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CLAUDIA STREY

THE LANGUAGE OF EMOTIONS:
AN OSTENSIVE-INFERENTIAL STUDY

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Pontifícia Universidade Católica
do Rio Grande do Sul

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Tese de Doutorado apresentada ao Programa de Pós-graduação em Letras/, da Pontifícia Universidade Católica do Rio Grande do Sul, como parte dos requisitos necessários à obtenção do título de Doutora em Letras.

Orientador: Prof. Dr. Jorge Campos da Costa

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BANCA EXAMINADORA:

Prof. Dr. Tim Wharton – University of Brighton

Prof. Dr. Billy Clark – Middlesex University

Profa. Dra. Beatriz Viégas-Faria – Universidade Federal de Pelotas

Profa. Dra. Cristina Becker Lopes-Perna – PUCRS

Prof. Dr. Jorge Campos da Costa – PUCRS

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To the memory of Ilena Bauer.

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/

If I say that I believe in man, I mean in man as he is; and I should never dream of saying that he is wholly rational. I do not think that a question such as whether man is more rational than emotional or vice versa should be asked: there are no ways of assessing or comparing such things. […] But I am aware not only of the power of emotions in human life, but also of their value. I should never demand that the attainment of an attitude of reasonableness should become the one dominant aim of our lives.

Karl Popper (1968)

ABSTRACT

This dissertation aims to broaden relevance theory scope in order to account for emotions in communication, evaluating its descriptive-explanatory potential. This work consists of three independent chapters, and each one of them comprehends one research question and its corresponding hypothesis. The first chapter provides the basis for the arguments developed in the subsequent chapters. It explores the study of emotion in philosophy of language and in neuroscience. The second chapter develops Sperber and Wilson's (1986/1995, 2015) relevance theory in order to argue for a broader pragmatics, which involves both verbal and non-verbal behaviours (in line with Wharton, 2009). The focus was mainly on how natural behaviours, such as facial expressions and prosody, convey emotions. The third and last chapter reorganise relevance theory in order to explain emotional communication. It is proposed the existence of two levels of communication: a propositional one and an emotional one, both relevance-driven. I finally argue that non-verbal behaviours, words and descriptions of emotion and loose uses of language encode emotional-reading procedures that help guide the comprehension process in order to yield cognitive-affective effects. This work seeks to provide theoretical improvements to relevance theory so it can explain the language of emotion.

Keywords: Pragmatics. Emotion. Relevance Theory. Communication.

RESUMO

Esta dissertação tem como objetivo ampliar o escopo da Teoria da Relevância a fim de explicar como as emoções influenciam a comunicação, avaliando o potencial descritivo-explanatório da teoria. O trabalho é composto por três capítulos independentes, e cada um deles compreende uma questão de pesquisa e uma hipótese correspondente. O primeiro capítulo fornece a base para os argumentos desenvolvidos nos próximos capítulos. Ele explora como a emoção foi estudada na Filosofia da Linguagem e da Neurociência. O segundo capítulo desenvolve a Teoria da Relevância, de Sperber e Wilson (1986/1995, 2015) com o objetivo de defender uma pragmática mais ampla, que envolve tanto comportamentos verbais como não-verbais (Wharton, 2009). Foca-se principalmente em como os comportamentos naturais, tais como expressões faciais e prosódia, transmitem emoções. O terceiro e último capítulo organiza a Teoria da Relevância para explicar a comunicação emocional. Em seguida, propõe-se a existência de dois níveis de comunicação: um proposicional e um emocional, ambos guiados pelo princípio da relevância. Por fim, argumenta-se que os comportamentos não-verbais, as palavras e as descrições de emoção, e os usos vagos de linguagem codificam procedimentos de compreensão da emoção, que ajudam a orientar o processo de compreensão a fim de criar efeitos cognitivos-afetivos. Este trabalho busca proporcionar mudanças teóricas à Teoria da Relevância para que ela possa explicar a linguagem da emoção.

Palavras-chave: Pragmática. Emoção. Teoria da Relevância. Comunicação.

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INTRODUCTION

If you study language in context, you have probably wondered about the role of emotions in communication. It seems evident, since we talk about emotions, we feel and we speak, we speak and we feel. Evident but paradoxical – even though researchers identify it, the relationship is not easy to describe or to explain. What are emotions? What is language? Is an emotional state able to modify inferences? Is language rational? Can emotions be scientifically investigated in language studies?

All questions are valid and relevant, and they underlie this dissertation through all of its chapters. I will try to answer some of them, as well as emphasise how language expresses emotions, not only by words, but also by context. It is important to have in mind, though, that when studying a complex object that has not been a major subject in your field, it feels like you are groping around in the dark. In order to make things clear, I should first define how some basic concepts are understood in this dissertation – so I can build an interface between them.

The first movement is to clarify the meaning of 'language' – and it means to delimit our first interface of study. I will adopt a cognitive view of language, but with specific focus on its pragmatic interaction with language. In this sense, what involve language in use and meaning are not only words, but also non-verbal behaviours. One of the frameworks that are in spirit with this approach is Relevance Theory (Sperber and Wilson 1986/1995). It parts from Gricean pragmatics to cognitively explain how humans communicate or how we understand more than what is being uttered.

The second concept that needs clarification is 'emotion'. Even though Wierzbicka (1995) points that if you intend to study it, you should not start with a clear definition of the concept – or you will end up with something very rigorous, I will assume a linguistic notion of emotions, observing either emotional contexts and linguistic marks. I am not interested exactly in how they work at a chemical level, for example, but in how they are expressed in language[1]. Taking arguments from

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[1] In this sense, I will not sustain a difference between emotion, feeling and passion. I will treat them as one only phenomenon.

[2] See also Costa and Feltes (2010).

[3] Approximate translation of: "sem a construção de interfaces apropriadas há o risco de se produzir uma interdisciplinaridade difusa, que faz multiplicarem-se variáveis não-controladas. Ao mesmo tempo, alinham-se adequação descritiva e explanatória, de modo a evitar a proliferação de descrições sem correspondente valor explanatório. Em ambos os casos, trata-se de operar com o Princípio de

psychology, neurobiology, or evolutionary biology that help sustain my thesis, I will build a specific and complex object between language and emotion. The aim of this dissertation, therefore, is to propose a framework that can describe and explain how emotion affects communication; more specifically, how verbal emotion can affect language.

In order to handle distinct fields of knowledge, I have to adopt a perspectival position of science, which recognizes that a scientific object would not be known in its entirety but only in perspectives of reality. Based on the work of Kant and particularly Nietzsche, perspectivism denies the assumption that claims of scientists are objective truths, but rather suggests that scientific claims reflect the historical, cultural, and social context in which those claims were made. The nature of scientific knowledge is not absolute because it is influenced by the practice and perspectives of human agents. Giere (2006) argues that the acts of observing and theorizing are both perspectival, and he also says that science is perspectival as well: complex scientific principles make no claims about the world, but models based on those principles can be used to make claims about specific aspects of the world.

Assuming Campos's (2007) *Metatheory of Interface*[2], I defend an idea of interdisciplinary investigation, organized via an approach of two-level interfaces: an external one, in which the interdisciplinary bases are established – among Linguistics, Logic, and Cognitive Psychology; and an internal one, or intradisciplinary, in which relations between subtheories, such as syntax, semantics and pragmatics are established. Based on this foundational assumption, the following dissertation hopes to integrate language and emotions as a complex object through interdisciplinary work.

The general aim of this dissertation is to broaden relevance theory in order to account for emotions in communication, evaluating its descriptive-explanatory potential. The pursuit of an adequate explanation and description of the phenomenon will be explored based on three research questions that I address:

(1) How do emotions relate to language and communication and why does this relationship have to be interdisciplinary grounded?
(2) How to account for non-verbal aspects of communication?

[2] See also Costa and Feltes (2010).

(3) How does relevance theory account for emotions in communication?

Three hypotheses are made to answer the questions above:

(1) Assuming a perspectival analysis, emotions are understood as a complex object that can only be studied in an interdisciplinary foundation – assuming arguments from psychology, neurobiology, or evolutionary biology, for example. To be linguistically relevant, any investigation about language meaning has to start from what is explicitly expressed in the utterance or from what is part of its context.
(2) Communication involves both verbal and non-verbal behaviours, such as facial expression, and prosody. Non-verbal aspects are picked up by a relevance-comprehension heuristic, and they may alter the salience of cognitive effects, encoding procedural rather than conceptual meaning. They convey a wide array of weak assumptions, communicating emotions and impressions.
(3) There are two levels of communication: a propositional one and an emotional one, both guided by relevance. Non-verbal communication and loose uses of language encode emotional-reading procedures that help guide the comprehension process to yield affective effects.

As a means to assess those hypotheses, the dissertation has three-fold methodological objectives, which are: (a) to create an adequate basis for investigating how emotions and language can correlate in communication, creating a solid foundation for further investigation; (b) to systematize relevance theory and argue for a broader view of pragmatics; (c) to operate with the relevance theory assumptions to achieve a better understanding of emotional communication.

The dissertation is organised as follows: in chapter 1, I will describe the interdisciplinary basis for the investigation. It is divided in three parts: the first sets the grounds for an interdisciplinary study; the second deals with philosophy of language and how emotions were explained and set aside from scientific investigation; the third part is concerned with emotions and cognitive sciences – I will use neuroscience data to build arguments to support my claims on the linguisitcs' side of the interface.

Chapter 2 deals with a proposal for a broader pragmatics. For that, firstly there is a brief introduction about how Gricean pragmatics explain language in context and its relation to speaker's meaning, followed by a discussion about relevance theory framework – the theory adopted in this dissertation. Following that, I introduce Wharton's (2009) natural pragmatics, which aims to describe and explain what is conveyed by natural, non-verbal phenomena, and how it interplays with verbal communication. In the same section, procedural meaning is described. Finally, based on natural pragmatics, I describe how interjections, prosody, and facial and bodily expressions affect communication, focusing mainly on their emotional aspects.

Chapter 3 firstly presents how relevance theory accounts for weak communication, especially how it conceptualises the communication of impressions. After that, there is a description of emotional communication, discussing the difference between propositional and affective effects. Following that, an emotional-reading procedure is proposed (following Wharton, 2009).

It is important to observe that not only the content discussed here aims to be a relevant contribution, but also the dissertation's structure: it is organised with three chapters, and each one of them will assess one of the above hypotheses. They can be read independently, but they present a thematic progression. First chapter's conclusion works as an argument for the second chapter, and the argument developed in the second will be the basis for the last one.

Overall, the study intends to illuminate future investigations in neurosciences, as its results may be able to feed cognitive experiments. At the same time, some findings may be useful to artificial intelligence areas, as it will shed light onto the complex relation between language and emotions.

CHAPTER ONE – "ONE SHAFT OF LIGHT THAT SHOWS THE WAY"

> *There can be no knowledge without emotion. We may be aware of a truth, yet until we have felt its force, it is not ours. To the cognition of the brain must be added the experience of the soul.*
>
> Arnold Bennett

1.1 INTRODUCTION

Popper (1963, p. 88) affirms that "We are not students of some subject matter, but students of problems. And problems may cut right across the borders of any subject matter or discipline". That seems to be the case of the relationship between language and emotions – it is not an object of one discipline, but rather of many. How we set the boundaries of research is sometimes more important than the work itself: if I can state exactly from where we are looking upon a problem, we have more chances of grasping its properties.

Undoubtedly, several interfaces can be built by taking emotions as the focus of chemical, biological, neurophysiological, or cultural studies. Furthermore, it is certainly reasonable to think that the relationship between language and emotions could be explored as well. In fact, if an interdisciplinary research is undertaken, any two or more theories can be approximated in order to explain a complex object composed of heteromorphic properties such as emotions.

In order to define 'emotions', one must define them within theories. If the question is "what are emotions?" the answer should be: it depends on the perspective. Within language studies, for instance, emotions can be seen from the perspective of Linguistics and Cognitive Psychology, or Linguistics and Philosophy. Assuming thus the complexity of the object, this chapter will address the first research question, *How do emotions relate to language and communication and why does this relationship have to be interdisciplinarily grounded?*, and analyse the first hypothesis:

- Assuming a perspectival analysis, emotions are understood as a complex object that can only be studied in an interdisciplinary foundation – assuming arguments from psychology, neurobiology, or evolutionary biology, for example. However, to be linguistically relevant, any investigation about language meaning has to start from what is explicitly expressed in the utterance and from what is part of its context.

To evaluate this, this chapter is organised as follows: first, I will set the grounds for an interdisciplinary research by assuming Campos's (2007) *Metatheory of Interfaces*, which can be considered as a methodology of research in linguistics. Then, I am going to take two routes on emotion studies: the classical one – how philosophers understand emotions – and the neuroscience/cognitive psychology one. The objective of this chapter is to establish a solid starting point to demonstrate that the relationship between language and emotions should not be disregarded.

This first chapter aims to work as a deductive argument: if neurosciences show that reasoning and emotions have an intimate relationship, and if language is part of reasoning itself, language and emotions have to be consequently intimately related. A brief description of how philosopy approaches this relationship is also offered in order to help elucidate the interface, as well as to show how interdisciplinary research works.

