Science communication

- *Academia to non-academia*

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”I am concerned about whether the social impact becomes the only criteria. By that we marginalize the science which do not immediately have social impact. I believe that to be defective, because there exist all kinds of important knowledge about the world, about human beings, about distant galaxies – which contain value in itself.”

- Svend Brinkmann

“But the idea that we publish will not be ignored by the people who read it. In another sense, the freedom of science suddenly by-passing the institutional limits… We do not protest. We do not complain about these existing rules. Let them be. But we find a way around.”

- Jaan Valsiner

Abstract

This paper investigates the phenomenon of science communication from academia to non-academia from a cultural psychological approach complemented by a structural focus drawing on Michel Foucault (Valsiner, 2014)(Foucault, 2002). Through a combination of a theoretical elaboration of the phenomenon and an empirical investigation of the academic perspective hereof, the investigation shed light on the complex correlation of scientific communication out of academia within the field of psychology. To address the correlation between academia and non-academia in regard to science communication, the cultural psychological perspective and the theory of social representations is brought in to elaborate on the transformation of knowledge and how we as individuals make sense of the world (Lawrence & Valsiner, 2003)(Sammut, Andreouli, Gaskell, & Valsiner, 2015). This thesis main concept is communication, which is seen as cultural tool that enable individuals to exchange knowledge and interact socially. Here, Positioning theory is added as a cultural tool used within communication to elaborate on the several potential asymmetric and dynamic power positions imbedded in the science communication (Van Langenhove & Harré, 1999). Foucault's concepts of discourse, governmentality and institutionalization is further added in order to draw out the more hidden structural aspects of the phenomenon under investigation (Foucault, 1975)(Foucault, 1997). As these societal power structures constitute science communication and serve as a macro context for the phenomenon. This theoretical elaboration is complimented by the empirical analysis of the two interviews with the psychological scientists Svend Brinkmann and Jaan Valsiner. This analysis draws on the Thematic Network analysis and applying the thesis theoretical base to the empirical data (Attride-stirling, 2001). Overall this thesis put forward a complex understanding of the phenomenon under investigation. Bringing in the many dynamic aspect contained in the correlation of science communication to non-academia. Adding the understanding of scientific knowledge getting transformed through different filters, and channels mediating the communication, parallel with the many agents drawing on specific discourses which is shaped by societal structures. Along with the many agenda and motives by different agents participating in the correlation which seeks to affect it.

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1. Introduction

Stepping into academia on my first year of university was like stepping into a new society with different norms, structures and social practices. It was like learning a new language. I learned that a large part of being a good student was to learn the academic way of thinking and writing, and so I addressed this abstract world of forms and instructions. Later on, deeply absorbed in 'the academic way', I started to see the gap between academia and non-academia. How science is produced and not being communicated outside of academia. How the knowledge that I as an academic student has access to, which could change and potential solve problems in the non-academic world, is not accessible for a non-academic audience. How could this be? Was it because it was difficult for scientists to communicate or initiate a dialog with a non-academic audience? Or was it because it was just not part of the 'academic way' or in the academic handbook for scientists? Or maybe the answer to this question was way more complex.

Some sciences have a bigger flow of knowledge from academia to non-academia than others. However, this communication of knowledge to non-academia, is not necessarily initiated by the scientist producing the research, but from other agents interesting in using the scientific knowledge. Journalist and the media have used sensational or controversial scientific findings to sell newspapers and awaken the public. Politicians to emphasis and promote their political agenda. Companies to catch their customers and sell their products. Conversely, scientists freely choosing to participate in the public debate by presenting their scientific knowledge from a more agenda neutral position, bringing forward relevant critic or elaborations that seeks to improve public understanding on a given phenomenon, is more difficult to spot. Despite scientific knowledge having a greater influence and position within the so called 'knowledge society' of today (Davies & Horst, 2016). It brings out the question of why scientists are not to a greater extent stepping out of academia and into the public debate? Along with the question of what is constraining the scientists, and are they actually free to communicate their science?

In the field of psychology Svend Brinkmann is taking up a lot of space in the public debate, as a scientist which have chosen to communicate his science and contribute to the public debate. Psychology has developed to be a hot topic within

society, as self-help books of easily accessible and simplified psychological aspects is sold extensively. However, the public personification of the psychological science is not easy to come by. Here, the face of Svend Brinkmann as a recognizable psychologist seem to stand alone. Leading back to the questions above, what restrains the psychologists for stepping into the spotlight of the public debate? Why is this important in the first place? Which leads up to the question of what is the purpose of communicating science to non-academia? To answer this question, we need to understand the phenomenon of science communication more deeply, and what role it contains within society. Elaborating on the many power relations attached to the phenomenon, and the structural context shaping it. Moreover, asking the psychological scientists of today which limitations and possibilities are available for them in relation to the phenomenon. Investigating the connection between academia and non-academia from the perspective of the psychological scientist. Elaborating on the many psychological processes imbedded in the phenomenon.

1.1. Research question

Grounded in the foregoing reflections on science communication presented above, a general problem formulation was formulated:

> *How leading psychological scientist at Aalborg University understands the relation between the academic world and a non-academic audience, in relation to science communication?*

This question is formulated in a broad term, as it seeks to approach the phenomenon of science communication from an explorative position, both theoretically and empirically. Being faithful to the data collected by not forcing a strict theoretical structure onto the phenomenon. The context of this study is limited to investigating science communication within the field of psychology, and empirically specified to the psychological scientists at Aalborg University. However, this thesis seeks to point out the structure of the psychological aspects of the correlation of science communication from academia to non-academia.

Science communication can also take place inside of academia in form of lectures or scientific articles. However, this thesis limit to investigate science communication from academia to non-academia. The concept of academia is refer-

ring to the academic institution in the concrete form of the Universities, but also more abstract as the institution encompassing the scientific knowledge production. The concept of non-academia is referring to everything outside of the academic institution, not being directly related hereto, or a participant of the academic institution. This 'group' should not be seen as a collective unity, but very diverse and consist of numerus groups. The only thing collecting non-academia is that they are not part of the academic institution.

1.2. The aim of the study

The aim of this study is to get a deeper understanding of science communication from academia to non-academia both theoretically and empirically. Focusing on the field of psychology, elaborating on the phenomenon from a psychological perspective drawing on theory within this field. However, this thesis seeks to point out general theoretical structures of the phenomenon through a psychological perspective.

This thesis aim is based in the above problematization of the importance of science communication to non-academic audience. Scientific knowledge plays a great role in shaping the society today, and thereby shaping the lives of the individuals contained herein (Davies & Horst, 2016). I first came across the relevance of science communication out of academia in my meeting with cultural psychology at my master program at Aalborg University. Here, I was presented to a whole new understanding of what culture is (Valsiner, 2014). This understanding being in contrast to how the concept of culture was perceived and used in non-academic. As the cultural psychological field of science had come far in elaborating on this concept, it looked like the practical world of non-academia was left somewhere in the Stone Age of comprehending culture. I notice how the concept of culture was very much active through social and political issues such as migration, national identity, etc. which let me to the conclusion that if this scientific knowledge on culture was communicated it could potentially change how we perceived and solved these issues. But why was this scientific knowledge not presented to the public, even though it was very much alive within the dynamic field of academia. The importance for human sciences and more specifically psychological science to reach out to a greater audience beyond academia, lies within the moral responsibility of the scientist to participate in the public debate. Addressing and discussing social issues in a reflexive, critical and nuanced way.

The aim of this study in a broader context is to shed light on the importance of science communication to non-academia, by understanding the complex aspects of the phenomenon, within the specific context chosen in this thesis.

1.3. The theoretical framework

This thesis has a cultural psychological approach to the phenomenon, as it is understood to be imbedded in a complex system of social practices and contexts (Valsiner, 2014). The social origin of the phenomenon is central, along with the significance of societal structures affecting and constituting the phenomenon. Here, Foucault's understanding of power and knowledge is drawn upon, in understanding the many complex layers constituting the phenomenon (Foucault, 2002). These two main theories serve as a meta-theoretical base from where this thesis approaches the phenomenon.

1.4. Introducing the thesis approach

First this meta-theoretical base is unfolded in section 2, relating its main points to the phenomenon of science communication. This is followed up by the theoretical presentation in section 3, presenting this thesis theoretical elaboration on the phenomenon under investigation. In section 4 the methodological reflections are presented chronologically through the different methodological steps conducted. The empirical data is brought in and analyzed in the following section 5., through the Thematic Network Analysis and the theory presented in section 2 and 3. This leads up to the discussion in section 6. of two themes arisen from the analysis, that of the freedom of science, and the purpose of science communication. Lastly, the thesis complex theoretical and empirical elaboration on the phenomenon is overall pointed out in the conclusion in section 7.

2. Meta-theoretical reflections

This section serves to unfold the theoretical meta perspective from where this thesis addresses the investigation of the core theme; science communication from academia to non-academia. It serves as a collective theoretical ground of how the thesis tends to approach the phenomenon as well as how the thesis understands the main concept

of science communication, culture, power and knowledge within society. Firstly, the cultural psychological approach will be laid out in section 2.1., drawing on Jaan Valsiner and Carl Ratner's Macro-cultural psychology. Secondly, the notion of power and knowledge according to Foucault, will be elaborated in section 2.2, where his concepts of discourses, governmentality and institutionalization is presented. Lastly, in section 2.3 the two meta-theoretical perspective would shortly be combined, their compatibility pointed out and linked to science communication.

2.1. Cultural psychology

The core of understanding a cultural psychological approach, is to understand that the discipline of cultural psychology is not unified by a certain description of what it contains, but is unified by its diversities. What is most important for Jaan Valsiner in this regard is to keep cultural psychology open for new theories. So that they are not being restrained by specific descriptions, but instead are having the freedom to be innovative on their specific understanding of what cultural psychology contains in a specific context. Hopefully having the outcome of eliminating the 'one-right-way' (Valsiner, 2014).

Jaan Valsiner do stress one specific understanding of culture, which he presents dualistically. Seeking to point out, how people has a tendency to use culture, both scientifically and in everyday language, contra his definition of culture. The two different ways of approaching the concept of culture he categorizes as the 'container' vs. the 'tool'. In figure 1, the A model illustrates the understanding of culture as a 'container'. Where the B model in figure 1 illustrates the understanding culture as a

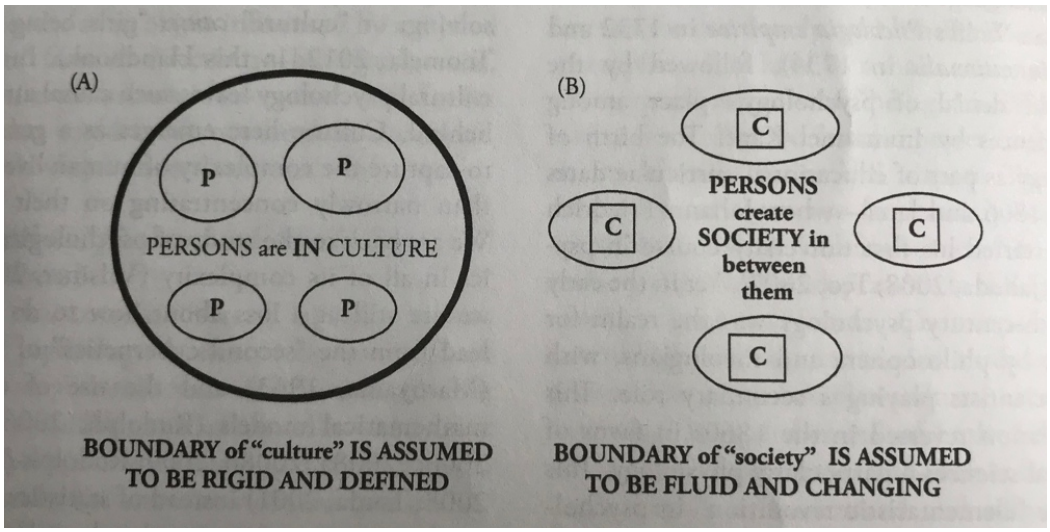


Figure 1: The container vs. the tool (Valsiner, 2014, p. 6)

'tool' (Valsiner, 2014). The common use of culture, which for Jaan Valsiner is a misuse of the concept, is that of culture as a container. This concept arises when we make the distinction between them and us, for example using the term Danish culture, or use a continent as a variable when claiming that Asian people are more collectivistic than western people. This notion of culture perceives the concept as a closed unity with strict boundaries. Moreover, the understanding that you belong to one culture, for example that you either are Danish or belongs to another container. This notion makes the idea of culture very inflexible, and do not allow people or any phenomenon to be in-between these boxes, despite the fact that we know that most people as well as phenomena exists in-between boxes (Valsiner, 2014). In contrast, to understand culture as a 'tool' allows us to have a more complex contextual approach to the concept, which can be argued to be more adequate to real life issues. In this understand culture is socially embedded, and exists between people, it could be through the use of signs, language, physically tools or even institutions. Another important aspect of this view is the understanding that these boundaries are dynamic and constantly shaped and reshaped by the social practices unfolding in the specific context (Valsiner, 2014). This thesis draws upon this understanding of culture.

This thesis has a cultural psychological approach to understanding science communication in regard to the relation between academia and non-academia. This manifests in approaching the phenomenon with the focus on the social context and the acknowledgement of the complexity of dynamic social elements, which effects and constitutes the phenomenon. To understand the communication of science from academia to non-academia, first of all we need to acknowledge that there is no simple understanding hereof, but multiple elements constituting this relationship. Secondly, we need to understand the context of this relationship, looking at the macro cultural psychological factors that dictates the framework, from where this phenomenon operates. This means that we need to understand the many socially embedded cultural processes that effects this relationship. Furthermore, acknowledge that this complexity goes beyond the elements that this thesis can capture.

2.1.1. Macro-cultural psychology

Bearing the above in mind, it is important to understand, how more specific cultural psychological processes constitutes the macro-cultural factors, for example how a

scientist positioning himself in regard to communication of science is constituted by the macro-cultural factors, that could be the social structure of the academic institution (Ratner, 2014). Carl Ratner elaborate on this: “The central tenet of macro-cultural psychology is that psychological phenomenon are elements, or parts, of macro-cultural factors. Macro-cultural factors are social institutions, artifacts, and cultural concepts. They are the broad, enduring cornerstones of social life.” (Ratner, 2014, p. 207). Macro-cultural factors are thereby setting the framework for social processes operating within the context of such factors. The macro-cultural concepts determine to some extent the micro-psychological phenomenon. Applying this to the institution of academia, the institution could be argued to serve as a macro-cultural factor that structures the different aspects of science communication on the academic side of the communication. To disclose and unfold these macro-cultural factors we need to understand the relation of dynamic effects between different levels of cultural elements (Ratner, 2014).

To understand science communication, is to understand the different aspects of the macro-cultural factors that effects the phenomenon. Psychological phenomena are rooted in the many structures and broader factors of society. They stem from a specific historical context, political, technological as well as art, religion and so on. All these different aspects of society create discourses (see section 2.2.) within academia, which is closely connected with the phenomenon of science communication (Ratner, 2014). Instead of seeing psychological phenomena as separate entities, we need to see the network of reciprocal interdependent relations between the different cultural layers of contexts: “Psychological phenomena are subjective aspects of these cultural-historical phenomena; psychology is not realm of its own, independent of these” (Ratner, 2014, p. 209). For example, shaping political power comes down by different channels such as legislation, the media and the academic institution itself. All different macro-cultural factors that influences micro psychological processes, which constitutes individual living. Thereby history is not made by isolated individuals operating in a social vacuum, but by different macro-cultural factors that shapes the individual life (Ratner, 2014). In addition, this understanding of the origin of meaning in broader macro-cultural factors, are something which according to Ratner tend to go unnoticed and are taken for granted. Therefore, bringing forward these structures gives the individual the possibility of identifying and changing them (Ratner, 2014).

These macro-cultural factors operate by socially organizing for example the academic institution through symbolic communication (Ratner, 2014). The academic institution consists of a complex set of rules, both explicit and implicit more subtle ones consisting of social norms and criteria. These are socially reinforced through the social interactions within academia. These constructions and socially organized macro-cultural factors shape how we perceive different aspect of psychological phenomena such as adopting knowledge. Through education we are trained to measure learning in a particular socially organized way, which shapes the way we grow up to perceive the concept (Ratner, 2014). Moreover, they are a reinforcement of the institution into the socially organized practices, such as science communication. By attending to the institution's rules and norms, one legitimates and constitutes the institution itself. So, for the institution to contain power or control and uphold these constructs or discourses, the individuals need to constantly reinforce them through their social practices of everyday life.

2.2. Foucault – Power and knowledge

Foucault stems from a poststructuralist approach, which aims to reveal the structures hidden in society. Only when we become aware of the hidden structures of social life, will the individual have the opportunity to break free from these social structures. Poststructuralism is skeptical towards conclusive truths and are critical in nature towards established systems (Wæver, 2012).

With Foucault arises a new way of understanding power, in opposition to the more Marxian top-down definition of power as a suppressive force, practiced from a higher power position towards a lower. Foucault did not see power as suppressive, but as a productive force that forms individual life and actions. In addition, he did not separate power from the human subjectivity, but instead perceived it as something embedded in the social practices of individual life, which then integrated into the individual conduct (Foucault, 2007). To see how power according to Foucault should be understood as productive, we must look closer into a few of his main concepts.

2.2.1. Discourses and knowledge

Foucault's notion of power is closely related to his concept of discourses, which refers to socially organized frameworks. Discourses are meaning systems of different

formation of perspectives on knowledge, by that Foucault rejects one true knowledge and the idea of generations becoming more knowledgeable. Instead, he sees knowledge as something shifting, not something we keep building upon, but imbedded in these discourses that through history of mankind keep changing. In another sense, one way of perceiving knowledge replaces the next (Foucault, 2007). These discourses are produced and constantly reproduced through individual's perception and action in everyday life. So, the power exists within these discourses that determines the lives of the ones attached to them. These internalized discourses then become normalized and integrated into cultural norms. They serve as a structured network of opinions which provide a framework of how individuals should perceive the world and act upon it. Here lies the understanding of power as productive. Firstly, the power imbedded in these discourses gives the individual agency to change these discourses through resisting some and creating new ones. Secondly, the discourses are to be understood as productive as they form individual action and induce shifts in knowledge (Foucault, 2002).

It is important for Foucault when analyzing the power of different discourses imbedded in the institutions, as he does in *Madness and Civilization* (Foucault, 1971), not to see them as determinant but as strategies: "These are only strategies, and therefore, by changing a certain number of things, by changing strategies, taking things differently, finally what appears obvious to us is not at all." (Foucault, 2007). He does not see power as suppressive and nor do he see it as conclusive structures. Nevertheless, he does believe these structures to be very solid and hidden, which make it difficult to oppose against, yet possible and therefore important to reveal and make visible. When looking close into how the power is reinforced, Foucault believe it to be self-imposed through internalization of the discourses formed within society. However, society is never more than the summary of the individuals participating in it. So, to change the discourses and power regulation within the society, is to change how we as individual perceive and act according to these discourses. Knowledge is power, and what we decide to categorize as knowledge, then have power, when reinforced and reproduced by the individuals sharing it (Foucault, 1975). The difficult part is according to Foucault, to unveil these dominant structures that we take for granted and bring to light the network of opinions within these discourses, that keep being reproduced without questioning its suitability or impact (Foucault, 2007).

2.2.2. Governmentality and the Panopticon

In order to understand the different structures of power relations within society, and how this plays out in the modern society, the concepts of *governmentality* and Foucault's analysis of the panopticon prison structure will shortly be addressed (Foucault, 1975).

Governmentality refers to the relation between the state and the population. Furthermore, how the state controls the population. He presents different forms of exercising this control, the most relevant for the modern society is that of 'the disciplinary power' (Foucault, 2002). This power is exercised in different modern institutions through disciplinary means. In *Discipline and Punishment: the birth of the prison* Foucault analyzes the prison as an institution preforming disciplinary power (Foucault, 1975). So, the institution could be a prison, it could also be education in the form of a University. Taking the example of the prison, Foucault analyzed the particular facility of the Panopticon, which is a prison structure with a watchtower in the middle of the prison with the prison cells in a circle around it. The tower is placed so it at any time can see into the prison cells, and thereby monitor the prisoners every behavior. At the same time the prisoners were not able to see if there were a guard in the tower watching them. So, the prisoner internalized the effect of the guard, by self-monitor their own behavior, as if they were being watched at all time. This phenomenon Foucault believed to be present in society, where individuals self-monitor their own behavior as if there were a watchtower surveilling their every behavior (Foucault, 1975). So, what has happened? In modern society individuals have internalized the norms imbedded in the different discourses within society, and then monitories themselves to comply with these norms. The power of governmentality in modern society lies within this hidden control exercised through existing discourses. Nikolas Rose evolve on Foucault's work in his book *Power of Freedom* (Rose, 1999). Here, he addresses the notion of people being free in the new world of neo-liberalism as an illusion that the government wants the people to believe in. Even though the power regulation is very much present. Through individualization and normalization, individuals are controlled to act in ways that is compliant to the norms of the liberal society, forcing individuals to be the most useful (Rose, 1999). The act of normalization lies within the norms, which serves to standardize individuals in regard to the norms desirable

for the institution. This combined with the individualization isolating the individual and effects the individual to become responsible alone for every action. This puts a great pressure on the individuals (Foucault, 1975).

