they inhabit.

By retracing these narratives, I could pay special attention to how they contribute to the scientist's *Epistemic Living Spaces*; how they affect, govern, streamline and potentially hinder the participants' science communication activities, as well as how the participants take up, resist and transport these narratives to their audience in the course of the Tea Time with Researchers project. In a cluster of narratives surrounding science communication and institutions I found that temporal, material and hierarchical constraints, either on a systemic level or through direct interventions from the interviewees' supervisors, hinder early-career scientists to engage in science communication on a practical level, even though it is often desired by their institution. This does not only confirm current research on science communication and institutions (Casini & Neresini, 2012; Davies, 2013b; Watermeyer, 2016), my data additionally show, that no matter if they engage within- or outside institutional science communication, the environment seems to be

set up in a way that scientists, who want to communicate their research, suffer from their double role: this happens in all dimensions, but mainly on a temporal and social/symbolic one but also on a symbolic/ epistemic one. The participants mainly feel that they lack time and resources from their engagement, but also that they have little academic success and that they get overtaken by their peers who just dedicate themselves to communication or research. In this rigid system, there seems to be no room for alternative narratives, allowing both, science communication and research to be carried out in an streamlined manner. This lack of narrative consequently points to the lack of a mode of valuation for science communication in the early-career researchers' home institutions, a fact that has been criticised by other studies in similar circumstances (Casini & Neresini, 2012; Neresini & Bucchi, 2011; Watermeyer, 2016; Ziegler et al., 2021) and to which I will come back to later in the discussion. Another narrative is that the privilege to engage in communication needs to be earned and is distributed in a hierarchical manner, confirming the reported strong influences that the epistemic community has , especially on younger researchers (Cerrato et al., 2018). Through all these hindering factors for early career scientists, I showed how institutions, through this rigid system, govern the narratives which are circulated within the epistemic community, as well as communicated to the public, not just in the context of public outreach as shown by Marcinkowski & Kohring (2014), but also in the context of intra-scientific interactions. Topics, like failures, pressure, being overworked or mental health have no space in this rigid scaffold and cannot be communicated by scientists within the framework of institutional science communication but are rather thematized in informal networks, for instance during the planning sessions of the communication event. This governance of specific communication topics can also be seen in the light of the scientists belonging to different collectives (Davies & Horst, 2016) and communicating accordingly. By engaging in science communication projects of their own, the participants potentially have the chance not only to form their own collectives, but also to develop their own narratives which they bring to the audience. Another way to think of this is that the participants have the chance to develop their own "storytelling Ethics" (Felt & Fochler, 2013). In the cluster of narratives surrounding the communication event, I could find some first approaches to both storytelling ethics and with it, the establishment of alternative narratives, for instance, when the participants decide to bring topics like their day-to-day lab work to their audience or their focus on the image of scientists, as warm and approachable in contrast to the "cold, hard world of natural science" (Q3), as the organiser frames it. But I have also shown that this is not an easy practice for the participants and that they are still influenced by- larger narrative infrastructures, which cannot be neglected, even if the communicators set their own agenda. The failed attempt to bring a controversy to the audience shows that these alternative narratives need to be rehearsed and practised. I will go deeper into the notion of practice in the

next section of this discussion. By investigating the self-understanding of the scientists as science communicators, I could observe that the more experienced communicators assume a dialogue-oriented or activist stand towards the public, underlining their insights from the audience and their incentive to facilitate participation of senior citizens in current societal debates. In contrast, the interviewee, who had so far only moved within an academic context and was not engaged in science communication prior to the Tea Time event, harboured an assumption about the public, that is very close to the deficit-model[59]. I could also show that through the interaction with the audience of the Tea Time, this view seemed to change somewhat with the interviewee underlining the dialogic nature of the encounter and being surprised about the expertise of the audience. This tendency, although in a very context-specific and small sample size, confirms previous qualitative observations (Davies, 2008), in which scientists, who repeatedly engage with the public frame the interaction as more context-specific, more complex and more as a debate, as opposed to a one-way transfer of information. Again, these findings support that these encounters do not cause immediate and sweeping changes but rather need to be rehearsed and practised.

The groundwork of retracing the *Epistemic Living Spaces* of the four participants of my case study and the analysis of the narratives surrounding their institutional context, as well as the science communication project enabled me to single out some of the influences that the act of science communication has on the participants' *Epistemic Living Spaces* in my case study.

Firstly, I could show that in respect to how the scientists see and value their own research, engaging in science communication not only makes them more attuned to their audiences' needs, they also develop the desire to direct the topic of their research into more applied fields which can directly benefit patients. Here, it is important to keep in mind the context of my research site. The particular setup of the Tea Time with Researchers project, as well as the scientists' background in applied biomedical research might be especially favourable for the development of these standpoints. Additionally, interaction with audiences makes the participants of the Tea Time project want to empower their audience to be at the height of time, to participate in current societal debates, therefore adopting a more stakeholder-oriented or activist stance which the scientists would not be able to take in their roles as scientists or institutional science communicators, in other words, the participants feel very much a responsibility to the audiences and want to give back to society (Loroño-Leturiondo & Davies, 2018; Rose et al., 2020).

Secondly in the context of the participants future and career planning, I demonstrated, that the involvement in science communication activities broaden the participants' career perspectives and outlooks, as they see not only a future for themselves in academia -and not

[59] However I would still not say that this correlation automatically means causation.

completely obeying the narrow career and valuation path of the current academic system (Fochler et al., 2016) - but consider science communication as an alternative or even a preferred career. Both experienced communicators see their involvement in science communication as a strong asset, even though for them their engagement means more work and also more practical obstacles in their current positions as junior academics. This finding demonstrates what previous studies have found, namely that most motivations for scientists to reach out to the public are a mixture between altruistic- and personal motives, like the advancement of their career (Besley et al., 2018; Cerrato et al., 2018; Davies, 2013, 2019; Merga & Mason, 2021; Rose et al., 2020; Yuan et al., 2019). But it adds an important aspect to these previous - mainly quantitative - assessments, namely it hints towards a potential reason why the involvement in communication is considered an advantage, despite the above mentioned obstacles. More research needs to be done in this regard, but the gathered data of this case study suggest, that it is mainly the social connections within the epistemic community, that the scientists make through the activity in science communication, the exposure to different audiences, but first and foremost to different career models within the epistemic community and their peers, that enables the early-career scientists to see their own position in the system differently and to realise, that there are alternative career models outside the rigid framework of the epistemic system making them more confident in their ability to find a place in the epistemic system.

Lastly, I focused on these social connections that were fostered by the participants' engagement in science communication and could demonstrate, that scientists who engage in science communication on a regular basis, not only have a more collaborative and cooperative view about their immediate epistemic community, they also derive self-worth from their science communication activities, mainly due to the immediate recognition they get from their audience and their peers, underlining the importance of science communication for the building of a scientific *identity* (Davies, 2021). The communication and exchange with wider collectives than their immediate epistemic ones, also makes them more critical towards the current academic system as a whole. This again underlines the importance of stepping outside one's boundaries and seeing one's own circumstances from a different perspective. However, even though the experienced communicators convey a more critical standpoint towards the epistemic system, they still adopt the 'market logics' of the system they inhabit and play along in their roles as institutional science communicators, for instance by acknowledging that science needs to 'sell' itself to the public or by publishing only success stories of a research group, underlining the inevitability of these market logics (Fochler et al., 2016). Lastly, I found that despite the more critical view and the larger self-worth that the participants derive from science communication, their motivation to do research and stay in academia is elevated due to the practice of

communicating their research to the public. This stands in stark contrast to the views of the participants' superiors and the allowances of the system they inhabit, which primarily value quantifiable dimensions, like material or temporal ones, over non-quantifiable aspects in the social or symbolic dimension like motivation or self-worth. Again, a solution which has been proposed (Neresini & Bucchi, 2011; Watermeyer, 2016; Ziegler et al., 2021) is the need for systematic introduction of indicators, which allow for science communication to be accounted for in the academic education system. I will discuss the potentials and pitfalls of these proposed indicators later in the chapter. Hence, despite the difficulties that are posed by this system, for the scientists/communicators, interacting with the public, acts as an important source of self-motivation, self-worth and connection which is not hindering their research activities but on the contrary enables them to pursue and sustain their academic research.

In the discussion, have so far laid out the many small changes that science communication and the involvement in the Tea Time with Researchers project cause in the scientists' *Epistemic Living Spaces.* As mentioned in the first paragraphs of the chapter, my case study is quite small and the findings are, as in any case-based, qualitative research - especially in an STS context -, inherently dependent on the site, the context and my own situatedness. Nevertheless, while still keeping in mind the partial perspective, I want to arrive at larger conclusions which I can utilise, both as an STS scholar, as well as a science communication practitioner. On the one hand, I want to better understand the multiple, faceted relations between science communicators and audiences and on the other hand, I want to contribute to the large ecosystem of science communication and, through my work as a practitioner, make these relations more rewarding, more symbiotic, more productive for both, the audiences, as well as the scientists/communicators. This incentive, to make use of my research, to *do* something, is also the main reason why I asked these questions in the first place and why I was interested in investigating communicating scientists, who struggle with the current academic system, just like I had prior to leaving the lab and becoming a science communicator. Therefore, in the last sections of this Thesis, I want to lay out what I take with me as the main connectors, the underlying currents, of my findings and discuss some of their implications. But I ultimately want to arrive at very context-specific suggestions for the *Epistemic Living Space* that I currently inhabit and for the epistemic system that I work with as a practitioner in order to achieve this more productive and rewarding relationship in the vast ecosystem of science communication.

Connection and Practice - How Bottom-Up Science Communication can Help Scientists Build their *Epistemic Living Space*

It matters what thoughts think thoughts; it matters what stories tell stories
(D. J. Haraway, 2016, p. 37)

Underneath all the miscellaneous little influences of science communication on *Epistemic Living Spaces* that I could identify, there are two recurring notions which connect them on a deeper plane. Firstly, there is the notion of connection, which enables the scientists/communicators to act and find their place in society and within the epistemic community and secondly, there is the notion of practice, which enables them to establish their own ways of interaction with society in a meaningful way through the act of science communication. Both notions operate on a personal-as well as on a systemic level, are interconnected and influence each other, just like the different dimensions of *Epistemic Living Spaces.*

Most importantly, both of these aspects are heavily influenced by the way the science communication event is set up, namely in a self-organised, bottom-up approach outside the confines of the scientists' home institution. Within the Tea Time with Researchers project, there are no institutional guidelines for communication, there are no confines of topics that are posed on the researchers/communicators. The participants are free to choose what and how they want to deliver topics to their audience, and how they want to interact with them. In this way, the scientists create, through the Tea Time project, not only a special platform of exchange with their audience, but also a platform in which they can grow and shape connections and practices. In the next paragraphs, I will unpack these two notions further, before diving deeper into how they could help to create a more resilient epistemic system.