1.2 INTERDISCIPLINARY RESEARCH

In Philosophy of Science, the idea of whether or not reality underlies scientific knowledge is discussed by different epistemological positions that converge to explain if it is possible for human beings to achieve total knowledge of reality. Within this philosophical framework, it would be possible to take at least four observation positions (Giere, 2006), namely: (a) objective realism, in which the role of the scientist is to discover reality (or true laws) as it presents itself, comprising the object, whatever it is (the language, the emotions, the universe), as having specific properties and pre-existing theories constructed; (b) constructivism, which sustains that there is a truth, but knowledge about it can be achieved only through human and social constructions; (c) naturalism, that implies the rejection of supernatural and a priori claims of any kind; (d) perspectivism, which recognizes the existence of a

single reality, but with the possibility of perspectives to assess it. Thus, the scientific object would not be known in its entirety, but only in perspectives of reality.

Giere posits that there is a reality before our own existence, but we can only elaborate it through a perspectival analysis. Furthermore, the truth of a specific claim is relative to a perspective, i.e. we can only judge its veracity if we understand how the object and its internal constitution are built. In this work, it seems appropriate to assume Giere's (2006) Scientific Perspectivism – influenced by notions developed by Kant, Nietzsche and Leibniz – because the object is complex, and the theories that help sustaining my argument are from different areas of research.

Taking the object as constructed within each theory seems to be something necessary when dealing with complex objects that assume fundamentals of different areas. However, the idea of undertaking the construction of the object as intrinsic to the construction of the theory is just one of the possible paradigms. Perspectivists state that this approach is just one perspective to understand science; it is not the only real possibility. As Costa and Feltes (2010) state, "An understanding of this situation [that science has different perspectives] gives perspectivism greater possibility and it represents a step forward without radicalism".

As a perspectival epistemology is undertaken, it is important to approach interdisciplinary studies, which seem to be the most predominant model of investigation in the academic world to solve complex questions and problems. Klein (1990, p. 188) argues that interdisciplinary is "neither a subject matter nor a body of content. It is a process for achieving an integrative synthesis, a process that usually begins with a problem, question, topic, or issue". She says that interdisciplinary is different from multidisciplinary (more than one discipline working on the same problem, but with no real conversation), pluri-disciplinary (disciplines interacting on the basis of work from other disciplines), and transdisciplinary (the organization of interdisciplinary research by a grand unifying vision). One major difference is that, whereas multidisciplinary approaches join together to work on common problem, and split apart unchanged when work is done, interdisciplinary ones join together to work on a common question or problem. Interaction may forge a new research field or discipline (National Research Council, 2004).

In the history of science, we can observe some examples of knowledge integration that pervade many research fields – from Aristotle, whose ideas apply until nowadays in Linguistics, Physics, Biology; to Darwin, whose theory of natural

selection still impacts all sciences; passing by Leonardo da Vinci, Isaac Newton, Einstein, etc. According to the National Research Council (2004, p. 26):

> Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice.

In this sense, a research can be considered truly interdisciplinary when it does not just approximate two disciplines together to create one object, but rather when it is an integration and a synthesis of ideas, methods and foundations. Klein and Newell (1997) define interdisciplinary study as “a process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession”.

Taking this path, I will assume Campos’s (2007) *Metatheory of Interfaces*, which proposes a methodological approach to interdisciplinary by highlighting the nature of Linguistics. According to this metatheory, language is a multidimensional object and we should admit, indeed encourage, interdisciplinary relations between the natural, formal and social sciences. Although the method proposes building interfaces inside the Science of Language, it is applicable to different areas of knowledge, whether social, cognitive or formal. In addition, more than being compatible with the perspectival vision, this metatheory already assumes an interdisciplinary scientific view. In this sense, the very idea of interfaces can be understood as an interdisciplinary approach to doing science.

As Campos (2007) posits,

> Indeed; to ignore the interdisciplinary relations is to go against the contemporary tendencies of bridging knowledge, and to ignore the intradisciplinary relations is to do blind specialization. Evidently, theories that have formalisms adequate to the interfaces become privileged. In an era in which the brain and computation are two of the most powerful interdisciplinary and intradisciplinary constructions, the Language Sciences are at the center of scientific activities, especially because language seems to be the most privileged access to the inner core of the mentioned constructions. (Campos, 2007, p.05)

It is possible to say that the metatheory bets on moderate realism, where the object itself is presupposed by the theories, in an articulated methodological

ontological commitment. At the same time, as Costa and Feltes (2010) explain, different perspectives are incommensurable on the theoretical level, but could be related to the level of fundamentals and potential of application. Within this framework of assumptions, the metatheory draws on a set of internal and external interfaces: external interfaces – or interdisciplinary – relate the different knowledge areas, such as linguistics and cognitive psychology or linguistics and neuroscience;e while internal interfaces – intradisciplinary – are responsible for the constitution of the object relative to the subtheories of each discipline (in the case of linguistics: phonological, morphological, lexical, syntactic, semantic and pragmatic properties).

According to Campos (2007, p. 363), it is important to realize that the intra- and inter-relationships are interdependent, constructed interactively. Thus, the author's proposal is a meta-scientific strategy to overcome the conflict between specific descriptions and generalized explanations. In order to describe how the method works, Feltes (2008, p. 173) highlights three key steps: "(a) construction of interfaces; (b) evaluation of arguments that mix interfaces; and (c) treatment of the phenomena within the interfaces created in accordance with the purposes of each domain". Regarding the construction of interfaces between theories that have separate grounds, Costa (2012) posits that perspectivism allow the researcher to have a better understanding of how theories with different methodologies may be compared and made compatible. Therefore, the metatheory constitutes a proposal for a reorganization, where:

> without building appropriate interfaces, there is a risk of producing a diffuse interdisciplinary, with is multiply uncontrolled variables. At the same time, [build interfaces] align descriptive and explanatory adequacy in order to prevent the proliferation of inumerous descriptions without explanatory value. In both cases, it concerns operating with a refined Occam's Razor. (Costa and Feltes, 2010, p. 354)[3]

Assuming the construction of external and internal interfaces, interdisciplinary studies seem to be able to explain linguistic phenomenon more adequately than a disciplinary approach. If the interfaces of the objects are complex, interdisciplinary

[3] Approximate translation of: "sem a construção de interfaces apropriadas há o risco de se produzir uma interdisciplinaridade difusa, que faz multiplicarem-se variáveis não-controladas. Ao mesmo tempo, alinham-se adequação descritiva e explanatória, de modo a evitar a proliferação de descrições sem correspondente valor explanatório. Em ambos os casos, trata-se de operar com o Princípio de Ockham refinado"

research seems to be more interesting and relevant, since there is greater descriptive and explanatory potential, and it brings contributions to more than one discipline.

Philosophy of Linguistics, as a sub-discipline of Philosophy of Science, also has to deal with these more general questions about reality and knowledge about it. It has to answer, for example, if its object (language) pre-exists the discipline or if it is built along its creation. A quick observation of different theoretical approaches in Linguistics is enough to realize that the apparently unique object – language – requires different methodologies to describe/explain it. Likewise, within each language subarea (phonology, morphology, syntax, semantics, etc.), which deal with distinct properties of language, there is a massive number of theoretical approaches. Therefore, does Linguistics have a unique object, pre-set, or does each area and, consequently, each theoretical construct have its own object? It seems that all these subdivisions, with their numerous descriptions of properties of language, show that the object is not pre-existing, but built within each theory. From that, we can assume that the perspectival approach seems the most suitable to explain the different views on the subject of Linguistics.

However, this position seems to go against the traditional and realistic view that Linguistics is an autonomous science, which has its own object and methodology. As Costa and Strey (2014a, p.578) explain:

> Historically, Saussure builds a Linguistics with its own methodology and object, but inserted in Semiology and Social Psychology, what is in the interdisciplinary perspective per area; Chomsky, in the same way, considers theory of language as cognitive theory, or even biolinguistics, inserting the investigation in the interdisciplinary scope of natural sciences; Bloomfield also has roots in his behavioral psychology perspective and, even Montague considers the studies of human language analogue to the ones within the formal and mathematical area. This implies that, even before the explicit interdisciplinary proposals, there had already been built a context for the emergence of interdisciplinary studies.

The problem is that a disciplinary approach fails to explain the complexity of natural language, which covers multiform properties, ranging from phonemes to fallacious arguments; and its relation with complex and heterogeneous objects, such as culture, society, communication, cognition and emotion. It is evident, therefore, once again, that perspectivism seems to be most suitable for explaining the complexity of the object of Linguistics.

What follows now is an attempt to pave the way for an interdisciplinary path, situating the study of emotions in two areas that have always been close to

Linguistics: philosophy and neuroscience/cognitive psychology, especially trying to bring down the idea that reasoning and emotion cannot co-exist.

1.3 SITUATING THE STUDY OF EMOTIONS

1.3.1 EMOTIONS AND PHILOSOPHY – A BRIEF OVERVIEW

How can emotions be defined? If a perspectival approach is assumed, it is possible to speak about different relationships that are built. Giere (2006) makes a relevant metaphor with vision to explain it:

> Just as the human visual system responds only to electromagnetic radiation, so do ordinary microscopes or telescopes. These systems are equally blind to cosmic rays and neutrinos. But even for those aspects of the world to which they do respond, the response is limited. The human visual system responds only to electromagnetic radiation in the visual spectrum. A camera responds only to that radiation to which its film, or, more recently, its digital sensors, are attuned. Finally, even within their range of sensitivity, instruments, again like the human visual system, have some limitations on their ability to discriminate among inputs that are theoretically distinct. The relationship between inputs and outputs always remains to some extent a many–one relationship. *The nature of this relationship is part of the perspective of any particular instrument*. (Giere, 2006, p. 41-42 – italics mine)

It means that different theoretical models create different relationships between emotions – a real world object – and science – a theoretical object. Defining emotions has always been a quite difficult task for scientists and philosophers[4]. First, the word itself is problematic, as it can account for sentiments, feelings, passion, and instinct (its original sense in English, from the mid-16th century, is "mental agitation"[5]). As Schmiter (2014) posits, even trying to recognise theories of emotion in early modern writing is hard, because there are different vocabularies for talking about the same phenomenon: for example, philosophers of the 17th century talked about 'passion' and 'affect', while eighteenth century thinkers would use 'sentiment'. She adds, "None of these terms (or their French and Latin cognates) carried the meaning they

[4] As should be expected, I am not going to make a list of emotions and describe them, neither am I going to embrace all previous studies on emotions – only bring different perspectives on the topic.
[5] According to the Oxford Dictionary.

now do or that 'emotion' has come to bear (which did not have a primarily psychological sense until the nineteenth century)" (Schmitter, 2014).

Another issue about studying emotion is related to a strong rationalist tradition to treat emotion as something of minor importance, a property from the body not from the soul. For the Socratic-Platonic philosophy, emotion is different from reason, as the first brings limitations to the latter – senses affect the clarity with which reason is perceived. Socrates was a rationalist in terms of his theory of knowledge, as he believed that truth comes from the mind and not from the senses. For him, our mind is limited by emotions, so humans should use rational thought to understand the truths about the world – a job for the philosophers. Plato also believed that we should not trust sensory information, as they can confuse reality with imagination. The philosopher praised that things are not always what they seem, and that we are not always able to perceive that we are making mistakes. Through his dialogues, especially *Phaedo*, he sustains a belief in an immutable reality, which is independent of what is perceived by the senses, and in the immortality of the soul – the subject of his Theory of Form. In proposing the use of reason instead of observation, Plato laid the foundations for rationality that would influence many other philosophers in the future[6].

Like Plato, Aristotle thinks there is a special and interactive communication between body, mind and emotions. However, he took Plato's main theory and fleshed it in a more empiric one, with ideas and observations that seem to appeal to common sense. Refusing the Platonic dualism between mind and matter, he shows that one is part of the other – and that senses could help give evidence to the theories. Prior to the Aristotle treatment of emotion, senses were only viewed in an irrational way, as something that completely escaped reason (Menezes e Silva, 2010). In both his works, *Rethoric* and *Nichomachean Ethics*, emotions (or *pathos*) are treated as vulnerable to rational influence and voluntary action, although not directly subject to choice. Aristotle present an extensive analysis of oratory, where he defended that it was possible to appeal to the emotions of individuals in argumentation – contrary of what Plato had said.

The book *Rhetoric* is divided in three parts: in Book I, Aristotle seeks to affirm that rationality and logic are fundamental to the rhetoric, because without it the truth

[6] For more details about how Greek philosophers approached emotions, I recommend read Vanin's (2012) dissertation.

can be defeated in a debate. Thus, he distinguishes between three means of persuasion: *ethos*, *pathos*, and *logos*: one derivative of the character of the speaker, one derived from the emotion aroused by the speaker in the listeners, and one derivative from truth or probable arguments. In Book II, the focus of the analysis is emotion and character. Aristotle shows how emotions can be part of the rhetorical argument where, in order to be persuasive, a speaker must have three characteristics: prudence, virtue and benevolence. Furthermore, it is necessary to know the properties of emotions so one can use them in argumentation, as well as the characteristic of the audience (such as age, social class). He then examines a range of emotions: anger, friendship, trust, shame (and their opposites), as well as the character of men (the character of young people, the character of the rich). In Book III, Aristotle lectures on issues of composition and style of rhetorical discourse. The author discusses quality-related topics of expression, such as clarity, grammar, prosody and tone of voice, as well as the use of metaphors. It is important to remember that he believed style is required for rhetoric, but it should work more as an auxiliary of argumentation than as a technique of ornamentation.