2.2.3. Institutionalization

Foucault analyzes different power institutions, one of them is the power of the psychiatry (Foucault, 1997). He advocates that psychiatry proclaims to produce the truth about psychology and psychic pathology, legitimating their existing through their production of knowledge. So, in one hand they proclaim to produce true knowledge, and on the other hand they use this to legitimate the power of deciding people's mental health. The institution then has the power of deciding, what true knowledge is, and use it to argue that people should listen to them (Foucault, 1997). Foucault goes even further, when making the parallel to the work of Pasteur, which discovered that the doctors themselves were spreading a certain disease. In the case of psychiatry, the psychiatrist then become the one making the patient sick, by forcing these discourses of knowledge onto individuals, even though they may not be fitting (Foucault, 1997).

The interesting part of this analysis is seeing the structure of the institution. How they take patents on true knowledge and through discourses, established within the institution, governs the individuals linked to these discourses. In the light of the research question of this thesis, it could be argued to be applicable to the institution of academia, and moreover, the psychological discipline. As the scientific knowledge production, and the status it has within society, legitimates the institution of academia along with the discipline of psychology. Through normalization and the internalization of the norms imbedded in the institution, the individual is controlled in a very hidden form, that makes it difficult to oppose. One thing, which is important to add, is that Foucault always saw that where power exists there exists resistance towards this power, and it is through this relation that power can be productive and even change societies (Foucault, 2007).

2.3. Science communication

These two meta-theoretical perspectives serve as a base for how this thesis approaches the phenomenon, but also how this thesis relates to the concepts of culture, power and society. Cultural psychology is the framework, from where this

thesis studies science communication as a cultural tool socially imbedded. Seeing the correlation of science communication as consisting of multiple complex cultural tools is central to this thesis. Along with facilitating the study of how individuals internalize norms and discourses regulating academia, and how individuals make sense of the scientific knowledge presented through the use of several cultural tools. This will be unfolded in the theoretical section and enhance through the analysis. Along with the understanding of how culture is enabling the phenomenon under investigating, the thesis focuses on the academic side of the correlation. More precisely the institutions relation to the phenomenon. Here, the Foucauldian perspective helps elaborating on the power imbedded in the institution and the system of knowledge. Power is thereby a central aspect in this thesis of the investigation on science communication. This perspective adds a structural analysis of the society that serves as a context of this correlation under investigation. Pointing out how discourses and governmentality is shaping the phenomenon. On the one hand the Foucauldian perspective sees these structures as subjective to and constrains the individual. Where a more cultural psychological perspective sees the cultural tools as resources, which frames the context, not determining the individual actions. This cultural view could be argued to give more agency to the individual. In contrary one could argue that Foucault ascribe the same agency to the individual as he believes power to be productive, and when bringing these societal structures to light, the individuals have high agency towards changing them, as they are upheld by the individuals reproducing them.

Overall the two perspectives draw out different aspects of the correlation of science communication and thereby are complementing each other in this thesis, as they both contributing to a deeper understanding of the phenomenon.

3. Theoretical presentation

This section serves to present the theoretical background for the analysis. Consisting of theory that elaborates on the phenomenon under investigation adding layers of understanding to comprehend the complex multifactorial aspects hereof. This theoretical base will be interweaved within the analysis in section 5. and integrated into a deeper theoretical understanding of science communication.

Firstly, in section 3.1. science communication is presented along with the cultural psychological approach to the phenomenon. Secondly, the theory on social representation is unfolded in section 3.2. further adding to this understanding. Thirdly, the last section 3.3. presents positioning theory, and relating it to discourses, conversation (or communication) and conflicts. Further investigating the many aspect surrounding the phenomenon.

3.1. Science communication

This thesis aim is to investigate the relation between the academic world and a non-academic audience, in relation to science communication. Here communication serve as a form of bridge connecting the two worlds, allowing information to flow between them. Nevertheless, it is not a matter of course that scientific knowledge is easily transmitted to non-academia. Neither, that this communication takes the form of a dialog, allowing a flow of information going both ways. There are many circumstances surrounding this phenomenon, as well as many complex contexts and aspects. Even though this thesis cannot manage to address all these aspects, an approach and outcome that respects this complex understanding of the many aspects effecting and constituting this phenomenon is strived. To mention a few of these aspects, science production seems to be flowing very well inside of academia. Although scientific knowledge is produced, it does not necessarily affect an equal amount of scientific knowledge getting communicated to a non-academic audience, allowing knowledge to get equally distributed and more importantly discussed, related to and negotiated. Some will say that the containing of knowledge inside of academia, contains the power and legitimation of the institution cf. Foucault (section 2.2.), upholding a barrier between the two worlds and an asymmetric power relation. Others will refer to the different issues related to the communication as reason for the scientist to be cautious about communicating their science. Along with the issue of the non-academic audience being skeptical towards integrating it (elaborate in section 3.2.1.). Maybe an understanding that incorporate these different issues draws out the most accurate picture hereof, maybe a few others need to be attached.

The following theoretical elaborations presented in this thesis, serve to get a deeper understanding of two main aspects. Firstly, the role of science communication in society. Why this phenomenon is relevant? How science communication effects and constitute individual life. Secondly, what theoretical

constructs can be applied to this communicative relationship between academia and non-academia and elaborate on the understanding of both the issues as well as opportunities for this relation.

3.1.1. Simplified correlation

Science communication could be, in short, defined as the communication of scientific knowledge. Davies and Horst elaborates on this definition: “as organized actions aiming to communicate scientific knowledge.” (Davies & Horst, 2016). This could both be of the communication within academia, as well as the communication to a non-academic audience, both aspects is brought up in this thesis, but with focus on the latter. As this thesis draw on a cultural psychological approach to the phenomenon, addressing it from a position which include the context and complexity is very important. However, other more simplified approaches to the phenomenon is presented in the literature. Here, communicating can be seen as the transformation of information from one source to another (Collier & Toomey, 1997). In figure 2 from Collier & Toomey, 1997, we see the process of communication narrowed down to a line of events, much like a computer program. The communication starting by a sender that transmit its message through an encoder, then the message goes through a cannel. In the other end is a decoder which transmit the message to a receiver. This understanding of communication is simplifying the process, leaving out many

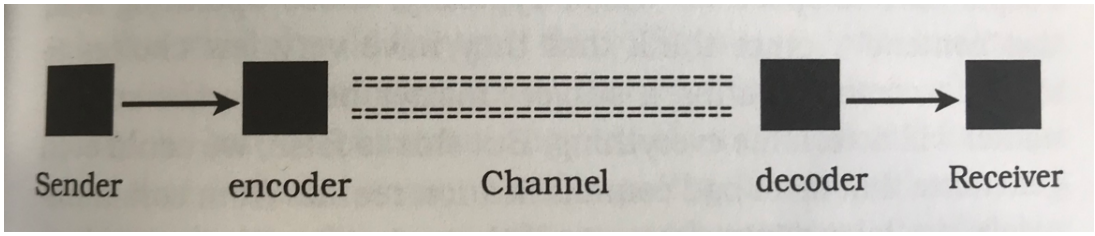


Figure 2 : Simple model on communication (collier, 1997, p. 301)

aspects, for example the context that this communication takes base in. Furthermore, the model reduces complex human beings to the forms of pieces in a computer program. Raising the questions: ‘Is communication just the transmission of knowledge?’ along with ‘Is it possible just to transmit knowledge directly from one to another without transformation?’. As we will go deeper into addressing these questions later in this section, for now, what can this understanding of communication apply? It operates the notion of an encoder and a decoder. One could

see these two concepts as a kind of filter that the information exchanged goes through. To evolve the notion of these 'filters' firstly we will look into how individuals adopt knowledge and evolve on this understanding in section 3.2. on the base of social representation theory.

3.1.2. Knowledge society

Before addressing how individuals adopt knowledge, I would like to put science communication into context, consisting of the aspects already determined. If we approach the society of today in line with Davies and Horst notion of the knowledge society, knowledge plays a significant role in shaping and constituting the society of today (Davies & Horst, 2016). If we apply Foucault's concepts of discourses, knowledge is produced, reproduced and acting through discourses, which are created in the intersection between knowledge and social historical codes and references within society (see section 2.2.). These discourses shape the structure of society, but more importantly shapes the individual's life. If we rewind a bit, looking at what comes prior to science communication. The production of scientific knowledge is constituting and shaping the science communication. Furthermore, how a scientist construct and conduct the research could be argued to be shaped by the epistemological base the scientist evolves from. Putting these aspects together:

Epistemology ↔ Science production ↔ Science communication ↔ Audience/actors ↔ Knowledge discourses ↔ Knowledge society

Figure 3: Science communication in the knowledge society

The arrows pointing both ways indicate the reciprocal and constantly shaping and reshaping of the different aspect. Figure 3 presents a linear relation between the different aspects, evolving on this a more complex circular understanding would be preferred. Nevertheless, the aim of figure 3 is to show how science communication is an important part of shaping the society, along with outlining how it facilitates the possibility of scientific knowledge to have societal impact if communicated.

3.1.3. Adopting knowledge

This section serves to elaborate on the relationship between academia and a non-academic audience, in relation to the communication of knowledge flowing out of

academia. Figure 2 could be a launch pad for this relation, if we interpreting it as a sender (could be an scientist) communicating knowledge through a channel (could be a book) to a receiver (could be that of a non-academic audience) and this knowledge go through both a decoder shaped by the sender, and a encoder shaped by the audience receiving the knowledge. If we take base in this understanding of figure 2, the encoder and decoder, this section aims to unfold the different aspect of the 'filter' an audience use to make sense of the scientific knowledge presented.

In contrast to the understanding of knowledge being directly transmitted from one source to another without getting transformed, an understanding of communication as a transforming process of individual making sense of the knowledge, is the point of origin in this section. From a cultural psychological standpoint, the accumulation of knowledge should always be understood within the social context it takes place. Acknowledging that contexts are dynamic, the theoretical understanding should be able to accommodate that (Lawrence & Valsiner, 2003).

3.1.3.1. Internalization and externalization

How we as individuals adopt knowledge communicated to us, therefore depends on how we socially address and make sense of this information, allowing us to integrate it into our own personal knowledge system. The understanding of adopting knowledge could be understood in relation to Lawrence and Valsiner's work on internalization and externalization processes (2003). They stress an understanding of individuals adopting information as a product of the intersection of social and personal organizing systems. We all have different individual systems of experiences and beliefs, which is decisive when making sense of knowledge presented to us, at the same time the social practices that the individual is imbedded in influences and serve as an equal creator in this process. Building on these connections the authors bring in the two concepts, that of internalization and externalization (Lawrence & Valsiner, 2003). These processes is to be seen as something that takes place in a social context, not isolated but constructed as this social act plays out. The social act could be that of the communication of science from academia and non-academia. Here, the non-academic audience should not be understood as a passive recipient of the scientific knowledge. The individuals within the non-academic audience is actively interpreting the message in the intersection of contributors from both the

social practice and the individual's personal inner world. This should be understood as a constantly negotiation and elaborating force, through the individuals' life, between the social and personal inner world (Lawrence & Valsiner, 2003).

The concepts of externalization, the projection of inner material out into the world, and internalization, taking in material from the outside world and integrate it into one's inner world, serves as points of opportunity for change in the relation between the individual and the surrounding social world or institution. This can, regarding of the persons attitudes, create an interdependence or distinct relation to the socially surrounding world/institution (Lawrence & Valsiner, 2003). Referring to the two meta-theoretical approaches, the social structures is both a resource for the individual, but also potentially constraining the individual, which depends on the context and individual in that context.

The meaning making, according to Lawrence and Valsiner, always starts at an inter-psychological level, then integrates into the intra-psychological understanding. This understanding aligns with this thesis cultural psychological meta theoretical approach, as meaning making is understood as a social process that originate in a social practice, changing as the cultural context shifts. To draw back to the first notion of whether communication was a directly transmission of knowledge from one source to another. This theoretical perspective shows how the scientific knowledge is transformed through these contexts depended psychological processes.

3.1.3.2. Internal dialogue

Individuals are constantly making-sense of the surrounding world and this is: "Made possible by semiotic mediation that takes the form of internal dialogue." (Lawrence & Valsiner, 2003, p. 725). The need for the individual to construct an illusory shared model of the social material, is a respond to the great diversity of collective culture. This illusion of a shared cultural and social ground Valsiner define as 'illusory intersubjectivity' (2018). This illusory intersubjectivity becomes the ground for the struggle of which ideas to dominate, through this negotiation there is a constant flow of shifting between being constraint by and reshape this illusory intersubjectivity, going both ways between the individual and the social world (Lawrence & Valsiner, 2003). Within the collective culture is a shared history of norms and approaches and these are constantly reinforcing onto its members. This collective culture may constrain the individual by attempting to limit its actions or perception into the

accepted ways. Individuals always integrate these constrains by reinterpreting them in relation to their inner feelings, intentions, norms and so on. Lastly, putting these counter strategies into action could potentially force the system to reintegrate this resistance (Lawrence & Valsiner, 2003). Furthermore, they refer to this 'dialog of voices', which is how people make sense of the social world, taking it in and constructing or reconstructing it internally by having inner dialogs to processing the social activities. This is a form of internalization. After this inner-dialog comes the dialog with the surrounding world. Where the individual through the social act of communication and other social activities with the members of the collective culture, incorporate the individuals new integrative understanding into the social shared. This is again a form of externalization (Lawrence & Valsiner, 2003).

Overall the social messages need to be transformed for the individual to integrate them into the persons conduct. These messages are always adopted according to the individuals complex inner-world (Lawrence & Valsiner, 2003). As individual is participating in different social practices, belonging to different social groups the social context will differ, and therefore they are interpreting and adopting information differently.

3.1.4. Applying filters and context

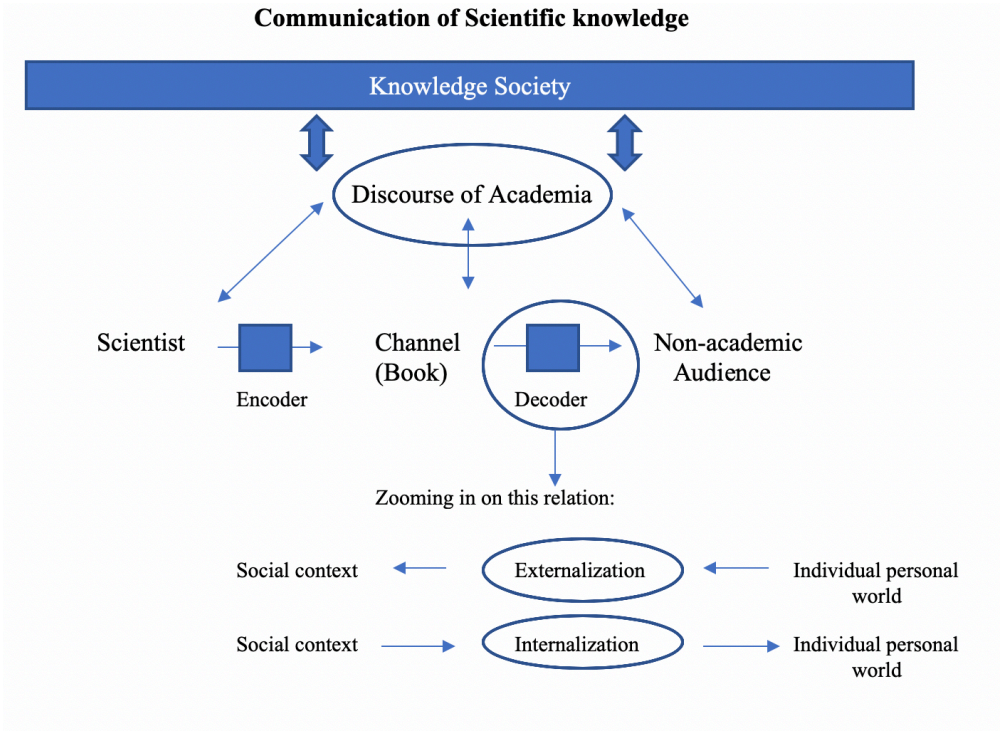


Figure 4: Communications of scientific knowledge – the decoder

In figure 4 the new understanding is integrating with the acknowledgement of it as incomplete, as not all factors effecting the phenomenon on many different levels can be illustrated in one figure. This figure gives an overview of the two processes of externalization and internalization, applying them to the previous elaboration of the phenomenon. Elaborating on figure 4, the social context surrounding the correlation should be perceived as dynamic, along with individuals having different notions of what the academic discourse contains, and a different incorporation of that into their personal conduct.

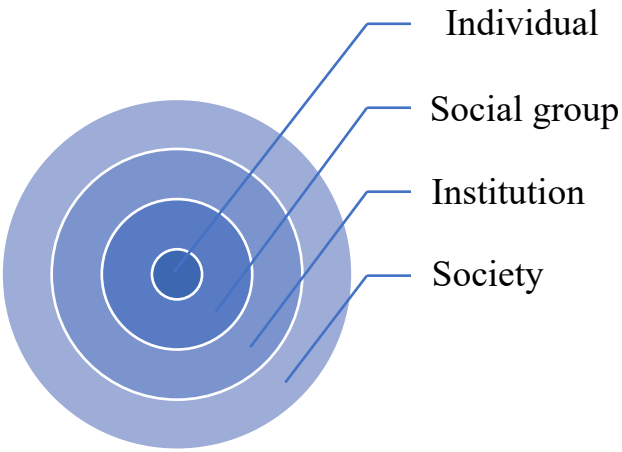


Figure 5: Contextual layers of science communication

If we go beyond figure 4, looking at the different contextual layer surrounding this correlation figure 5 illustrate these different layers of social influence that the individual is imbedded in. In relation to both Foucault and Lawrence/Valsiner's theoretical base, there is a reciprocal relation between all the different layers, as the individual is producing and reproducing the discourses of knowledge and socials norms that is part of the different layers. These contexts affecting back on the individual through the different social practices that the individual participates in.

Combining the two figures (4 and 5) adopting knowledge is a social process, where the individual transforms and integrates this knowledge. Through processes of interaction the individual access a socially illusory shared intersubjectivity, which the individual draws upon. Lastly, the individual integrates their understanding hereof into the individuals own personal system of knowledge.

3.2. Social representation theory

A system of social representations shared by a specific group, that the individual participates in, can be understood as the social system of knowledge and reasoning

that the individual draws upon when making sense of new information. Evolving on the section above the theory of social representation is unfolding the social produced framework from where individuals 'filter' knowledge presented. The theory takes base in the notion of meaning making being a social process, which reciprocals influence both on the individual and the group. When the individual is to integrate knowledge, it is selected, integrated and understood through the networks of social representations, which the individual has established by interacting within a specific group or context (Sammut, Andreouli, Gaskell, & Valsiner, 2015).

Serge Moscovici was the founder of social representation theory, which aim was to understand how individuals socially make sense of the world. A social representation is a constructed collection of a group's values, beliefs, norms etc. of a certain phenomenon, which is condensed into a specific social representation. It serves to organize knowledge and allowing the individuals to act in meaningful ways. Every group has a system of social representations that enables the group to organize and make sense of this arising knowledge by integrating it into the existing social representation. Identifying a groups social representation system, helps understand the way the group approaches a specific phenomenon (Sammut et al., 2015).

Moscovici presented two concepts explaining the process of how groups integrate new information into the system of social representations; *objectification* and *anchoring*. The process of *anchoring* lies in the process of taking something new and unfamiliar and integrate it into a familiar framework. In another sense, the aim is to integrate the meaning of new information, object or phenomenon and anchor it to an existing social representation. This process of anchoring helps create order in the unfamiliar by relating it to already existing knowledge, and thereby stabilizing a potential root for chaos and conflict. Along with integrating this new object/phenomenon into an existing moral order within the social representation system. Which adds a layer of positive or negative value to the anchored object/phenomenon (Kronberger, 2015). The process of *objectification* consists of: "Externalization by which the meaning of an object or event is projected in the world through images or propositions." (Sammut et al., 2015, p. 9). This process aims to make something new incoming, and perhaps confusion material, concrete by attaching it to something iconic. It could be that of a familiar concept, metaphor or image which helps the group to integrate a perhaps more abstract and broader

phenomenon that are alienating to them, by attaching it to a more concrete familiar object (Kronberger, 2015).

The act of communication plays a great rule in constructing and reconstructing the knowledge within the social representation system of a group (Sammut et al., 2015). The social representation presents a ground of groups members to communicate and meet the need for a common ground of addressing constructs in the surrounding world. Here, the anchoring and objectification processes is helpful facilitators for group communication (Kronberger, 2015).

Referring back to figure 4, zooming in on the decoder that transforms the knowledge communicated to the audience. When adding the theory on social presentations, one aspect of the decoder is the complex social system of representations that the knowledge needs to be 'filtered' through. Here, objectification and anchoring, which could be seen as another version of the externalization and internalization processes presented in section 3.1.1., permits the knowledge to integrate into the individual conduct. Even if a group would like to dismiss the piece of knowledge, the knowledge is integrated into the social representations system as something the group is opposed to.