Connection, in my case study signifies first and foremost the establishment of informal peer-to-peer networks outside of institutional contexts. The participants of the Tea Time with Researchers project create their own space in which they not only plan and execute a science communication event, but they also share their experiences, act as role-models to their peers and support each other in many other different ways. The involvement in science communication tacitly enables them to establish more connections, both to different audiences, organisers and other parts of society, as well as to their peers with which they engage in the activity. By establishing such a wide range of connections, they get a more faceted view of the epistemic

community they inhabit, as well as a broader view of society and of the interaction of both. As shown by the many instances of the experienced science communicators in my case talking about societal engagement or engagement within the scientific community, the more they are involved in science communication, the more they are attuned to such needs or sensitivities of the larger society or their peer-collectives. This elevated awareness enables them not only to be more critical towards the injustices of the epistemic system but also to compare themselves to their peers in terms of research and career and find alternative narratives and career models outside of the rigid valuation and expectations of the epistemic system; feeling less trapped in the system, being more aware that things could be different. This ultimately allows the scientists to be more confident, have more self-worth and see more possibilities for themselves within the system, in other words feel more empowered to change their *Epistemic Living Spaces* so they better suit their needs and expectations. Through the established connections, they also might feel empowered to bring topics to the stage that they are interested in and could not thematize in the frame of institutional science communication, like their own lived experiences as scientists and the struggles they face in their daily lives and careers, which brings up the notion of practice.

Practice, as the term implies, can only be experienced and not taught or planned ahead. Especially when interacting with different people and audiences in the course of a science communication event, exchanges often do not go as planned, people bring different stories and knowledges to the table and, if the exchange goes well[60], both sides profit from the exchange and the scientists experience some broadening of their *Epistemic Living Space.* But there are also ambiguous exchanges, for instance in the delivery of the gender-controversy, where the audience, as well as the scientists struggle to find the right mode for interaction. These kinds of exchanges, even though they require more work, can be as fruitful - or even more so - than interactions, where everything goes according to plan. They can prompt both sides to question their preconceived notions and narratives they might have believed all too easily. Such ambiguities in the interaction between science and society can hardly be taught in theory. Scientists who communicate, as well as their audiences, need to experience them firsthand and learn how to handle these encounters, and, most importantly, find a way, how they can profit from them in other dimensions of their *Epistemic Living Space*. Usually, these types of exchanges, where things go off script and scientists and audiences do not behave as planned, usually do not happen in the context of institutional science outreach activities. If the framing for exchange is too rigid, for instance if a visitor of a science festival talks to a scientist presenting their topic, the audience feels less encouraged to address potentially controversial topics, and the scientist might feel less confident to react because they speak *on behalf of* their institution - or even of

[60] As described by Merida in her social media and blog posts in the case of the first Tea Time event

Science itself-. The nature of exchange for both sides changes with communication projects such as the Tea Time with Researchers. In this setup, outside the confines of institutional science communication and focused on mutual exchange, both sides might feel more comfortable to talk about the topics that usually do not come up in a more formalised situation. In the context of gender medicine, the senior citizens talk about the expectations of gender roles in society and how they suffered from them; in the second Tea Time, the scientists decided to share with the audience their daily work as scientists, how they cultivate cells and what obstacles and challenges this type of research has. Both are topics that would likely not have been discussed within the framework of institutional communication and provide room for exchange outside the usual scope of institutional science communication activities. Practising communication outside of these constraints can therefore be a platform for the young scientists to rehearse and profit from interactions and see their audience, their peers, as well as the epistemic system they inhabit, with different eyes. Again, this can lead them to new insights, opportunities and add more depth to their *Epistemic Living Spaces*.

Hence, practice and connections add multiple facets to the *Epistemic Living Spaces* of the scientists. This is not only important for their development, the experiences they make in the course of their engagement in communication enable them to see more room for action and improve their place within the epistemic system. But we have seen that within this case study, this rather happens outside the confines of their respective institutions, and that institutions are sometimes even framed by the participants as counterproductive to these efforts. Therefore in the last section of the thesis, I will develop some suggestions on how the epistemic system could be more accommodating for these kinds of interactions and ultimately create a more resilient science system.

Communication in Hybrid Spaces - How to Create a More Resilient Science System

It is about choice, about what stories are being told and which ones are left out, and in that sense also about which kind of science we frame for which kind of society.

(Felt & Fochler, 2013, p. 89)

Most studies on the topic of science communication talk about the benefits for the public. This case study points out the many benefits of science communication for the scientists themselves, who engage in exchange with the public and their peers, building connections and who try to find their own ways of doing so through practice. It also points out benefits beyond the

well-researched factors, like visibility or giving back to society; or the ones that are easily quantifiable, like the numbers of visitors to a science communication event or the number of papers a PhD student publishes in the course of their project. The main influences that the engagement in the Tea Time Project brought to the participants of my case study are more subtle and cannot easily be put into numbers. I cannot say that a Postdoc is interacting with 20% more people after they have participated in the event or that, due to talking about it to an audience, a PhD student is 10% more motivated to carry on with their project. But this does not mean that these less tangible influences have no effect on how early-career scientists look at their work, their peers or their careers. On the contrary, they can be of utmost importance when it comes to feeling at home in the space that surrounds them, i.e. their *Epistemic Living Space*. By focusing on these subtle factors, I have shown that for a certain group of scientists, for whom science communication "is their academic lifeblood, their means of self justification, and we may therefore surmise, self-preservation" (Watermeyer, 2016); for the ones that are outgoing, that are eager to communicate and gain a large part of their valuation and motivation from sharing their intellectual work, with their peers, as well as with audiences; for this type of person science communication, is a crucial part of their *Epistemic Living Space* and makes them more at home within it[61]. Most importantly, communication for them is so crucial, that they put up with the - very quantifiable - temporal, material and hierarchical disadvantages imposed on them by the system.

Because of the institutional and career limitations, the scientists who communicate out of their own incentive, create hybrid spaces for themselves where they can engage in communication[62]. The participants of the Tea time project try to include their desire to communicate in their epistemic work but face many difficulties doing so, again mainly on a material and temporal level but also on a social/symbolic one. Therefore they look for spaces outside of their institution to communicate, where they enter as scientists, doing research in their institution, but not as representatives of it. This hybrid space between epistemic- and non epistemic world, between science and non-science enables them to reconcile the communication aspect and their lives as researchers on their own terms. Notably, the creation of hybrid spaces in the scientists' *Epistemic Living Spaces* also enables them to be more motivated to carry on with their research activities and stay within the epistemic system. However, creating this hybrid space comes with considerable efforts, for the researchers/communicators. They have to work against the many limitations that are posed to them by the system, they have to invest their freetime, they have to persuade their superiors, they have to manage their expectations. If institutions would

[61] It makes them more"themselves", as Jane puts it.

[62] The notion of Hybrids in this context is loosely taken from Haraway's definition of Hybrids, in which she blurs the epistemological line between object of research and subject and underlines the connectedness and the stakes of everybody involved. Here, hybrid spaces should signify the blurring of the boundaries between the epistemic and non-epistemic space in the context of the communication event.

allow for more of these hybrid spaces - or would facilitate the creation of them - scientists could engage more resources for building their own *Epistemic Living Spaces* according to their own needs and desires. They could expand their connection and practices, as described in the previous section. Ultimately, this would create a more creative and collaborative work environment and in the long run a more resilient epistemic system than the precarious and pressurised one that scientists are inhabiting currently.

How could institutions create the framework for such spaces? This is a question that I ask myself, not only in the context of engaging in this case study but also in my professional role as an institutional science communicator[63]. The first and most effective measure would be to take pressure out of the system, mostly the temporal and material pressure that comes with the need for publication and attaining projectified funding and which affects all levels of academia, from the PhD students to the institutions. The publish-or-perish atmosphere of the current life sciences ultimately leads to the narrative that every second, not spent in the lab, working on projects is a second lost. This pressure is highest in the more junior positions of academia, namely in PhD students and PostDocs because they usually do not have the freedom to decide the particularities of their own project. Under this temporal and material pressure, non-quantifiable factors like motivation, exchange or self-confidence are often overlooked but are not less important for conducting research in practice, and above all for keeping early-career researchers in an academic career. Right now, the system keeps young researchers interested in staying in academia by deploying another - very powerful - narrative, namely the one that, once you enter the academic track, anything less than pursuing the classic career path - from PhD student to professor- is considered a failure. Careers outside of this scheme, in industry in scientific support or in science communication, are deemed less valuable than fighting for the few available academic positions. Also institutional science communication, and myself as a part of it included, contributes to this. The science stories told are merely depicting the successful tip of the icebergs of research whereas the 90% failures, frustrations and setbacks are deliberately left under the surface. The engagement in exchange beyond the narrow academic circles, through science communication[64] could enable especially early-career scientists to question this powerful narrative. Considering all of this, it is the task of the epistemic community and of institutional science communication to be more self-reflexive, and find measures to alleviate the pressure, to

[63] The pressures of the system to publish, to be visible and international also have an effect on my day-to-day work. For instance, due to time pressure, I often resort to framing the science stories that I write about, focused on success, on single discoveries and on immediate applicability to the public or I rely on a few “celebrity scientists” because I know that their stories will be picked up by the media. Many of my plans for informally connecting scientists, interested in outreach to the public often are not realised for several reasons but mainly due to a lack of financial resources and time constraints.

[64] But by no means exclusively through science communication

establish different valuation practices and tell new stories about science which enable young scientists to pursue activities outside of the lab, build connections and experience practices.

First of all, should these new valuation practices include the introduction of new indicators and tools to measure and account for science communication engagement of scientists, as proposed by some researchers in the field (Neresini & Bucchi, 2011)? There are some arguments to be made in favour of that; with the main one being that by implementing some sort of (e)valuation, activities outside of established research practices, like science communication, could gain more recognition and be better accounted for in the evaluation of epistemic merits as a whole. In other words, in a system, in which relies on indicators for valuation, everything that is not counted or measured has no worth. However, I already hinted at two counter arguments to making communication activities countable in the previous paragraphs: Firstly, science communication is not for everyone. The positive effects that I could show in the course of my research cannot be applied to every scientist[65], as not all scientists are even interested in communicating. By turning communication and other types of engagement into a fixed set of standards and a measurable currency, they might become just another factor that adds to the overall pressure of the current epistemic system. Secondly, the main benefits, the main learnings from the practice of science communication, can hardly be measured in a meaningful way. After all, how does one account for a productive science-society relationship? A scientist can write popular newspaper articles and reach a large audience and still contribute to a deficit-model relationship with society. It is difficult to quantify the unquantifiable and so the introduction of indicators would perhaps in the end contribute more to a further formalisation of science communication and its subjection to established types of institutional science communication. What I would suggest is to rather approach the problem of quantifiability from the other side and question the overwhelming importance of numbers and indicators in the current scientific system overall, but at least in the context of early-career research careers.