At the same time of his famous work on rhetoric, Aristotle was best known for his notes on logic, exposed in *Organon*. He believed that non-discursive knowledge comes first, and it provides the basis for discursive or argumentative knowledge. This distinction is very important to understand the author's point of view, because Aristotle believed that there is knowledge that comes directly from the mind – it cannot be accessed through vague feelings or hunches – it is the capacity for intelligent appraisal (discernment, comprehension).

The different positions of Plato and Aristotle on the perception of things in the world – empirical or rational – build the foundations for the organization of Western thought. In the 17th century, the debate reached its culmination after Descartes published *The Discourse on Method*. Descartes was part of the so-called Scientific Revolution, and he wondered about the possibility of expanding the knowledge and understanding of the world. He defended pure research, freeing science from scepticism. At the same time, he sought to show that we could not trust our senses as a secure basis for knowledge, because they can deceive us. Descartes is frequently described as the father of Modern Philosophy, because he pursued certainty in Philosophy, as it exists in Mathematics, but without subscribing to dogmas or considering arguments from authority, as well as establishing a firm and

rational basis for knowledge. In his *Selection from the Principles of Philosophy,* we can find the following principles, which explain how the dualism reasoning/senses is established:

> **I. THAT in order to seek truth, it is necessary once in the course of our life, to doubt, as far as possible, of all things.**
> As we were at one time children, and as we formed various judgments regarding the objects presented to our senses, when as yet we had not the entire use of our reason, numerous prejudices stand in the way of our arriving at the knowledge of truth; and of these it seems impossible for us to rid ourselves, unless we undertake, once in our lifetime, to doubt of all those things in which we may discover even the smallest suspicion of uncertainty.
> **II. That we ought also to consider as false all that is doubtful.**
> Moreover, it will be useful likewise to esteem as false the things of which we shall be able to doubt, that we may with greater clearness discover what possesses most certainty and is the easiest to know.
> **III. That we ought not meanwhile to make use of doubt in the conduct of life.**
> In the meantime, it is to be observed that we are to avail ourselves of this general doubt only while engaged in the contemplation of truth. For, as far as concerns the conduct of life, we are very frequently obliged to follow opinions merely probable, or even sometimes, though of two courses of action we may not perceive more probability in the one than in the other, to choose one or other, seeing the opportunity of acting would not unfrequently pass away before we could free ourselves from our doubts.
> ***IV. Why we may doubt of sensible things.***
> Accordingly, since we now only design to apply ourselves to the investigation of truth, we will doubt, first, whether of all the things that have ever fallen under our senses, or which we have ever imagined, any one really exist; in the first place, *because we know by experience that the senses sometimes err, and it would be imprudent to trust too much to what has even once deceived us; secondly, because in dreams we perpetually seem to perceive or imagine innumerable objects which have no existence.* And to one who has thus resolved upon a general doubt, there appear no marks by which he can with certainty distinguish sleep from the waking state. (Descartes, 1664 - *Of the principles of human knowledge* – italics mine)

Whilst Descartes believed that, in order to make science, one should put his passions aside since they can tempt us to understand the properties of the world inappropriately; he argued that it is necessary to define bodily-based perceptions in order to know them better and avoid those interferences. Commentators on the philosopher always assume that he did not think passions should be completely eradicated, because they are functional – they are meant to inform which things are helpful and which are not damaging (Schmitter, 2014). Similarly, Brassfield (2012) affirms that we should not understand *passions* as guides to evaluate our experiences, because they can exaggerate what is good and what is bad.

Even though Descartes was not the first philosopher to talk about emotions, as they had been part of ancient and medieval philosophy of mind, rhetoric, biology,

etc., he identified emotions as passions – or bodily-perceptions perceived by the mind. He also proposed that the mind and the body are two distinct substances – one is material and the other, immaterial. was the first to clearly grasp the spirit of the consciousness and the brain. He called the mind *res cogitans* (thinking thing) and the body *res extensa* (extended thing, that occupies space), which brings up the distinction of two heterogeneous realities, rescuing the Platonic ideas that senses are only a shadow of reality. For him, emotions are part of a physical phenomenon called 'passion', which is divided between mind and body, as he states in *The Passions of the Soul*:

> Now that we have looked at all the things the body can do unaided, it's easy for us to see that there is nothing in us that we must attribute to our soul except our thoughts. There are two main kinds of thoughts—actions of the soul and passions of the soul. The ones I call 'actions' are all our volitions, ·i.e. acts of the will·, because we experience them as coming directly from our soul with, apparently, no input from anything else. On the other hand, our various perceptions or items of knowledge can be called the soul's 'passions'—taking this word in a very general sense—because they are often not ·actively· made by our soul but rather ·passively· received by the soul from the things that they represent. (Descartes, 1649*,* article 17).

A "passion of the soul" is, therefore, a mental state (a thought), which is a result of brain activity, and that can lead us to action (Smith, 2014). Descartes' explanation on how the mind could be influenced by the body is very important – it would happen via the pineal gland, which is a small organ in the centre of the brain that would join the soul to the body[7]. The so-called Cartesian dualism follows from a complete breakup of the man in two – the body and the soul, which is only thought – that are together only by means of the pineal gland[8].

Descartes believed that the solution to all issues depended on the solution of the problem of knowledge and the foundation of a scientific method. The division between reason and emotion was methodological, so that reality of knowledge could become known without being sensitive to the passions of the soul. This split stimulated other philosophers and scientists, who did not deeply study the influence

[7] Descartes' anatomical description is not the same as the one currently adopted by neuroscience.
[8] The split between mind and body has been the focus of a various number of studies, and cognitive physiologists and neuroscientists argue that this ontological separation is not justifiable. Embodied cognition assumes that cognition is strongly affected by the body further than the brain. In Cognitive Linguistics, one of the main researchers is George Lakoff, who started studying embodiment in the 60s and 70s. Nowadays, there are different theories that study through this perspective, but they are not the focus of this study.

of emotions in reasoning. In the twentieth-century, philosophers of mind and psychologists kept the tendency to neglect emotions — perhaps because of the great variety of phenomena covered by the word (De Souza, 2010). The difference in vocabulary is marked by historical choices made by philosophers: seventeenth century philosophers like Cicero and Augustine used 'passion', 'affect', and 'perturbation' as Latin translations of the Greek word *pathos*; eighteenth century British and French philosophers, on the other hand, used 'sentiment'. According to Schmitter (2014), none of the terms convey the meaning used nowadays in psychology, and the connections discussed at the present time are a heritage from past philosophers.

Evans (2001, p.497) posits that older theories, that methodologically separate emotions from reason, assume "a negative view of emotion". He claims that:

> According to the negative view, emotions usually affect reasoning for the worse. To the extent that humans can free themselves of emotion, so they can become more rational. Until recently, most philosophers and scientist have tended to agree with Plato on this matter. In the past couple of decades, however, a growing number of thinkers have challenged the traditional consensus. They argue for what may be called 'the positive view of emotion'. According to the positive view, emotions usually affect reasoning for the better. The positive view suggests that, other things being equal, humans will be less rational to the extent that they lack emotion.

This idea reflected on cognition studies – from neuroscience to cognitive psychology – and only in the last decades emotion and reasoning started to be studied as having a positive connection. It is not possible to say, however, that there were no previous studies, as great philosophers had theories to approach them, as Aristotle (with his *pathos*) and Descartes (whose methodology separated reason from affection). Those theories are mostly conceived as responses of a subject to certain sorts of events, triggering bodily changes and characteristic behaviour. In general, the approaches endorse the antagonism between cognition and emotions, a perspective that has been prevailing for centuries.

1.3.2 NEUROSCIENCE AND THE LANGUAGE OF EMOTIONS

For a period of time scientists in general did not treated the relationship between emotion and reasoning as a noble object, as emotions were seen as interfering negatively in reasoning. Nowadays, cognition is a term used in a loose

way, which relates to processes such as memory, attention, language, problem solving and planning – in other words, processing information, applying knowledge and changing preferences[9]. Emotion, in neuroscience, is understood as personality, desires, and moods. In fact, 'emotion' can be understood as a label to talk about different aspects of the brain and the mind: there are approaches that assume a relation between drive and motivation; others focus on conscious/unconscious processes; some discuss if there are basic or extended emotions (Pessoa, 2008). It all suggests that it is very difficult to have a clear definition of what 'emotion' refers to, as it is also a loose term.

LeDoux (1996) states that there is no 'emotion' faculty, as well as no exclusive brain system dedicated to this function. For him, "there is no single emotion system. Instead, there are lot of emotion systems, each of which evolved for different functional purposes and each of which gives rise to different kinds of emotion" (LeDoux, 1996, p. 21). The researcher says that emotion and cognition are best thought as separate, but interacting mental *functions* mediated by separate but interacting brain *systems* – an attempt to broaden the scope of emotion in the brain. Pessoa (2008) postulates that emotions and cognition should not be studied as opposite systems, but just as a unitary one, as he states:

> [...] parcelling the brain into cognitive and affective regions is inherently problematic, and ultimately untenable for at least three reasons: first, brain regions viewed as 'affective' are also involved in cognition; second, brain regions viewed as 'cognitive' are also involved in emotion; and critically, third, cognition and emotion are integrated in the brain. (Pessoa, 2008, p.148)

According to Gazzaniga et al (2002), the neural systems of emotion and cognition are independent and interdependent, which means we should be able to localise in the brain areas responsible for emotional processes and areas related to cognitive functions. Even if we assume that cognition and emotion should be a unitary, studies localise in the brain structures that are more or less related cognitive or emotional functions. In the traditional perspective, the brain structure that processes emotions is the limbic system, which involves the hypothalamus, anterior thalamus, cingulate gyrus, hippocampus, amygdala, orbitofrontal cortex, and portions of the basal ganglia (Gazzaniga et al, 2002). However, nowadays, neuroscientists

[9] Source: http://www.sciencedaily.com/articles/c/cognition.htm

abandoned the idea of a limbic system related to emotions, because it is grounded in a brain anatomy that is no longer accepted as accurate. LeDoux (1996, p.101) claims that

> The limbic system term is an useful anatomic shorthand for areas located in the no-man's-land between hypothalamus and the neocortex, the lowest and highest (in structural terms) regions of the forebrain, respectively. The limbic system term, even when used in a shorthand structural sense, is imprecise and has unwarranted functional (emotional) implication. It should be discarded.

For Gazzaniga et al (2002), the idea that only one neural circuit of emotions exists is no longer accepted because, depending on the emotional task or situation, different neural systems would be involved. Studies have been showing that emotion invokes a great number of brain regions – some of those parts are present in the limbic system (e.g. hypothalamus, basal ganglia), as well as others systems (e.g. insular cortex, somatosensory cortex). The authors say that the orbitofrontal cortex and the amygdala have emerged as the primary functions related to processing emotions. Pessoa (2008) explains that it is very hard to point out which regions are related to emotions, but he presents some regions feature prominently in the discourse surrounding emotional neuroscience (Figure 1).

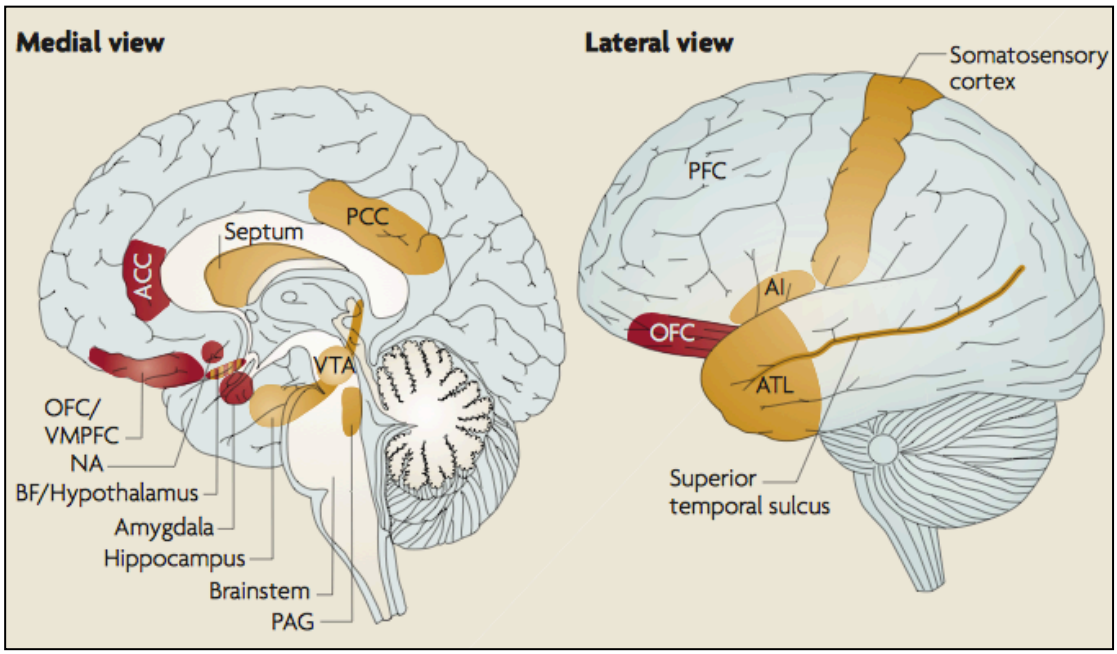

Figure 1: Emotional brain: core and extended regions
Source: PESSOA, L. On the relationship between emotion and cognition. Nature, 2008. v.2.