3.2.1. Science and knowledge in society

Nicole Kronberger elaborate on the relationship between scientific knowledge and the public, in the chapter *Of worlds and objects: scientific knowledge and its publics* (2015). She draws on the theory of social representations, as a contributor to understanding and unfold this relation.

Social knowledge is shaped by two different means, the knowledge that comes directly from our own experience and the knowledge which we adopt secondarily, without having experienced it, but still accept and believe to be true. The secondarily adopted knowledge is central for looking into the issues of communication between academia and non-academia. This relation withholds several contexts from where discrepancies can unfold: "Social, economic, political and ideological contexts frame the production of scientific knowledge, and science and technology influence the lives of everyday people." (Kronberger, 2015, p. 358). These different contexts are said to effect science production, one can argue that these contexts therefore effects and shapes the communication of science as well.

Science has a significant position within society, as scientific knowledge and technologies are expected to solve many problems imbedded in society today (Kronberger, 2015). As the development of many modern societies has distancing from religious beliefs, secularization, looking at the position that scientific knowledge has emerged to possess, it could be argued to have simply replaced the role of religion. Nevertheless, scientific knowledge is not unquestionable truth, the public do challenge the status and authority of expertise and knowledge, and do not blindly trust its concepts (Kronberger, 2015).

3.2.2. Issues of miscommunication

Kronberger present two historical line of approaches to the dynamic between academia and non-academia. The first arising in 1960 seeing the lack of science getting communicated as due to communication issues. The responsibility of this was placed on the non-academic publics lacking knowledge or ground for understanding science. The solution was to educate the public and train their scientific understanding. Secondly, a more radical approach came in the 1990's the issue was ascribed to how the scientists dealt with issues in society, that have the outcome of decreasing trust of the public. Here, the solution was more public engagement and involvement (Kronberger, 2015).

Seeing this issue through the social representations theory, the miscommunication could be argued to lie within the two different agents in the correlation having different social representations systems. The focus shifts from the issue of miscommunication to the understanding of how groups integrate knowledge differently: "The question is not so much how 'biased' one way of understanding is compared to the other. Rather, the interest lies in what logics the systems follow and what functions they fulfil." (Kronberger, 2015, p. 359).

Through social representations theory two new points of addressing science communication has arisen. One, to unfold the network of social representations imbedded in the receiver. Secondly, what purpose or function this network serves. In addition, Kronberger stresses that through the theory of social representations, we see non-academia as a complex network of different groups having very different ways of adopting scientific knowledge. These groups make sense of the world through their system of social representations, which build upon affective, imaginative and ideological experiences and beliefs within the group. So, if

the group feels threatened by certain scientific concept, they have great resistance towards it, because it can potentially threaten the groups system of social representation and thereby the coherence of the group (Kronberger, 2015).

It could be argued that the academic institution to some extent understand communication and the integration of knowledge as if it should aim to be directly transmitted. As a scientist your ways of interpreting information is most likely formed by social representations imbedded and constantly produced and reproduced within the academic system. As one can analyze the system of social representation within a group of Catholics, you can also identify the academic network of making sense of the world, as well as the imbedded norms and cultural codex that follows with. However, the academic social representation of communication and adopting knowledge, is in most cases not identical with the social representations of the many different groups outside of academia. These groups are grounded in different belief system and has often a different way of adopting scientific knowledge, through a completely different network of social representation. Therefore, the barrier between the scientist(academia) and non-academia becomes even more visible, when scientists believe non-academia to disintegrate the scientific knowledge (Kronberger, 2015). As non-academia integrates the scientific knowledge, not in regard to the academic rationale drawing on the social representation systems of academia, but through the rationale of the familiar social representation already established within their social group.

3.2.3. Communication as a tool

Communication is an important tool for groups to navigate in different external pressures, for example if there is a pressure for group members to make-sense of information and forms opinion on issues arising in the society. When groups use the process of anchoring current issues into familiar social representation, it is not necessarily done in the respect of prior scientific knowledge or rationale (Kronberger, 2015). When a group approaches a new phenomenon, the most secure way is to understand it within the framework of ideas and concepts that they already know.

Relating this to the context of society, scientific knowledge plays a great role within society in regard to legitimizing both political as well as public

decision making. This status of scientific knowledge is not left unchallenged: "Society has learned to speak back to science." (Kronberger, 2015, p. 367). This emphasize the importance of negotiating dialogical communication flow between the two and enable barriers to be diluted. Nevertheless, if there is not initiated this communication, the room for the two worlds to meet vanishes. Scientist may not want to initiative this communication in fear of being misunderstood, as science can serve both ground for containing status quo and also initiative change. The extent of what impact one's research might have, can be immeasurable (Kronberger, 2015).

3.2.4. Connections to Positioning theory

This last subsection serves to present positioning theory in relation to social representation theory. Social representation theory is a neutral theory in the means that it does not present a morally hierarchically order among the system of representations. One could argue that this is not compatible with the positioning theory. However, instead one can see this as complimenting in the sense that positioning theory can add the understanding of how groups, through certain kinds of social representations, positioning themselves and the 'other' or the outgroup, and how this positioning is presented within communication (Harre & Moghaddam, 2015). Positioning theory also adds the layer of power relations and power disparities among groups members as well as groups in-between. Harre and Moghaddam elaborate on this relation:

> *"The issue of positioning is deeply embedded in the whole program of social representations research. Once some body of knowledge has been identified and its content established, that is, a social representation of some matter has been made explicit, the question of how it is to be realized arises – and that requires attention to the way rights and duties are distributed among the people who share the representation." (2015, p. 225).*

In every social representation system within a certain group there is a constantly positioning as the knowledge is constructed and reconstructed through interaction of the group members. A new social representation can provide ground for creating new duties and right along with the abandon of others. As well as ridged existing social representation can limit the groups opportunity for reorganize or change the duties

and right among them. The authors go on to emphasize: “The joint use of positioning theory and social representations is a powerful tool.” (Harre & Moghaddam, 2015, p. 233).

3.3. Positioning theory

Positioning theory rises from Davis and Harré’s analysis on marketing, where communicating strategies was seen as positions in relation to competitors, from where to place the products within the marked. Later on, Hollway used it in the context of social science, and here the formulation of positioning as a process that constituted interaction, arises (Tirado & Gálvez, 2007). Positioning theory is useful in micro scale interactions as well as macro scale interactions, and interaction on all levels between individual, institution, groups, and society. In this sense, the levels should be seen as reciprocal related (Van Langenhove & Harré, 1999).

3.3.1. Discourses

Position and discourses can be seen as closely intertwined through the understanding of positioning as: “the discursive construction of personal narrations.” (Tirado & Gálvez, 2007, p. 5). The act of positioning oneself in a conversation originates in a discursive practice. A discourse can in this context be seen as a map of historical and contextual production of values, norms and their effects, which guides the rules of social interaction. Which is in line with this thesis meta-theoretical approach as a combination of both a cultural psychological focus on context and cultural tools, and the Foucauldian notion of discourses closely related to power. It is within the discursive framework positioning plays out, as the discourse creates specific locations of positions within the conversation for the individual to take up. Positioning theory is overall an interactionist approach, which see positioning as dynamic and context depend. To uncover the complex process of positioning it is important to understand how these processes is fluid and constantly changing (Tirado & Gálvez, 2007).

3.3.2. Communication

Conversation (or communication) is the discursive practice, where we create meaning, and make sense of the world, here essential elements of social reality is created. Through everyday conversations, there is a constantly negotiation of

constructing and reconstructing this social reality. Here, positioning should be seen as a phenomenon of conversation (Tirado & Gálvez, 2007). Which refers to positioning being a tool within the act of conversation, through which the construction and reconstruction of the social reality takes place. The dynamic process of positioning arises from narratives, images and metaphors. One can argue that these narratives, images and metaphors exists and arises within a certain discursive framework. When positioning oneself in a conversation, one can take a position or is likely to be given a position. Moreover, one can position the 'other' part in the conversation as well. There will always be an implicit positioning arising, as one positions oneself, there can arise an opposite implicit positioning of the 'other', or if given a position the other can implicit through that act position oneself (Van Langenhove & Harré, 1999).

3.3.3. Positioning in science communication

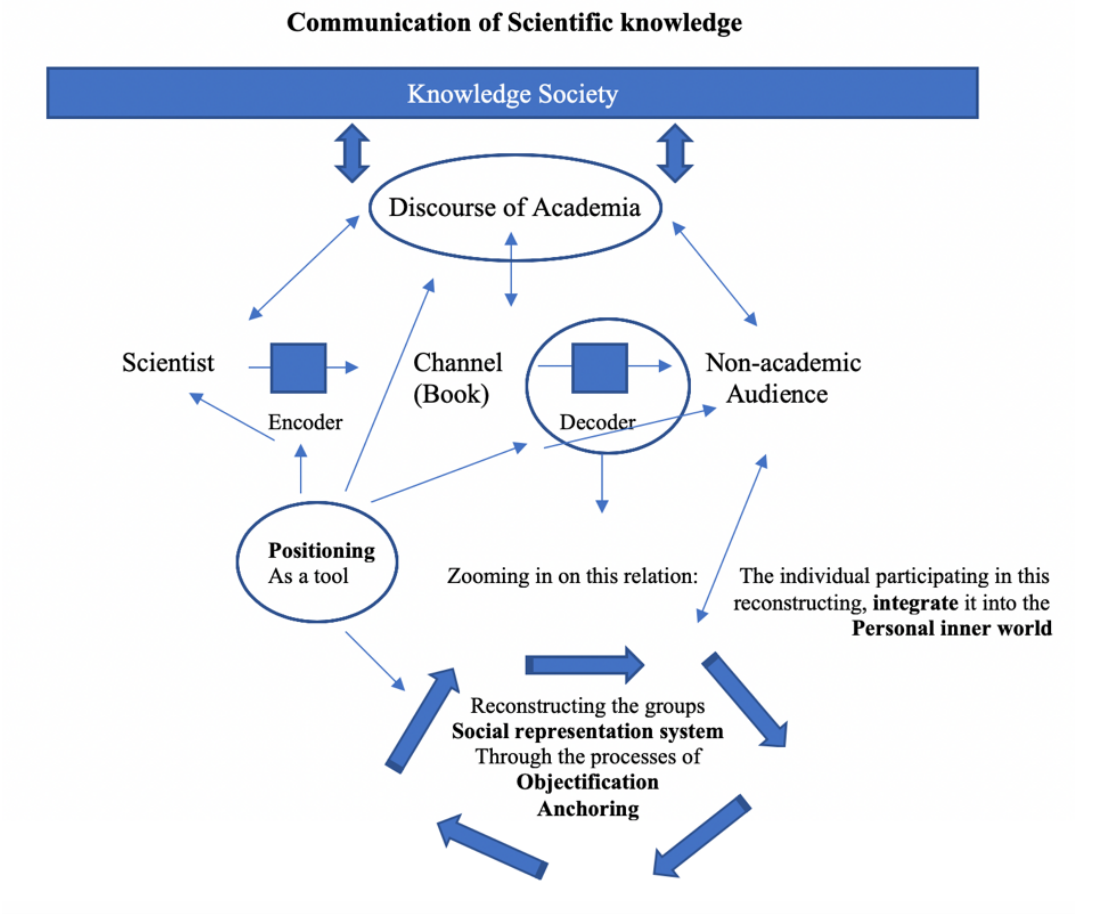


Figure 6: Positioning of science communication

Positioning in relation to science communication can be seen as a tool that takes place in the social interaction between two parties. Thereby positioning takes place within the communication of scientific knowledge, along with the process of making sense of and integrating that knowledge. Negotiating positions, resulting in positions being taken or given, effects the setting from where the knowledge is being communicated. Adding this to figure 4 positioning as a tool affect the process of either producing or re-constructing the system of social representation. This elaboration is illustrated in figure 6, above. More concrete, positioning is a tool that a scientist uses when communicating one's science. This way of communicating relates to different 'filters' (encoder/decoder). It could be the filter of the different social representations that you as a scientist draw upon when communicating your science. Here, positioning is a parallel process that contributes to the scientist relating to the audience. How the scientists position oneself thereby affects how the scientist choses to communicates one's science. This positioning can then affect back on how the scientist perceive oneself in opposition to the audience, getting integrated into the scientist own personal world. The scientist can also position oneself in regard to the discourse effecting this communication, as either aligned with the discourse or being in opposition to it. On the other side of the correlation, the audience can also position themselves in relation to the scientist, the academic institution or to the scientific knowledge presented. To sum up, positioning is a tool that is used and effect all the different process imbedded in science communication.

3.3.4. Conflicts

Positioning within a conversation can result in conflicts and moreover, negotiations of positions. Conflict can be seen as destructive, but it can also be seen as something productive cf. Foucault's understanding of power as a productive force. From the base of a conflict new arguments is more possible to arise, and conflicts offer a ground for refining arguments, positions and social representations, which are most adequate. Hereby, conflicts can be seen as an opportunity that allows changes and transformation (Tirado & Gálvez, 2007). Relating this to science communication, the conflicts that can arise, when academic knowledge is being communicated to a non-academic audience, can be seen as productive and an opportunity.

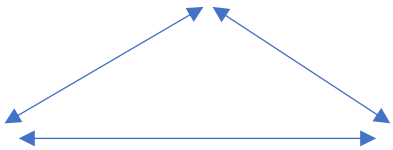
3.3.1. Rights and duties

"In all human interactions, there are asymmetries in the resources for social action that are available to each individual in concreate circumstances", behind the concept of positioning lies the understanding that there is a asymmetric access to moral rights and duties in a given context (Harré, 2012, p. 193). The rights consisting of 'what others must do for me' and duties consisting of 'what I most do for others'. The ascription of specific right and duties decides which individuals have access to a certain discourse mode. A position contains a situated access to a specific cluster of rights, obligations and duties. The rights and duties one individual have been ascribed determines the action available for the individual, in that position. Such assignment of rights and duties can in some specific social contexts be ground for conflict and negotiation. When seeing rights and duties as part of the position occupied, the position given determines the cultural resource available (Harré, 2012).

Relating this to figure 6, there are specific rights and duties attached to the general position of a scientist. For example, the scientist has the right to produce scientific knowledge and thereby having access to the power imbedded herein. A duty of the scientist to communicate their science to non-academic audience. Or even the duty not to communicate one's science, as this could be misused. This affects the science communication, as some scientist can have very different rights and duties, as their position can have different storylines or different significance. This is all determining what and how science gets communicated. A similar example could be applied to the non-academic audience or the channel.

3.2.2. Triangle of positioning

POSITION



SPEECH ACT STORYLINE

The triangle of positioning consists of the three elements illustrated above (Van Langenhove & Harré, 1999). It serves to unfold the different aspect of positioning in a conversation, and how these three aspects mutually determine one another. As

mentioned above, positioning in a conversation is dynamic and can change several times. In regard to the triangle that means when one of the tree corners is challenge and changes, the other two corners are forced to change as well. The first corner of the triangle; *the position* given or taken is constituted by the rights and duties. This takes base in the duality of power and vulnerability, in the sense that a position has an underling power or vulnerability which is in contrast to other positions attribution of power or vulnerability. The second corner; *the Speech-act* consist of action (an intentional performance) and act (social meaning of action). Lastly, the third corner; *the storyline* can be understood as a local narrative, which can be either implicit or explicit, and serves a description on the unfolding structure of the conversation. The positioning always take base in a certain storyline, or even multiple. Overall, the positions taken up in a conversation relates to a certain storyline unfolding within the conversation, and moreover, relates to the meanings of intentional actions conducted by the people participating (Harré, 2012).

Relating this to figure 6, we are zooming in on the different aspects of positioning that describes how this is used in science communication. It could be that of scientific knowledge being superior to non-academic knowledge, which the scientist draws upon when positioning oneself through the communication and help to maintain a superior position that legitimates the content communicated.

3.3.2. Applying the theoretical concept to academia

Reflecting on the above something interesting arise in the literature. As scientists is the ones producing these theoretical reflections on science communication and the relationship between the academic world and the non-academic audience, they seem to leave out applying the same analysis to academia. They do not even seem to relate scientists belonging to a group, or the institution of academia. This resulting in the positioning of scientist, and hereby also the academic institution, as the ones who see knowledge clearly without getting blurred by emotions or belief systems integrated into network of social representations. This positioning takes place, through the positioning of ‘lay people’, as they define the non-academic individuals, as the ones being clouded or blurred by the social representation systems that make it impossible for them to adopt the knowledge in an academic way. But this is exactly the point, the academic way is not necessarily the right way, the academic produced knowledge is not necessarily more worth than the knowledge produced in everyday life outside

of academic. In the literature there is a tendency to present the scientists as if they do not draw on a social representations system of their own, which also contains certain beliefs, but positioning them as the only ones fully capable of comprehending the phenomenon. In contrary one could argue that the applying of these different theoretical concepts involves the institution of academia as well, along with the scientist imbedded in this institution drawing on specific social representations that need to be unfolded.

4. Methodological reflections

This section seeks to outline the different methodological steps, I went through conducting the research on science communication from academia to non-academia. First, the epistemological reflections will be unfolded in section 4.1. through applying the hermeneutic and cultural psychological approach that this thesis draws upon. Furthermore, the different steps and reflections made in collecting the data is chronological presented in section 4.2. from the interview to the treatment of data.

4.1. Epistemological reflections

This thesis draws on a hermeneutic epistemology as it aims to unfold the meaning and understanding of the phenomenon under investigation, rather than focus on the cause of effect (Berg-Sørensen, 2012). I have approached the phenomena from a personal prior understanding of science communication, as I have experienced the barrier between the scientific understanding of a given phenomenon and the non-academic awareness of this progress or elaboration. More specific, for example how far psychological science has come in understanding culture as a phenomenon or concept, and how the non-academic world uses the term in a more traditional way, which could be argued to affect many concrete social practices where the understanding of culture is determining. Therefore, I have experienced how the lack of science communication hinders potential development in non-academia, in regard to a certain issue. This prior understanding of the phenomena, and my origin in a cultural psychological theoretical framework has shaped how I chose to approach the phenomenon. Despite this personal prior understanding of the phenomena, I did not have a predeterminant theoretical understanding of the phenomena. This resulting in

having an explorative approach to what arises, when unfolding the phenomenon. Both when searching through literature that could elaborate on the phenomenon, and when conducting the interviews and analyzing the data. This has ensured that no strict way has been forced onto the phenomenon or data collected, but continuously this thesis approach has been faithfully adjusted to the phenomena and data.

4.1.1. Hermeneutic circle

The prior understanding of the phenomenon was my starting point that shaped a curiosity towards unfolding the complex correlation of science communication, and identifying the different elements constituting it. Here, the prior understanding acted as a working direction in exploring whether the imbedded hypotheses had an explanatory force or needed to be changed. This prior understanding was constantly reshaped in the process of theoretical and empirical investigation of the phenomenon.

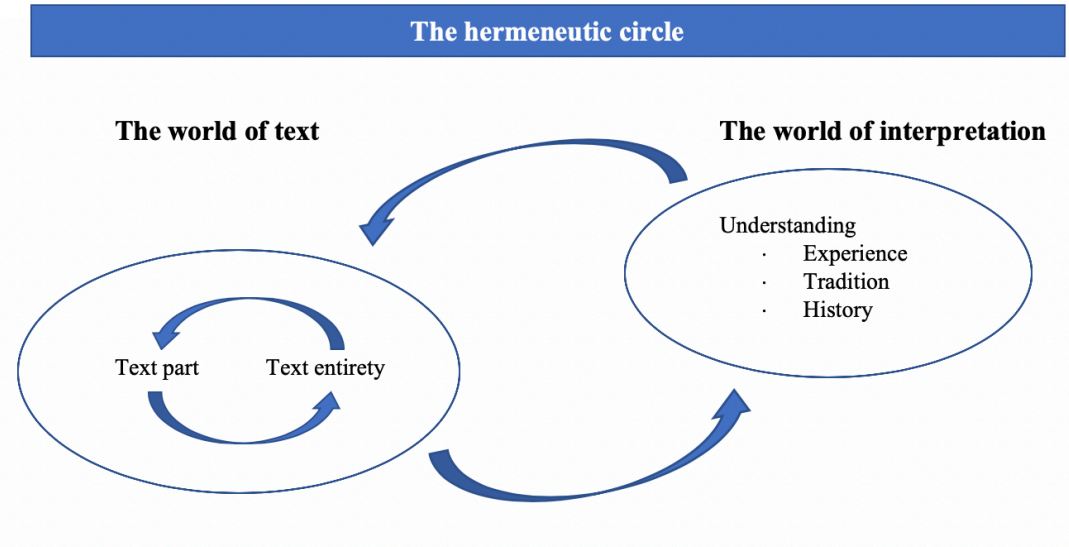


Figure 7: The hermeneutic circle

This process can be seen in relation to the hermeneutic circle, which refers to the interpretation as a process of going from part to entirety illustrated in figure 7 (Berg-Sørensen, 2012). Where one move between different contextual layer of understanding, being very close to the phenomenon through theoretically or empirically pieces. Then putting this extracted part, which has been investigated into context with the different levels affecting the phenomenon. Then a new understanding arises through this process of reading text material and applying this new accumulated knowledge, when interpreting the phenomenon. This ongoing process of moving close to the phenomenon, contextualize that elaboration and reshaping you

foregoing understanding, in relation to the hermeneutic circle, is continually throughout this thesis.