Specific measures to alleviate the pressure of the current epistemic system could also be achieved by a change in institutional communication practices. For instance a more permissive attitude towards reporting on research projects that did not succeed would lead to less of an incentive for scientists to ‘sell’ themselves and present themselves in a good light. Institutional science communicators, and I include myself in this, need to pay attention to the stories they tell, talk not just about success, great inventions, but also give room for stories about community and failure, about mental health and inclusion and diversity. Not only would this somewhat give a more authentic picture of science to the public, it would also help the scientific community telling

[65] This was already presupposed by the selection of my research-site, which prevented me from researching scientists who were not interested in science communication. After all, I only interviewed scientists, who were already motivated to participate in a science communication project in their free time.

these stories, to recognise themselves in them, to feel more connected to their audience, as well as to their peers; in other words to establish a 'storytelling ethics' (Felt & Fochler, 2013). By doing this, the system could perhaps even produce a more robust type of knowledge because it would include multiple perspectives but discussing this in an adequate manner would be beyond the scope of this thesis. In summary, institutional science communication should leave more room for the ambiguities and the messiness of scientific research and lives.

A third lever could be financial incentives for small-scale, self organised science communication projects outside of institutional boundaries. In the Austrian context, funding bodies, such as the FWF give out grants for science communication. But most of these grants are rather high volume and especially dedicated to communicate the research projects, funded by the very same institutions[66]. Applying for such funding and carrying out the projects if they are funded, is not only a full-time occupation but ultimately also serves at promoting the funding body and the research institutions themselves. EU-wide research grants, such as the Horizon 2020, often have public dissemination as a prerequisite criterion but, as they are always part of a larger research project, the communication activities are again bound to the purpose of the grant and to the constitution carrying out the research. There should be more funding opportunities outside of these pre-given contexts, in which practitioners, especially early career scientists, can set their own topics and can practise their own ways of interactions with the public. By gaining more financial freedom, they might be alleviated from some of the pressure and gain some more recognition from their institution.

Fourth, a framework for academic career development between science and science communication needs to be established by the epistemic system. This should be applicable to all stages of scientific careers, starting from the PhD level. The participants of my case study who engage in science communication pointedly state that they feel overtaken left and right and get compared to both, scientists who just do science and communicators who just communicate. However, especially in the context of applied biomedical research, a position in between science and the public, a scientist who is attuned to the needs of the public and in turn can bring the research to the affected publics in a very immediate manner would be an asset for science, as well as for society. The establishment of such positions would need a new framework outside of the established valuation practices. PhD programs, could for instance, give out extra credits for students who engage in communication, again freeing them of some of the temporal and material pressures, without the measures being imposed on everyone to avoid the pitfalls of metrics that I have pointed to earlier. For the higher career levels, there could be projects, like fellowships for

[66] The largest grant in Austria being the 'FWF Communication Programme (WissComm)' grant with 100,000 € is handed out exclusively for communicating FWF research projects.

long-term engagement in communication, which ideally would not negatively impact their careers. Some of the measures would be easier to implement than others and many in the end are not realistic to think about in the context of the pressure and hyper-competition of the current academic system, but in some cases, it would be worthwhile for institutions to at least think about them.

The fifth and last measure I want to mention is the better implementation of professional science communicators in the system. At first glance, this might seem counterproductive because it might lead to a proliferation of more of the same institutional science communication efforts, that I have identified to be a source of many of the pitfalls of the current system. But, considering that the all above suggested measures take a substantial amount of effort and work from the part of the scientists, from writing grants to finding partners, to getting in touch with audiences, they would need a support and guidance system, consisting of professionals, which enables them to do all these things. The supporters should ideally be conscious about the struggles of the scientists and of the requirements of different audiences, being able to facilitate the science communication efforts, while at the same time not being bound to a certain institution, allowing the scientists to realise their own version and desires for communication. Hence the setup should be more like a marketplace, in which ideas are discussed and traded, connections are made and projects can grow organically. This, together with adequate financing, could be a viable addition to the ecosystem of science and science communication.

In the end, what I found through the deep engagement in my case study, but what I also often find in my profession as a science communication practitioner, the act of science communication is hardly ever about the science itself but about connection, relationships and practices. Weather you want to empower (senior-) citizens to actively participate in contemporary discussions, connect with your peers in the institute and talk about issues which are often swept under the rug by the epistemic community or stand in for equality and diversity within a large research institution; the science itself, that is transported on the way, is in all these cases merely of secondary importance. It is a means to a bigger end. This is why we have to re-think science communication as fundamentally relational, situated and contextualised. We need to pay attention to its effects towards the outside, but equally important, towards the inside. By doing this, we might find ways in which we could make the science system more resilient, more inclusive and create less frustration and exhaustion in the process. And, last but not least, we could make research more responsive and adapted to the outcomes we want to achieve, the kind of society we want to create.

The case of the Tea Time with Researchers project highlights the potential benefits of promoting

science communication, not just for the recipient or the public, but also for those who communicate. It also shows that science communication should be conceptualised, not just in the form of large efforts and projects, but should also allow space for small, decentralised and self-organised efforts, stemming from within the epistemic community. With a certain amount of practice and routine, such a diverse ecosystem of formats and encounters would not only allow for the accommodation of different types of audiences in different circumstances enabling science and society to grow closer together; it would also enable the epistemic practitioners of science communication to be more aware of the impact of their research, to be more reflexive and more motivated to make better science - and to make Science better.

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Annexes

Annex A: Original Quotations (in order of appearance)

Q1_Transcript_Interview_Merida, Pos. 258
…dass ich mich irgendwie mal wieder sozial engagieren wollte und irgendwie am meisten in dem Moment Lust hatte, mit Seniorinnen und Senioren Zeit zu verbringen. Weil ich so das Gefühl hatte, sie freuen sich, sie sind dankbare PartnerInnen in der Freizeitgestaltung

Q2_Transcript_Interview_Merida, Pos. 318
…das wünscht sich das Haus Augarten auch, dass das so quasi Poren hat und Leute von außen reinkommen können.

Q3_Transcript_Interview_Merida, Pos. 345
Aber bei einer Teestunde, also so zusammensitzen und es geht mir darum, dass es gemütlich ist und dass man… also es geht um menschliche Wärme, was eben nicht kontraintuitiv und unvereinbar mit der "kalten harten Welt der Naturwissenschaften" sein muss.

Q4_Transcript_Interview_Merida, Pos. 360
…nein also die Grundidee ist absolut, dass sie… dass wir an den Punkt kommen, dass sie mir sagen, was sie hören wollen.

Q5_Transcript_Interview_Merida, Pos. 274
Das erste Mal war einfach, so hat direkt meine Erwartungen übertroffen. Dass das einen interessanten Maßstab gesetzt hat.

Q6_Transcript_interview_Meg, Pos. 193
Normalerweise macht man zwei, drei Postdocs, macht woanders PhD als man studiert hat. Also ich bin jetzt eigentlich nicht so viel rumgekommen. Aber ja, es wird ja immer angeraten, dass man den Postdoc im Ausland macht. Ich bin jetzt halt in Österreich, das ist jetzt nicht so richtig Ausland [laughs] aber ja kann sein.

Q7_Transcript_interview_Meg, Pos. 52
Es gibt ja unterschiedliche Arten von Druck. In der Wissenschaft ist es ja so, dass 90% von dem, was du machst, eh nicht funktionieren. Das muss man wissen.

Q8_Transcript_interview_Meg, Pos. 30
Das ist eine Sache, die wir im Moment immer sehr diskutieren. Weil ich bin jetzt im dritten PostDoc Jahr und ich hab natürlich schon auch eigene Ideen und langsam finde ich das manchmal auch unangenehm wenn Sachen so vorgegeben werden

Q9_Transcript_interview_Meg, Pos. 68-72
Also, in der Wissenschaft ist ein riesiges Problem: es gibt für die Absolventen, die ein Studium absolvieren, gibt es eine Promotionsstelle. Dann gibt es PostDoc Stellen, aber weniger als Promotionsstellen. Dann gibt es Stellen für Habilitanden, aber noch viel weniger und dann gibt es Professorenstellen aber nochmal weniger. Und jemand, der einen Postdoc anfängt, landet ganz

schnell in der Falle, dass er eben zu alt ist für die Industrie. Und dann nicht mehr aussteigen kann aus Academia. Oder dem… ist es dann schwieriger für diese Person auszusteigen aus Academia. Das heißt, man muss dann das anstreben mit der Habilitation und der Professorenschaft, aber auch das ist ein sehr, sehr steiniger Weg. Und es kann passieren, das passiert auch, oft, dass Leute dann mit Mitte 30 aus Academia aussteigen müssen, wegen der Kettenvertragsregel, ich weiß nicht.. kennst du das oder?
K: In Deutschland, oder?
M: Ja gibts in Österreich auch.
K: Ok
M: Ähm, dass die dann mit 35 nicht mehr weiterarbeiten können in Academia und mit 35 stehen sie dann vor dem Nichts. Das ist schon ein Problem.

Q10_Transcript_interview_Meg, Pos. 68
Wenn jemand mich fragt, ob das Wissenschaft und Forschung, ob ds einen gute Idee ist, dann …. ich würde dieser Person sagen, überleg dir einen Plan B!

Q11_Transcript_interview_Meg, Pos. 18
Weil Forschung ist immer für die Gesellschaft und und es ist natürlich auch unsere Aufgabe der Gesellschaft was zurückzugeben. Und dieses Tea Time event, das die Marie hatte ja diese Initiative und ich hatte Lust dazu,

Q12_Transcript_Interview_Merida, Pos. 26
*Und bin darüber eigentlich so in die Szene so ein bisschen reingekommen an Wissenschaftskommunikator*innen in Deutschland. Weil das ziemlich deckungsgleich ist mit Leuten, die sich allgemein in der Forschungscommunity dafür engagieren, dass sich etwas verändert.*

Q13_Transcript_Interview_Merida, Pos. 54-58
Darüber hab ich dann den Institutsleiter vom LBI, also Ludwig Boltzmann institute of applied Diagnostics, kennengelernt. Und wir haben befunden, dass es interessant wäre, wenn ich da mein Doktorat machen würde. In den Naturwissenschaften aber nebenbei auch kommuniziere und Patienten einbinde.
K: Mhm... ah interessant und ääh... ist das jetzt etwas, wo das LBI schon jemand gesucht hat, so wie dich oder ist das jetzt wegen dir praktisch, hast du dir jetzt deine eigene Stelle quasi erschaffen?

M: Ich würde sagen zweiteres

Q14_Transcript_Interview_Merida, Pos. 168
Ich spreche da jetzt eigentlich gegen mich, aber man kann, wenn man alles machen möchte, dann kann man es nicht mehr gut machen, und dann kann man nicht mehr so akkurat arbeiten, und [laughs]man muss sich halt auf irgendwas konzentrieren.