One of the most important regions related to the emotional brain is the amygdala, because it is involved in a variety of emotional tasks, from fear conditioning to social responses. For LeDoux (1996), the amygdala functions like the hub of a wheel, receiving “low-level inputs from sensory-specific regions of the thalamus, higher level information from sensory-specific cortex, and still higher level information about the general situation from the hippocampal formation” (LeDoux, 1996, p. 168). The author also states that the amygdala can process the emotional significance of a given individual stimulus as well as complex situations, being involved in the appraisal of emotional meaning. He says that it is where trigger stimuli do their triggering.

It is important to understand that more studies should be carried on trying to understand how an integrated system of cognition-emotion could help explain complex phenomena like neurological disorders and mental illnesses. Gray et al (2002) state that, “at some point of processing, functional specialization is lost, and emotion and cognition conjointly and equally contribute to the control of thought and behaviour”.

Another topic of relevance to this discussion is how one specific part of cognition – the reasoning faculty – is being studied when emotions are introduced. One of the leading neuroscientists who bet on a positive relationship between reason and emotion is Antonio Damasio. In his book *Descartes' Error* (1994), he shows that patients who suffered severe brain damage in the prefrontal cortex had reduced ability to experience things and they also had trouble making practical decisions, such as choosing between two dates – which one would be better for a medical consultation. Damasio together with other researchers like LeDoux (1996) establish a complex approach to the study of the human mind. Emotions become the focus of interdisciplinary study, including psychology, neuroscience, evolutionary biology and even economics. It is important to note, however, that the studies do not approach strictly an emotional part, but they observe the importance of a unitary brain. According to Damasio,

> Knowing about the relevance of feelings in the processes of reason does not suggest that reason is less important than feelings, that it should take a backseat to them or that it should be less cultivated. On the contrary, taking stock of the pervasive role of feelings may give us a chance of enhancing

> their positive effects and reducing their potential harm. (Damasio, 1994, p. 246)

Based on this assumption, Pham (2007) groups series of neuroscience studies that show how emotional states affect rational processes, as well as in humans' logical ability. Intense emotional states such as anxiety influence the capacity of the working memory, carrying a vast number of consequences, such as: lower ability to recall information and organize this information in the memory; longer time to verify the validity of logical inferences; selection of an option without considering every alternative; tendency to commit more errors in geometric and semantic analogical problems; process of persuasion arguments are less thorough (Pham, 2007, p. 157).

The author also brings evidence that lighter emotional states also influence the rational process. Compared with neutral emotional states, some emotions lead people to categorize objects more widely; generate more creative and interesting responses; come out better in solving problems involving ingenuity; solve problems involving multiple tasks more efficiently. According to Pham (2007, p. 158), these findings demonstrate that positive emotions bring positive results to decision making, as well as reasoning and problem-solving process. Likewise, Pham states that positive emotions may also negatively influence people, who may have their performances on deduction tasks decreased. What is clear is that whether the emotions are positive or not, they do affect logical reasoning.

Damasio (1994) points out that, on one hand, rationality and decision-making implies a logical strategy to produce valid inferences supported by attention and working memory. On the other hand, emotions play an essential role in decision and reasoning processes, functioning as a kind of alarm to the premises completed – device that the author calls the *somatic marker hypothesis*. According to Damasio (1994, p. 173):

> But now, imagine that before you apply any kind of cost/benefit analysis to the premises, and before you reason toward the solution of the problem, something quite important happens. When the bad outcome connected with a given response option comes to mind, however, fleetingly, you experience an unpleasant gut feeling. Because the feeling is about the body, I gave the phenomenon the technical term somatic state ("soma" is Greek for body) and because it "marks" an image, I called it a marker. Note again that I use somatic in the most general sense (that which pertains to the body) and I include both visceral and nonvisceral sensation when I refer to somatic markers.

Emotion would thus have a crucial role in reasoning and decision-making, something that is only possible because all of our life experiences, whether personal or social, are accompanied by some kind of emotion. The author also states that, whether emotions respond to stimuli chosen by evolution, as in the case of sympathy, or to learned stimulus individually, as in fear, the fact is that emotions – positive or negative – and feelings that follow them become mandatory components of our social experiences. In other words, emotions (product or learned stimuli chosen by evolution) form a basis to help in predicting the future consequences of a decision. It is important to note that Damasio (2003) states that this feature of emotions may be something that occurs in partially or completely, consciously or unconsciously. The author shows that, regardless of these aspects, the mechanism will focus attention on certain aspects of the problem in order to improve its analysis[10].

If we move to the relationship between language and emotion, there are few linguistic theories that successfully integrate it. One of the reasons is because general Linguistics still has a Cartesian way of understanding science. While there are few studies in Linguistics, there are many neuroscience studies that explain emotional communication. According to Gazzaniga et al (2002), emotional communication is an important tool to understand how the brain works. The authors state that not just structural or neural systems should be studied, but we should also understand how the right and the left hemispheres interact and contribute to emotional experiences – such as perception, production, and conscious experience of emotion.

It has been widely discussed that the right hemisphere is more important for emotions than the left one – and there is evidence such as damaged-brain patients. The literature presents that the mainly representation of language use is on the right hemisphere, because dysfunction on this side of the brain is often associated to the inability to perceive (and sometimes produce) figurative meaning, inferences, indirect requests, and humour – pragmatic operations by definition. For Van Lancker Sidtis (2008),

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[10] There are some critics concerning Damasio's position about how emotion and reason relate to each other (see Greenspan, 2003). For him, emotions can guide reasoning, and they regulate rational responses. I believe that emotions not only regulate reasoning but they are always running in parallel, with mutual adjustment – something like I think what I'm feeling and I feel what I'm thinking.

> Given these facts – a longer processing window, pattern recognition, and complex pitch perception, it is not surprising that most elements of the pragmatics of communication, including recognition of paralinguistic material such as emotions, sarcasm, irony, and humour; response to conversational cues; and discernment of nonliteral and inferential meanings in speech are often impaired in right-hemisphere damage. (Van Lancker Sidtis, 2008 p. 205-206)

Gazzaniga et al (2002) state that there are two types of emotional stimuli that are studied within emotional communication: emotional prosody and facial expressions. Van Lancker Sidtis (2008) says that prosody and gesture are universals of emotional expression across languages[11] – which implies that the difference does not seem to be in language itself, but in a paralinguistic level. It is important, however, to make a remark about the use of 'paralanguage'. According to Wharton (2009), the term is problematic, because:

> Some people treat 'paralanguage' as including only those vocal aspects of language use that are not strictly speaking part of language: intonation, stress, affective tone of voice, rate of speech, hesitation (if that can be considered vocal) etc. On this construal, facial expression and gesture are non-linguistic. Others treat the paralinguistic as including most or all of those aspects of linguistic communication that are not part of language *per se*, but are nonetheless somehow involved with the message or meaning a communicator conveys. On the first construal, while the set of paralinguistic phenomena intersects with the set of natural phenomena I am concerned with, there exist both paralinguistic phenomena that are not natural – deliberate frowns or fake smiles – and natural phenomena which might be co-opted for communicative use that I would not want to call paralinguistic on any conception – a bruise or a pale complexion, for example. (Wharton, 2009, p.5-7)

Despite this problem of definition[12], neuropsychological studies show that disorders of emotion affect communicative competence, and language disorders affect efficient communication of emotional and attitudinal information (Van Lancker Sidtis, 2008). For the author, there is plenty of evidence that supports that emotions, moods, and affect underlie and inform nearly every normal expression. Therefore, we could assume that pragmatics should be the natural place where the study of the relationship between emotion and language takes place.

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[11] What is universal is the phenomena of prosody and gestures expressing emotions. Different cultures may use the same prosody and gestures to communicate different emotional expressions.

[12] As I have got familiar with neuroscience studies, I realised most of them have some problems with definitions of linguistic concepts, such as language, paralanguage and communication, for example. One of the aims of this work is to shed some light on how emotions can be studied in linguistics and, consequently, when in an interface with neuroscience.

Assuming a positive view of emotions, if reasoning is affected by emotions, and if cognition and emotions should be seen as a unitary system, how should language studies be carried on? Does the presence of language alter language production and comprehension? If so, how? For LeDoux (1996), we often categorize and label our experiences in linguist terms, as well as store experiences in ways that can be accessed linguistically. All that should be taken in consideration when future studies involving emotions are developed, since many experiments involve some kind of linguistic or paralinguistic exposure (Van Lancker Sidtis, 2008). For that, it is also important to know how language is understood by neuroscience, so linguists can contribute in the debate.

1.4 EMOTION AND COMMUNICATION: OTHER INTERFACES

When trying to create an adequate basis for investigating how emotions and language can correlate in communication, it is important to understand how linguists have indirectly studied the relationship between human language and human emotion. Metaphor analysis, discourse analysis, and rating studies are some of the areas that have somehow approached the topic of emotion. In psycholinguistics, mainly priming studies have examined the role of emotion in word storage and retrieval (Van Lancker Sidtis, 2008; Scherer, 2003).

There are different possible perspectives to understand the relationship between language and emotion. The first one assumes that there is no necessary relationship at all, as the different levels of language (phonology, morphology, syntax, semantics, pragmatics) can verbalise different things – a mathematical formula, a personal feeling or a scientific claim. Another perspective accepts that language has roots in emotional expression – a view that is supported by evolutionism. For Darwin, emotional expression is an important way of establishing communication between individuals, either humans or animals.

> The movements of expression in the face and body, whatever their origin may have been, are in themselves of much importance for our welfare. They serve as the first means of communication between the mother and her infant; she smiles approval, and thus encourages her child on the right path, or frowns disapproval. We readily perceive sympathy in others by their expression; our sufferings are thus mitigated and our pleasures increased;

> and mutual good feeling is thus strengthened. The movements of expression give vividness and energy to our spoken words. They reveal the thoughts and intentions of others more truly than do words, which may be falsified. (Darwin, 1872, p. 364)

It is important to observe that Darwin gives even more importance to this 'root' expression, as it cannot be falsified as words can be. It means that we have competence to identify if another person is really feeling something or if it is feigned. One of the psychologists that applies Darwin's comments to emotion in humans is Steven Pinker, who presents an unromantic theory of emotions, which:

> combines the computational theory of mind, which says that the lifeblood of the psyche is information rather than energy, with the modern theory of evolution, which calls for reverse-engineering the complex design of biological systems. I will show that the emotions are adaptations, well-engineered software modules that work in harmony with the intellect and are indispensable to the functioning of the whole mind. The problem with the emotions is not that they are untamed forces or vestiges of our animal past; it is that they were designed to propagate copies of the genes that built them rather than to promote happiness, wisdom, or moral values. We often call an act "emotional" when it is harmful to the social group, damaging to the actor's happiness in the long run, uncontrollable and impervious to persuasion, or a product of self-delusion. Sad to say, these outcomes are not malfunctions but precisely what we would expect from well-engineered emotions. (Pinker, 1997, p. 370)

For Pinker (2008, p. 28), the relation of words and emotions are in "the way in which words don't just point to things but are saturated with feelings, which can endow the words with a sense of magic, taboo, and sin". In his perspective, words connect to thoughts, feelings, relationships and reality itself. In order to understand the language system, one should not only care about semantics, but about the relations of the words to community, to the act of conversation. Nevertheless, the most important idea comes from the notion of "language as a window into human nature", where Pinker defends that, if a Martian linguist would describe our species, he would say that grammar is a window into thoughts, swearing into emotions and indirect speech into social relationship. If we assume that language is the window into the mind, we can hence assume that it is also the gateway for complex investigations of thinking and feeling in their reciprocal interactions.

In Linguistics, much of the ideas that discuss this relationship are bound to language functions, especially related to Jakobson's (1960) theory. Based on Bühler (1990), his theory represents one of the most important moments of the interface between language and emotion, as he approximated the emotional effect of an

utterance in the audience. His model of language functions is based on the mathematical model of communication, which presupposes the existence of the following factors: context, addresser, addressee, contact, common code and message. Each function operates between the message and the factors, and they are:

> (1) the referential function is oriented toward the context (the dominant function in a message like 'Water boils at 100 degrees'); (2) the emotive function is oriented toward the addresser (as in the interjections 'Bah!' and 'Oh!'); (3) the conative function is oriented toward the addressee (imperatives and apostrophes); (4) the phatic function serves to establish, prolong or discontinue communication [or confirm whether the contact is still there] (as in 'Hello?'); (5) the metalingual function is used to establish mutual agreement on the code (for example, a definition); (6) the poetic function (e.g., 'Smurf') puts 'the focus on the message for its own sake'. (Jakobson, 1960, p. 356)

The emotive function "aims a direct expression of the speaker's attitude toward what he is speaking about. *It tends to produce an impression of a certain emotion whether true of feigned*" (Jakobson, 1980, p. 81 – italics mine). The author explains further, that emotive impressions are purely presented by interjections, which differ from referential language by sound pattern and syntactic role, but can be extended to phonic, grammatical and lexical levels. Furthemore, he posits that expressiveness can be coded in language through differences between short and long vowels, for example, and that those expressive features convey ostensible information about the speaker's attitude. However, according to Klinkenberg (1996, p. 53), emotive function, which could be called '*expressive* function', should not be understood as referring to human affect, because it has nothing to do with emotion. According to the author, any message, including the most neutral, reveals the condition of its sender.

To understand how some kind of impression are derived in almost all communication, consider the following examples[13]:

(1) John: Why are you sad?
Mary: I'm having a bad day.