4.1.2. Applying cultural psychology

As unfolded in the meta-theoretical section (2) this thesis draws on a cultural psychological epistemology, which have been present in the different methodological reflections and how the phenomenon is approached and investigated. The cultural psychological understanding of culture as something that is socially imbedded is applied to the phenomenon of science communication. As the phenomenon is sought investigated through this understanding of communication as a cultural tool that is socially imbedded. Furthermore, it needs to be understood through the cultural psychological emphasize on the phenomenon as context depended and consisting of multifactorial complex processes and agents. This further means that the thesis has investigated the phenomenon from a psychological point of view, interviewing two psychological scientists, which resulted in elaborating on the context consisting of the discipline of psychology. As the context is a factor in this understanding, when investigating other disciplines, one should acknowledge that this thesis findings and model is not necessarily applicable in another context, for example the context of another scientific discipline. However, this thesis presented model of a correlation is a theoretical suggestion on a basic starting point, for further research and is sought to be further tested and elaborated upon. The cultural psychological approach is further used theoretical and empirical unfolding how individuals are making sense of themselves, how this process is socially imbedded, and context depended. This focus on context and the social origin of these processes has shaped this thesis results and elaborations.

4.2. Interview and treatment of data

This section serves to unfold the different steps regarding the collection and treatment of data. First in section 4.2.1. the semi-structured interview that this thesis conducted and the reflections in relation hereto will be presented. Secondly, in section 4.2.2. the participants are presented, and reflection hereof is unfolded. Thirdly, in section 4.2.3. the interview guide is elaborated upon with the reflections that goes along. Lastly, in section 4.2.4. the treatment of data is presented through the

method of thematic network analysis, going through the steps of transcription, coding and the analysis of data.

4.2.1. Semi-structured interview

This thesis has conducted two semi-structural interviews, which is an interview with a well-planned, but jet flexible structure, that aims to extract the participants experience and opinion on a certain phenomenon in preparation for interpreting the imbedded meaning. Here, the interview guide serves as a background framework that overall structures the interview, but at the same time do not determines it. Furthermore, these interviews can be determent as 'concept interviews' in that they seek to unfold the conceptual structure behind a person or groups understanding of a phenomenon, by covering the participants discourses and taken-for-granted knowledge (Kvale & Brinkmann, 2009).

I choose to conduct interviews and in particular the semi-structured interview, because I wanted to uphold a form of explorative approach of the phenomenon, and not force a theoretically or personal hypotheses down on to the phenomenon. Through semi-structured interviews I estimated that more spontaneously and original perspectives came to the surface, as a strict structure or form was not applied and thereby did not determine the data selected. When conducting the interviews, it was important for me not to force any particular structure or questions that in the moment did not fit in. Instead of trying to lead the interviews in a particular direction, I tried to be open to the line of argumentation and the direction that followed, that the scientists introduced. However, keeping the overall structure of exploring science communication between academic and non-academia, in regard to the academic side, as the scientists contain important knowledge hereof. Even though I did not force my interview guide/questions through, it did not mean that I was passive in the interviews. I tried to follow the line of argumentation that they presented, but also challenging these perspectives that arises forcing the two scientists to further unfold their ideas.

The method of conducting interviews was in line with this thesis approaching a new phenomenon. Here, the qualitative explorative form of the interviews allowed different not restricted perspectives and reflections to arise and be thoroughly elaborated. This could easily be supplemented in further research through different both qualitative and quantitative methods.

The interview setting was different in the two interviews. The interview setting was decided by the participants, as they are two busy scientists that did what they could to fit me in their schedule. This meant that the interview settings were decided from a practical perspective of what was possible at the time.

Interview 1 with Svend Brinkmann was conducted in his office at Aalborg University, which made it more formal. Furthermore, it was fit in-between his other work arrangements that day, which also affected the tempo as we needed to follow a strict timeline. It was my experience that Svend Brinkmann despite these circumstances was concentrated, present and engaged in both the interview as well as the phenomenon under investigated. Nevertheless, these factors were a frame that could be argued in some extent to have affected the outcome of the interview. The interview was conducted the 27 of March 2019 at 3 p.m. and lasted 1 hour.

Interview 2 with Jaan Valsiner was conducted at his home the 28 of March 2019 at 4 p.m. it lasted 1 hour and 45 minutes, but before starting the interview there was an unformal talk for about a half hour. This environment facilitated an intimate and unformal talk, where the person behind the scientist were unfolded and did give the interview a more personal aspect.

4.2.2. Participants

In choosing my participants, several considerations were made. The original reflection that ended up resulting in the choice made, was having two kinds of empirical data. One part consisting of the scientist that have communicated science, and one part consisting of the non-academic audience receiving this science communication. Due to time and content restrictions I chose to only have empirical data reflecting the scientist side. I chose to investigate the phenomenon in the context consisting of the discipline of psychology, and I chose to limit it to Aalborg University as it was the scientists, I had access to. Here, I was looking at the knowledge group leaders inside the department of psychology. First, the idea of choosing the knowledge group leaders arise, which had the most diverse knowledge group area, in trying to get as representative segment as possible. What determined that I did not go along with this choice, was the content of my research question. I wanted to investigate science communication between academia and non-academia, with the background hypotheses of an issue revolving the lack of scientists

communicating to this particular audience. This determined that I ended up choosing two knowledge group leaders, which were not chosen on the basis of their knowledge group area, but on the bases that this was two different scientists in regard to the phenomenon under investigation. As Svend Brinkmann is communicating to a non-academic audience, which Jaan Valsiner has chosen not to do. This allowed a deeper understanding of the reflections and arguments behind both choses.

Svend Brinkmann is a professor in general psychology and qualitative methods at Aalborg University. He is educated cand.psych. from Århus University and has a PhD in psychology. Moreover, he describes in the interview to have roots within philosophy, which he integrates into many of his psychological assumptions and theoretical elaborations (Appendix 3, p.1). He has produced science in a broad range of topics, to emphasis a few he is known for his notion on the diagnosis culture and qualitative studies. Among his work inside of academia, he has written three books aiming a non-academic audience that communicate his scientific assumptions on the psychological individual within society. Along with one more about grief there is a more direct communication of his scientific work on grief. Besides the books, he has also communicated psychological scientific knowledge through articles in the Danish newspaper Politiken and through the radio podcast 'Brinkmanns briks'.

Jaan Valsiner is a Niels Bohr professor at Aalborg University, where he leads the first Centre on Cultural psychology. He is the funding editor of the SAGE journal culture and psychology among others. He is the author of numerous books and hundreds of articles along with book chapters within the field of cultural psychology. He is the mind behind the theory of semiotic mediation and other elaborations on higher psychological prosses that functions within dynamic social contexts. In April 2017 he received the Hans Killian Award as a result of his international recognition in the field of interdisciplinary cultural psychology, and how his scientific work has had worldwide impact.

4.2.3. Interview guide

The interview guide was formulated on the base of the theoretical understanding that at the time was accumulated, along with issues that originates from the research question. This resulted in three themes that structured the interview (Appendix 5).

Firstly, the theme *Epistemology and general take of science*, which aim was to uncover the scientists epistemological base and scientific ideals. The reason behind was the hypotheses that their epistemological take on knowledge effected the science production along with the science communication. Furthermore, that it was important to know, which knowledge discourses the scientists' assumptions on science communication stem from. These reflections had theoretical roots in this thesis meta-theoretical perspective of Foucault and discourses (section 2.2.), along with the theoretical notion of 'the knowledge society' and how it effects the correlation of science communication, see section 3.1. This also let to a sub theme on knowledge and society, along with the subthemes; aim of psychological science and being a scientist, which further aimed to unfold the field of academia. The second theme was *Academia vs. non-academia*, as these concepts stem from the research questions and was sought to be tested, along with the hypotheses of a barrier between the two. The last theme was *Science communication*, which aim was to extract the two scientists' assumptions on the phenomenon. It was sorted into two subsections, that of a general take on science communication, and that of a personal take. The questions of this section were generated from the theoretical base of power cf. Foucault and positioning theory, along with an explorative curiosity of the scientists' views and experiences on/with the phenomenon.

As elaborated above in section 4.1. having an explorative approach, not forcing a structure or a theoretical approach onto the phenomenon was very important for me. This was relevant when conducting the two interviews, as the structure that the interview guide suggested was not strictly followed. Equal for the two interviews was that the two participants had a lot of elaborating thoughts and assumptions for each question, which resulted in a need for moving past a lot of sub themes and questions due to time restrain. It was important for me not to cut them off forcing them to follow the structure of my interview guide, but to give them space and opportunity to follow their line of argumentations and thoughts. My priority was rather to have few well unfolded assumptions than many brief assumptions. My role was to allow them to detour from my script, allowing spontaneously examples and thoughts to arise, as an expression for what they account as relevant, but still balance it with keeping an overall frame of science communication. These reelections aim was to respect the participants and further the data collected by not forcing a strict

structure but been flexible still within the lines of my research topic. This respect of the data is also applied to the steps of analyzing data.

4.2.4. Thematic network Analysis (TNA)

This subsection serves to unfold the different steps in the treatment of data, hereunder the transcription of the two interviews, coding of the data through the TNA and the analysis of data using both the TNA and the theory presented in section 2 and 3.

4.2.4.1. Transcription

After conducting the two interviews I transcribed them in relation to the following reflections. As my analysis of the data is focusing on the content of the interviews rather than details of how it is said or the meaning of a pause, I did not record details such as pauses. The transcriptions were focused on reproducing coherent sentences, where their assumptions were clear, therefore the pauses and thinking expression such as 'eehmm' is left out. So, if one of them stops within a line, taking a short pause or saying 'eehm' this was not writing, instead the coherent sentence was written. Besides leaving out these breaks the data is faithfully reproduced through the transcription. If they laughed or took a long break that effected the content of what they were saying, it was reported in the transcription. If they when speaking uses wrong gramma this is also corrected to the extent that it did not change the sentence, if the sentence needed to be changed in order to be grammatical correct this was left unedited.

The interview with Svend Brinkmann was conducted in Danish therefore also transcribed in Danish and coded in Danish, but the themes were phrased in English. First, when a quote from Svend Brinkmann needed to be inserted in the thesis, then it was translated into English. So, it is possible in both Appendix 1 and 3 to see the original transcription in Danish, in relation to the quotes presented in the thesis. As for the interview with Jaan Valsiner, it was conducted in English and therefore also transcribed, coded and inserted in the thesis in English as well.

4.2.4.2. Coding

The data is coded into themes in regard to the process of the thematic network analysis (TNA), following the steps listed below in figure 8 (Attride-stirling, 2001):

BOX 1. *Steps in analyses employing thematic networks*

ANALYSIS STAGE A: REDUCTION OR BREAKDOWN OF TEXT

Step 1. Code Material
- (a) Devise a coding framework
- (b) Dissect text into text segments using the coding framework

Step 2. Identify Themes
- (a) Abstract themes from coded text segments
- (b) Refine themes

Step 3. Construct Thematic Networks
- (a) Arrange themes
- (b) Select Basic Themes
- (c) Rearrange into Organizing Themes
- (d) Deduce Global Theme(s)
- (e) Illustrate as thematic network(s)
- (f) Verify and refine the network(s)

ANALYSIS STAGE B: EXPLORATION OF TEXT

Step 4. Describe and Explore Thematic Networks
- (a) Describe the network
- (b) Explore the network

Step 5. Summarize Thematic Networks

ANALYSIS STAGE C: INTEGRATION OF EXPLORATION

Step 6. Interpret Patterns

Figure 8: Thematic Network Analysis Coding (Attride-stirling, 2001, p. 391)

Step 1: First a coding framework was constructed on the base of the research questions, the theoretical base of the thesis and the interview guide. This coding framework is presented and unfolded in Appendix 8.

Step 2 and 3: This coding framework was used in extracting relevant quotes from the transcription that were collected under basic themes, illustrated through a specific example in Appendix 8. These basic themes were organized into organizing themes, and lastly, a global theme was extracted.

Step 4: An overview of the coding organized in the thematic network is presented in Appendix 1 and 2, which are further illustrated in figure 10 and 13 in the analysis section 5.1. and 5.2.

Step 6: An analysis of each organizing theme is conducted in section 5.1. and 5.2. Hereunder, due to the restriction of the thesis the most relevant basic themes are selected and interpreted using relevant theories presented in section 2 and 3.

5. Analysis

This analysis is divided in two parts, in respect to the empirical data of this thesis. The first part (section 5.1.) consists of a theoretical analysis on the empirical data from Interview 1 with Svend Brinkmann, following the structure of the Thematic Network Analysis (TNA) applied to the data. The second part (section 5.2.) consisting of a correspondingly theoretical analysis on the empirical data from Interview 2 with Jaan Valsiner, following the structure of TNA, illustrated in figure 9 below. The theoretical analysis is drawing on the theory presented both in section 2 and 3, more specific Cultural psychology, Foucauldian notion of power and knowledge, Social Representation theory and Positioning theory.

The aim of this analysis is in overall to get a more complex theoretical understanding of the science communication between academia and non-academia. When analyzing the empirical data two main analytic points is drawn out. Firstly, theoretical assumptions on science communication that these two scientists present, and how these assumptions can be applied and connected to a consisting complex understanding of the phenomenon. Secondly, analyzing the origin of these assumption for a deeper understanding of, which epistemological and discursive ground these scientists evolves from. Both focus points will be analytically integrated, and not directly explicit highlighted.

In the discussion section 6 themes that arise across the two analysis will be extracted and unfolded, as illustrated in figure 9 below.

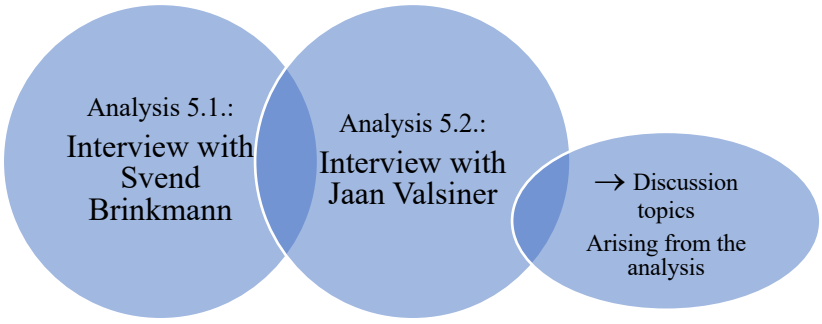


Figure 9: Structure of analysis

5.1. TNA interview Svend Brinkmann

In this section, an analysis will be conducted on the empirical data from the interview with Svend Brinkmann. It will be organized through Thematic Network Analysis

(TNA), which is applied to the data, and theoretical analyzed in relation to relevant theory, for the aim of drawing out a deeper theoretical understanding of the subject of this thesis. Along with the unfolding of the scientific and discursive base for the scientist assumptions regarding science communication.

First the TNA (illustrated in figure 10) will be presented and shortly unfolded, as the networks organizing themes serve as the basic structure for the further analysis. Only the most relevant basic themes will be selected, and some will be collected under theoretical concepts.

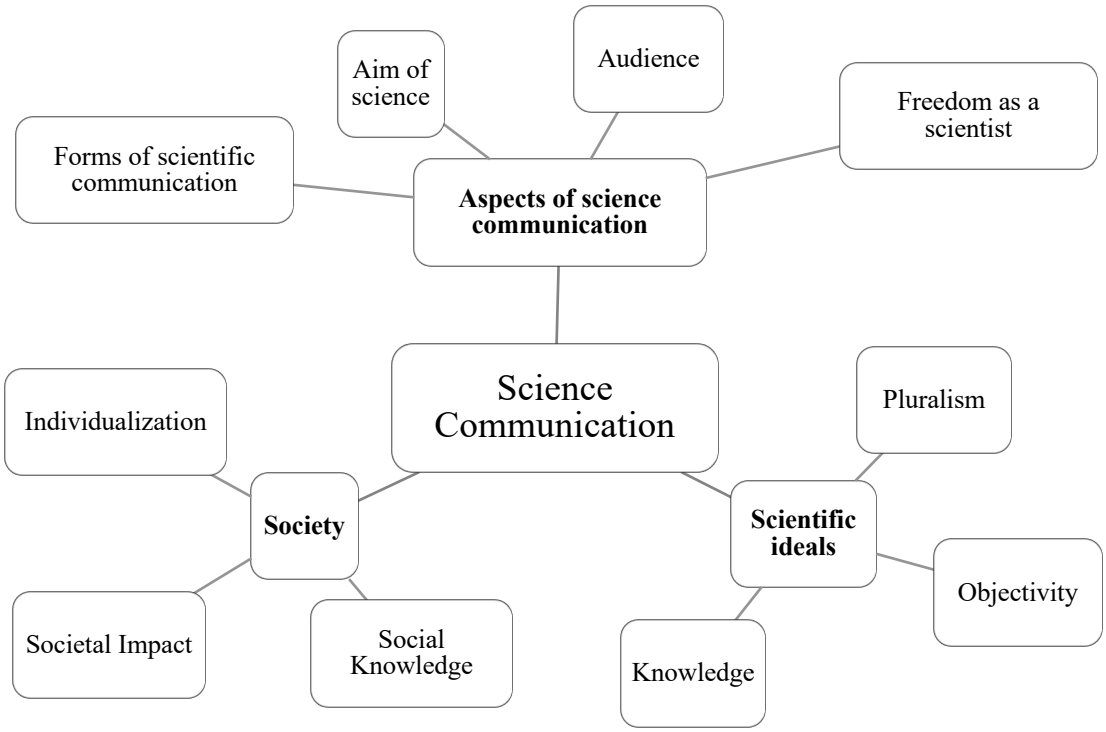


Figure 10: TNA on Interview 1 with Svend Brinkmann.

The **global theme** of the interview is *science communication* (illustrated central in figure 10), which covers the central phenomenon of this thesis; science communication from academia to non-academia. The global theme serves as an overall category from where the different aspects unfold through different **organizing themes** (OT) and hereunder the **basic themes** (BT) branch off. In this interview there are three organizing themes, which consist of *Aspects of science communication*, *Scientific ideals* and *Society.* The first OT; *aspects of science communication* consist of Svend Brinkman's assumptions on different aspects imbedded in and influencing this particular relation regarding science communication, that for him is important. The second OT; *scientific ideals* consist of

his notion on the epistemological and scientific beliefs he originates from. The third and last OT; *society* consist of his critical productive notions on the structure of the society of today, as the structure of society serves as a macro-cultural factor from where the communication of science to non-academic audience takes places. Here, the role of knowledge is elaborated.

In relation to section 3.1 figure 3 containing the contextual complex aspects of science communication each organizing theme will further evolve on this relation, as this analysis serves to add to this understanding.

5.1.1. Aspect of science communication

This section serves to unfold the 1st organizing theme.

Across the basic themes of 'forms of science communication', 'aim of science' and 'freedom as a scientist' he refers to two positions that of being a scientist as a generalized position, and that of a personal position of him as a scientist. These two positions are related and set up against each other, with the aim of emphasize and organize the two positions. The general position is used to either align or distant his personal positioning of being a scientist with/from the more general position, which results in clarifying his personal position. Drawing out examples from the first OT (Appendix 1), these two positions will be unfolded in two part.

5.1.1.1. General position of a scientist

Svend Brinkmann starts by stating that science communication is an inevitable part of being a scientist. He mentions three forms that he ascribes to the duty of the general position of being a scientist, in regard to science communication. As he emphasizes that a scientist "must write scientific articles" as one sort of science communication, and he goes on "We must teach… And it is expected that we communicate to the general public as well" (Appendix 1, p. 1). Lastly, he is presenting a second and third form of science communication, which according to him is imbedded in the job of a scientist. Using the word "must" emphasizes the duties ascribed to the general position. Producing scientific articles and teaching is something the scientist "must" do, in oppose to communicating to a general public is something, which is "expected". Here, we can draw out a hierarchy among the duties ascribed to this position, as the first two seems to be inevitable the last is more

indefinite. He goes on further establishing the general position, when elaborating on how to address producing a scientific article "there you test one argument… what suggest that you are right and what oppose that and how do you balance these." (Appendix 2, p. 1). In this statement it could be argued that there is an underlying storyline of 'the academic way', referring to a set of norms that acts as a formula of how to write a scientific article, attached to the generalized 'you'.

Further, the issue of scientific knowledge not being communicated to a non-academic audience is brought up in the interview. Here, he defends the position of the scientist through presenting it as taking the duty, ascribed to the position, of communicating to a non-academic audience seriously: "There is actual many who prioritize it (communicating to a non-academic audience)" (Appendix 1, p. 1). He goes on justifying this claim, when referring to the scientists that deals with communicative difficult subjects: "Some subjects or some perspectives that do not appeal as broad… But they can be brilliant communicators. One's communication talent is not determined by how many that reads one's books, but by the enrichment of the one who reads them" (Appendix 1, p. 1). Firstly, it can be argued to implicit contain a claim that there are several scientists who does communicate their science to a non-academic audience. This positions the scientist as an active communicator that does take on the duty ascribed and conduct it well. Secondly, as he states that 'they do not appeal as broad' implicit could be interpreted as positioning the non-academic audience as responsible for the lack of communication due to lack of interest.