Q15_Transcript_Interview_Merida, Pos. 124
Das heißt, viel Aufwand und da merke ich jetzt echt, also es ist klar und verabredet, dass ich bei sowas mitmache und das liegt mir auch und macht mir auch Spaß. Aber da merke ich zum Beispiel, das ist jetzt inzwischen zu viel.

Q16_Transcript_Interview_Merida, Pos. 86
…aber auch das leidet halt, muss ich sagen gerade, unter der multiplen Rolle, die ich da spiele, also gerade dieses neue oder selbst... Eigentlich ist es alles schon geplant und das..., also am Plan scheitert das nicht, sondern am Machen, das ich dazu komme. Es ist ja meine Aufgabe, im Labor zu stehen und das anzupacken.

Q17_Transcript_Interview_Merida, Pos. 373-374
Ne, Identitäts Mäßig finde ich, ist das überhaupt kein Problem. Ich finde eben, es gibt viele Überlappungen sei es eben, dass es verschiedene Facetten kreativer Arbeit sind. ähm und sei es jetzt für das, das Worte-Finden, also ein Schreibprozess, also das hast du ja in der Forschung auch. und auch da musst du dich im Besten Fall gut ausdrücken können.Aber das strukturelle und die Zeit, das ist wirklich ein großes Problem.

Q18_Transcript_Interview_Merida, Pos. 290
Also meine Motivation ist auf jeden Fall, dass auch sie Wählerinnen und Wähler nach wie vor sind einfach gesellschaftlich teilhaben müssen und die Chance haben... bekommen sollten, ein bisschen am Puls der Zeit zu bleiben.

Q19_Transcript_Interview_Merida, Pos. 322
Zum einen wünsche ich mir, da freue ich mich darauf, jetzt der Wissenschaftscommunity davon zu erzählen. Und meine Hoffnung ist da eben so ein bisschen, das Interesse für diese Zielgruppe zu wecken. Das andere ist, dass ich mir wünsche, das im Kollektiv künftig zu machen, so dass ich nicht mehr jeden Monat diejenige bin, die das alleine durchführen muss.

Q20_Transcript_Interview_Merida, Pos. 326
Ich meine im Endeffekt ist es, von mir aus auch bei dieser Konferenz natürlich wäre kein Problem für mich, wenn irgendwie an einem Konzept interessiert ist und das in einer anderen Stadt ähnlich umsetzen möchte, sich da mit mir austauschen möchte. Es geht mir nicht darum, dass es.., dass da für immer und ewig mein Name drauf steht.

Q21_transcript_interview_Jane, Pos. 7
Und gegen Ende von dem Praktikum ist so quasi der Jackpot gekommen, also da ist eine Mail ausgesendet worden, sie suche einen PhD in der Knorpelregeneration in Oberösterreich. Also das ist quasi DIE eine Stelle, die es jemals geben wird in Oberösterreich in genau meinem Thema.

Q22_transcript_interview_Jane, Pos. 9
…ich meine, nach außen hin sage ich oft gerne, oder sagen auch andere oft gerne, ja ich habe ja zwei Kinder gekriegt in der Zeit, aber und da geht dann auch, gel? Kinder gehen bei allem! Nur ist es für mich selber weiß ich weil pro Kind war ich 4 Monate weg und nicht länger... Also das ist schon nicht der Grund

***Q23**_transcript_interview_Jane, Pos. 34*
Also ich meine, mein pet-Ding, Mein Pet-Project ist immer noch etwas Laufendes, nämlich womit es auch angefangen hat. 2016 Hab ich angefangen, dass ich die Homepage vom Institut betreue.

Q24_transcript_interview_Jane, Pos. 243

Ja schon, aber ich meine, es ist jetzt eben, es geht jetzt schon los, dass quasi äh die S. [supervisor] das anders sieht, also quasi sie weiß, dass ich zehn Stunden- dreißig Stunden Aufteilung habe, aber das stimmt ja eh net quasi in ihrer Sicht. Also in Wirklichkeit soll ich ja eh noch immer alles machen für Knorpel, und halt sagen, wann ich nicht kann. Nur sagen, wann ich nicht kann, ist dann schon wieder dasselbe Problem, wie mit der Freizeit! Weil definiere mal nicht können! Ähm, das wird quasi wird spannend, wie man das das dann abgrenzt.

Q25_transcript_interview_Jane, Pos. 73
Also quasi, meine PI ist sehr streng, von wegen was wir machen, also ich meine mittlerweile - und da bin ich eh stolz darauf - nach drei Jahren oder sowas habe ich es geschafft, dass ich es quasi.. dass sie auf mich hört und dass quasi ich Sachen vorschlagen kann und die werden dann gemacht!

Q26_transcript_interview_Jane, Pos. 88
Sie meint das nicht böse oder sowas, sondern sie macht auch für sich immer alles 110%ig also es ist alles akribisch genau, es passt, es sitzt. Es wird wirklich erst rausgegeben wenn das Ganze Hand und Fuß hat. Das macht in der Wissenschaft kaum jemand!

Q27_transcript_interview_Jane, Pos. 226
Ich glaube, da ist ihm zuerst mal bewusst geworden, quasi, dass ich das ja auch mache und dass das am freien Markt eigentlich total viel Geld wert ist. Wenn man ein Institut findet, das das zahlt.

Q28_transcript_interview_Jane, Pos. 233
Ich habe zumindest meine Nische. Ich hab meine Nische von Themen, die ich gut kenne, von Forschungsstrukturen, die ich gut kenne und und da sitze ich ganz gut drinnen.

Q29_transcript_interview_Jane, Pos. 171-173
K: Kannst du generell.. wenn du jetzt Science Communication machst und Forscherin bist zugleich, sind das, sind das zwei Rollen, die du schwer vereinbaren kannst oder tust du dich da leicht.
J: Es ist zeitlich oft schwer zu vereinbaren! Weil eben jetzt gerade seit ich diese Science Communication mache, habe ich quasi zwei Hüte auf im Institut und zwei Chefs, Weißt eh, einerseits der Chef Chef, der die Kommunikation will, andererseits halt meine Gruppenleiterin, die will, dass ich dem Labor stehe.

Q30_transcript_interview_Jane, Pos. 183
Ja, weil ich meine, die Laborwelt ist schon oft... Sie ist leise, sie ist sie braucht ganz viel Geduld, es ist oft stundenlang dasselbe und du bist alleine im Labor. Während das Science Communication ist sowas Soziales!

Q31_transcript_interview_Nani, Pos. 12
Wir haben schon immer wieder Publikationen, aber da ist es einfach wirklich schwierig weil da... dadurch, dass wir ja auch einen kritischeren Ansatz haben und ein großer Teil unserer Arbeit es ja auch ist, zu schauen, wo könnte die Meduni besser werden in Chancengleichheit und Antidiskriminierung sind unsere Ergebnisse einfach sehr fokussiert und da ist es ganz oft auch so, dass die Maßnahmenkonzeption da der entscheidende Schritt ist und nicht die Publikation.

Q32_transcript_interview_Nani, Pos. 103
Es gibt andere, viel wichtigere Probleme, als da zu jammern, dass die Wissenschaft, die ja staatlich extrem gefördert ist, wo ur viel Geld für viele Leute hinfließt, für Leute die bei Weitem nicht so feine Jobs haben und sich da jetzt selber leid tun.

Q33_transcript_interview_Nani, Pos. 143
Das ist auch für mich der Hauptvorwurf an die Wissenschaft, dass es so für sich ist; eine bestimmte Art und Weise von Menschen und so ausschließend. Und da ist es mir ganz wichtig, dass es das nicht ist. Auch mein eigenes Ich.

Q34_transcript_interview_Nani, Pos. 89
Ich verstehe meinen Job immer als ein Stück weit kritisch! Ich würde mich nie als jemand sehen, der so systemkonform arbeitet, das ist nie! Ich bin jetzt nie, nie, nie, nie bereit zu sagen gut, da werden wir ur das Forschungsfüllhorn ausschütten. Und dann machen wir alle grad das und das ist jetzt das Burnerthema auf das wir uns alle einigen. Und es ist auch einfach eine super kleine Nische, meines.

Q35_transcript_interview_Nani, Pos. 85
Aber ehrlicherweise, ich kann schon gut damit umgehen, also ein bisschen WIssenschaftskritik müssen die schon aushalten!

Q36_transcript_interview_Nani, Pos. 49
Ich kommuniziere hier nur!! Also in bin vor..äääh Ich bin ausschließlich, also ausschließlich ist jetzt zu hart gesagt, aber ein Großteil von meiner Arbeit ist kommunizieren. Also nicht nur meine eigenen Forschungsergebnisse, die sind eigentlich immer Gleichstellung, da kann man nichts originelles mehr herausfinden. Die Bestätigung des immer gleichen in anderen Teilaspekten. Und da bin ich immer damit beschäftigt, das zu kommunizieren und irgendwie Unterstützung zu generieren und Allianzen zu schaffen.

Q37_transcript_interview_Nani, Pos. 136-137
Also ich glaube im Unterschied zu vielen, vielen anderen Forschenden bin ich in einer sehr speziellen Position. Ich verstehe meinen Beruf als hauptsächlich eher politisch! Im Sinne von Veränderungen in der Organisation anstoßen und begleiten. Und da ist Forschung und Kommunikation immer nur Mittel zum Zweck. Also klar mag ich das lieber manchmal intensiver, es ändert sich auch immer wieder, aber ich würde jetzt nicht sagen, dass ich da eine Präferenz habe.
Es ist nicht so, ich glaub klassischerweise verstehen sich Forscherinnen oft so, das ist das, was sie eigentlich tu... forschen und das ist dann das addon, dass sie darüber sprechen.

Q38_transcript_interview_Nani, Pos. 160
Ich finde Selbstreflexion ganz entscheidend [laughs] Also das sich immer wieder auch zu überlegen, was tun wir hier, wo gehen wir hin, mit welchem Ziel, und geht sich das aus, geht sich das nicht aus oder ist das irgendwie kontraproduktiv. Und wichtig ist immer, einfach sehr, sehr ambivalent und widersprüchlich.

Q39_transcript_interview_Nani, Pos. 127

Ich war überrascht, dass es so viel Interesse gab! [laughs] Und das hat mich überrascht. Und genau dann hat mich noch überrascht, dass ein Mann dabei war, der recht viele Fragen gestellt hat, so wie ich das im Kopf hab. Weil es eigentlich ein Frauenthema ist.