(2) John: Why are you sad?

[13] Discussed in STREY, C. *Linguagem e emoções – um estudo em interfaces*. 2012. 97 f. Dissertation (Master in Letters) – Porto Alegre, Faculdade de Letras, PUCRS.

Mary: My day is bad, bad.

(3) John: Why are you sad?
Mary: It looks like a truck drove over me.

In general, the three responses seem to convey the same content – that Mary is sad because she had a bad day, but we still have the feeling that there are differences in the degree of sadness that she is experiencing. How to explain it? It seems that there is some relationship between how a person chooses to say one utterance and the inferences that are implied. In terms of linguistics, pragmatic-inferential theories seek to explain how what is beyond said – which is studied by Stylistcs. Overall, theories do not explain why one chooses to state (1) and not (3), for example. Pinker (2008) addresses this issue, when talking about the Gricean approach:

> Grice came to conversation from the bloodless world of logic and said little about *why* people bother to implicate their meanings rather than just blurting them out. We discover the answer when we remember that people are not just in the business of downloading information into each other's heads but are *social animals concerned with the impressions they make*. (Pinker, 2008, p. 379 – italics mine)

According to Strey (2012), the notion that humans are social beings leads to the idea that there is some property that causes things to be said in a certain way and not another – and this property seems to be emotions. As Pinker says (1997), the literal meaning of words is not modified, but the emotional sense is. In the examples above, we can grasp that Mary is perhaps sadder when she utters (3) than when she utters (1)[14]. Tannen (2001) says that we must understand that people are emotionally involved with each other and we talk in order to establish contact, keep it and monitor it. In general, more than just to inform, communication involves informing non-verbally intentions and emotions. She posits:

> Communication isn't as simple as saying what you mean. How you say what you mean is crucial, and differs from one person to the next, because using language is learned behavior: How we talk and listen are deeply influenced by cultural experience. Although we might think that our ways of saying what

[14] In (3), there is a metaphor, which seems to increase what is being emotional communicated. In the next chapters, this question will be addressed.

> we mean are natural, we can run into trouble if we interpret and evaluate others as if they necessarily felt the same way we'd feel if we spoke the way they did (Tannen, 1995, p. 138)

1.5 CHAPTER SUMMARY

After briefly presenting a foundation for an interdisciplinary research that seeks to explain the relationship between language and emotions, a few final considerations need to be made. As we have seen that the term ‘emotion’ can refer to different phenomena, there is a necessity to define what I understand by emotion and how I am going to use it here. As several interfaces can be built, this dissertation will work with *verbal emotions* (Costa and Strey, 2014b), which is how language expresses emotions, and not with emotions *per se*.

This chapter also represents how neuroscience may be useful for linguists. In an interdisciplinary study, it does not seem necessary to be an expert in the brain, but we might be able to use their findings to base our theories and arguments. The observations that will be made in the next chapter are compatible with the findings described here.

Based on this analysis, the chapter fulfilled its main objective, which was to establish a solid starting point on the debate between language and emotions. It has also assessed the first hypothesis. Furthermore, as we have seen, there is no point in disconecting emotions from language, since different perspectives approach that relationship. The movement here is clear: if this is a relevant topic, there should be linguistic theories trying to explain it and describing how emotions affect communication. In the next chapters, it will be argued that verbal emotions should be studied from what is verbally and not verbally expressed in an utterance. I am now in a position to attempt a more profound study of language and emotions in ostensive-inferential communication.

CHAPTER TWO – "MORE THAN WORDS IS ALL YOU HAVE TO DO TO MAKE IT REAL"

> *Se olharmos as coisas de perto, na melhor das hipóteses chegaremos à conclusão de que as palavras tentam dizer o que pensámos ou sentimos, mas há motivos para suspeitar que, por muito que procurem, não chegarão nunca a enunciar essa coisa estranha, rara e misteriosa que é um sentimento."*
>
> *José Saramago (1996)*

2.1 INTRODUCTION

Pragmatics can be defined as the study of the relationship between sentence meaning and speaker's meaning, including topics such as presupposition, anaphora, speech acts, intentions, inferences. In general, pragmatic theories explain how we understand utterances, and how we use language to imply more than what we say. What falls inside the concept of what is not said can differ depending on the theory, according to the perspective assumed. The phenomena covered change: it is possible to study how an utterance threatens someone's face, or how strong or weak implicatures, such as those expressed by metaphors, are conveyed. However, it seems that emotional effects are not a classical locus of study, especially of theories that follow from Gricean tradition. I am not saying they are not present in pragmatic theories, but rather they are not clearly approached. Overall, we will find that those theories tend to refer to paralanguage – gestures and prosody mainly – when they approach emotions in everyday language.

Assuming an ostensive-inferential communication, the aim of this chapter is to broaden the scope of pragmatics to account for some nonverbal inputs, such as gestures, facial expressions, and prosody. If it is possible to extend the phenomena covered by pragmatics, then emotional aspects of communication have a chance to be better described and understood.

Nonverbal inputs should not simply be ignored by a holistic theory of communication: to understand an utterance means to interpret natural behaviours that often "show us more about a person's mental/physical state than the words they accompany; sometimes, they replace words rather than merely accompany them"

(Wharton, Natural pragmatics and natural codes, 2003a, p. 109). They should be one of the aims of all pragmatic theories, because we should not overlook the fact that they are part of communication.

The pragmatic theory I adopt in this dissertation is relevance theory (Sperber and Wilson, 1986, 1995; Wilson and Sperber, 2012), which holds a cognitive perspective, aiming to explain how inferential communication works. It bets on semantic representations, along with non-linguistic context and propositional forms. The main point of this chapter is to argue along Wharton (2009) and Sperber and Wilson (2015) that relevance theory can approach nonverbal behaviours within its theoretical architecture.

In this chapter, I will focus on the second research question: *How to account for non-verbal aspects of communication?*, and analyse the following hypothesis:

- ❖ Communication involves both verbal and non-verbal behaviours, such as facial expression, and prosody. Non-verbal aspects are picked up by a relevance-comprehension heuristic, and they may alter the salience of cognitive effects, encoding procedural rather than conceptual meaning. They convey a wide array of weak assumptions, communicating emotions, impressions, and moods.

To evaluate it, this chapter is organised as follows: firstly, I will briefly present how Gricean pragmatics explains language in context and its relation to speaker's meaning; I will also discuss relevance theory framework – the one adopted in this dissertation. Secondly, I will introduce Wharton's (2009) natural pragmatics, which aims to describe and explain what is conveyed by natural, non-verbal phenomena, and how it interplays with verbal communication. In the same session, procedural meaning will be described. Finally, based on natural pragmatics, I will describe how interjections, prosody, and facial and bodily expressions affect communication, focusing mainly on their emotional aspects.

2.2 PRAGMATICS AND COMMUNICATION

Human communication has been, for a long time, understood as a process of transmitting messages through encoding and decoding, best known for Shannon and Weaver's (1949) Code Hypothesis Model[15]. The goal of the authors was to develop a mathematical theory of communication in order to assist telecommunication. For this reason, they left out some other phenomena, such as differences in cultural assumptions and in communication preferences, for example. In the code model, a simple statement as *This lovely British winter!*, where the speaker expected the hearer to understand an irony, would probably not be interpreted as ironic. When applied to Natural Language, this model simplifies and reduces human communication, where semantic and pragmatic aspects are disregarded.

The difficulty in explaining certain phenomena in human communication motivated the development of an inferential model of communication. The major change was possible from Grice (1989)[16], who sought to demonstrate how a statement could mean more than literally expressed. He assumed that there is some kind of rule that allows a speaker to imply more than is being said, and a listener to understand this extra information. For him, implicatures are generated according to the Cooperative Principle[17] (GRICE, 1989, p. 39-40). He posits that no communicative act is entirely free, because speakers could lose control of the game itself (which implies a strictly rational view of the communication). At the same time, such quasi-contractual basis would be learned simultaneously with the acquisition of language, so one does not lose the ability to perceive the effects of meaning that a given message can carry. During a dialogue, there would be a given cooperative effort of the participants to recognize a set of common goals, or at least a mutually

[15] In general, the goal was to demonstrate how to use channels of communication with maximum effectiveness. Communication in this sense would consist of (a) source of information, which produces a message; (b) transmitter, which encodes the message on a sign; (c) channel, by which signals are transmitted; (d) receiver, which decodes (reconstructs) the message from the signal; (e) destination, where the message arrives. The authors also add a sixth element: noise, responsible for possible channel interference, which could invalidate the success of communication.

[16] The date refers to Grice's *Studies in the Way of Words*, which compiles different papers previously published.

[17] Grice proposes that the communicative act is guided by implicit directions that govern conversational movements, namely, rules that were part of a general principle observed by the participants of a dialogue, called the Cooperative Principle (CP): "Make your contribution such as required, at the stage at which occurs, by the accepted purpose or direction of the talk exchange in which you are engaged." (Grice, 1975, p. 26).

accepted direction. Such goals could be set at the beginning of the conversation or evolve during the dialogue; and can be well-defined or undefined (as in the case of casual conversation). By accepting the assumption that the Principle of Cooperation is true, Grice, resuming Kant, distinguishes four categories responsible for the conversational act, which are: Quantity, Quality, Relation and Manner, which articulate maxims and sub maxims (Grice, 1989, p. 26-27).

Overall, Grice aimed to explain meaning in natural language, distancing himself from a classical logical approach. He acknowledged that a debate between a logical form of an utterance and its occurrences in natural language is misconceived, because while formal approaches bet on an ideal language in order to make science (in the sense that one can only guarantee the truth of an utterance via logic analysis); informal approaches recognize that language can be used for purposes other than academic. Grice further states that, as in natural language many inferences and arguments do not follow traditional logic, there should be a simplified, non-systematic logic, which would be only driven by formal logic, not submissive to it. (Grice, 1989, p. 23-24).

In general, the theoretical path followed by post or neo-Gricean semantic-pragmatic theories has consolidated the notion that inferences are essential to the explanation of how the communication process occurs. To rethink natural communication as only guided by a coding and decoding model is something that does not apply to natural language. The inferential model of communication seems to be accepted as the best explanation among pragmaticians. However, some problems still reside in the description of inferential communication, such as an explanation of how to articulate inferences and emotions.

Despite the fact that Grice assumed an informal logic, getting distanced from the traditional code model, he did not address emotions/impressions in communication. The author wished to explain how meaning involves non-trivial inferences in a context-dependent perspective, as well as speakers' intentions (in the communicative sense) and inferential reasoning.

From the establishment of the new linguistic paradigm, one of the theorists who have somehow adopted the main contributions of the Gricean theoretical project is Levinson (2000). Just as Grice, Levinson focuses on human capacity to generate inferences, but assumes the existence of preferential interpretations, or default, which capture human intuitions about preferred or normal interpretations. Levinson

(2000) builds his conceptual architecture based on heuristics that constraint the search for sets of assumptions, and they are sufficient to descriptively sustain generalized conversational implicatures.

Another theory that follows from Grice is Sperber and Wilson's (1986/1995) Relevance Theory (RT), concerned with the establishment of a cognitive principle to explain the inferential processing of human communication, moving away from Levinson's (2000) model, for example. From Grice's (1975) inferential model, especially the notion of maxim of Relation[18], the authors propose a theory that seeks to explain which information is communicated and how communication happens. The main criticism that the authors make to the Gricean model concerns the fact that there are no logical and psychological guarantees to support obedience to the Cooperative Principle and its maxims; there is no explanation for how information is selected to generate inferences, nor for instances where communication fails. Finally, the certainty of a mutual understanding between speakers would involve checking ad infinitum which would prevent communication from happening.

In the next section I will introduce the pragmatic framework adopted in this dissertation: Relevance Theory, providing a brief outline of its main assumptions in order to discuss them later in this chapter.

2.2.1 OSTENSIVE-INFERENTIAL COMMUNICATION

Sperber and Wilson's (1986/1995) Relevance Theory is a theory concerned with the establishment of a cognitive principle to explain the inferential process of human communication. The authors start from Grice's (1975) inferential model, and propose a theory that seeks to explain how communication is processed. The main criticism that the authors make to the Gricean model involves the following issues: there are no logical and psychological guarantees to support obedience to the Cooperative Principle and its maxims; there is no explanation for how information is selected so to generate inferences, nor explanation where communication fails;

[18] Costa (2008) had already proposed that the maxim of Relation constitutes a mega-maximum, since it would be responsible for guiding other maxims. In this way, the listener would be able to recognize if the speaker would be breaking the maxims of quantity, quality, relation and manner.

finally, the certainty of a mutual understanding between speakers would involve a check *ad infinitum*.

Based on these problems and on the assumption that people pay attention to what is relevant to them, relevance theory is presented as a complex proposal to articulate pragmatic theoretical perspectives (in relation to syntax and semantics) to recent studies in cognitive psychology. Sperber and Wilson therefore propose a model of ostensive-inferential communication, postulating two properties that cannot be dissociated: the communicator has to produce an ostensive act, and the audience has to make inferences about the communicator's intentions.

Based on Grice's view that the listener may be able to recognize the speaker's intention to inform their communicative intention, Sperber and Wilson (1986/1995) bet on the existence of two layers of intentions in communication: the informative intention – an intention to make manifest or more manifest to the audience a set of assumptions–, and the communicative intention – an intention to make mutually manifest to the audience and the communicator that the latter has this informative intention. The purpose of calling attention to the speaker's intention is the base of an ostensive-inferential communication. By making this definition, relevance theory replaces the notion of meaning$_{NN}$ [19] with the idea of an ostensive-inferential communication.