He goes on emphasizing that he does not believe the scientists lack a desire of communicating but validate that maybe it is a lack of format and opportunity for the scientists (Appendix 1, p. 2). This further contributes to the positioning of the scientist as taking on the duty and not accountable for the lack of communication, as it is external aspects that restrain the scientist. Further on, he points out:

> *"Science is an institution within society which has several aims and perspectives. One of them is to make contributing to the public debate, and qualifying decisions as politicians make or leaders, people who possess power… Another legitimate aim, that is also to maintain a professional*

competency of knowledge… to make sure that knowledge that human mankind has created and accumulated do not disappear" (Appendix 1, p. 2).

As the positioning of the general scientist is imbedded in the academic institution, there is a connection to high power roles within society, that of politicians for example. This connection could be addressed through the theory of societal governmentality cf. Foucault (section 2.2.2.). As Foucault points out the institutions within society can be argued to be assigned a certain neutrality that legitimates their power, even though they are controlled and monetarized by the Danish government. This legitimation of power imbedded in academia, can be argued to apply to the general position of the scientist as well. Furthermore, he ascribes the position of academia to have the duties of keeping a scientific knowledge flowing and active, so it does not become irrelevant or forgotten. This implicit understanding of scientific knowledge as significant for the individuals in society, positions the scientists work as irreplaceable. Here, he accesses a long storyline of scientific knowledge production throughout history, that could be argued to justify and emphasis the position of the duties of the scientists, to produce scientific knowledge.

It could be argued that the rights that goes along with these duties is the implicit legitimation of the institution of academia that the scientists draw upon. Scientists have the right to produce legitimate knowledge, which could be argued to be perceived superior to the non-academic knowledge and opinions. If we draw on Foucault's notion on power (see section 2.2.), power is imbedded in the knowledge, and as the institution of academia produces knowledge, one could argue that they are accumulating power through the production and attributing of scientific knowledge. The rights of deciding what is true knowledge is thereby ascribed to the general position of a scientist. As exemplified in section 3.1. figure 3, scientific knowledge is integrated into several knowledge discourses constituting the knowledge society and effecting individual lives. Brinkmann goes on to elaborate on the freedom of the scientist, in where he claims that we have scientific freedom in Denmark in regard to science production. Thereby, he is positioning the scientist as scientifically free from restrictions and outside interference. Along with containing great power in the right of producing scientific knowledge.

5.1.1.2. Personal positioning

The second position is the personal positioning of him as a scientist. He starts by addressing that he does not need to teach as much "I am bought out (from teaching) … in addition I need to put my work hours into some science projects" (Appendix 1, p. 1). He goes on to elaborate on the different science communication to a non-academic audience that he conducts. Here, he is referring to the several books aiming at a non-academic audience that he has written, writing in the Danish newspaper Politiken, along with hosting his own radio program about psychological issues. Through this he positions himself in oppose to the generalized position, as he has certain privileges of rights ascribed to his position, or one could say his duties diverge from the duties ascribed to the general position. This positioning could be argued to be tacit rather than intentional, as he is asked in the interview about his work and thereby initiated to elaborate on it. This could be supported by how he tries to make the differences between him, and the general position more equal by defending the general position.

Later in the interview, he differs between the two different arenas, that of appearing in the radio program, and that of writing scientific articles, in relation to integrate different perspectives (Appendix 1, p. 1). Here, he establishes one acting accessible, when operating as a scientist outside of academia, and another set of accessible actions inside of academia, attached to the personal position. He goes on to position himself as lucky (Appendix 1, p. 2), when accessing the underlying storyline of him as a successful scientist outside of academia (not to rule out his success inside). This underlying narrative of him being successful, he accesses when positioning himself as humble towards this success. Going on defending the generalized position of being a scientist. This could be argued to downplay the differences between him and the general position, which help him maintain a humble position towards his success. This defending of the general position is exemplified in this quote: "There are all kinds of sciences…. But they are just as important. They are just as legitimate even though they do not have the same opportunity for communication their science as I do." (Appendix 1, p. 2). One effect of this positioning can be that of his personal positioning maintaining a humbleness towards his success. Another effect could be that of him through this position himself as different,and by making this distinction, his position as a successful scientist is emphasized. Thereby humble but still successful.

Furthermore, he rejects that the corporation *Obel Foundation*, which has financed his latest scientific work (of science communication), is affecting the way he chooses to communicate his science to a non-academic audience (Appendix 1, p. 3). Through this rejection he maintains a position as free from restrains and influences, which is in alignment with his positioning of the general scientist as equally free. Ascribing a great agency to the personal position. He does elaborate on this relation to Obel Fonden, by saying that he freely chooses to search for these financial resources, but when getting into collaboration with this cooperation there is some duties and strings attached (Appendix 1, p. 3). When making this claim he draws on the metaphor of freely choosing to get married, as resembling to the relationship with Obel Fonden. Here, referring to the certain kinds of duties and strings attached to the agreement of marriage as well. This is interesting in the light of social representation theory. As one could argue that he is trying to make sense of the unfamiliar and potentially threatening relationship between the scientist and the financial foundation. In order to do that, he draws on a shared social representation in the form of marriage which he expects me (the receiver) to know. Accessing the reference to marriage as not something threatening but as something for the most that you freely chose (in Denmark), which apply some strings and duties, but also provides you with love and belonging, thereby also give you something good. It could be identified as using the tool of objectification (see section 3.2.), when attaching the unfamiliar to a known shared metaphor.

Going back to his personal positioning as a free scientist, he expresses to feel great autonomy elaborating on his scientific carrier, where he has not experienced limitations (Appendix 1, p. 4). Here, he establishes a storyline of him as a free non-restrained scientist stretching throughout his carrier. He elaborates on this as he says: “I have actually published in many genres, all the time. That is also an expression of how free I feel.” (Appendix 1, p. 4).

5.1.1.3. Audience

Moving shortly away from the theoretical analysis of positions and social representations, Brinkmann elaborate on the audience influence on the decisions made by the scientist in regard to science communication. Drawing on the basic theme; *audience,* he addresses the issue of the extension and impact of one’s science communication, which effects the motivation for communicating science in a

specific form according to Brinkmann. He points out that shockingly few reads the average scientific article, and for a reader to comment back and starting a dialog one almost need to be specialist in the area to be able to critically evaluate the scientific article (Appendix 1, p. 2). In addition, he points out that the need for being a specialist limits the audience even further. He relates to this issue:

> *"So, that is a bit tragic. We invest exceptional amount of money, and people are using an exceptional long time and create something exceptional difficult – namely science, which is to be published. And then most of this science is not read by anyone" (Appendix 1, p. 2).*

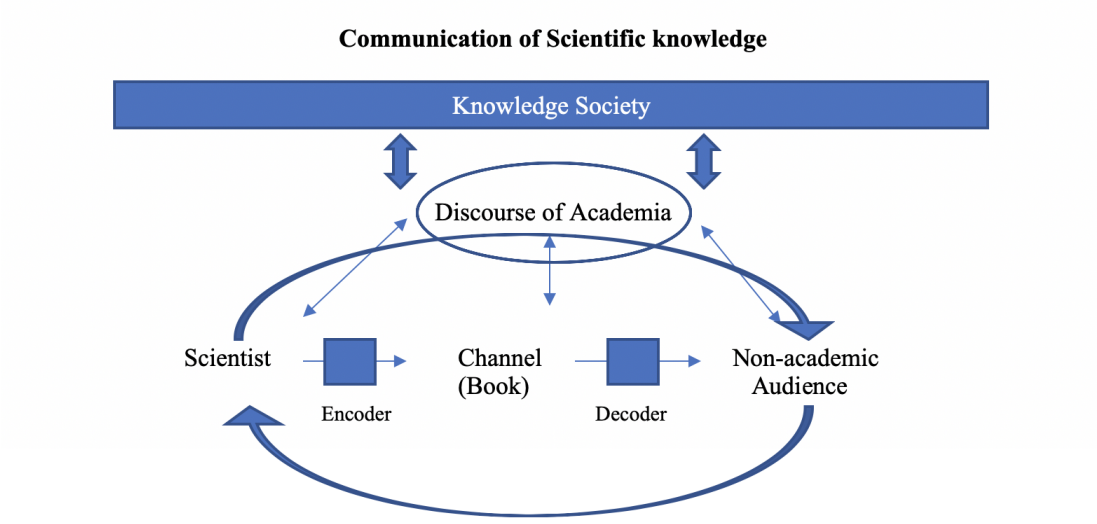
He goes on and relates to this as being very demotivating for him, especially when he compares it to his science communication to a non-academic audience. He addresses it as "dysfunctional" (Appendix 1, p. 3). Furthermore, he elaborates that when writing an article for the Danish newspaper, he can have an audience consisting on about 100.000 people, in addition to a scientific article which can have as little as two readers:

> *"So, that is a bit more fun (communicating to 100.00 people), in a different way, to talk to them. To so relatively many people, for whom it might actually mean something, and maybe they reflect upon it, maybe they use it for something, maybe they criticize it, and then we have the opportunity of a discussion, but it starts something." (Appendix 1, p. 3).*

This emphasizes the reciprocal relation between academia and non-academia. How scientific knowledge will not possess any power if there was not an audience reproducing this power, by ascribing legitimation to the scientific knowledge. So, the importance of the audience is stressed, along with the power also contained in the position of the non-academic audience, which is determining the science communication. Furthermore, the amount of audience seems according to Brinkmann to have great influence on which scientific communication he prefers.

Elaborating further on the figure 6 presented in section 3.3.3., which unfolds the correlation of science communication (presented in figure 3) by further integrating

the filter of social representation theory, and the tool of positioning. This analysis (section 5.1.1.) apply this theoretical elaboration on the correlation to the empirical data collected. As this empirical data is representing the academic side of the correlation, the understanding of these theoretical concepts being applicable to academia as well is showed. The analysis of section 5.1.1.3. is further added to the correlation, the significance of the audience for the motivation of the scientist choice of communication to a non-academic audience. This elaboration is illustrated in figure 11, as the arrow from the scientist to the audience and back to the scientist. These exemplify a reciprocal relation between the two and is constituting the correlation of science communication.



Figurer 11: The significance of the Audience

5.1.2. Scientific ideals

When integrating Brinkmann's theoretical assumptions about science communication it is important to understand, on what epistemological ground these assumptions stem from, and how this shapes his approach to the phenomenon. This section serves to unfold the 2nd organizing theme, which draws out three topics that arise in the interview. These ideals are sorted under the three basic themes, that of *pluralism, objectivity* and *knowledge.*

5.1.2.1. Pluralism

Throughout the interview Brinkmann is referring to the base of pluralism. He draws on the theoretical notion of pluralism, when elaborating on the many different aims of psychology, this plurality he also stressed, when elaborating on the aim of science (section 5.1.1.):

> *"SB: There is not one aim for psychology. It depends on who you ask. If you ask Foucault, then his answer would be that the aim of psychology is for the state to be able to control the population. If you ask Freud, then it would be to transform neurological misery into universal misery. But which one is right?*
> *(Me): What if you ask Svend Brinkmann, what is it then?*
> *SB: Then it is that there are many different aims… and I mean that you cannot reduce them into one single." (Appendix 1, p. 4).*

Pluralism is a philosophical approach to the world, which emphasis differences and variation or plurality. It stands in contrast to monism, which contains an understanding of the worlds diversity as something that can be reduced to one entity, which can be sorted under generalized regularities and the same logical principles (Cohnitz, Pagin, & Rossberg, 2013). So, when Brinkmann is referring to pluralism, he is referring to the philosophical understanding of taking the many pluralistic aspects of a given phenomenon into account. Further, not seeking for one answer or one collective aspect. Here, his roots in philosophy, and how he combines philosophy and psychology, when addressing psychological issues, is also present (see section 4.2.2.). These different epistemological discourses within academia, could be argued to have the same function and structure as the diverse discourses of non-academia. For Brinkmann pluralism is a theoretical framework, that could easily be understood as a social representation, that helps him make sense of the world. As the representation is socially constructed it is shared and reproduced of the group aligned with this understanding. This notion of pluralism, he also applies when elaborating on scientific ideals:

> *"Utility is one component. Like for example objectivity is. Well, science need to be about something in the world that not only reflects the scientist subjective ideas, preferences and wishes… But the most important thing for me, like I*

have made clear a couple of times before, is to stress that we need to be pluralistic about this, and not just decide that one of these concepts determine if something is scientific." (Appendix 1, p. 4).

This way of addressing scientific ideals as well as science communication from a multifactional framework, is also aligned with this thesis cultural psychological approach (section 2.1.). As this thesis aim to understand the complex aspects revolving science communication.

5.1.2.2. Objectivity

A scientific ideal that Brinkmann discuss in the interview, is that of objectivity. As he challenges a more social constructionistic understanding of the scientist subjective interacting with the phenomenon under investigation. Through social constructionism there is a notion of objectivity as a utopic scientific ideal, that is not possible, and which is blinding the researcher for him/his subjective creation and interference with the phenomenon. As a result, the scientist must accept and be transparent about its subjective interference with the phenomenon, and with transparency towards this lies the scientific aim, from a social constructionistic approach (Colin, 2012). This notion that a scientist will always be subjective, and that it is utopia to strive towards objectivity Brinkmann is critical towards. He states:

"For something to be objective, it just means that there is something within the world which is not alone formed by my conception of it… I sometimes play with the word 'objective' in English, which have the same root as the word 'object' and as the verb 'to object' – there is something that resists. Something that protest against our interference. Something we are not just able to change in regard to our pleasure or shape from our subjective wishes. In that notion lies the objective." (Appendix 1, p. 5).

He is very thorough in explaining how he relates to and defines the scientific ideal of objectivity. In another sense he is recreating the concept in opposition to a more social constructionist notion of the concept. If we understand the concepts of objectivity as a social representation within the discourse of 'the academia way' there is an ongoing negotiation on how to comprehend the notion of objectivity, and

whether to relate to this concept or not. One could track this negotiation way back, but the interesting part is to understand its structure, which can be unfolded in relation to social representation theory. When Brinkmann brings this scientific ideal up, he is renegotiating an inherent negativity and certain understanding of the concept, within academia. He goes on to elaborate on the concept, using a metaphor of the astrophysicist who uses a telescope to learn about a phenomenon:

> *"The telescope of cause is mediating the knowledge and, in a sense, that it also effects the knowledge that it creates… (but) Objectivity is the notion of the fact that there are still something out in the world that we cannot force to take a certain shape. We cannot have the telescope produce a picture of Donald the duck down on the photo plate, when we look out in the sky with our telescope. That is because the world reveal itself to us in a certain way, in the arrangement that we invited it in." (Appendix 1, p. 5).*

Here, he uses a more known relatable metaphor of the concrete telescope, that the scientist looks in the sky with. This can be seen as a way for Brinkmann to draw on a shared social representation in the form of a metaphor to objectify this unfamiliar notion of objectivity and have me(us) integrated into our already established social representation system. At the same time the process of anchoring can be argued to take place as well, within the same argument. As he draws on the metaphor of the astrophysicist with the telescope, he also mentions Donald the Duck, that for most people are connected with the cartoon, which is often part of a childhood memory. So, using Donald the Duck, he anchors something unfamiliar to a familiar reference, which most people have positive childhood memories of. In addition, it could be argued that it is not an intentional act, but something we as individuals do to relate and integrate new information, as well as impose others to integrate. Thereby, scientists, including Brinkmann, is also part of a group taking base in a shared discourse, using a system of social representations to make sense of the world, positioning oneself in a conversation in relation to others. Even when it comes to elaborate on scientific ideals. Brinkmann goes on to relate this metaphor with the field of psychology:

> *"We do not have telescopes when we investigate human beings… When we have an instrument which is ourselves, then does it just mean that we are then subjective? It is that the analogy of the telescope should show. No, the fact that we have an instrument is of course a prerequisite for us to be able to elaborate on something. But that does not mean that it is completely random what we say, or that we just as well could have said anything else, so saying that it is totally subjective… We chose to look in a certain direction, and that is co-creative for what we see. But the fact that we chose to look in a certain direction, do not determine what we see." (Appendix 1, p. 5).*

He is critical towards the understanding of the researcher creating the phenomenon and he holds on to the understanding that these phenomena are existing, and we cannot change them into anything we want. We can co-create them by adding our understanding to the phenomenon, but we do not construct them totally subjective.

5.1.2.3. Knowledge

The last scientific elaborating he draws out is how he perceive knowledge. Summarizing it, he does not see the big differences between common-sense knowledge and scientific knowledge. He believes them to be equal and have the same structure. He defines the common ground of all type of knowledges as: "Knowledge is when I investigate my experience, and reflect upon it" (Appendix 1, p. 6). This notion of scientific knowledge not being above knowledge accumulated outside of the academic institution, he points out is rooted in pragmatism which do not believe scientific knowledge to be superior to other accumulation of knowledge. Instead it puts value in the usefulness of its content. This understanding can in one way be seen as in opposition to this thesis elaboration of scientific knowledge. As this thesis perceive that scientific knowledge within society is positioned as superior to and overrules non-academic individuals' opinions, beliefs or knowledge about the world. Nevertheless, what Brinkmann unfolds here is the theoretical approach to understanding the relation between scientific constructed knowledge and non-academic constructed knowledge. This does not necessarily need to be in opposition to the understanding that scientific knowledge in practice is perceived and used superior to other sort of knowledge. Foucault, which this thesis draws upon, would

also see the theoretical process of creating knowledge discourses as the same for academia and non-academia, which aligns with what Brinkmann expresses above.

5.1.3. Society

This section draws on the organizing theme: Society, see figure 10. It serves to unfold the different aspects of the societal structures that surrounds and effects the phenomenon under investigating. Elaborating further on the top of figure 11, through Brinkmann's theoretical assumptions on this matter.

5.1.3.1. Societal impact

Brinkmann elaborates on how societal impact becomes a criteria of its own, which determines the reception of scientific knowledge within society. He goes on to unfold how the societal criteria of measuring impact determine not only the reception of the science, but determines the academic institution:

> *"If you ask the politicians. If you ask the ones in charge of the universities… then everybody wants these institutions to have societal impact, and thereby having an effect that can be measured. In the sense, that we get a better society out of the money spend on educating psychologists, which then go out and fill out some societal functions. Then the scientific becomes instrumental in relation hereto." (Appendix 1, p. 7).*

This explains the relationship between the society's structures or macro-cultural factors and the institution of academia. One could argue that there exists a societal discourse which could be referred to as 'societal impact' which shapes the discourse and social representations imbedded in the institution of academia. This discourse consists of the criteria that everything needs to be measured in relation to the amount of impact, and implicit the usefulness for society. I could be argued that the institution of academia is in a reciprocal relation to these macro-cultural factors or societal structures, constituting one another. Thereby, the discourse for measuring the societal impact stems from big structures within society, that could be argued to stem from political reforms and directives. This could be related to Foucault's concept of governmentality (section 2.2.2.) as the political power implicit operating through this institution in trying to govern the individual life in a certain way. Controlling the

scientists to stress the need for making societal impact with their science, or else it is not accounted for. This agenda acting through the discourse affecting the norms and direction within the institution, but at the same time the institution is reproducing the discourse by enforcing this discourse onto the scientists. Brinkman elaborates on the criteria of societal impact as he says:

> *"I am concerned about whether the social impact becomes the only criteria. By that we marginalize the science which do not immediately have social impact. I believe that to be defective, because there exist all kinds of important knowledge about the world, about human beings, about distant galaxies – which contain value in itself."* (Appendix 1, p. 7).

He recognizes that having societal impact could be one important aim, but it must not stand alone, as the diversity of science should be embraced. Overall there is theoretical ground for arguing that this has become an effective criterion within academia, and it is reasonable to believe that it shapes the phenomenon of science communication as well.