Q40_transcript_interview_Nani, Pos. 149
Veränderung und wirklich Veränderung, die nicht autoritär verordnet passiert setzt ja immer voraus, dass es so etwas wie einen Einsichtsprozess gibt, also eine gewisse Freiwilligkeit. Das passiert halt nur kommunikativ. Ich kann das nicht.. also ich wüsste nicht, was ich anders gestalten kann. Also ja, ich kann ein Gesetz schaffen in meinem Arbeitsplatz, weiß nicht, 40%Frauenquote für dies und Jenes, aber das allein löst auch nicht, also da muss am erst recht wieder kommunizieren. Und du kannst es dann nutzen. Und es ist schon gut, dass es das gibt, aber nachhaltige Veränderungen gibts erst, wenn es angekommen ist, ok, es ist auch gut, dass es das gibt.

Q41_transcript_interview_Jane, Pos. 88
Und somit, weil ich bin absolut nicht mehr konkurrenzfähig als Wissenschaftlerin! Von Quasi vom output her und wie lange ich gebraucht habe für den PhD. Und das hat mir halt doch total aufs Gemüt geschlagen.

Q42_Transcript_Interview_Merida, Pos. 376-377
Und wenns dann eben darum geht, ähm es gibt kein Konzept, was vorsieht, dass man irgendwie ein bisschen was von Beiden machen kann, bedeutet das, man muss sich für eine Seite entscheiden. und das dann zum Hauptprojekt machen und da wird man dann halt verglichen. mit dem Stand und der Geschwindigkeit von allen anderen, die nur forschen oder nur kommunizieren. und sobald man sich aber für irgendwas dazwischen interessiert, gibts eben keinen Rahmen, der das unterstützt und keinen Maßstab für das, sondern man wird immer dann ganz normal mit denen verglichen mit denen, die nichts anderes noch machen. Und das baut schon Druck auf.

Q43_Transcript_interview_Meg, Pos. 146-147
[das Institut] hat so eine Art Career Center. Die bieten so eine Art Schulung an und so Workshops für Führungskräfte und für Antragsschreiben und sowas. Und ähm, das passiert halt schon mal, wenn wir da einen Kurs belegen wollen, der so einen Vormittag dauert, dass die dann sagen, nein, du solltest dich besser ins Labor stellen.

Q44_Transcript_Interview_Merida, Pos. 136-140
M: Ja eben weil mein PI wie gesagt der Institutsleiter ist. Und er hat auch ein Interesse an Öffentlichkeitsarbeit. Muss man auch einmal sagen.
K: Ja klar…
M: Da geht es auch um Vermarkten des Instituts.

Q45_transcript_interview_Jane, Pos. 173
Es hat doch schon also quasi den Versuche gegeben von der Gruppenleiterin, das zu unterbinden, das ich Science Communication mache. Hat nur zum Glück nicht funktioniert und ich habe mich halt auch gewehrt, weil mir das wichtig ist, dass ich Science Communication mache.

Q46_Transcript_interview_Meg, Pos. 142-144

M: Und ich weiß auch, dass unsere PIs voll dagegen sind!
K: Ja wirklich? warum denn?
M: Ja weil man steht in der Zeit nicht im Labor und man beschäftigt sich mit anderen Sachen und man faulenzt… also jede Zeit, die man nicht im Labor verbringt ist ganz schlecht.

Q47_Transcript_interview_Meg, Pos. 144
Ich weiß nicht, wenn das 20% der Arbeitszeit wäre, dann würde ich sagen, ja, mach halt, weil die Studenten auch… das kalkuliert man immer nicht ein. Die können nicht die ganze Zeit schuften. Die machen zwischendurch eh was anderes.. so ist halt ein Mensch… und da können sie ja auch was machen, das ihnen Spaß macht, oder?

Q48_transcript_interview_Jane, Pos. 68
Ich meine, ein kreativer Aspekt, den ich habe, ist die Histologie. Aber auch nur als Nebenprodukt. Weil das ist eben diese Bildgebung mit den ganzen schönen bunten Farben, mit diesen Färbungen. Ähm, wo ich dann gerne ein bisschen darüber hinaus sitzen bleibe und halt schau, "Wow, das ist voll schön, da mache ich jetzt eine 100er Vergrößerung" obwohl ich das voll nicht brauche! einfach nur weil es mir gefällt.

Q49_Transcript_Interview_Merida, Pos. 172
Naja, das System ist halt so, dass die, die am kreativsten eigentlich sein können sind dann eben jene, die bereits auf einem Karriereniveau sind, wo sie nicht mehr selber im Labor stehen, sondern Projekte vergeben und ausführen tuns dann halt eben diejenigen, die noch frischer im System sind

Q50_Transcript_Interview_Merida, Pos. 144
Wenn ich an eine PI denke, dann geht es auch daran, oder darum, du musst dir das erst ein wenig selbst erarbeiten als Early Career Researcher. Personen, die das selbst machen als PI, die selbst den Dialog suchen und sich da engagieren, sind aber der Meinung "Ja aber komm erst mal an dem Punkt, dass du dir das erlauben kannst"

Q51_Transcript_interview_Meg, Pos. 191
Ich weiß nicht, aber man verbringt sehr viel Zeit mit der Wissenschaft und man verbringt sehr viel Zeit auf der Arbeit und ich glaube, man isoliert sich so ein bisschen von allem Anderen.

Q52_transcript_interview_Jane, Pos. 235
Also das geht eh schon mehr in die Richtung, aber halt, er sagt immer nur dreißig Prozent externe, siebzig Prozent interne Kommunikation, was aber eh irgendwie sich mit dem deckt auch, was ich quasi rausgefunden habe, dass ja so total viel interne Kommunikation auch wichtig ist, damit was meaningful ist.

Q53_Transcript_interview_Meg, Pos. 194-196
K: Ok, also ist es schon eher so ein Systemversagen, als ein Versagen jetzt einzelner Wissenschaftlerinnen, dass niemand miteinander redet, würdest du sagen?
M: ich glaub das wird nicht gefördert, dass man miteinander redet.

Q54_transcript_interview_Jane, Pos. 119

Weil es geht ja trotzdem noch immer um das Projekt oder um die Erkenntnis oder um den Fortschritt, den man gemacht hat, nicht um den Menschen, der dahinter sich vielleicht kaputt gearbeitet hat. Ich meine das wird eben.. Auf Twitter wird es immer schon massiv thematisiert.

Q55_Transcript_interview_Meg, Pos. 72-74
M: Ähm, dass die dann mit 35 nicht mehr weiterarbeiten können in Academia und mit 35 stehen sie dann vor dem Nichts. Das ist schon ein Problem.
K: Und hat dir das jemand gesagt
M: [laughs] No!

Q56_transcript_interview_Jane, Pos. 128
"Love what you do or leave", die mir immer total getaugt hat weil ich war immer voll drinnen! Mir hat das ehg gefallen. Ich hab mir immer gedacht, hey wenn sich da jetzt jemand beschwert, dann zieh mich nicht mit runter! Aber je älter ich werde, desto mehr denke ich ein bisschen beschweren wäre schon nicht schlecht und man muss... Man kann Wissenschaft lieb haben und trotzdem nicht alles ok finden.

Q57_Transcript_Interview_Merida, Pos. 411
Ich sehe es einfach in meinem Umfeld, dass man, dieser Karriereweg, der so ein gerader sein soll, durchgezogen wird, bis es nicht mehr geht und einfach die Lust verloren geht.

Q58_transcript_interview_Jane, Pos. 119
Weil es geht ja trotzdem noch immer um das Projekt oder um die Erkenntnis oder um den Fortschritt, den man gemacht hat, nicht um den Menschen, der dahinter sich vielleicht kaputtgearbeitet hat.

Q59_Transcript_Interview_Merida, Pos. 407
Wer wird denn interviewt? Das sind halt, das sind für irgendwelche, für die Unis oder so werden dann mal die Jungforscher interviewt so hey, die macht das und das, oder für irgendeinen Preis, Aber jetzt nicht vom von der Lokalzeitung oder so wenn dann halt PIs immer und immer wieder gefragt.

Q60_transcript_interview_Jane, Pos. 123-124
K: Glaubst du, jetzt du als Science Communication, weil du machst ja auch Science Communication, propagierst du dieses falsche Bild auch selber ein bisschen?
J: Ich bin zumindest sicher Teil davon, dass es nicht thematisiert wird weil wenn ich über etwas schreibe, dann schreibe ich halt auch über "hey, wir haben den Preis gekriegt; Hey es gibt diese neue Methode zur Behandlung von dem und dem...." Aber es geht nie darum, Hey, wir können alle nicht mehr! Ich meine, das wäre ein bisschen ein wieder Artikel für unsere Instituts Homepage [laughs] "50% der LBI Mitarbeiter sind extrem überarbeitet." Das geht nicht, das geht mir nie durch und das kann ich auch nicht machen. Ich meine, ich bin oft, vielleicht beteilige ich mich daran, indem ich auf twitter Sachen retweete, aber das ist auch schon wieder click activism und click activism hilft auch keinem!

Q61_Transcript_Interview_Merida, Pos. 368
Ähm Ja, genau was ich dazu sagen wollte ist, dass auch die Forschung muss sich irgendwie verkaufen. Es geht ja immer darum, wo kommt das Geld her, weil eigentlich geht es ja darum,

*dass nicht gezwungenermaßen ein Produkt daraus entstehen muss. Das ist ja die Freiheit, die die Forschung genießen muss, dass es diese explorative ist, was nicht, also nicht gezwungenermaßen auf irgendeinem Konsumgut hinausläuft. und ähm wenn man's irgendwie schafft, die Öffentlichkeit dafür zu interessieren, dann bekommt man auch ein standing, auch wieder was Forschungsgelder angeht. Und deshalb halte ich es für eine unglaublich kluge Idee mit den potentiellen Profiteur*innen und Profiteuren ins Gespräch zu kommen… also es ist… vermarkten. Also selbst wenn die Forschung vermarkten zu wollen nicht das schönste Motiv ist Also wenn das der Grund für den Dialog ist, dann ist das nicht jetzt das allerschönste Motiv, aber wenn es dann zur Folge hat, dass dieser Dialog zustande kommt, dann ist das immer noch eine oke Sache, finde ich.*

Q62_Transcript_Interview_Merida, Pos. 345
Aber bei einer Teestunde, also so zusammensitzen und es geht mir darum, dass es gemütlich ist und dass man… also es geht um menschliche Wärme, was eben nicht kontraintuitiv und unvereinbar mit der "kalten harten Welt der Naturwissenschaften" sein muss.

Q63_Transcript_interview_Meg, Pos. 98-100
Aber das ist halt als WIssenschaftlerin nicht meine Aufgabe, da eine Meinung zu transportieren, sondern bei den Fakten zu bleiben. Ich hab natürlich eine Meinung aber darum ging es jetzt nicht natürlich.
K: Kannst du das so strikt trennen, glaubst du? Deine Meinung und die Fakten...?
M: [sighs] Also, ich glaube, dass viel von Meinung, die man hat, auf unzulängliches Auseinandersetzen mit einem Thema, äh… Ne das ist falsch formuliert. Also: Manches an Meinung ist wenn man sich mit dem Thema nicht auseinandergesetzt hat, gerade was so Atomenergie und sowas angeht.