Related to the informative intention is the idea of degrees of communication. Sperber and Wilson (1995) discuss the difference between verbal and non-verbal communication, and they tie it to differences in manifestness. The authors characterise the communicator's informative intention as an intention to modify the cognitive environment of the audience, and sometimes the speaker wants to strongly communicate their assumptions, but sometimes they do not:

> When the communicator makes strongly manifest her informative intention to make some particular assumption strongly manifest, then that assumption is strongly communicated. An example would be answering a clear 'Yes' when asked 'Did you pay the rent?' When the communicator's intention is to increase simultaneously the manifestness of a wide range of assumption, so her intention to concerning each of this assumptions is weakly manifest, then each of them is weakly communicated. An example would be sniffing ecstatically and ostensively at the fresh seaside air. (Sperber and Wilson, 1995, p. 59)

[19] For more about meaning$_{NN}$, go to the next session.

The authors claim that their explanation of informative intention in terms of manifestness is a way of correcting a distortion of non-accounting non-verbal and vague forms of communication. At the same time, this is a form of not introducing ad hoc solutions to the problem[20].

Another important point is that, unlike what was proposed by Grice, the inferential process occurs on both, explicit and implicit, levels. For this to be possible, relevance theory bets on the existence of an intermediate level between what is said and what is implied: the explicature – a logical form of the proposition developed. Sperber and Wilson (1995, p. 182) state that "explicature is a combination of linguistically encoded and contextually inferred conceptual features. The smaller the relative contribution of the contextual features, the more explicit the explicature will be, and inversely". It is at this level that several pragmatic operations occur, such as disambiguation, reference assignment, and interpretation of metaphors. The authors also point to the importance of explicature, which, along with the implicit assumptions of a statement, ensure the derivation of implicit assumptions (Sperber and Wilson, 2006, p. 184). The theory foresees the recovery of a basic explicature – the enrichment of the logical form – and the construction of a higher-level explicature, which requires more pragmatic development such as determining the propositional attitude or embedding the basic proposition into a speech-act.

Wharton (2003a) exemplifies the construction of high-level explicatures with examples involving tone of voice. Consider how Jack might interpret Mary's utterance (4). After recovering the basic explicature, a higher-level explicature could be built by embedding it under a speech-act description (5) or, if we consider Mary's tone of voice or other cues (nonverbal behaviour), it could be embedded under a propositional-attitude description (6).

(4) Mary (in a regretful tone of voice): I don't feel well.

(5) Mary is saying that she doesn't feel well.

(6) Mary regrets that she doesn't feel well.

Despite the importance of explicature, there are numerous discussions (Levinson, 2000; Recanati, 2004; Bach, 2006) about the existence of such theoretical construct, which rekindles the debate about the semantics-pragmatics interface. The

[20] A more detailed discussion about non-verbal communication will be provided later in this chapter.

main point is to understand how inferential processes based on pragmatic contexts are responsible for determining what is communicated and for enriching the semantic proposition. This means ultimately to assume that communication is based on truth conditions, and if you need pragmatic complementation, that there is a risk of never having a complete proposition because the reference may not be enough. To escape this problem, Sperber and Wilson (1995, p. 183) argue that the speaker retrieves the correct propositional form through a relevant relationship, which would prevent an infinite pragmatic recovery.

At a later point, it is assumed that the concepts are adjusted in order to build ad hoc concepts on the explicature level (Carston, 2002a; Wilson and Carston, 2006, 2007). Such concepts are constructed in different ways: *broadening* is the process that inhibits some logical information and encyclopedic lexicon to denote broader concepts; while *narrowing* is the process of restricting the information from the lexicon to denote narrower concepts. This restriction may occur in degrees and in different directions. Carston (2002a) also states that these two processes can occur simultaneously.

These processes lead us to realize that the communicated concept is often broader or narrower than the concept encoded. Ad hoc concepts are part of the proposition that the speaker wanted to communicate, rather than part of implicatures, which means they are part of explicature. Overall, broadening and narrowing are part of the inferential process. According to Wilson and Carston (2006), each time a concept is communicated, it is automatically adjusted through an online process to form the explicature. Once adjusted, through broadening and narrowing, the ad hoc concept is created and the inferential process continues through the construction of implicatures. Wilson and Carston (2007) claim that the construction of *ad hoc* concepts not only occurs in metaphors, but in the continuum in which they are included, ranging from literal to metaphorical, through hyperbole and other loose uses. An example of an *ad hoc* concept can be seen in (7).

(7) Jack: Do you think Mary could help me cleaning the attic?
Lily: She is a princess.

The meaning expressed by the word ‘princess’ is the concept PRINCESS*, narrower than PRINCESS because Mary is not royalty, but also broader, because it refers to all women who are spoiled, who require special treatment, etc. Most

important is that the choice of which part of the concept is being accessed is given through a search for relevance, with an adjustment of the meaning of the concept PRINCESS. Wilson and Carston (2007, p. 2) state that "the speaker might be seen as asserting that Caroline is a PRINCESS*, where PRINCESS* is a modification of the encoded concept PRINCESS, and the proposition that Caroline is a PRINCESS* is both, a part of what is explicitly communicated and a vehicle for implicature".

Two principles sustain Relevance Theory: a cognitive one (11) and a communicative one (12)[21]:

(8) First, or Cognitive Principle of Relevance: human cognition tends to be geared to the maximisation of relevance

(9) Second, or Communicative Principle of Relevance: every ostensive stimulus conveys a presumption of its own optimal relevance.

Where presumption of optimal relevance is:

(10) Presumption of optimal relevance: (a) The ostensive stimulus is relevant enough for it to be worth the addressee's effort to process it; (b) The ostensive stimulus is the most relevant one compatible with the communicator's abilities and preferences.

In (8), the idea of relevance can be defined as a property of the inputs – cognitive effects gained versus processing effort expended. Other things being equal, the more cognitive effects and the less processing effort expended, the greater the relevance of the input to the individual. (9) states that, by overtly displaying an intention to produce ostensive stimuli, the speaker creates a presumption that the stimulus is relevant enough to be worth processing, and it is compatible with the abilities and preferences of the listener[22].

[21] The formulation of the two principles and the presumption of optimal relevance is the one presented in the postface of the second edition of *Relevance* (1995).

[22] Costa (2012) makes an important critique of the notion of ostensive communication. For him, the theory only compromises with communication when there is a certain degree of awareness related to the intention of the speaker to address the listener. He questions the fact that communication needs to be, by principle, relevant, stating that there seems to be a previous step to the notion of relevance. Costa proposes a hypothesis that there is an innate tendency for non-trivial connectivity, understood as basic human communication, that is isomorphic to the evolutionary process of animals. This

One of the most important notions for relevance theory regards a balance between cost and benefit: the amount of mental effort required to interpret an input (cost) compared to the derived contextual effect (benefit). That is, the more effects a stimulus has the more relevant it is. Sperber and Wilson also propose that relevance is not just a property of linguistic utterances and other ostensive stimuli (such as actions - gestures or speeches - and traces of actions - writing, for example - meant to draw the listener's attention and convey some content), “but as a property that any input to a cognitive process might possess: sights, sounds, utterances, thoughts, memories, suppositions may all be relevant to an individual at a given time” (Sperber and Wilson, 2006, p. 177).

It is worth noting that inputs become relevant during the process of communication, and certain assumptions become more or less manifest. The modification and reorganization of inputs in a particular context result in cognitive effects. A new proposition can yield cognitive effects by means of:

a. strengthening or weakening of existing assumptions, by providing further evidence;
b. contradicting and leading to elimination of an existing assumption;
c. contextual implication, that combines the new assumptions with existing assumptions. New information follows from that combination and not from either alone.

Regarding inputs, Sperber and Wilson (1995) postulate that they are structured from three sources: (i) logic entry: set of deduction rules applied to the logical form of which a concept is structured; (ii) encyclopaedic entry: set of information on events and/or property representing the concept; (iii) lexical entries - set of information in natural language (syntactic, morphological, phonological information). To illustrate the processing via relevance theory, note the following dialogue between friends, who are discussing what costumes they will wear in Halloween (11)

(11) Lily: What costume will Jack use?
Mary: Dark Knight.

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principle means that there is a cognitive direction of the brain/mind to communicative connection before relevant communication.

Assuming that Mary has been the most relevant as possible, Lily might derive possible assumptions according to the accessibility of the information and context. In order to understand Mary, Lily has to access in her encyclopaedic memory that the Dark Knight corresponds to Batman, and therefore Jack will dress up as Batman. If Lily does not know that Batman and the Dark Knight are the same person, she would not understand what costume Jack was going to wear. If Lily is not sure about the relationship, her assumptions can be strengthened if Jack turns up dressed as Batman, or contradicted, if Jack were wearing a dark Spiderman costume (which would prove that neither of them know the relationship).

For the theory, the processing of inputs happens via non-trivial logical calculus, which combines the information stored in memory to derive valid conclusions. The calculi of inference proposed by Sperber and Wilson differ from classical logic, because the human deductive mechanism is not subject to purely formal properties of assumptions. Thus, inference is non-demonstrative, since the calculation can only be corroborated, and there is no evidence for it. Moreover, the validity or invalidity of the assumptions cannot be verified, therefore conclusions are only probable. In this sense, we speak of strength of assumption: the greater the belief in a premise, the higher its corroboration. And in case there is a stronger assumption, the weaker one is eliminated. Conclusions are not subject to proof, but can be confirmed by the force of the premises, originated from various sources such as perception (through sight, hearing, touch, smell, taste), decoding and linguistic assumptions stored in memory.

From the communicative principle, Wilson and Sperber (2004, p. 259) build a relevance-guided comprehension heuristic (12):

(12) Relevance-theoretic comprehension procedure

a. Follow a path of least effort in computing cognitive effects: Test interpretive hypotheses (disambiguations, reference resolutions, implicatures, etc.) in order of accessibility.

b. Stop when your expectations of relevance are satisfied.

According to Wilson and Sperber (2004, p. 261), this heuristic can be broken down into different subtasks (13). Those subtasks are not sequentially ordered, because comprehension is an online task. Explicatures and implicatures (implicated

premises and conclusions) are developed in parallel adjustment, and they can be revised as the utterance unfolds.

(13) Subtasks in the overall comprehension process

a. Constructing an appropriate hypothesis about explicit content (in relevance-theoretic terms, EXPLICATURES) via decoding, disambiguation, reference resolution, and other pragmatic enrichment processes.

b. Constructing an appropriate hypothesis about the intended contextual assumptions (in relevance-theoretic terms, IMPLICATED PREMISES).

c. Constructing an appropriate hypothesis about the intended contextual implications (in relevance-theoretic terms, IMPLICATED CONCLUSIONS).

According to Wilson and Sperber (2002, p. 269), loose uses (which include metaphors) convey an array of weak implicatures:

> A proposition may be more or less strongly implicated by an utterance. It is STRONGLY IMPLICATED (or is a STRONG IMPLICATURE) if its recovery is essential in order to arrive at an interpretation that satisfies the expectations of relevance raised by the utterance itself. It is WEAKLY IMPLICATED if its recovery helps with the construction of an interpretation that is relevant in the expected way, but is not itself essential because the utterance suggests a range of similar possible implicatures, any one of which would do.

To relevance theory, the speaker, seeking optimal relevance, chooses to imply all she believes that is mutually manifest. As more information becomes implicit, more mutually manifest the assumptions are; the more explicit the information is, less mutual manifestness exists. The authors point out that even if the speaker is misunderstood because of the choice of words, a stylistic choice has to be made. For them, no style is neutral, since an utterance reveals the speaker's assumptions about the listener and about his processing capacity (Sperber and Wilson 1995, p. 218).

Consider the following example, adapted from Clark (2013, p. 235).

(14) (standing on a summer party)

Mary: Would you like a burger?

Jack: I'm vegetarian.

Jack's answer implicates clearly that he does not want a burger, and the reason for that is because he is vegetarian. We could say that Jack communicated the following assumptions:

(15) Proposition expressed/explicature: Jack is vegetarian.
Implicated premises:
- Vegetarians do not eat meat.
- The burger contains meat.
- Anyone who is a vegetarian will not eat a burger.
- If Jack is vegetarian, he will not eat a burger.

Implicated conclusion: Jack does not want a burger.

However, we could list a series of weak implicatures that could be communicated:

(16) Jack thinks it is wrong to eat meat.
Jack is idealistic.
Jack is criticising my choice of not being a vegetarian.
Jack thinks this party is not good.

In (16), a range of weak implicatures may be conveyed rather than a strong implicated conclusion. The main point is that sometimes the speaker's meaning conveys both strong and weak implicatures, but sometimes one only communicates weak implicatures, as it is the case of poetry and literature. Sperber and Wilson (1995) called 'poetic effects' what is communicated when there is a clear choice of style. They claim that poetic effects are the result of a wide range of weak implicatures that are conveyed in the search for relevance. The position of the theory is to assume that literal, vague or metaphorical uses are processed the same way: they are in a continuum of cases processed through the search for relevance.

We have seen that relevance theory addresses the problem of non-verbal behaviours in communication mainly through poetic effects and strength of communication, but there is still some room to question how those phenomena are related to this theoretical framework, which is the main objective of the next session.