5.1.3.3. Social Knowledge

Referring back to section 3.1. and the concept of the knowledge society, this section aims to unfold Brinkmann's theoretical elaboration on the concept. He starts by stating: "Knowledge, well scientific knowledge, has a huge influence on all individual's life, because we surround ourselves with technologies which are informed by knowledge." (Appendix 1, p. 7). He goes on to further unfold how technologies and knowledge is closely connected in the modern society, which results in great division of labor. As knowledge is being distributed among the individuals within society, it puts a lot of weight on the trust imbedded in these relations: "So, the relation lastly rely on the trust you have in that he knows what he does, and what his work is worth." (Appendix 1, p. 7). Here, he elaborates on the many professional positions within society that contain specialized knowledge. As there is a new movement of individuals seeking knowledge of their own and challenging these positions. However, these positions do not go along unchallenged: "But, something that then happens in this so-called 'knowledge society' that is that the trust is being problematized. In relation to the general loss of authority"

(Appendix 1, p. 7). So, the different positions including specialized knowledge then contains a certain power, which then results in counter-movements of the public

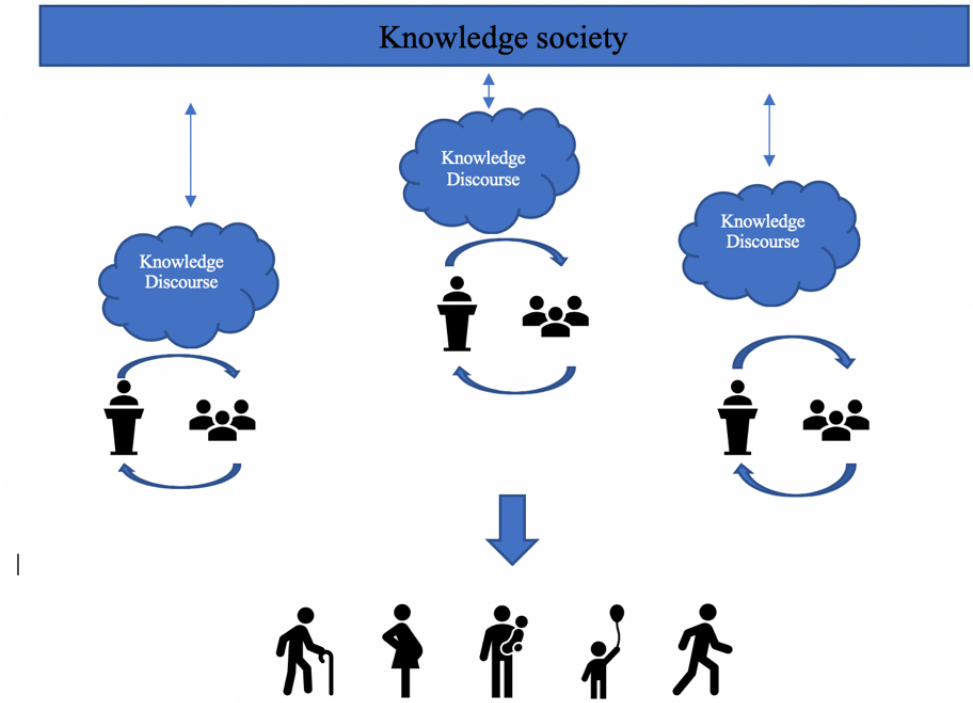


Figure 12: Production and reproduction of knowledge discourses

obtaining a challenging attitude towards these positions. Figure 12 below is illustrating this relationship between the institution or professions and the individuals, using these institutions or professions, is negotiating the knowledge discourse in the tension field of trust and challenging. The figure also illustrates how these knowledge discourses forms society, along with constituting and directly affecting the individuals life. This counter movement can be explained theoretically through Lawrence and Valsiner's concept of counter-constraining strategies, as they point out that the institution in which the individuals participate in can at times constrain the individual (section 3.1.1.). This will result in counter-constraining strategies as the individuals seek to integrate this constraining into their personal inner world. They do so by producing these strategies of opposing the constrains, which then can be put into action. In the end it can force the system to reintegrate this resistance and change these discourses.

Brinkmann goes on to address this relationship between academia and non-academia in relation to science communication:

> *"The academy is an institution within society and by that there exists a systemic barrier… But there is of cause a constant exchange, and that is more intense than ever before… The Universities scientific knowledge enter into constantly more parts of the society, but it is also problematized more than it might did before… The academy has moved out of the walls containing it, but in a way where it is still questioned." (Appendix 1, p. 8)*

In relation to section 5.1.1. one can argue that he is defending the position of the scientist and academia, for being responsible for the lack of scientific knowledge reaching the public. Here, he adds to this defending by not acknowledging a barrier between academia and non-academia, which maintains a storyline of information flowing freely between the two. This contributing to containing the position of the scientist and academia as an integrated part of society which contributes positive to the relation. He goes on: "Barriers? No… the University is very much integrated into the ordinary society… Knowledge is flowing from the Universities and back." and pointing out that the academic institution is prioritizing the communication to a non-academic audience: "The Universities wants a public face" (Appendix 1, p. 8). This positioning can be argued not to be intentional, but drawing on Brinkmann's construction of an academic discourse, which for him contains a positive attitude towards academia. Which can be seen as supported by his own positive experiences of being free as scientist, meeting the non-academic audience, and thereby not seeing potential barriers. In contrary one could also understand this positioning as defensive and intentional, as he might feel threatened by the potential idea of barriers and academia being responsible. As he is part of this institution, it is a critic that effects the position of the scientist as not having fulfilled the duties ascribed to this position. Maybe if his position was not threatened, another more open attitude towards acknowledging issues or barriers between academia and non-academia, would have arisen in the conversation. This could be explained through his sense of attachment and sympathy with the generalized position of a scientist, elaborated in section 5.1.1.2., and could be argued to express a great attachment to the academic institution as well.

5.1.4. Summary

The analysis on the interview with Svend Brinkmann follows the structure of the three organizing themes from the TNA.

The first organizing theme *aspect of science communication* empirically applies positioning theory to the academic side of the correlation of science communication, through Brinkmann's two positioning of the general scientist and the personal scientist. Here, Brinkmann advocates that the lack of science getting communicated out of academia is due to lack of format and possibilities. Maintaining the storyline of the scientist not being responsible hereof. Along with further applying the audience motivating the scientist to the correlation. The second organizing theme *scientific ideals* Brinkmann's epistemological and discursive base for his assumptions is unfolded. The third and last organizing theme *society* is elaborating on the societal structures impacting the correlation. As different societal discourses is identified along with how they affect the institution of academia, and serve as a determining context for the correlation of science communication.

5.2. TNA Interview with Jaan Valsiner

In this section, an analysis will be conducted on the empirical data from the interview with Jaan Valsiner, and similarly organized through the Thematic Network Analysis (TNA). The points drawn out from the TNA will be theoretical analyzed, along with the epistemological and discursive base for the scientist assumptions regarding science communication.

First the whole TNA will be presented and shortly unfolded:

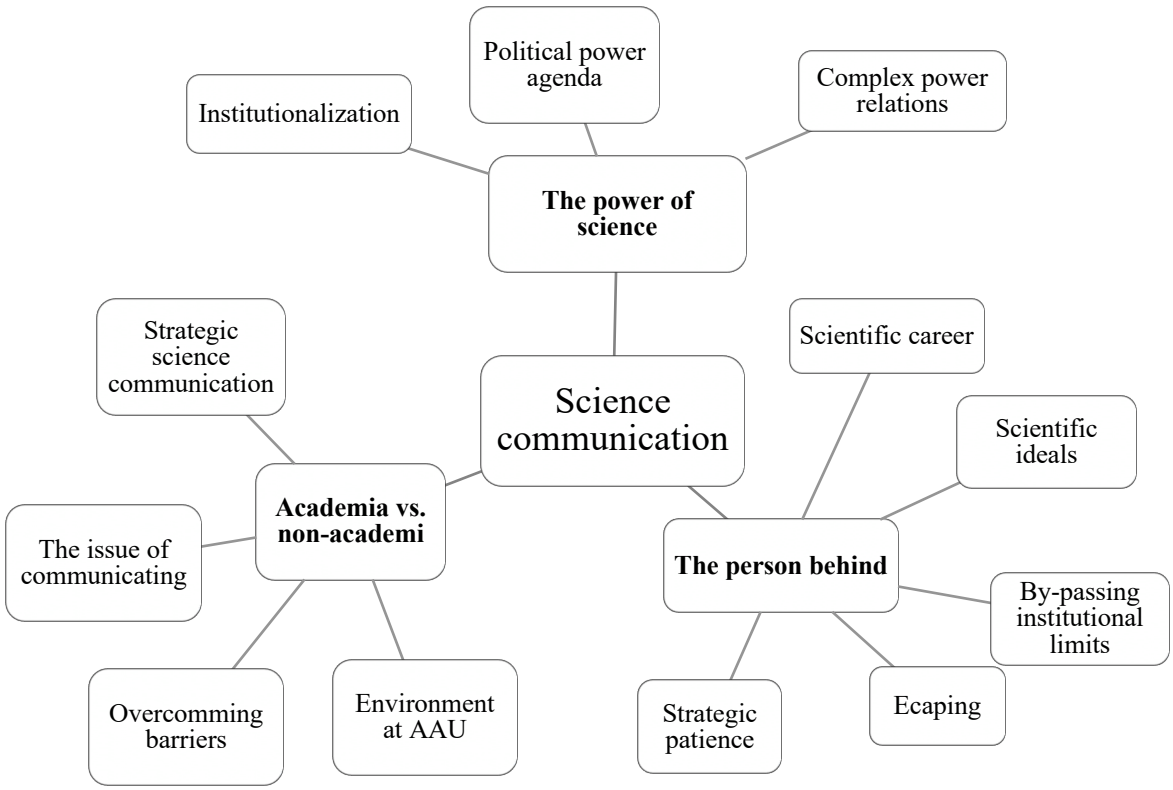


Figure 13: TNA of Interview 2 with Jaan Valsiner

The global theme of this interview is *science communication*, more specific between academia and non-academia. Evolving from the global theme are three organizing themes (OT). *The power of science*, which consist of three different aspects (organized in the three different basic themes) of power in relation to science, which are all areas that lastly effects how the academic science gets communicated. The next OT is elaborating on *the person behind*, through five different basic themes that unfold different personal aspects, which shapes his notion on science communication. The last OT; *academia vs. non-academia,* elaborating on the concept through the four basic themes addressing different aspects of this relationship in regard to science communication.

The analysis will follow the structure of the three organizing themes, grounded in the great amount of data obtained through the interview, only the most relevant basic themes are selected and theoretical analyzed.

5.2.1. The power of science

This section drawing on the first organizing theme, serves to present Jaan Valsiner's theoretical assumption on the many different power aspects of science communication.

5.2.1.1. Institutionalization

Jaan Valsiner brings up the concept of institutionalization, when addressing the academic institution and how it effects the individual, which participates herein. He takes up an example of a scientist which has overruled a parent that found it inappropriate, that there had been questions about sexuality within a questionnaire presented to the parent's child: "The combination of being standardized, and therefore approved questionnaire, and the signature on the consent form, was sufficient enough to say: 'You parent, you have no role to ask questions because we use standardized methods'." (Appendix 2, p. 1). Through this example he draws out the issue of the academic institution positioning as superior to a non-academic audience, through the use of the discourse; 'the academic way', which contains strict standardized and formalized rules that they use to justify and legitimate the institution. First the institution establishes the rules from a higher power position, stating that they are allowed to produce knowledge and rules about knowledge production, that are superior to non-academic opinions. Secondly, they use these established rules to legitimate their actions, in a non-dialogical way, overruling a non-academic audience. One could argue that imbedded in the discourse 'the academic way' there is not just a collective meaning system of how to do things or address things the academic way, but also the notion of the 'the academic way' as the right way of approaching things.

Valsiner identifies the institutionalization of the academic way as new: "This is a pattern that has developed in the last 50 years or so. In psychology more than anywhere else. Not only psychology, all human sciences they are object for this kind of institutional intervention into the intimacy of the researcher" (Appendix 2, p. 1). Here, there is an interesting dividing between the institution and the researcher. Unlike, what this analysis will interpreting as Svend Brinkmann's more coherent understanding of the scientist and academia, Valsiner seems to divide these two. So, as Valsiner is critical towards the institution, he positions the researcher as separated from the institution, and moreover, positions the researcher as being violated by the institution.

He goes on making the comparison between elite sport and institutionalization in academia: "So, this is basically takeover of sport for the sake of the legal system. The same applies to these ethical forms in academia, and to academic writing." (Appendix 2, p. 1). So, the pattern of institutionalization which

according to Valsiner violates the researcher in how they conduct their work, is somewhere similar to the legal system imposing rules on elite sport for the sake of the system, and not for the sake of the sport. He goes on referring to a new European demand consisting of all publications will be open to access, which he is critical towards: “The rich can publish and the poor can read. Since most of the rich are in the first world, and the poor in the third world, it means a new form of colonialism. Intellectual colonialism.” (Appendix 2, p. 1). This he sees as another example of the oppressing force of the institutionalization towards the researcher. This line of argumentation supports the positioning of the institution of academia as violating the researcher. Putting these two positions in opposition to each other.

Even though he positions the researcher as violated, he does not position it as weak or inferior to the institution of academia. He uses a social representation of a counter movement/strategy, that he along the interview keeps drawing on, which have the effect of positioning the violated researcher as actively opposing this attempt to oppress them (elaborated in section 5.2.2.1.). This we see exemplified in this statement:

> *“It is a counter movement of institutional takeover of academia basically. Because what is happening? There is an effort to control what academics are doing. Even if they are not fired, there is an effort to control what they are trying to find out. But the counter effect to that, is whatever we do, very often in social not really relevant areas, is very free from these constrains.” (Appendix 2, p. 1).*

He positions the researcher to by-pass this attempt to suppress them, and thereby ascribe a lot of agency to the position. Along with seeing this counter movement, as a development, which is creating a storyline of a positive future, where the researcher so to say wins. He ascribes very different characteristics to the academia institution in relation to the researcher. This way of organizing these two positions, can stem from his personal experience which has given rise to the critical voice towards institutions (see section 5.2.2.3.). There are two different groups within academia, for him, the suppressive force of academia, and the opposing force he considers himself part of. Part of his argumentation stile, of suppressing institutions and counter movements, could be argued to be part of a social representation, encountered

through his social experiences and then integrated into his personal inner world. Lastly, externalized into these concepts that is brought up in the interview.

5.2.1.2. Political power agenda

Valsiner elaborates on the politician of the modern society's close relation to science. When reflection on the recently cut of staff on the department of cultural psychology among other parts of social science, which did not have an economic base, but was a political decision, he unfolds his notion on the role of social science in society: "Social human sciences are always very dangerous. They are more dangerous than natural science. Social scientist can find out something about the society which the political system will not like…. Power is to be held, rather than divided, rather than shared." (Appendix 2, p. 2) As he emphasis the power and control executed by the politician, implicit he unfolds the great power held by the academic institution as well, and the researchers themselves. As the politicians in power is according to Valsiner threatened by social science. This positions the scientist to hold great power in the production and communication of knowledge. Valsiner draws on an example from Germany after the cold war:

> *"But on the basis of the discussion, the politicians picked up that part of the discussion that demonstrated that kindergarten is not very good for child development. And concluded that, that was a scientific basis for eliminate German kindergarten. The goal was predefined. We take from the scientists what we want." (Appendix 2, p. 2)*

This was a case of a conference initiated by the politicians to discuss whether kindergarten was a better option, than mothers staying home and taking care of the child. Valsiner points out that the conference was not an open discussion, but an institutional setup to have science support the decision they have already made. Thereby, using the power imbedded in the scientific knowledge production and afterwards in the communication hereof to emphasis their decision, as scientific results is superior to individual opinions. He goes on to problematize this:

> *"So, we ask you for scientific advice, but through the backdoor we give you money, for this kind of study. In another sense, they support the autonomy as*

long as they give the advice, they want… In another sense, what is useful for society is determined by the power roles, not by the society. And the power roles are not the society." (Appendix 2, p. 2)

Here, he draws out that power roles within the society determines what science is useful and promote it. So, he takes the agency, in relation to this matter, away from the public, stressing that the power roles decide. Once again distances the position of the researcher from the misuse of power and influence. As the researcher is positioned in opposition to the power roles, which tries to take advantages of them, according to Valsiner. He elaborates further of his notion of the political interference:

"Science in history have not been occupied by politicians. It is a recent development. Interesting enough, I will say, the recent 60/70 years or so – post world war two… This power hierarchy is interested in capitalizing the power, to make sure that science do what they want them to do. So, the result is that they do there outermost to try to regulate what to do with science. And they succeed by various concrete mechanisms – for example what kind of publications count in the academic performance and what don't count. In my native country of Estonia. None of the books that I edit will count." (Appendix 2, p. 2)

These critical reflections upon the power roles affecting the scientific work, can be traced to originate in Valsiner's experience with suppression systems throughout his scientific career (see section 5.2.2.3.). However, is bringing to light the political power in deciding what scientific work or knowledge counts, and what does not.

5.2.1.3. Complex power relations

Moving away from the top power roles within society, Valsiner elaborates further on the complex notion of power surrounding the phenomena of science communication. Drawing on the example of the science communication behind the Mars landing:

"Well the example of the Mars landing illustrates the absolute power of science over mass communication. Because the scientist strategically decides what is for mass communication and what is not. In balance to that, in psychology it is

not only the psychologist who determine what is communicated to the public. But somebody in the mediated role between the public and psychology will say – oh we must have this published."

Here, the scientist has the power in deciding what they give to the public. At the same time the channel that the scientific material goes through, could be mass media, contains power in the ability to effect and manipulate the science, before it is presented to the audience. In the simplified figure 14 below, we insert the channel to be that of the mass media. Here, to illustrate how it serves as a transformer, along with the encoder and decoder that we have been elaborating on as the 'filters' that the scientific knowledge goes through.

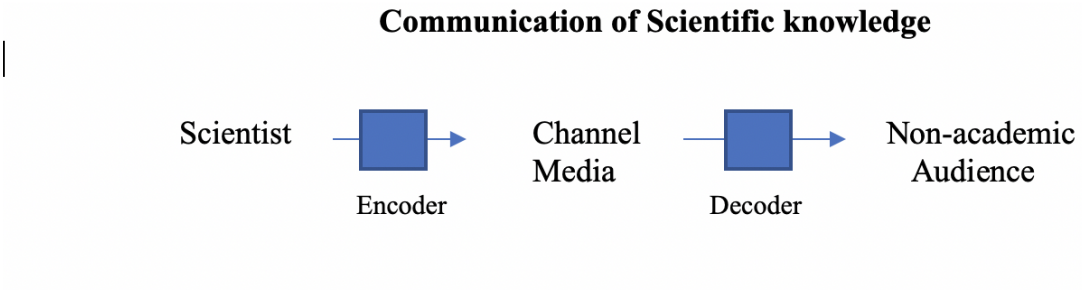


Figure 14: The channel of mass media

In relation to the above, this model could be further extended by adding the complex power imbedded in the science production and the science communication. Valsiner divides power influence in three. First, the power of the scientist deciding the science production process and afterwards whether to communicate that along with what to communicate. Second, the power held by the public, or the non-academic audience, to select in the science presented, taking what is useful. The third, he mentions companies using science in their production, selecting what science to form the companies products and also how to communicate this science imbedded in these products (Appendix 2, p. 3). Here, the role of media as well as the notion of political power strings could be further added to Valsiner's three aspects of power in relation to science communication, illustrated in figure 14 as the channel. Valsiner draws out a metaphor elaborating on these correlations:

"You are essentially preparing your marked for your products. We usually talk about market value and the marked making a difference, but actually markets

are prepared…. The marked do not decide the beginning, the market may decide in the end, but when and what do we bring to the marked. This is exactly what you said before, who is in control?" (Appendix 2, p. 3).

Adding this marked metaphor to the above, it could support the notion of scientists containing great power in deciding what to bring to the 'marked'. In another sense, what scientific knowledge to communicate, and how to communicate it. But also, that it in the end it is the marked, or the audience, that decides. Therefore, the different potential channels are also directing the scientific knowledge in regard to what the audience would like to hear.

5.2.2. The person behind

This section serves to unfold Jaan Valsiner the person behind the scientist, through the second organizing theme. Identifying the different maxims and personal experiences that shapes his theoretical work and assumptions. Showing how imperative these elements are for how he perceives science communication, and in a more general notion how the person behind the scientist is affecting the choice made in regard to science communication. For now, leaving his words to speak for themselves:

"So, it is a deeply intimate affair being a scientist. You are really dedicated to these ideas, in totally rational ways, because you do not necessarily expect any specific rewards or anything. But you cannot do differently. You have this kind of feeling that this is what I am doing, I need to do it." (Appendix 2, p. 4)

5.2.2.1. By-passing institutional limits

One of the most significant trademarks of Valsiner throughout the interview was this notion of by-passing institutional limits, also expressed through his many version of the counter-movements:

"V: They say no we will not have your publication, because it does not count. Now, what do we do? We say, your problem not ours, we will publish anyway. If your system does not like it…
(me): You publish anyway.