***Q64**_transcript_interview_Nani, Pos. 143*
Und es liegt an meinem feministischen Anspruch und an meinem wissenschaftskritischen Anspruch.

Q65_transcript_interview_Nani, Pos. 137-141
Ich glaub klassischerweise verstehen sich Forscherinnen oft so, das ist das, was sie eigentlich tu... forschen und das ist dann das Addon, dass sie darüber sprechen. Und bei mir ist es eher so, dass ich das Ziel - mehr Chancengelichheit, weniger Diskriminierung- und ich hab da unterschiedliche Werkuzeuge und die greifen dann auch idealerweise inneinander.
K: Mhm.. mhm..
N: Ja!
K: Glaubst du, das ist jetzt speziell wegen deinem Fachhintergrund oder ist das auch bei Naturwissenschaftlerinnen so?
*N: Ich glaube, es hängt an meiner Position. Also ich glaub Genderforscher*innen, die jetzt eben nicht auch in einer Umsetzungsorientierten Position sind, die äääähh würden das genauso wie die Naturwissenschaftler schreiben, ja ? Ich hab da ein Thema, dass mich interessiert, ich mache darüber dann meine Forschung und dann muss ich eben noch publizieren auch noch.*

Q66_transcript_interview_Nani, Pos. 64
Das ist eigentlich von meiner Tagesverfassung abhängig und es ist sehr themenspezifisch. Also üblicherweise können Wissenschaftlerinnen Dinge kommunizieren, die nicht dermaßen

umstritten und Widerstand auslösend sind wie ich und das ist natürlich nicht lustig, wenn man immer wieder mal die gleichen Diskussionen zu führen. Und dann finde ich es anstrengend.

Q67_Transcript_Interview_Merida, Pos. 294-298
M: Es hat politische Dimension!
K: Ja. Und wenn jetzt ein Kritiker sagen würden, das ist jetzt nicht deine Aufgabe als Wissenschaftlerin? Was würdest du dann sagen?
M: Ich würde mich fragen, wessen Aufgabe es denn sonst ist, weil ich weiß, was ich brauche, um gut arbeiten zu können. Ich und meine Kolleginnen und Kollegen, weil wir diese Arbeit ausführen. Und es ist eben etwas sehr Spezielles. Wo man irgendwie sich immer tiefer gräbt damm kennt nur man selbst und vielleicht das Arbeitsumfeld, was es wirklich braucht. Und wenn dann nicht die Politiker und die Politiker durch irgendeinen Zufall selbst den Bezug haben und es dann genauso gut wissen, dann braucht man irgendwelche Leute, die es ihnen sagen, was, "was brauchen wir?" Und wie kann man mit der Gesellschaft verhandeln, ob wir da einen Konsens finden, ob wir das so machen können....ähmmm... Das war halt auch Gegenstand dieses Protestmarsches in 2016 usw. Dass auch die Forschung nicht von Politik zu trennen ist. Und damals ging es auch um diesen Ruf, den wir haben, also nicht politisch zu sein und eben sich so von dem Gesellschaftsleben zu distanzieren.

Q68_Transcript_Interview_Merida, Pos. 333
Da war meine ursprüngliche Motivation auch ein Thema aufzugreifen, worauf ich Lust hab, was mich interessiert. Und eins, wo ich so ein bisschen schauen kann, wie weit kann ich eigentlich mit den Seniorinnen und Senioren gehen. Verwehren sie sich da komplett, also wenn es jetzt um Geschlechterrollen geht. Aber auch weil ich ultra neugierig bin, was sie dazu auch an eigenen Erfahrungen zu sagen haben

Q69_transcript_interview_Nani, Pos. 50
Es ist nicht so, dass meine Kolleginnen hier in der Meduni jenseits meines Teams prinzipiell finden, dass Gleichstellung so ein wichtiges Thema ist... Gendermedizin jetzt eher, aber nur wenn man von jedem politischen Anspruch loslöst [laughs].

Q70_transcript_interview_Nani, Pos. 127
Ich war überrascht, dass es so viel Interesse gab! [laughs]

Q71_Transcript_interview_Meg, Pos. 125-128
jetzt ist ein bisschen Zeit vergangen, findest du, dass jetzt dieses event oder generell.. ja nur dieses Event, hat das jetzt einen bleibenden Einfluss auf dich gehabt?
M: [long pause] Ja würde ich schon sagen…
K: Kannst du ein bisschen…
M: Weil es war dann am Ende halt schon ein ziemlicher Dialog. Und tatsächlich mit Betroffenen interagiere ich nicht so oft. Deswegen hat mir das schon eigentlich sehr viel Einblick gegeben, in was die Leute wollen, worum sie sich Sorgen machen und sowas.

Q72_Transcript_interview_Meg, Pos. 172
Also, wenn man mehr miteinander spricht, dann weiß die WIssenschaft eher, was gebraucht wird, woran Bedarf ist

Q73_transcript_interview_Jane, Pos. 194

Und quasi die Perspektive, wieder einen Schritt raus, was ist überhaupt wichtig, dass ich das mache.

Q74_Transcript_Interview_Merida, Pos. 360

mein Ziel, dass ich eigentlich wirklich als Facilitator ihnen ermögliche mit den Forscherinnen und Forschern in Kontakt zu kommen, mit denen sie gerne einmal sprechen würden.

Q75_transcript_interview_Nani, Pos. 154-155

K:Wenn du jetzt mit jemanden kommunizierst, ist es dir schon mal passiert, du sagst, ah ja jetzt hab ich auch ein bisschen eine andere Perspektive auf meine Arbeit? Also ist das auch eine Two way street? Weil du bist mehr in der Rolle, dass du jemanden also wenn du jetzt kommuniziert, bist du mehr outgoing...

N: Das passiert mir dauernd! Also es wird einen der Prozess der Auseinandersetzung, wo ich immer wieder neu verstehe was heißt es jetzt konkret, oder warum ist das so, warum ist das nicht? Diese Kleinteiligkeit so ist oder nicht anderst. Das ist immer wieder spannend.

***Q76**_transcript_interview_Jane, Pos. 219*

Also zumindest ich kommuniziere ja immer auch verschiedene andere Arbeiten und habe dann auch wieder so viel Vergleich. Was machen die anderen Gruppen, was mache ich, was könnte ich besser machen, was mache... also das ist das ist schon ein großer Teil, so intensiv beschäftigt sich normalerweise net damit.

Q77_transcript_interview_Jane, Pos. 200

Wenn ich es könnte, quasi wenn ich mehr Einfluss hätte, würde ich mich sicher mehr in diese Richtung hinbewegen. Dass ich quasi Sachen mache, die die wo ich auch das Gefühl habe, dass die Leute verstehen, dass die Leute verstehen, dass sie wichtig sind und die quasi auch imminent leichter in die Klinik zu transferieren sind, als halt irgendwelche Verständnis- Methodik-Fragen.

Q78_Transcript_Interview_Merida, Pos. 365

…dass wir abgleichen, was wird geforscht und was wäre für die Menschen eigentlich das Wichtige, dass es beforscht wird. Und dann halt irgendwie dazwischen zu verhandeln.

Q79_Transcript_Interview_Merida, Pos. 401

Mein Bewusstsein ist schon sehr geschärft dafür, dass es eine Außenwelt gibt, die in Wahrheit keine Außenwelt ist, sondern... die Forschung ist halt in dieser Außenwelt eingebettet. Ich würd sagen, dass ich mir dessen eben bewusst bin, der gesellschaftlichen und politischen Dimensionen, die auch Forschung hat.

Q80_Transcript_Interview_Merida, Pos. 290

Also meine Motivation ist auf jeden Fall, dass auch sie Wählerinnen und Wähler nach wie vor sind einfach gesellschaftlich teilhaben müssen und die Chance haben... bekommen sollten, ein bisschen am Puls der Zeit zu bleiben.

Q81_Transcript_Interview_Merida, Pos. 376

Da wird man dann halt verglichen… mit dem Stand und der Geschwindigkeit von allen anderen, die nur forschen oder nur kommunizieren. Und sobald man sich aber für irgendwas dazwischen interessiert, gibts eben keinen Rahmen, der das unterstützt und keinen Maßstab für das, sondern

man wird immer dann ganz normal mit denen verglichen mit denen, die nichts anderes noch machen. Und das baut schon Druck auf.

Q82_transcript_interview_Jane, Pos. 100-101
K: Findest du wirklich, dass du nicht erfolgreich bist?
J: Im Vergleich zu anderen. Man wird super viel Output hab ich nicht, ich bin immer noch kein PhD, ich bin..., ich hebe mich jetzt nicht von den anderen Wissenschaftlern ab. Außer durch meine Science Communication, das ist das Einzige, was quasi ich bin und wo mich die Leute auch mehr kennen als übers Knorpel Ding.

Q83_transcript_interview_Jane, Pos. 180
Nur, ich finde, das stimmt überhaupt nicht! Ich finde meine Karriere hat eher davon profitiert, dass mich die Leute kennen als als die C., die die ganze Kommunikation macht. Weil ich meine, für sie ist Wissenschaft immer nur Wissenschaft und diese ganze People Komponente ist total nebensächlich, oder braucht man nicht. Und in Wirklichkeit ist es so wichtig, wenn du alles kennst und wo du alles Einblick hast und und wer DICH kennt, dass ich das niemals weglassen wollen würde.

***Q84**_Transcript_Interview_Merida, Pos. 403*
…und auch noch mehr Möglichkeiten von beruflichen Werdegängen, ja, wie es, wie es verlaufen könnte.

Q85_Transcript_Interview_Merida, Pos. 160-164
M: Also das war mal ursprünglich mein Gedanke, dass man schaut, ob man es nicht als Teil des Forschungsauftrag sehen kann, was dann aber eben nicht mit Zwang, soweit dass das dann ein Zwang ist, darf es dann wahrscheinlich auch wieder nicht gehen. Ich hätte das Ganze nicht schlecht gefunden, das mal auszuprobieren, dass man alle zu zwingen [both laugh] [inaudible]
K: [sarcastic] Kommunizier jetzt!!
M: Probiers halt mal halt so! Schreib mal was! Ich hatte mal vorgeschlagen, so eine Art Wisskomm Dienst, einmal pro Halbjahr, so dass man einen Nachmittag, einen, was auch immer, einen Facebook-Post oder worauf irgendwer Bock hat, einen Mini-Text über die eigene Arbeit für die Homepage. So was ganz Ganz Kleines. Aber so, es darf niemand gezwungen werden

Q86_Transcript_interview_Meg, Pos. 133-136
K: Und jetzt dieses einzelne Event, hat das jetzt Lust gemacht, mehr zu machen in dieser Hinsicht oder das jetzt ein bisschen weiterzuverfolgen in der Zukunft?
M: Die Kommunikation, ja schon.
K: In deiner Karriere oder so?
M: Ja! Also ich muss mir ohnehin irgendwann mal ohnehin überlegen, was ich mit meinem Leben zu tun gedenke. Ich weiß nicht, ich … die Wissenschaft auseinanderklamüsern, damit irgendwelche anderen Leute damit… oder das einfach zu transportieren, das kann ich mir schon ganz gut vorstellen, ich finde das sinnvoll so zu tun.