2.3 NATURAL PRAGMATICS

There are different theories to explain how we imply more than we say. If we assume that people also communicate in order to establish connections and to convey intentions, a view without some presence of inferential processes is incompatible. At the same time, people do communicate to convey their emotions as well, and they do that through linguistic marks and weak implicatures, for example. In this sense, to assume a cognitive perspective of communication implies to explain how cognition and communication are bound. And, as was discussed in the previous chapter, cognition is a broad concept – language, emotions, attention, etc. – and it should be treated so[23].

Many theories have been developed since Grice's seminal work. However, even being the place for what is not explicitly said, much has been let aside in pragmatic studies. According to Carston (2002b), pragmatics is concerned with ostensive stimuli, especially with verbal utterances, although "they themselves are frequently proceeded by other ostensive gestures of the face, hands, voice etc, all of which have to be interpreted together if one is to correctly infer what is being communicated" (2002b, p. 129). Wharton (*forthcoming*) states that "any pragmatic theory worth its salt simply must have a view on non-verbal communicative behaviours and how they contribute to speakers' meanings".

In the 1980s, Mehrabian identified the '7%-38%-55% Rule' (Mehrabian, 1981), that posits that 55% of communication is facial/body language, 38% tone of voice and inflection, and only 7% the words themselves. Even if the proportion is not exactly this one, the fact is that language communication is defined both by linguistic and non-linguistic properties, such as intonation and gestures (Wharton, 2009). This shed light on a really simple question: why is nonverbal communication not systematically part of a theory of pragmatics? If words are only 7% of what is being conveyed, it seems linguists are still bound to the logical tradition of propositions and to the logical form.

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[23] Although relevance theory assumes a modular perspective of mind, where cognition is related to thinking and it is modular (following Fodor), I do not think we should separate emotions and nonverbal behaviours, as they are part of communication. I will not address the question on how emotions interplay with other cognitive abilities, but I am sure my account is compatible with Sperber and Wilson's theory.

To understand how non-verbal communication can be part of pragmatics, it is first necessary to discuss the difference between natural and non-natural meaning. Grice, on his famous paper *Meaning* (1957), raises an important question about the difference between 'deliberately and openly letting someone know' and 'telling', or between natural meaning ($meaning_N$) and non-natural meaning ($meaning_{NN}$). While natural meaning is defined as when you are able to infer *p* from *x means p* – or from *smoke means fire*; non-natural meaning involves the existence of a particular kind of intention. Grice's definition of $meaning_{NN}$ is: "'A $meant_{NN}$ something by X' is (roughly) equivalent to 'A intended the utterance of x to produce some effect in the audience by means of recognition of its intention'" (Grice, 1989, p. 219). He adds that, if you ask *A* what he meant, the answer would be a specification of the intended effect. Grice later defines $meaning_{NN}$ as:

> 'U meant something by uttering c' is true iff, for some audience A, U uttered x intending:
> 1. to produce a particular response *r*
> 2. to think (recognise) that the utterer intends (1)
> 3. to fulfil (1) on the basis of his fulfilment of (2)
> (Grice, 1989, p. 92)

Wharton (2009) discusses Grice's clear-cut division between showing and telling. Assuming a cognitively-oriented pragmatics, he advocates for a natural pragmatics, which deals with the interpretation of non-verbal behaviours, and how they contribute to overt communication or to more covert/accidental forms of communication. He posits that natural and deliberately shown behaviours that may be seen as cases of natural meaning can be used in overt intentional communication. He argues that, for a communicative act to be intentional,

> "it is much less important whether an audience might have been able to draw their own conclusions in the absence of such an intention. […] the very fact that a communicator has provided evidence of an intention to inform may lead the audience to make 'less direct' inferences about the communicator's meaning. (Wharton, 2009, p. 27-28)

Relevance theorists have argued for the existence of a continuum of cases between showing and $meaning_{NN}$, and that all of them fall within the domain of pragmatics (Sperber and Wilson, 1995). Wharton (2003b) argues that there is a continuum of showing-$meaning_{NN}$, and he claims that natural behaviours are somewhere along this continuum. He proposes a difference between natural signs,

which carry information by providing evidence for it, and signals, which carry information by encoding it. Wilson and Wharton (2005, p. 430) affirm that human communication is a combination of decoding and inference making, and it has three types of inputs: natural signs (interpreted inferentially), natural signals (sometimes only by decoding), and linguistic signals (combination of decoding and inference).

In the showing-meaning$_{NN}$ continuum, at one extreme there are cases of showing; while at the other extreme there are cases of meaning$_{NN}$. Wharton (2009, p. 30-33) presents three examples, which I will recreate here, that show that natural behaviours can be part of an ostensive-inferential communication: they are cases of crying, shivering and smiling.

First, imagine Mary is talking to Jack about her dog and she starts crying. She is openly showing (meaning$_{N}$) her natural behavior in order to inform Jack about her feelings about the dog – it means that she creates an expectation that there is something to infer from her tears. Even if we do not know the content of their conversation, we can imagine she is feeling sad (or they may be tears of happiness). However, to Jack, the same input might mean something else: not only it helps to understand what she is implicating (by strengthening what is being uttered by providing further evidence), but it also conveys Mary's feelings about what she is saying, building on her own emotions. The fact is we may not know strongly which inferences Mary was implying, but we have 'less direct' evidence.

The second example is shivering. Jack and Mary are on the beach in a summer day in the south of Brazil, a beautiful sunny day but with a cold southern wind. Mary goes to the sea to swim and when she returns to the sand she feels cold and begins to shiver. She looks at Jack and draws attention to her shiver, creating an expectation of her informative intention. Mary makes it possible for Jack to infer that she wants him to do something: to hand her a towel, for example. This is also a case of intentional communication, because Mary's natural behaviour indicates that she wants Jack to infer her informative intention to get a towel.

The third example involves smiling. Imagine Jack gives Mary a box of chocolates, and Mary responds by openly showing Jack her (spontaneous) smile. Jack will probably infer that Mary is happy because of the gift, and she is thanking him. Imagine now the same smile as being fake, it deliberately provokes the audience to infer the intention behind it.

It is important to discuss the fact that natural behaviour can be produced deliberately to provide evidence of an intention, and this is a clear case of meaning$_{NN}$. An example would be if Mary were not feeling cold, but started shivering exaggeratedly to induce Jack to hand her a towel. However, spontaneous behavior, which is natural, involuntary, may not be deliberately produced, but can be overtly shown. I believe shivering spontaneously or deliberately is relevant when we understand the effect in communication. In both cases, it will be interpreted as an intention to infer something, and it may affect the message that is being conveyed.

If the speaker conveys how bored, frustrated or angry they are by their tone of voice or facial expression, they may not be deliberately providing evidences about their state of mind. However, the hearer may pick those inputs in a relevance-driven heuristic and operate with them to understand the speaker's meaning.

Wharton argues that natural behaviours may carry information for the hearer/observer by betraying one's thoughts and feelings without intentionally communicating them; by deliberately producing them to be intentional; or by involuntarily producing them, but overtly shown. "Intentional verbal communication, then, involves a mixture of natural and non-natural meaning, and an adequate pragmatic theory should take account of both" (Wharton, 2009, p. 11).

I will follow Wharton's argument that natural behaviours may be important to understand both the speaker's propositional attitude and the proposition intended to be conveyed. Consider that Mary utters (17), and that it could have been said in different contexts.

(17) A: I love you.

Context

(17.1) There are some people around dressed in black at a funeral. Mary talks to Jack, who has passed away and is in the open casket.

(17.2) Mary is in a nightclub with Jack. They are in the early stage of their romantic relationship, and this is the first time Mary says the special three words.

(17.3) Mary is in a pub and Jack enters it. They have just broken up from their 2-year relationship.

Analysing the utterance and the different contexts, we could assume that different inferences could have taken place depending on the context. In (17.1), even knowing that Jack cannot hear her, Mary may be implying that she will always love him, and she will never forget him[24]. In (17.2), Mary may imply that their relationship is strong and that she is comfortable to declare her love. In (17.3), the inference could go in two directions: either Mary regrets the break up and really loves Jack, or she is being ironic, and wants to say she hates him. None of those inferences are strong, and they can be easily cancelled. The fact is that a simple utterance can mean different things depending on the context – and this is pretty much what has been discussed in pragmatics, and it is quite well accepted as true.

However, we could play with the inferences that are being expressed if we add some nonverbal behaviours, such as in (17.4) and (17.5) [25].

Nonverbal context

(17.4) Mary's eyes sparkling, skin under eyes wrinkled, mouth drawn back at corners. Her tone of voice is loving, happy.

(17.5) Mary's nostrils raised, mouth compressed, eyes wide open, head erect, chest expanded, arms rigid by sides etc. Her tone of voice is angry.

(17.4) is Darwin's description of facial expressions expressing happiness; while (17.5) is his description of anger. If we combine (17.2) with (17.4), we could have more evidence for our inference that Mary loves Jack and is comfortable and happy with the relationship. But if we combine (17.2) with (17.5), the evidence is opposite: verbally, Mary says she loves Jack, nonverbally, Mary is angry. Jack would have to decide whether he believes in what Mary is saying or in what she is not saying, but implying with her behaviour. We should not assume, though, that nonverbal behaviours are more important than the words being uttered, rather that they can sustain or change the course of inference-making and comprehension. As any other linguistic input, non-linguistic cues have to be decoded and successfully or not interpreted. In a scenario of (17.2) and (17.5), Jack might have missed some of Mary's facial expression or tone of voice, or even misinterpreted it.

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[24] Even though the audience is not there, when Mary utters *u,* what she means is a three-place predicate: to mean something to somebody (her beloved that is dead).

[25] All descriptions are based on Darwin's (1872) *The expression of emotion in man and animals.*

In relevance theory framework, when an utterance is produced, the hearer has to follow a path of least effort in computing cognitive effects and stop when their expectations of relevance are satisfied. The interaction to adjust the meaning happens not only at the level of what is explicitly communicated, but at word level as well, through ad hoc concepts. According to Wharton (2009), natural behaviours can affect the adjustment of the conceptual content, and contribute to the explicit truth-conditional of utterances. Consider Mary and Jack are at the beach:

(18) Jack: Do you want a towel?
Mary (shivering ostensively): I'm cold.

In (18), Mary's natural behaviour is salient enough to be interpreted by a relevance comprehension heuristic, and it will help to interpret the meaning of 'cold'. Her shivering will indicate how cold she is, and will calibrate the degree of coldness she is expressing. For that utterance, a possible explicature would be 'Mary is COLD*', and she would be implying that she wants a towel. Wharton (2009, p. 55) states that "The overall interpretation process is relevance-driven, and the intentionally shown natural behaviours provide additional clues to the speaker's meaning, which is not encoded but inferred".

Natural behaviours can also help to calibrate a basic explicature, but also a higher-level explicature, which is built by embedding the basic explicature under a speech-act or propositional-attitude description. Consider Mary's utterance in (19), and a higher-level explicature in (20).

(19) Jack: Do you want to go to the mall?
Mary (with an angry tone of voice): I hate going there before Christmas.
(20) Mary is telling me angrily that she hates going to the mall before Christmas.

It is important to observe that, depending on subtle variation in the tone of voice or facial expression, Mary is able to express how angry she is about the proposition she is expressing. Jack, on the other hand, can infer more or less Mary's emotion, and decide if she is quite annoyed, angry or furious.

Our human ability to discriminate differences in tones of voice and facial expressions is not bound to our linguistically capacity to decode, and it should not be

taken for granted in any pragmatic theory. As Wharton (2009, p. 57) observes, “The contribution made by the more ‘natural’ aspects of complex ostensive stimuli to establishing a speaker’s meaning – including basic and higher-level explicatures – should be neither overlooked nor downplayed”.

In the following sub-section, I will discuss the nature of procedural meaning.

2.3.1 PROCEDURAL MEANING

Before any discussion about what natural behaviour communicates, we need to understand one important distinction in relevance theory between conceptual and procedural meaning. This distinction was first introduced by Blakemore (1987, 2002) to state a difference between content words, like *cat*, and procedural words, like *so, therefore.* The first are seen to encode concepts that contribute to the truth-conditions of a sentence, while the latter carry a non-truth conditional meaning, guiding the inferential comprehension process. Procedural words constrain the search of relevance, interacting with contextual assumptions and cognitive effects. Blakemore (2002) exemplifies the conceptual-procedural distinction with connectives, as we can see in (21).

(21) It’s raining, *so* I’m not going to run.

In (21), the word ‘so’ does not affect the content of the utterance, but it indicates the relationship between the propositions. Its role is to guide the hearer to make one interpretation more salient than the other: the speaker is not going to run *because* it is raining, and not *despite of*.

The procedural-conceptual distinction has been applied to other phenomena, such as reference assignment, prosody, and interjections. If early stages of research showed that it was only a matter of truth-conditional and non-truth-conditional meaning, later it was clear that the parallel works in different ways (Wilson, 2014, p. 143). Wilson and Sperber (1993) explain that procedural meaning can also contribute to truth-conditional meaning, as well as conceptual meaning to non-truth-conditional meaning. They frame their discussion in a diagram, which here will only be discussed when it refers to procedural meaning.