V: We publish anyway." (Appendix 2, p. 5)

One of his counter-strategies towards what he identifies as an institutional attempt to limit him, is publishing. In this quote, one can identify the positioning of him as a fighter, who see through the institutional control and opposes it through different forms of 'by-passing'. That emphasis the positioning of him as a strong individual, which are not easily subdued. When elaborating on science communication, he draws on his past experience with suppressive systems: "Books, journals and so on, which the Estonia system will ignore. But the ideas that we publish will not be ignored by the people who read it. In another sense, the freedom of science is suddenly bypassing the institutional limits." (Appendix 2, p. 5) Another concept, which Svend Brinkmann point out as well, is that of the freedom of science and the scientist. Even though they naturally have different social representations and references of this concept, they both emphasizes it. For Valsiner, the freedom is not something given by the academic institution, but something the scientists create themselves by these different counter-movements, which is by-passing the attempt to limit them: "That is almost the only counter strategy you can have. Basically, forcing the local systems to start appreciating it." (Appendix 2, p. 5) The storyline attached to the positioning of the institution of academia, is consisting of its attempt to control and limit the researcher. This could be argued as an unintentionally positioning of the academic institution as strong and above the researcher. In oppose to this distribution of power between the two positions, Valsiner positioning the researcher as by-passing these attempts by creating counter-movements which sets them free. This could be seen as resulting in the researcher retaking the first order position: "We do not protest. We do not complain about these exiting rules. Let them be. But we found a way around." here, he brings up one of his main maxims which also lies within the notion of by-passing (Appendix 2, p. 5). Here, there is a meaning of 'going around', not of confronting, not a revolutionist idea of changing the system, but a more strategic 'quiet' notion of working outside of the systems restrains: "With my lecture I play. For me, all this marvelous barrier of doing something correct, publishing in the right places, I just ignore them. Very similar it must be for Svend, we feel free. Completely free." (Appendix 2, p. 5). He keep on emphasizing the position of the researcher as free, supported by the ongoing reference to the underlying storyline of this by-

passing not only limitation, by also the norm and structures of academia telling him what he is supposed to do:

> *"People give you all kinds of advice, every time in my promotion in America, they were fussing about me publishing in the wrong places. But they promoted me anyway. Instead of publishing in the right places, I published in the wrong places…. But there was an effort to stop me, an institutional effort to stop me, which I either bypassed or rejected it. This can be my arrogance, but maybe… Maslow will say: 'High self-actualization' whatever he will say, but I think in this case… I do not do it for a reward, I do it because it is inherently pleasurable." (Appendix 2, p. 6)*

This new storyline brought up here, additional emphasizes the position of him as strong, independent and in control. It is the successful story of the system failing to limit him, falling to control him. The story of him succeeding in by-passing the institution. Furthermore, it is adding another layer to his position, or one could say his narrative about himself. He points out that he does not want a reward, but he does it, because it is inherently pleasurable. The reasoning behind this line could be that of internal justification rather than socially justification, as he finds it satisfying within himself to by-pass the institutional limits. So, it is a personal matter for him.

5.2.2.2. Escaping

Valsiner further unfolds his personal aspect behind his choice of science communication. Revealing the whole person behind the scientific mind. As the maxims of by-passing and counterstrategies supports a strong positioning of him, he positions himself more vulnerable through the presentment of the 'Escapism' as he calls it. It arises when he explains why he do not communicate to a non-academic audience:

> *"Now, I am not good at it – I see how it could work, but I do not know how to work it…. So, I do not think I am very good at it. I am in a way escaping. You can see that escaping was with my publication – I publish in places that are very unusual. My paper on sensuality comes in a little article, nobody reads*

this journal in Slovakia. My other relevant article on methodological cycle came in India." (Appendix 2, p. 6)

He goes on to elaborating on this new characteristic brought into the interview:

"Yes. The most important work I did on women's roles comes in India… I am writing for people who will find it one way or another. I am not actually trying to escape, but I am also not trying to get it published in a very visible place, because I really do not care – somebody says 'why are you not publishing in leading journals' and I say 'why should I, when I am already publishing'. So, those who need to read, would want to read, and will get it, and others do not read it. So, that is my escaping in a way. I will have similar escaping in public publications. Despite being to talkative here, I am a very shy person." (Appendix 2, p. 6)

Here, it is interesting that he takes the notion of him escaping back, as he goes on to present it as a passive action rather than an active escaping, grounded in his opposing against the discourse of 'the academic way'. Adding to the story line of him resisting the institutional norms and rules. He elaborates on this passive resistance: "Yeah, but it is also, so I call it my constructive arrogance – I do not care, but I care very much… because behind that arrogance there is an effort to do something new. So, it is not just dismissive, but it is actually very constructive." (Appendix 2, p. 6). Here, he exposes a more vulnerable position of the else strong character that he has built up. Adding another deeper layer into the origin for his else passive aggressive actions towards the system. This arises from a deeper hidden effort to make a change. One could argue that this is a point of no return, as he breaks down the strong position that do not care and repositioning himself as someone who gets affected and do care. Moreover, someone who is shy and do not like communicating to the public, this could be argued as an intentional positioning of a vulnerable person, which results in a more complete character with both strong and vulnerable aspects. Bringing this personal elaboration on the person behind into the interview, could be seen as something he perceives as important for the scientific understanding of his own science communication, and overall science communication in general.

5.2.2.3. Strategic patience

The last of Valsiner's personal aspects, brought up in the interview, that effects his science communication, is strategic patience. Which also is presented as a maxim, that effect many aspects of his scientific work. The value of patience is very important for him, and he sees a hesitant attitude towards any issues as a strategic move. Not reacting immediately, not reacting directly, but waiting strategically for the right moment to strike back behind the scene: "I do not hit my head against the wall, I found a way around the wall. If there is a moment when I see the wall is breaking, I will hit. I wait for that moment, very carefully." (Appendix 2, p. 6). This strategic patience is rooted in one of his first meetings with the controlling power of academia:

> *"V: This was the case of the immigration story of my defection from Soviet Union. I was in 1977, or so, we wanted to send an article to publish in America. We needed a form of letter from the University saying that the University had nothing against it. I went to the debut director of the University, as a young (...) of 27, recent graduated. Going to the psychology department, saying 'we need this letter, will you sign it?' 'How old are you?' '27' 'do you consider yourself competent in writing internationally?' and of course I had been working on the paper for two years. So, 'yes'. 'We at the University do not consider you competent, so we do not sign the letter'. Okay, I had to go away, they didn't sign the letter. Then three weeks later, they got an order from Moscow for that letter and then they signed it. Because the American publisher had asked Moscow, Moscow had asked Estonia, and Estonia asked the director of the University. When it comes down by that power channel the local debut director had to do it. We were summit quickly to get the letter. But before that when you go there by your own initiate you are simple saying that you are too young.*
>
> *(me): So, what you do – you wait. You wait for the right moment.*
>
> *V: Yes, the right moment came two years later when we had the change of leaving to the west. And without any doubt we left. We had no future. We went to Sweden, asked for political asylum. The first letter I wrote back, knowing that the KGB would read it, and I knew that it was read by the doctor committee of the University, explicitly references this particular incident. I*

knew that they would read it. And I didn't lose my opportunity to tell them 'you tell me I am to young, that is why I left. Your problem – not mine'.
(me): That is your experience that effects how you communicate science.
V: Yes, it is.
(me): It is like, you know to wait for the right moment for something to come out.
V: Yes, exactly."

This story is important for understanding Jaan Valsiner the person behind, as this experience shapes how he relates to the institution of academia, and that could be argued to serve as an imbedded social representation hereof, that he draws upon. Also, this is a successful act of the strategic patience, that he has gone on to use when facing institutional limitations and control. A successful counter-strategy organized into his personal inner world, and which is a very active mechanism in his scientific life and work. In one way he could be seen as a confronting person, resisting to be controlled or told how to do things, but at the same time he never confronts anything or anyone immediately and mostly not directly. He waits for the right time, or he acts behind the line in a quiet way, which could be identified as a passive confronting characteristic of his position.

There is a person behind every scientist, and this person's experiences and maxims shapes the decisions made in regard to science production as well as science communication. So, one of the many aspects of understanding the phenomena under investigation is to understand that the person behind is determining the conducting of science communication. In relation to section 5.2.1.3. bringing something to the marked (communicating science) is the first crucial step.

5.2.3. Academia vs. non-academia

This section draws on the third organizing theme, which address the theoretical division of academia and non-academia. Along with understanding the relation and the potential issues imbedded herein.

When asked about potential barriers between the two, he says: "I personally do not believe in any barriers. But the reason I do not believe in any barriers, is that I do not take my academic institution role seriously." (Appendix 2, p. 8) It could be

argued, that whether he believes that there is a barrier between him and the non-academic world or not, he relates to his personal position. As if he was asked if there was any barrier between him and a non-academic audience. He positions himself as equal to the non-academic audience, through him opposing the discourse of 'the academic way', and the rights and duties that goes along with the ascribed position given by academia. So, he sees it in relation to his personal position, and that positions attachment. In regard hereto he does not believe to be attached to the academic institution that he in certain area opposes against. Which means, if there are any barriers, he does not believe them to exist between him and the non-academic audience.

5.2.3.1. The issue of communicating

As Valsiner have not chosen to communicate his science to a non-academic audience, he goes on elaborating on the reasons behind. Here, he addresses the different issues related to communicating science to a non-academic audience.

First, he acknowledges that he does not believe that much scientific research is being communicated to a non-academic audience: "Well, probably very little, and probably very episodically. Very often it depends on the scandal value of the particular issue or the social burning issue." (Appendix 2, p. 8) For scientific research to come out to the public, he believes that there are certain criteria, which is determined by the ones channeling the research, or by the non-academic audience. He goes on to elaborate on the reason behind:

> *"A good example of what creates the need is interesting in astrophysics. Particular in the Mars landing programs. If you look at the internet, when you look for the Mars landing program, you see beautiful pictures of their gadgets that has landed on Mars, making little moves – very slow moves om Mars… Hero's story about their marvelous engineers…The actual science that is involved is completely absent…. The glory story of Mars landing is what is given to the public domain. So, they have very cleverly brought that aspect that the public can feel comfortable and interesting in, where you are keeping away the science." (Appendix 2, p. 8)*

The relationship between academia and the non-academic audience is exemplified through the mars landing. Several aspects can be drawn out. One being that Valsiner positions the non-academic audience to urge for comfortable information, and implicit is not ready for the actual science, which they are not interested in. Which again positions the audience as picky and controlled by what they desire to hear, in opposition to being open and rational. On the other hand, it also shows how much power the scientist and academia have, when determining what is brought to the public. Among, how they select the science to be presented. So, there are many layers on both sides that the scientific knowledge travels through, and which transforms it again and again. One of these more implicit layers is that of the constantly positioning that takes place in almost every sort of conversation, but also the social presentations systems which both is used by the academic institution and its members, as well as the many non-academic diverged groups. This could be seen as some of the aspects of the simplified decoder, and encoder in figure 6, simplified in figure 14. Adding to this complex understanding of the transmission of the message, another 'filter' could be that of the different motives that the different positions possess and tries to act out. This could be the scientist's motives, the institutional motives acting through the scientists, or the journalist's motives when communicating the science, and the different motives the audience can have in using the science. Motives could also be a crucial aspect in the academic attachment to the power roles, for example the politicians, which also effects the science production as well as the science communication. Sometimes the politicians are even the channel, in relation to figure 14, in communicating scientific knowledge, as they use it for publicly justifying their political actions. Elaborating further on the journalist's role, in channeling the scientific knowledge to the non-academic audience, Valsiner unfolds:

> *"If suddenly the newspapers started to give positive stories, followers will probably go down. So, it has a certain aspect of need to negativity. But secondly the question is; for what purpose? If the purpose of giving scientific knowledge to the public is that of entertainment." (Appendix 2, p. 8)*

Here, Valsiner could be argued to draw out a potentially motive for the journalist. The economic incentive of selling newspapers, which forms a motive of beating the

other newspapers in drawing attention to them. This can lastly be identified as the scandal value, which serves as a motive when the journalist seeks through scientific knowledge, selecting and might even transform the scientific knowledge in a way consisting with this motive. Lastly, in this quote above, he is problematizing the purpose of communicating scientific knowledge, implicit saying that if he was to communicate his knowledge, there should be a relevant purpose behind. Here, he implies that the purpose of entertaining the public is not something, he considers as a relevant purpose. This storyline justifies his reason not to communicate to a non-academic audience and ensure his position. Valsiner goes on problematize the science communication to a non-academic audience:

> *"Well, the problem about my voice being heard the way I want it to be heard, is that it is communicational impossible. Why? Because of the Karl Bühler's solution to the communication process organon model. Which is that the sender, who will send a message – but the message is always a construct by the recipience, in a different way. Even if the recipience have no specific role of their own. If they have goals of their own, it is even more complicated, because then their reception is already oriented towards one or another way of seeing the message. So, that makes me very cautious." (Appendix 2, p. 9)*

Here, he elaborates on the many layers imbedded in the function of the channel and the decoder (figure 14) as the scientific knowledge that he wants to present gets transformed, which make him cautious. He does not want his scientific material to be misused:

> *"V: For example, I am ready to write about prostitution – but I will not…. My writing towards prostitution will be emphasizing the very ordinary life of women who are in prostitution…. But since they are stigmatized in society, I do not want anybody to use what I am doing for further stigmatizing or to start to feel sorry for the women."*

Overall, Valsiner draws out some very interesting issues surrounding the phenomena, attached to the transformation of the scientific knowledge.

5.2.3.2. Strategic science communication

Building on the strategic patience presented in section 5.2.2.3., this section serves to unfold Valsiner's conception of strategic science communication, as a solution to the presented issues in the section above. Addressing the importance of knowing what, how, to whom and especially when to communicate science to a non-academic audience:

> *"Always finding out what can and needs to be communicated, to whom. Who would listen and would not listen and to whom are we telling this story? If we have that really clearly and constantly in mind, the science communication can be really productive. This also means, not telling the story to the recipience who will not use it or will miss use it." (Appendix 2, p. 9)*

Firstly, the strategic considerations behind choosing to communicate science, from the scientist's perspective, is according to Valsiner imperative. Even though he does not feel comfortable in communicating to a non-academic audience, he thinks it has potential of being productive. Secondly, he seems to distant these consideration from the personal position. Distributing it to a generalized position through the words of 'we' and 'the science communication' not involving an 'I'. All with the notion of being careful, setting back and being strategic about its execution. Thirdly, another notion could be that of the perhaps unintentional positioning of 'the academic way' as superior to the non-academic perception. In another sense, position the audience as dangerous in that they can thwart the academic knowledge. Within this notion, could be argued, to lie an implicit understanding of the academic material being honest knowledge, or correct rationally knowledge which then transform through the 'filters' of the non-academic audience and then become disrupted or potentially misused in relation to the academic origin. This positions the academic material as superior to any outcoming understanding of the material. Nevertheless, Valsiner does point out the relevance of having the audience reception in mind, when choosing to communicate one's science. He goes on to add to this notion:

> *"And also, the right format of inserting. This brings me to the question how I see different applications from psychology. For me, the best applications are*

when it is not even visible. But it is an application of psychology which is so imbedded into the original environment. Carefully plant by psychologically ground, but it is never accentuated that it is from psychology." (Appendix 2, p. 9)

Another, not mentioned in this thesis before, form of science communication is that of scientific intervention into the non-academic life. One could say that science communication through the channel of a book, also have potential for intervene with the non-academic audience life. Nevertheless, there is also more direct interventions from academia into non-academies life. Here, Valsiner stresses that such applications from psychology is best, when they are not explicit, but naturally fits in with the environment. It could be argued that this opinion arises from his escapism (see section 5.2.2.2.), as he does not like being in the spotlight. This personal aspect could influence how he approach this subject. In addition, one could argue that if the application is well hidden, it becomes more difficult for the recipient to be critical about this application, and thereby emphasis the power imbedded in the knowledge produced and distributed by the academic institution. However, the general notion of psychology fitting more naturally and not enforced into the social practices, containing non-academic individual life, seems relevant in opposition to being forced and presented for the sake of promoting the scientific position in public. Valsiner sums up these notions:

"(me): So, for science communication to be successful it needs to be strategic?
V: Exactly. Taking into account the social reality of the recipience. Who is receiving it? What is the expectation of receiving it? What format they will receive? What format will they maintain?" (Appendix 2, p. 10)

In the last sentence he, in relation to the above quote, emphasis the 'maintaining' understood as the application being successful and thereby lasting. He ends this notion of the strategic science communication when emphasizing: "The analysis of when it went wrong, will give you more to think about how we do it, than the analysis of the cases that have seem to go right." (Appendix 2, p. 10). Here, making the point of that in order to comprehend science communication we need to look at the cases, where science communication went wrong.

5.2.4. Summary

The analysis on the interview with Jaan Valsiner follows the structure of the three organizing themes from the TNA.

The first being *the power of science*, is elaborating on the different aspects of power affecting the correlation of science communication. The political influence on academia and the science production is pointed out, as the politicians use and transform the power of scientific knowledge in relation to their agenda. Moreover, the complex reciprocal power relations of science communication are drawn out, adding to the understanding of power playing a great role in the correlation. The second organizing theme *the person behind*, Valsiner note that it is an intimate affair being a scientist, as he unfolds the person behind the scientist. This section serves as an analytic ground for emphasizing how the scientist's more personal character and experience plays in and ultimately shapes the scientists' attitude toward science communication. The third and last organizing theme *academia vs. non-academia*, elaborates on the relation between the two, through Valsiner unfolding the issue of the scientific knowledge getting transformed, misunderstood and potentially misused. Both agents having power in either determining, what science comes out or selects, what scientific knowledge getting communicated to select. Lastly, stressing the need for science communication to be strategically.

6. Discussion

In section 3. of this thesis the theoretical elaboration of science communication within the context of academia to non-academia, was investigated and presented. Theoretically elaborating on the way individuals adopt information along with, how we make sense of the world, was unfolded. This theoretical elaboration of science communication resulted in the following extension of the understanding. Firstly, the acknowledgement of societal structures and discourses acting as macro contexts that shapes the science communication, illustrated in the top of figure 15 below. Secondly, adding 'filters' to the correlation of science communication, through social representation theory. Along with presenting positioning as a tool available in every part of the correlation.

This theoretical elaboration was applied in the analysis in section 5, through the empirical data further unfolding the theoretical concepts. As the data consists of two psychological scientists, it was mainly elaborations concerned with the academic side of the correlation within the field of psychology. Firstly, an

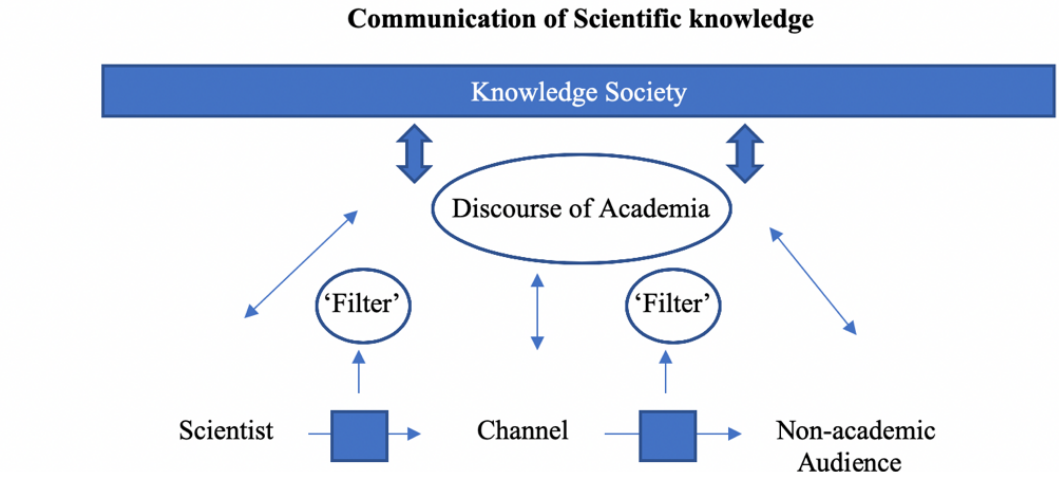


Figure 15: Simple overview of science communication

understanding of the channel was unfolded, as two ways of understanding the channel. One being different forms of science communication, it could be that of a book, a speech a radio program et cetera. Another as mediating subjects, it could be the politicians, journalists, a company et cetera. Secondly, pointing out the power attached to the agents affecting and constituting science communication. Thirdly, applying social representation theory and positioning theory to the data, showed that these concepts is not limited to the non-academic audience. Fourthly, how the person behind has great influence on the scientists' choices of communicating ones science.
One interesting thing raised through the analysis in regard to academia, was the two scientists' dismissal of any barriers between academia and non-academia. Through this thesis meta-theoretical perspectives of Foucault, it could be seen as if there exists a blind spot within academia for understanding the structural parts of the institution among the potentially barriers to the non-academic audience. The barriers consisting of the academic use of the discourse referred to in this thesis as 'the academic way', as a superior 'way of doing it' to non-academia, which enforces and legitimates academic knowledge and actions.

Arisen from the analysis four themes that went across the two interviews and several organizing themes were: The academic way, The freedom of

the scientist, The purpose of science communication, and lastly, Objectivity vs. Subjectivity. These themes were extracted as underlying themes of the analysis that both interview participants elaborated or drawn upon. From these four themes the two most relevant themes were selected for further discussion. In section 6.1. the freedom of the scientist will be discussed. In section 6.2. The purpose of the science communication will be discussed. Lastly, in section 6.3. suggestions for further research will be elaborated.