Q87_Transcript_interview_Meg, Pos. 183-185
M: Möglich, weil die Wissenschaftler reden ja auch anscheinend untereinander nicht miteinander. Vielleicht wird man nur Wissenschaftler, wenn man nicht so gerne kommuniziert.
K: Glaubst du das wirklich?

M: Weiß ich nicht, aber manchmal scheint das so.

Q88_transcript_interview_Jane, Pos. 211-212
K: Findest du generell die Leute, mit denen du jetzt interagierst wegen Science Communication sind die interessiert ihre Arbeit nach außen zu tragen?
J: Ja. Ja. Ja! Ich hab's noch nie erlebt, dass jemand nicht dankbar wäre oder sich gefreut hätte, dass ich Interesse habe!

Q89_transcript_interview_Jane, Pos. 203-205
K: Und glaubst du, deine Science Communication Aktivitäten, haben die auch deine Perspektive verändert, wie du Wissenschaft, jetzt das System siehst, also siehst du's vielleicht ein bisschen kritischer oder ein bisschen weniger kritisch?
J: Ich glaube kritischer, weil als Wissenschaftler man wenig Blick nach außen. Hey, die meisten Leute habe ich jetzt erst kennengelernt über diese Science Communication. Weißt eh, die meisten Kollegen, eben wir sind 90 Leute am [institute] in unserer Gruppe, waren es, eine Zeit lang waren wir nur zu zweit. Ich meine, jetzt sind wir halt fünf Leute, aber ich würde sonst nur diese fünf Leute mit ihren Problemen und ihren Situationen kennen. Und über die Science Communication kenne ich so viel mehr! Nicht nur am Institut, sondern auch an den Unis und so weiter, mit denen wir auch kooperieren, mit denen ich dann auch was gemeinsam mache für eine Story und so weiter. Also das ganze System sehe ich überhaupt erst durch die Wissenschaftskommunikation! Vorher bist du in deiner Gruppenblase drinnen und siehst total wenig nach außen! Und ich glaube natürlich, es ist sicher auch mit der Grund, warum sich Leute so ausnutzen lassen, weil sie gar keine, weil sie, weil sie nur in ihrem eigenen,... in ihrer eigenen Bubble drinnen sind.

Q90_transcript_interview_Jane, Pos. 101
Meine Science Communication, das ist das Einzige, was quasi ich bin und wo mich die Leute auch mehr kennen als übers Knorpel Ding.

Q91_Transcript_Interview_Merida, Pos. 365
Wenn ich die Möglichkeit nicht habe, mit Außenstehenden darüber zu sprechen oder auch mit anderen Disziplinen mich auszutauschen, dann verliere ich die Motivation. Also für mich ist das wirklich was ganz Grundlegend-Essentielles, was mich überhaupt dazu motiviert, in diesem Forschungsbetrieb zu bleiben. Sonst wäre ich schon ausgestiegen, hätte ich das nicht entdeckt.

Q92_transcript_interview_Jane, Pos. 92
Auch da habe ich... da habe ich einen Impact gehabt! Da habe ich zum Beispiel Logos designt oder Bilder designed und die sind dann in Anträgen verwendet worden von teilweise total unrelated Leute, die haben das halt im Internet gefunden und verwenden es weiter und das taugt mir dann auch. Ich weiß, das ist so semi-Ding, das darf man auch nicht, aber für mich passt das! Ich freue mich, wenn ich einen Impact habe und sich was verändert!

Q93_Transcript_Interview_Merida, Pos. 156-157
Ich bin sehr überzeugt davon, dass es eben nicht so sein muss. Eben, gerade wenn man das strukturiert macht, und nicht die Leute zusätzlich machen lässt, was mehr Kraft kostet, sondern wenn man eine Struktur bieten kann, dass junge Forschende sich mal einbringen können in die Kommunikation dann gibt man ihnen gerade eben den Halt weil es nicht ausufert und dann haben Sie im besten Fall einfach mehr Motivation, weil es einfach so eine Doktorarbeit oder wie

auch immer, eine Forschungsarbeit auch eine Sache sein kann, wo man das Gefühl hat, man ist allein mit irgendwas.... so einen abstrakten..., mit so einer abstrakten Aufgabe. Und das kann sehr motivierend sein, darüber zu sprechen und sich daran zu erinnern. "Warum mache ich das eigentlich nochmal?" wenn ... Ich weiß nicht, ob ich jetzt gerade abgeschweift bin, aber ich glaub sehr, dass das etwas Systematisches ist.

Q94_Transcript_interview_Meg, Pos. 30
Weil, ich bin jetzt im dritten PostDoc Jahr und ich hab natürlich schon auch eigene Ideen und langsam finde ich das manchmal auch unangenehm, wenn Sachen so vorgegeben werden.

***Q95**_transcript_interview_Nani, Pos. 96*
*Aber wahrscheinlich ist das meine Philosoph*innenarroganz. Ich find die meisten Dinge nicht so komplex, dass es mich einschüchtert [laughs]*

Annex B: Notes, Posts and Translations from Ethnography and Document Analysis

N1_Announcement_poster_TT1 (full translation)
Der erste Aufguss dieser Teestunde enthält Spuren von Radioaktivität - für Ihre Gesundheit und auch nur theoretisch. Gesellen Sie sich zu Merida und Nani und lernen Sie radioaktive Werkzeuge kennen, die in der Medizin beim Hineinschauen in Herz, Schilddrüse, Tumore und mehr helfen. **Erzählen Sie den Forscherinnen von Ihren eigenen Erfahrungen und Hoffnungen.**
The first infusion of this Tea Time contains traces of radioactivity - for your health and only theoretically. Join M. and B. and get to know radioactive tools that help research to look into the heart, the thyroid, tumors and much more. **Tell the researchers about your experiences and hopes.**

N2_Document_Analysis_LinkedIn_posts, Pos. 3; Full post:
There was even more expertise on the subject gathered in the room: a former radio technician and a former nurse took part in the discussion. One was working in Seibersdorf at the time - the other, like B., worked in the Vienna General Hospital. The ladies and gentlemen also contributed with their experiences with nuclear medicine "at first hand". **I am happy to have learnt quite a bit from them about how they perceive our field** - and how I can further develop the Tea Time as a regular space for meeting.I am happy to have learnt quite a bit from them about how they perceive our field”

N3_Field_notes_interviews_online _ethnography_summary, Pos. 58; Full note:
I have to note that she and I have a lot in common, even more so than I have with the other interviewees. We have a very similar epistemic background and both felt the need to engage in communication during our life as scientists. Both of us were prompted to do so by our activist background. But both of us also did not cut ties with the life sciences completely and struggle to choose between the two things. We were also attending the same networking conference at the time, so we talked about that towards the end of the conversation. I write all of this in the interest of situating myself and my knowledge (also emotional knowledge of the

struggles that she is facing) into the conversation and into my findings. I have to be very self-reflective when doing this analysis especially to avoid the danger of “going native”. (Field_notes_interviews_online _ethnography_summary, Pos. 58)

N4_Article_M_SciComm_magazine, Pos. 4
...dass ich aber mal mit einer Zeugin über unsere Forschung sprechen würde, hätte ich mir nicht träumen lassen.”
...that I could talk about our research to a first-hand witness, I had never imagined!

N5 Article_M_SciComm_magazine, Pos. 16
Ich bin wieder einmal überwältigt und dankbar, wie offen die Seniorinnen und Senioren uns an ihren teils sehr schmerzhaften Erfahrungen teilhaben lassen.
Again, I am overwhelmed and thankful, how open the seniors share their painful experiences with us!

N6_ethnography_planning_Tea Time2, Pos. 11.4
M. intersperses this explanation with questions and judges if C.s explanations are suitable for the target audience (they are) → M. already seems to be so experienced with talking to different audiences that she feels comfortable making the judgement on the go → some people might not be so confident.

N7_ethnographyI_II_planning_Tea Time3, Pos. 9.4

M. Talks about the plan of the event and the technicalities (language, garden setting etc.).
She especially assigns who should assume which role: She should trigger the seniors to talk and S. as the expert should answer questions. There should be 1 core message that the seniors should take home / What should that core message be? → Again, M. is very professional (like in previous planning sessions). She makes clear that she is the one that has the final say, even though she explicitly invites input.

N8_Article_M_SciComm_magazine
https://www.wissenschaftskommunikation.de/teestunde-mit-forschenden-42159/
Pos. 1: Kein zweites Mal werde ich es versäumen, die Teilnehmenden zu Beginn unserer gemeinsamen Stunde neben ihren persönlichen Erfahrungen mit dem Thema auch nach ihrem beruflichen Hintergrund zu fragen!
Pos. 13: In meinem Ehrgeiz, für meine Expertin Publikum anzuwerben, lade ich die kartenspielenden oder sich auf der Hollywood-Schaukel unterhaltenden Seniorinnen und Senioren ein, sich zu uns zu setzen. Mit dieser Methode hatte ich schon beim letzten Mal Erfolg
Pos. 14: Die direkte Ansprache lohnt sich
Pos. 17-22: Projektsteckbrief
Träger: One-Woman-Show, die in ein kollektives Organisieren durch Forscherinnen und Forscher münden soll.
Budget/Finanzierung: Wenn die Leitung der Seniorenresidenz neue Programmpunkte für ihre Bewohnerinnen und Bewohner fördert, sind Raum und die wenigen benötigten Materialien gratis. Eine Teestunde braucht aber auch besonders guten Tee. Dafür zahlt sich eine Partnerschaft mit einem lokalen Café oder Teehandel aus. Um Menschen aus der Umgebung – potenzielles Publikum sowie Gäste Expertinnen und -experten – auf das Format aufmerksam zu machen, kann man 20–30 Euro in das Drucken von Flyern investieren.. Auch hier kann man ein

Sponsoring bei Druckereien mit passendem Schwerpunkt – etwa denen von Uni-Verlagen – anfragen. Insgesamt braucht es so kaum Budget und lediglich Kapazitäten für die Koordination.
Ziele: Rund 18 Prozent der Bevölkerung in Deutschland sind 65 Jahre oder älter. Die wachsende Gruppe der Seniorinnen und Senioren kann mit diesem Format Einblicke in die aktuellen Entwicklungen der Wissenschaft bekommen. Die Forschenden wiederum können im Gespräch mit den Seniorinnen und Senioren von deren großen Erfahrungsschatz der persönlichen Erlebnisse oder beruflichen Vergangenheit profitieren.
Zielgruppen: Seniorinnen und Senioren sowie interessierte Personen jeglichen Alters aus der Umgebung. Durch ein Öffnen des Formats für die Nachbarschaft kann die Residenz so auch zur Begegnungsstätte werden.
Zahlen zur Zielerreichung: Drei „Teestunden mit Forschenden“ haben in der Wiener Seniorenresidenz Haus Augarten rund 25 Seniorinnen und Senioren erreicht, von denen einige ihre sehr persönliche Erfahrungen mit den Forscherinnen geteilt haben. Zu der Teestunde läuft außerdem eine qualitative Studie. Die dabei gesammelten Daten werden aktuell für eine Masterarbeit ausgewertet. Dabei wird untersucht, ob das Gespräch mit dieser Zielgruppe einen Einfluss auf das Selbstverständnis der Forschenden haben könnte.

N9_ethnography_planning_Tea Time2, Pos. 11.11
Jane INVOLVEMENT OF EVELYN (DAUGHTER): Talks about her experience at giving talks and how she connects her line of research with her personal life (“this is my most successful cell culture experiment” / “I am doing embryonic tissue engineering” talk while pregnant. Merida Is excited by the idea and encourages Jane to do this → Jane has a real interest in making her topic interesting; she knows that if she involves her daughter, the event automatically becomes more relatable. Not everyone would involve their children in such activities. This shows also how passionate she is about showing her work. Are her role as a public speaker, communicator and as a researcher can even be separated → Q for interview

N10_ethnography_planning_Tea Time2, Pos. 11.21
Jane tells the story of how she wrote a children's book about tissue culture (!!)
Merida is very excited and gives practical advice about finding a publisher → Interesting! Her involvement with science communication childcare issues and how she makes hybrids of them: Theory: Successful researchers/communicators make hybrids to cope with different roles!!

N11_ethnography_planning_Tea Time2, Pos. 11.36
Chit-chat about ‘lab voodoo’ and common practices in the wetlab → shift to personal talk again quickly; both get along very well when they do personal talk.

N12_ethnography_planning_Tea Time2, Pos. 11.38
Personal talk about how cool internships are for early stage researchers, share experiences about this → Both reassure themselves about their common beliefs and attitudes.

N13_ethnography_planning_Tea Time2, Pos. 11.40
Jane talks about a previous communication project → Wants to signal that she knows her way around sci comm and share her enthusiasm.

N14_ethnography_planning_Tea Time2, Pos. 11.42

Talk about childcare and home office (how great it was for Jane) and their family organisation (who works, who stays home etc.) → personal relationship, shared experience, Generally they seem to be very similar in their views about that.

N15_Document_Analysis_LinkedIn_posts, Pos. 25
M. again thanks all the people involved. She stresses that this event was different from the others, she uses the word “exciting” to describe it. She also mentions that the audience was the largest so far.

N16_Article_M_SciComm_magazine, Pos. 16
Ich bin wieder einmal überwältigt und dankbar, wie offen die Seniorinnen und Senioren uns an ihren teils sehr schmerzhaften Erfahrungen teilhaben lassen.
Again, I am overwhelmed and grateful, how openly the seniors let us be a part of their in part really painful experiences.

N17_Document_Analysis_LinkedIn_posts, Pos. 6
M. continues her post in a comment below, most likely because the original post would have gotten too long otherwise and the comment adds context. In this add-on, she stresses how much she has learned from the expertise of the audience (professional as former radio technician/nurse and lay as patient!!) . She acknowledges the new viewpoints that she was made aware of (“I am happy to have learnt quite a bit from them and how they perceive our field”) → DIALOGUE model!!

N18_ethnography_planning_Tea Time2, Pos. 11.5
→ Stress of collaborative format of the Tea Time project, both from the side of the collaborator/expert and the audience.

N19_ethnography_II_planning_Tea Time3, Pos. 9.23
M. Warns S. that some seniors rather share too much (tells about a previous case where a resident told about her incredibly hard fate of depression and suicide). Talks about exit strategies in case the situation gets too emotional.

N20_ethnography_II_planning_Tea Time3, Pos. 9.26
Merida anticipates audience question: “Why is this gender thing even a relevant category?”
Nani does not see this as a biochemical question (as intended by M.) but rather as a “classic philosophical question”. She gives a very philosophical and long answer but assures M. that she will answer in a simple way during the event. She brings up again the topic of categorisation and Trans-Identities but says that she rather wants to stick to binary explanations. Merida brings the topic back to medicine [personalised medicine aside from gender identity] and is reluctant to include gender identity on a social level. Nani acknowledges the topic as “problematic” and she says it is better not to mention it. (→ interesting dichotomy about the differences in perception of the researcher and her audience. S. feels the need to “hide certain” advanced aspects of research in order to avoid controversies!)

N21_ethnographyI_III_Tea Time3_field_notes, Pos. 37
Seniors are more eager to talk about general societal aspects of gender like how boys are taught not to cry and why this is wrong/right (→ discussion). and the differences between a man’s and a

woman's struggles in a patriarchal society. And even more philosophical talks about life itself (One female participant said "You gotta be tough")

N22_ethnographyI_III_Tea Time3_field_notes, Pos. 40
"Short talk about economic factors of disease (brought up by a resident)

N23_ethnographyI_III_Tea Time3_field_notes, Pos. 41-42
M. ends with topic suggestions for the next time
→ Seniors give lots of inputs

N24_ethnography_planning_Tea Time2, Pos. 11.7
Jane: Ethical concerns about telling the seniors about the age limit of the technique C. is working on ("I hope they won't feel excluded") → She clearly wants to talk about her research but also wants to make an interesting and relatable account. She is not sure how to reconcile this.

N25_ethnography_planning_Tea Time2, Pos. 11.31)
Merida wraps up the explanation by setting the endpoint ("This is already a good end"). Jane quickly intersperses by adding a connection to old people (as donors of bone material) ("old people actually play a big role in my research") but a the same time states that they will not talk about that because of sensitivities (old people's femur heads are used when they get their hip replaced). Merida thinks this would be a great entry point and does not share Jane's concerns → Merida warts to set the agenda and not make the talk too technical. But Jane wants to add an interesting fact to the story, at the same time she is not sure if they should tell it because of sensitivities.

Annex C: Questionnaire of the four Semi-structured Interviews

1. Background:
    a. Tell me about your professional life as a researcher! Where and what did you study, what you do now...
    b. How did you decide to become a researcher?
    c. Tell me a bit about your activity as a science communicator! some projects you were involved in...
    d. Why did you become interested in science communication?

2. Current work/creative process
    a. What does your typical work day look like
    b. Do you get feedback: do you value that process/do you think you can profit from it?
    c. How much time do you dedicate to conceiving and planning your work? Do you think you have enough time to do that?
    d. How much of your work is predetermined by somebody else (i.e. your supervisor or collaborators)?
    e. Do you actively try to conceive of new ways to research something or do you rather stick to established methods?
    f. How free can you generally be in the decisions of what you want to do research on?

g. Would you say that planning and thinking about your research has a creative element? If yes examples, If no, Why?
h. How do you go about planning a research project? Where do you start?
i. Are you generally happy with your position, do you have a lot of stress?
j. If yes, what is the main element that contributes to stress?
k. Do you think that stress hampers your creative process?
l. Do you think the “system” encourages creativity in researchers?
m. If yes/no, explain!
n. Do you think that the stories that are told about the life of scientists are reflecting the real life of a scientist?
o. What would you say to a highschool student who would like to start studying in the life sciences?

3. Communication
    a. Tell me about your project Tea Time with Researchers?
    b. How did you get the idea for this specific project?
    c. Two events took place already: were they similar?
    d. Do you feel like there is some routine involved now? Do you think this is good or bad?
    e. What were the dominant emotions during the events?
    f. Are you more comfortable with the role of a moderator or as an expert like in the first tea time?
    g.
    h. Why did you decide that you don’t want a ppt presentation? Was it a deliberate decision or just a practical one?

4. Changes
    a. As a researcher, do you generally think that communicating your research can change the perspective on some aspects of your work? Small things like new ideas, perceptions about patients,...
    b. Can you think of examples?
    c. Do you find the roles of researcher/communicator easy to match and reconcile?
    d. Do you think of making science communication a career for you after your PhD?
    e. DO you think that we need more science communication in the life sciences
    f. What are the biggest problems with science communication?
    g. Did the communication change your perspective on the science system as a whole?
    h. If no: Do you think communication can even have these effects?

English Abstract

Communicating their own research to the public is an intricate practice for scientists at the intersection between epistemic culture and science communication. In this thesis, I examine the multiple ways in which the practice of science communication is embedded in scientists' ways of living, working and communicating (in) academic research. To explore this, I accompanied the planning and execution of a science communication project, organised by early-career researchers in the biomedical sciences. By applying the theoretical concept of *Epistemic Living Spaces*, I investigate how communicating their research shapes the participants' perspectives on this multidimensional space, on their knowledge production, their views on the epistemic community, on themselves as researchers and their careers. The findings contribute to the field of science communication, as well as to research on epistemic cultures. It shows how scientists can enrich and develop their *Epistemic Living Spaces,* as well as find new productive ways to strengthen the interaction between science and the public.

German Abstract

Die Vermittlung der eigenen Forschung an die Öffentlichkeit ist für Wissenschaftler*innen eine komplexe Praxis an der Schnittstelle zwischen epistemischer Kultur und Wissenschaftskommunikation. In dieser Arbeit untersuche ich, wie der Akt der Wissenschaftskommunikation die Lebens-, Arbeits- und Kommunikationsweise von Wissenschaftler*innen in der akademischen Forschung beeinflusst. Um dies zu untersuchen, habe ich die Planung und Durchführung eines selbstorganisierten Projekts zur Wissenschaftskommunikation begleitet, das von Nachwuchswissenschaftler*innen in den biomedizinischen Wissenschaften geplant und durchgeführt wurde. Durch die Anwendung des theoretischen Konzepts der Epistemischen Lebensräume untersuche ich die Auswirkungen der Wissenschaftskommunikation auf die Art und Weise der Wissensproduktion von Nachwuchswissenschaftler*innen, ihre Ansichten über die epistemische Gemeinschaft und auf sie selbst als Forscher*innen und ihre Karriere. Diese Ergebnisse leisten einen Beitrag zum Bereich der Wissenschaftskommunikation sowie zur Forschung über epistemische Kulturen. Sie zeigen Wege auf, wie Wissenschaftler*innen ihre epistemischen Lebensräume bereichern und weiterentwickeln sowie neue produktive Wege zur Stärkung der Interaktion zwischen Wissenschaft und Öffentlichkeit finden können.