6.1. Theme 1: The freedom of the scientist

6.1.1. The analytic origin

In both interviews, the two scientists bring up the feeling of freedom in their work. Svend Brinkmann describes it as a freedom to decide what to investigate and how to communicate it. Him being able to publish to a non-academic audience, he ascribes to the academic institution giving him that freedom, along with him being lucky as the audience is interested in his research topics. So, Brinkmann's notion of the freedom imbedded in his work is attached to the academic institution. In contrary, Jaan Valsiner does not attach this freedom to the academic institution directly. In one way he is very critical about the institution, as he describes it as attempting to limit and control the researcher. Thereby, he distances himself from the institution, and challenges it, as he opposes to the discourse of 'the academic way'. This he conducts through several counter strategies, by-passing the institutional limits. In opposition to Brinkmann's freedom being attached to the academic institution, Valsiner ascribe his freedom to the counter-strategies opposing the academic institution. However, as he throughout the interview identify this limiting controlling force inside of academic, he also acknowledges that the environment at Aalborg University is special in containing the freedom of the scientist. Then again, he still is very critical of foremost the political influences on the institutions that intervenes into the freedom of the scientist. But where comes Valsiner's experience of freedom then from? These many attempts to by-pas the system through counter-strategies is from where Valsiner describes to feel free, as has no need for doing it 'the academic way'.

Even though it could be argued, that the two scientists feeling of freedom arises from different places, Valsiner explicit mentions that he believes that Brinkmann must feel

exactly like him. As Brinkmann is, according to Valsiner, by-passing the academic way by communicating to a non-academic, which he sees as an expression of how free Brinkmann feels as well. Maybe Brinkmann has a similar view on the matter, we do not know. What is interesting is that they both stresses this freedom. It could be argued to be an important notion that they feel free and non-restrained in their work as a scientist. Looking at how this notion emphasis their positioning. Brinkmann's attachment to the system of academia, could be seen as forcing him to understand the academic institution as the one giving him freedom. If the academic institution was doing something 'wrong' then his attachment to the institution and his own position imbedded herein was in danger. Moreover, Valsiner's narrative about being strong and successful in by-passing and working against the system, serves to maintain what he describes as his freedom to be part of this counter-movement. So, how they both make sense of the phenomenon of science communication and moreover the freedom they feel, could be part of maintaining and ensuring their position and the storyline enforcing this position. Here, it is interesting to ask whether the scientists actually are free? If so, what does this freedom contain? And what do that mean for the communication of science to a non-academic audience?

6.1.2. Freedom of science

In Denmark we have freedom of science, which consist of that the scientists at the Universities and similar institutions is isolated from the government on two levels. One at the institutional level separating the institution of academia from the government interferences with science production and science communication. Another in the form of the scientist as separated from the institutional management interference with the specific research topics or how the scientist plan to conduct the research. That overall means that the scientist is free to decide what topic to research, how the scientist will organize and conduct it, along with how one will communicate both to an academic audience and to the public (Kappel, 2014). This is in one paragraph written in the Danish legislation, along with part of the Universities written practices. So it means that the Danish scientists are formally free of interfering. Nevertheless, the questions of whether this freedom is actually present is reasonable.

6.1.3. Governmental interference

Looking at the society today, through the many aspects presented in this thesis, this freedom of science could be challenged. If we look at science bigger role within society one could argue the importance of its independency of governmental interference. As one can ascribe a certain moral responsibility to the scientists, consisting of rising important relevant questions unattached to any agenda or motive. But is the Danish science production free of governmental interference? Formally the answer will be yes, as elaborated above. However, the theoretical elaboration in this thesis challenge this by pointing out several aspects of governmental interfering into different layers of academia cf. Foucault (see section 2.2.2.). Arising from Foucault's concept of governmentality, one could argue that the power influences of the government towards science, is hidden in the structures within society. These structures contain different discourses that shapes and constitute individual life.

6.1.3.1. Discourse of societal impact

One discourse identified in this thesis, is that of science aiming at having 'societal impact'. This could be traced back to originate from a political discourse of everything in society need to be effective and productive, including science. It is to the broader public presented as a need for everything to be of use for the societies greater good. Nevertheless, how do we determine if something is useful? What is accounted for as useful? Here, the government has the chance to decide what is useful based in their agenda and motives, hiding behind ensuring the usefulness within society. As the discourse of 'societal impact' acts through the institution of academia, we have seen the past years how specific departments has been cut and researcher on specific departments cut off. Valsiner points out in the interview a potential political agenda of aiming to control science and how politicians feel threaten by the social sciences as they can challenge the positions and opinions of political government. Whether we choose to believe in this or not, social sciences have been cut or reduced over the past years. This effecting the amount of researcher in these areas, and therefore could be argued to be a concealed governmental regulation on the science production in this field.

6.1.3.2. The academic way

As part of the discourse of 'the academic way' the scientists are foremost evaluated on the amount of international publications in academic high rated journals. This type of science communication counts when scientists are evaluated for a job, when they need to apply for foundation grants to finance their research, or when the institution need to cut staff of. The science communication to non-academic audience is not foremost accounted for. So, the discourse of 'societal impact' could be argued, in light of the academic pressure, to effect what form of science communication the scientist chose, along with the research topic. Even if some of the scientist chooses to oppose of this discourse of usefulness, they are more exposed, when departments are being cut leaving them unemployed. So, the reality of the circumstances surrounding science production could through a Foucauldian structural perspective be seen as affected by governmental discourses shaping the science production and communication. Drawing on Foucault's notion of the panopticon, these discourses could be seen to be externalized in the individuals as norms and restrictions, they impose on themselves, and thereby very subtle. Furthermore, this thesis has elaborated on the great power imbedded in scientific knowledge, as it is part of many different aspect of society. This power imbedded in the scientific knowledge can be argued to emphasis the many different power roles interest in affection science production and communication. This interfering with the freedom of science.

6.1.4. Affecting science communication

For scientific knowledge to have societal impact it needs to leave the inside of the academic institution. In another sense, it needs to be communicated to the public. This communication can be channeled through products, political practices or different intuitional positions. It can also be very explicit in the scientist being the communicator of one's science. However, science communication plays a great role in this discussion of scientific freedom. As the limitation of scientific freedom affects the science getting communicated, and also effects the many factors surrounding this process, which shapes and constitute science communication.

One aspect of the above mentioned morally responsibility of the scientist to communicate their science, could be that of a duty to participate in the public debate and the democratic decisions processes. This can be seen limited by the discourse of 'the academic way' as the decisions of what counts effects the scientists'

choices in conducting their research. In another sense, as the discourse of 'the academic way' is affecting the scientist being evaluated on their scientific publications, there is no incitement from the academic institution for the scientist to communicate their science to a non-academic audience. Moreover, no incitement to participate in the public debate. Here, we see how the discourses imbedded in academia can shape the science communication, and the publics access to scientific knowledge. There is an ethical issue imbedded in the question of who has the right to access scientific knowledge. If the scientific knowledge is not communicated to the public or is not communicated in a form and language that the public can access, then individuals outside of academia is eliminated from accessing scientific knowledge. This constitutes the institution and the positions imbedded in society, and thereby constitutes individual life. Containing scientific knowledge inside academia results in only high educated academic individuals accessing scientific knowledge, and the power imbedded herein. This leads up to the question of what purpose do we communicate scientific knowledge?

6.2. Theme 2: The purpose of science communication

6.2.1. The analytic origin

This thesis empirical base consists of two participants. Where Svend Brinkmann is known for communicating to the public through different books, articles in newspapers, tv interviews and a radio program. Jaan Valsiner is not known to the public as he mainly communicates very abstract theories, in a form and language that require special expertise, limiting his audience to be inside of academia. Brinkmann elaborates that the reason for him to do this kind of communication, is because it feels natural to him and he feels very motivated by the great amount of audience engaged in his research topics. On the other side Jaan Valsiner elaborates on the many issues he believes to be imbedded in the communication of science. This raising the issue of what purpose are we communicating science? If he is to communicating his science, it needs to be for a good enough purpose inserted at the right time in strategic patience. As he believes science communicating needs to be strategic and well executed.

6.2.2. Purpose of entertainment

In light of the Mars landing example of science communication that Valsiner presents, it is relevant to ask if the purpose of communicating science is entertainment? On the one hand we can see the need for downgrading the scientific language and weight, when communicating to the public. This could be seen as resulting in leaving the actually scientific ground and instead replace it with an aim to entertain. As if it was a product that needed to sell and in order to do so, we need to make it interesting and amusing. In this understanding there is a tendency to ascribe a lot of responsibility to the audience, as if they would only take this scientific knowledge in, if they find it interesting or entertaining. Another aspect of this argumentation could be that of the issue of the transformation of the knowledge, that is elaborated in section 3 and 5. The acknowledgement of the scientific knowledge as being transformed, through multiple filters, along with being affected by the different motives contained by the agents involved in the communication, can raise the issue of the content of the knowledge getting misinterpreted or misused. In contrary, this transformation of knowledge could be seen as a premise for all sort of communication. The barriers consisting of individuals integrating knowledge differently should not restrain us for communicating with the person next to us. In relation to science communication, the dialog with a non-academic audience consists of two agents. One could argue that the academic agents should accept the premise of his/hers understanding getting transformed. Initiating a dialog of negotiating this knowledge, rather than leaving the communication.

6.2.3. The purpose of initiating a dialog

When communicating scientific knowledge, one could go further and require the scientist to targeting the communication, to fit with the audience receiving it. Drawing on social representation theory, presented in section 3.2. Targeting a particular audience is already happening in the two interviews through the process of objectification as both scientists uses a metaphor to communicate their point to me, in order to make it more accessible for me, as the recipient. So, being aware of the barrier imbedded in different forms of using the language or in a professional position one contains, and aim to equalize this asymmetry, could be argued to not be the same as ‘selling out’ of the content or purpose. In relation to the theoretical framework elaborated in section 3. In addition, the transformation of the scientific

knowledge is a premise for every social practices and processes, which is imbedded in the understanding of a dialog or negotiating. That there is more than one part in a conversation, and as long as it is not a monolog there is different perspectives and modifications of what is being discussed. The back and forth discussion, dialog or exchange of content could be argued to be the root of all kind of interactions in society.

The scientist is thereby not suppose to determine, how the scientific knowledge is received and integrated into the society. But they have the right to decide what and how to communicate it. Still the possibility of the scientist not agreeing with the use or transformation of one's research could be seen as a premise, and not a failure. As there exist many different perspectives and opinions within society, and this diversity could be argued to be valued rather than eliminated. It is also an option for the scientist to go back into that dialog, after feeling that one's science has been misused, to once again clarify the scientist purpose and intent when communicating the science, forcing the dialog to continue.

6.2.4. Strategic science communication

One way of looking at science communication is with the strategic patience that Valsiner stresses, to make sure that you communicate your science from a well planned base and with a good clear purpose. I do not think that anyone in theory will disagree with that notion. However, it could result in hindering a lot of science being communicated and refrain scientists from communicating at all. Maybe the lack of communication of science could be seen as worse than the possibility of doing something 'wrong'. And as elaborated in the forgoing discussion, there is not much incitement for the scientists to communicate their science to a non-academic audience, which overall means that there are much more holding the scientists back from this field than motivates them to engage in it.

6.2.5. The purpose of moral responsibility

Then, for what purpose should the scientist communicate their science? One answer could be for the purpose of meeting the moral responsibility of the scientists, consisting of engaging in the public debate and democratic processes that influences individual life, with their specialized scientific knowledge on a certain area. Enhancing the public debate and challenge existing and perhaps taking-for-granted knowledge

that is deeply rooted within the discourses of individuals everyday life. By actively participating in shaping and challenging the knowledge discourses within society. Where the scientist is also breaking down potentially barriers or asymmetry between the academic and non-academic world. When Foucault refers to the institutionalization of mental health imbedded in the psychiatry, one way of avoiding that the system only exists for the systems sake, or that the system acts only to legitimate and uphold the system, is through the use of science communication and a dialog between academia to non-academia. Drawing on this thesis meta-theoretical theory of cultural psychology, conversation is seen as a cultural tool, which individuals draws upon in social practices. When seeing the communication as a cultural tool, the purpose of scientist using this to participate in the dynamic social knowledge exchange, could be emphasized. Culture is something that exists between people. What if we saw this as an opportunity for taking the potential influence and tool of science, out of its hiding inside of academia and communicated it out to a non-academic audience. Hereby, nourishing the culture that is socially deeply rooted in the practices of communication. What if we saw the structural and cultural opportunity and purpose imbedded in the communication of science to a non-academic audience.

6.3. Further researcher

Drawing on the line of argumentation in the above discussion, it could be relevant to go further in exploring the different kinds of knowledge within society. As this thesis problematize scientific knowledge being perceived and used as superior to any non-academic knowledge. To give a short example from the field of psychology of potential different kinds of knowledges which could be further investigated, could be the specific context of losing a child. Here, the mother who has lost her child could be argued accessing the conversation with a position that consist of the right to address this phenomenon, as she is a life-expert on this matter containing relevant knowledge. The position of a scientist who has studied the phenomenon could argue to have a similar right to participate in the conversation, as the scientist possess scientific knowledge on the matter. A third agent in this conversation could be a priest who has great experience with burying children lost by the parents, and as a result possesses a different kind of knowledge, that could be argued to be legitime and important. The point here is that of investigating different kind of knowledge systems and how they are perceived and used in our society. As this thesis is focusing on the

field of psychology, the understanding of science communication and the model unfolded in this thesis should be seen within this context. However, it could be relevant to investigate science communication within other fields as this thesis findings might be very different for similar findings focusing on other scientific disciplines.

Moving further one could argue that this thesis is manly a theoretical exploration of the science communication to a non-academic audience within the field of psychology. Even though this thesis consists of empirical data, it could be argued to be theoretically as well, as the two interview participants are scientists which theoretically elaborate on the phenomenon. However, there is also empirical material imbedded in the interviews which are drawn out and analyzed, that serves to empirically elaborate on the academic side of the correlation. Taking this complex understanding further, that this thesis has presented, could be addressed through an empirical study on the audience perspective, or the perspective of the channel. Empirically elaborating on the other perspectives in the correlation presented in this thesis.

This thesis has a psychology perspective on science communication, and more specific approaching the phenomenon from a cultural psychological perspective, drawing on Foucault's understanding of knowledge and power imbedded in society. This means that it is from this ground the thesis elaborates on science communication. That also means that it could be relevant to address the phenomenon from other scientific perspectives, which could further unfold a complex understanding hereof. Along with this thesis drawing on only qualitative method, and more specific only using interviews, other both qualitative and quantitative exploration of the phenomenon could be relevant and supplement or even challenge this thesis understanding. Which could result in a further interesting discussion of the phenomenon.

7. Conclusion

To start by answering the first question in my introduction, I would draw the conclusion that yes, the answer is way more complex. Science communication to a non-academia audience, is a complex phenomenon with many elements constituting and reshaping the phenomenon, imbedded in several dynamic contexts. This thesis main findings apply to the academic aide of the correlation, that this thesis has put for-

ward. Firstly, through cultural psychology and social representations theory the transformation process of the scientific knowledge was elaborated, adding the understanding of filters on both side of the correlation (Figure 15). Bringing the overall conclusion that it is premise for communication that knowledge gets transformed and reconstructed through social practices. In addition, hereto, identifying positioning as an active tool that is imbedded in several parts of communication. Secondly, drawing out the importance of knowledge within society, and through Foucault's notion of power and knowledge emphasizing the many power strings effecting the scientific knowledge production as well as communication, and enforced through discourses imbedded in the institution. This let to elaborating on the channel illustrated in figure 15, as a mediator which can take many forms and have an agenda of its own. Thirdly, Brinkmann added to the correlation the importance of a present audience which affect his choice of science communication. Valsiner brought in the person behind, which in addition added the important of the personal aspect which again affects the choice of science communication. Along with several others specific empirical elaboration which added to a complex understanding of the many aspects of being a scientist, and communicating science, within social science, more specific psychological science. This thesis has approached the phenomenon from a psychological perspective, collecting empirical data from two psychological scientists, which limits its findings to apply to the discipline of psychology. However, the thesis does present a suggested basic model (figure 15) for understanding the many elements affecting and shaping the phenomenon. This model should be further investigated and tested.

8. List of reference

Collier, J. H., & Toomey, D. M. (Eds.). (1997). *Scientific and technical communication*. California: Sage Publications, Inc.

Attride-stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *SAGE Publications*, *1*(3), 385–405.

Kvale, S., & Brinkmann, S. (2009). *Interview - introduction til et håndværk* (2nd ed.). Copenhagen: Hans Reitzels Forlag.

Berg-Sørensen, A. (2012). Hermenuetik og fænomenologi. In M. H. Jacobsen, K. Lippert-Rasmussen, & P. Nedergaard (Eds.), *Videnskabsteori - i statskundskab, sociologi og forvaltning* (2nd ed., pp. 215–232). Hans Reitzels Forlag.

Kappel, K. (2014). Forskningsfrihed. https://doi.org/https://forskerportalen.dk/da/forskningsfrihed/

Colin, F. (2012). Socialkonstruktivisme. In M. H. Jacobsen, K. Lippert-Rasmussen, & P. Nedergaard (Eds.), *Videnskabsteori - i statskundskab, sociologi og forvaltning* (pp. 335–374). Copenhagen: Hans Reitzels Forlag.

Cohnitz, D., Pagin, P., & Rossberg, M. (2013). Monism, Pluralism and Relativism: New Essays on the Status of Logic. *Erkenntnis*, *79*(Suppl 2), 201–210. https://doi.org/https://doi-org.zorac.aub.aau.dk/10.1007/s10670-013-9473-0

Davies, S. R., & Horst, M. (2016). Introduction: Science Communication as Culture. In *Science Communication* (pp. 1–28). London, UK: Springer Nature.

Harré, R. (2012). Positioning Theory: Moral Dimensions of Social-Cultural Psychology. In J. Valsiner (Ed.), *The Oxford Handbook of Culture and Psychology* (pp. 191–206). Oxford, UK: Oxford University Press.

Harre, R., & Moghaddam, F. (2015). Positioning theory and social representations. In G. Sammut, E. Andreouli, G. Gaskell, & J. Valsiner (Eds.), *The Cambridge Handbook of Social Representations* (pp. 224–233). Cambridge, UK: Cambridge University Press.

Sammut, G., Andreouli, E., Gaskell, G., & Valsiner, J. (2015). Social representations: a revolutionary paradigm? In G. Sammut, E. Andreouli, G. Gaskell, & J. Valsiner (Eds.), *The Cambridge Handbook of Social Representations* (pp. 3–11). Cambridge, UK: Cambridge University Press.

Kronberger, N. (2015). Of worlds and objects: scientific knowledge and its publics. In G. Sammut, E. Andreouli, G. Gaskell, & J. Valsiner (Eds.), *The Cambridge Handbook of Social Representations* (pp. 358–368). Cambridge, UK: Cambridge University Press.

Psaltis, C. (2015). Communication and the microgenetic construction of knowledge. In G. Sammut, E. Andreouli, G. Gaskell, & J. Valsiner (Eds.), *The Cambridge Handbook of Social Representations* (pp. 113–127). Cambridge, UK: Cambridge University Press.

Rose, N. (1999). Control. In *Power of freedom* (pp. 233–273). Cambridge, UK: Cambridge University Press.

Lawrence, J. A., & Valsiner, J. (2003). Making Personal Sense - An Account of Basic Internalization and Externalization Processes. *Theory & Psychology*, *13*(6), 723–752. https://doi.org/https://doi.org/10.1177/0959354303136001

Valsiner, J. (2018). Culture in psychology. In *Beyond the Mind* (pp. 3–24). USA: Library of Congress Cataloging-in-Publication Data.

Foucault, M. (1975). *Discipline and Punish: the birth of the prison*. Paris: Editions Gallimard.

Foucault, M. (1971). *Madness and Civilization*. London, UK: Tavistock.

Foucault, M. (2002). *Power - essential works of Foucault 1954 - 1984*. (J. D. Faubion, Ed.). London, England: Penguin Books.

Foucault, M. (2007). *The politics of truth*. (S. Lotringer, Ed.). Los Angeles: SEMIOTEXT(E).

Wæver, O. (2012). Strukturalisme og poststrukturalisme. In M. H. Jacobsen, K. Lippert-Rasmussen, & P. Nedergaard (Eds.), *Videnskabsteori - i statskundskab, sociologi og forvaltning* (2nd ed., pp. 289–333). Copenhagen: Hans Reitzels Forlag.

Van Langenhove, L., & Harré, R. (1999). Introducing Positioning Theory. In *Positioning Theory - Moral Contexts of International Action* (pp. 14–31). Wiley-Blackwell Publishing Ltd.

Tirado, F., & Gálvez, A. (2007). Positioning Theory and Discourse Analysis: Some Tools for Social Interaction Analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, *8*(2). https://doi.org/http://dx.doi.org/10.17169/fqs-8.2.248

Ratner, C. (2014). Macro-Cultural Psychology. In J. Valsiner (Ed.), *The Oxford Handbook of Culture and Psychology* (pp. 207–237). Oxford, UK: Oxford University Press.

Foucault, M. (1997). Psychiatric Power. In *Ethics: Subjectivity and Truth. The essential works 1* (pp. 39–50). London: Penguin Books.

Valsiner, J. (2014). Introduction: Culture in Psychology: A Renewed Encounter of Inquisitive Minds. In J. Valsiner (Ed.), *The Oxford Handbook of Culture and Psychology* (pp. 3–24). Oxford, UK: Oxford University Press.

9. List of Appendix

10. List of figures