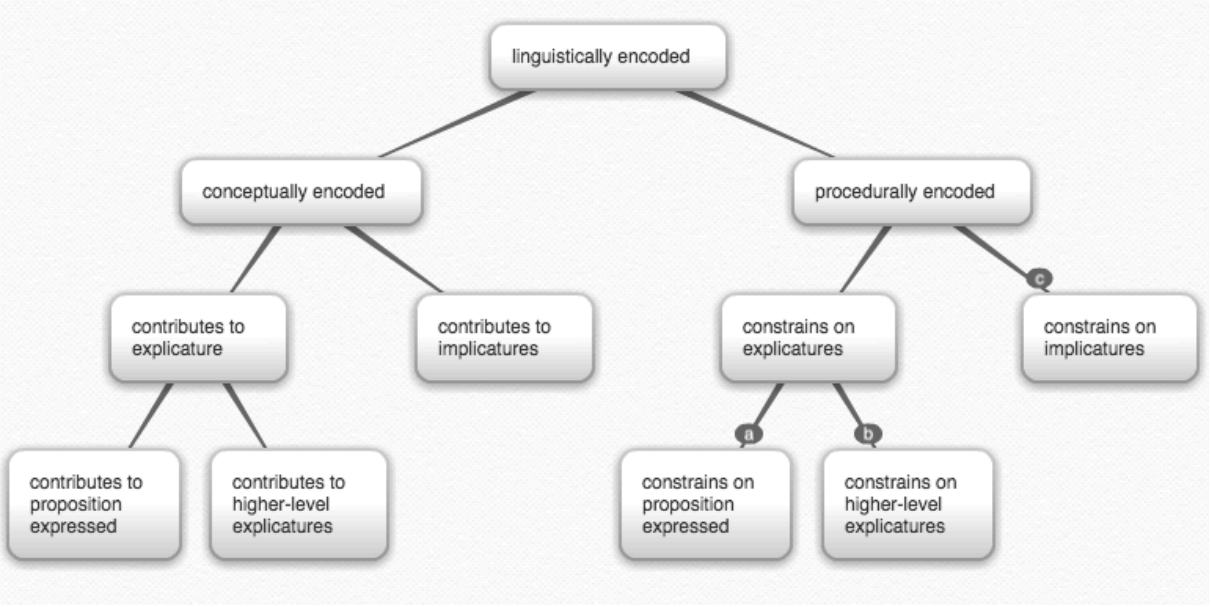

Figure 2: Conceptual and procedural meaning
Source: Wilson and Sperber (1993)

(a) Procedural constraints on the proposition expressed: pronouns are a category of words that are procedural and they impose constraints on explicature, guiding the search for the intended referent, which is part of the proposition. For example, in (22), the word 'she' is not referring to any specific person, but we narrow the search to assign the referent for some woman, not a man[26].

(22) She is going to Brazil.

(b) Procedural constraints on higher-level explicatures: one example is interjections. The presence of an interjection in the beginning of (23) will lead to a higher-level explicature such as (24), turning the speaker's intention more manifest. Prosody falls under this category as well.

(23) Aha! You're here.

(24) The speaker is surprised that I am here.

[26] Monawar and Strey (2014) have been developing an approach where prosody encodes a procedural constraint on the proposition expressed, which seems to be the case of modal readings in Brazilian Portuguese. As this language does not seem to have a vast number of words to express different flavours of modality, native speakers seem to indicate via intonation the force of a determinate final modal reading.

(c) Procedural constraints on implicatures: under this category is Blakemore's approach to connectives, represented in (21).

Even though procedural meaning has been used in relevance theory, Clark (2013) considers some problems identified by Blakemore (2002) that are still open to discussion, which are: procedural meaning is difficult to paraphrase, it lacks synonymous conceptual counterparts, it is not compositional, and it is interpreted differently from conceptual expressions in fragmentary utterances.

In this dissertation, cc. A translational activation happens when a word is translated into a concept, it helps the inferential construction of a full propositional form. A non-translational activation encodes information that does not translate into concepts, but rather it narrows the range of hypotheses, guiding and constraining the inferential process. The main point of assuming a broader sense of procedural meaning is that the inputs are not instructions to interpretation, but they manage levels of activation. Furthermore, it applies to linguistic and non-linguistic expressions, such as affective tones of voice, for example. From now on, when I refer to procedural meaning, I will be referring to Wharton's broader definition.

In the next session, I will show how natural behaviours, such as prosody, interjections and facial expressions, may interplay with linguistic utterances in order to convey emotions and impressions.

2.4 NATURAL BEHAVIOURS AND COMMUNICATION

The discussion about procedural meaning is important because it underlines the one about what natural behaviours communicate. We may say they contribute to what is explicitly communicated, but it seems more accurate to assume that natural behaviours contribute to what is vaguely implicated. They can be described along relevance theory's weak communication: they convey an array of weak implicatures rather than a strong one. They can also communicate attitudinal information about the speaker, helping to constrain a higher-level explicature. Overall, they increase the manifestness of a very wide range of assumptions, guiding the hearer's

comprehension of an utterance and communicating impressions, emotions and moods.

A more specific definition on how gestures, prosody and interjections convey emotions will be provided next. I will show that they may constrain the proposition expressed, on higher-level explicatures or on implicatures.

2.4.1 INTERJECTIONS

One of the phenomena of language that has been discussed among linguists is interjections. According to Padilla Cruz (2009, p. 182), "interjections are communicative elements that individuals use to express their mental states, attitudes or reactions to perceived stimuli". Traditionally, they are hard to classify, as they are syntactically independent, they appear in different parts of discourse, they have morphological peculiarities. Wharton (2003a) posits that interjections convey vague content, they are highly context-dependent, they are partly natural and partly coded, they do not encode other concepts, and they lack truth-conditions, because they are expressives.

Interjections are a very heterogeneous class, and they include items such as *wow, yuk, aha, ur, brr, oops, well*, etc. They can be described as being emotive/expressive (*wow*) or conative/volative (*psst*). Padilla Cruz (2009) describes the latter category of interjections as cases when the speaker intends to communicate a specific order to be inferred by the hearer. In this dissertation, I will focus only on emotive/expressive interjections, because they are one of the linguistically coded forms of expressing emotions.

From that, I will follow Wharton's (2009) argument when he states that interjections are mechanisms that help the hearer to recover the speaker's propositional or emotional attitude toward the propositional content of the utterance or toward an object. Interjections "might be analysed as indicators of higher-level explicatures containing the type of speech-act or propositional-attitude information the hearer is expected to infer" (Wharton 2009, p. 85). Consider Jack's answer in (25), and the higher-level explicature in (26).

(25) Mary: Would you like to go to New York with me?

Jack: Wow! I loved the invitation.

(26) Jack is delighted that Mary asked him to go to New York.

In (25), the interjection *Wow* can be analysed as contributing to an expressive speech act in the higher-level explicature. Searle (1979, p. 15) defines that "the illocutionary point of this class is to express the psychological state specified in the sincerity condition about a state of affairs specified in the propositional content". However, since interjections lack a semantic content that is constant[27], their function is to indicate the speaker's mental or emotional state in an imprecise way. At the same time, if we combine (25) with different tones of voice and facial expressions, the vaguer communicative effects of *wow* can be more or less manifest. Overall, Wharton (2003a, 2009) proposes that an interjection may activate a wide range of possible propositional-attitude descriptions. However, we cannot precise how the hearer will operate with the interjections, because it depends on the selection of context and inferential abilities.

Besides accounting for interjections as projecting a propositional-attitude towards a proposition, Wharton (2009) applies his account to cases in which the attitude is projected towards an object. To illustrate it, assume Jack shows Mary his new house, and Mary's answer in (27):

(27) Mary: Wow! Your house is amazing.

The hearer of (28) would not be expected to deliver a higher-level explicature such as (31):

(28) * Mary is delighted that Jack's house is amazing.

[27] Wierzbicka (1992) proposes that interjections communicate complex conceptual structures that are massively decompositional. However, there can be found some counterexamples to the conceptual structures proposed, especially when the definitions do not account for all aspects of meaning that an interjection can covey. *Wow,* for example, is described as conveying a positive emotion, such as delight, surprise, but it can also express negative feelings. At the same time, it does not express degrees of emotion (from surprise to mildly impressed. For more details, see Wharton (2009, p. 75-77).

In this case, the interjection is not enabling the embedding of the proposition as a higher-level explicature, but rather it is communicating some type of emotion[28] to the hearer. An almost similar process happens in (29), when a child tries some food in particular for the first time and utters:

(29) Child: Yuk!

In (30), it is not possible to derive a higher-level explicature, because there is no proposition to embed into an expressive speech act. What the child communicates is an emotional attitude at the food and it cannot be described as in (30).

(30) Encyclopaedic assumptions:
- People normally say *Yuk* when they dislike something or find it disgusting.
- When people try different food they tend to not like it.

Contextual assumptions:
- This is different food she has never tried.

Implicature
- She did not like the food.
- She thinks it is disgusting.

The problem of a description such as (30) is that the interjection does not encode a concept, but a procedure that activates a range of attitudinal descriptions associated with a specific emotion. If we analyse it, the implicature expressed corresponds to the encyclopaedic information about the interjection – there is no need for an inferential calculus as if it were propositional. Besides, there is no proposition expressed in order to calculate inferences.

The question now is how we know which emotion that interjection is activating if there is no conceptual code. A possible answer is that interjections code something that is instinctive to humans. Darwin (1872) observes that, when expressing surprise, humans tend to produce a prolonged *Oh*!, and if the surprise is accompanied by pain,

[28] Wharton (2009) proposes, in line with Rey (1980), that emotions involve an interaction between cognitive, qualitative and psychological states; while feelings or sensations do not involve all elements. I will assume, in line with what has been argued in chapter 1, that those are *verbal emotions*, which is some kind of sensation conveyed by utterances that change the cognitive environment of the audience. I will not discuss if they are feelings, emotions or if they have any other nomenclature.

> "there is a tendency to contract all the muscles of the body, including those of the face, and the lips will then be drawn back; and this will perhaps account for the sound becoming higher and assuming the character of Ah! or Ach!" (Darwin, 1872, p. 97).

This can suggest that interjections are directly connected to our emotional responses to the world. Furthermore, although they are culture-specific, they share some phonetic similarities – for example, to express relief, an English speaker will use 'phew', while a Portuguese speaker will choose 'ufa'.

2.4.2 PROSODY

Within relevance theory, important progress has been made concerning the interpretation of prosody as an emotional element, in particular in the last years. Work developed by Wilson and Wharton (2005), House (2006), and Wharton (2009) deal with emotional aspects that shed some light onto relevance theory. According to Wildgruber et al (2006), prosody can communicate different things:

> Among others, it is used to specify linguistic information at the word (*con*tent vs. con*tent*) and sentence level (question vs. statement intonation: "It is new?" vs. "It is new!"; location of sentence focus: "he wrote this letter " vs. "he wrote ***this*** letter"), and conveys information about a speaker's personality, attitude (i.e. dominance, submissiveness, politeness etc.) and emotional state." (Wildgruber *et al.*, 2006, p. 14).

As Wildgruber posits, prosody can vary from emotional to linguistic (lexical stress, lexical tone). House (2006) says that prosody can be best described as forming the *packaging* rather than the *content* of a message – it has multiple functions: to alter the salience of possible interpretations, to create impressions, or to convey information about emotions or attitudes. Wharton (2009) describes prosodic inputs as highly context-dependent, because they interact with information from other sources, and they may have different effects depending on the occasion. Furthermore, he says that a general point of agreement is that "prosody typically creates impressions, conveys information about emotions or attitudes, or alters the salience of linguistically possible interpretations rather than expressing full propositions or concepts in its own right" (Wharton, 2009, p. 141).

In an ostensive-inferential account, affective prosody is interpreted as relevant input, which will be processed in a context of available assumptions to yield positive cognitive effects. Wilson and Wharton (2005, p. 436) propose that affective facial expressions and tones of voice may be analysed as providing support for "alterations in the strength or salience of a wide array of conclusions rather than providing strong support for a single, determinate conclusion". In this sense, prosodic inputs encode procedures to specify what is being conceptually communicated. Consider example (31), where Mary meets Jack in a pub:

(31) Mary (with a surprise tone of voice): You are here!

(32) Mary is surprised that Jack is in the pub.

Following a path of least effort in looking for enough cognitive effects, "the more salient the prosodic input, the more it will be expected to contribute to the speaker's meaning by achieving positive cognitive effects" (Wilson and Wharton, 2005, p. 442). In example (34), neutral prosody would not be processed as a relevant input; therefore it would not activate extra cognitive effort or effects. However, when produced with a tone of voice of surprise, prosody would increase the hearer's phonological processing effort, but at the same time it would encourage them to look for extra effects. The utterance of (34) with a tone of voice of surprise indicates a certain degree of surprise that Mary feels toward the proposition. Like interjections, prosody encodes a procedural meaning and it affects the recovery of a higher-level explicature, conveying an expressive speech act or an emotional attitude toward the proposition, as shown in (35).

Affective prosody may also help to determine the truth-condition of a proposition by calibrating the degree of emotion the speaker is feeling, as in (33), Mary's response to Jack's invitation.

(33) Mary (with a happy tone of voice): I'm so happy to watch the new Star Wars movie!

In (33), the prosody will help the hearer to determinate how happy the speaker is, and it would help convey an explicature such as 'Mary is so HAPPY* to watch the new Star Wars instalment'. In the examples above, (31) conveys the speaker's

emotional state; and (32) seems to reinforce the idea of happiness in terms of the proposition expressed.

Another case of a different effect of prosodic input is illustrated in (34), which is uttered with an unexpected tone of voice.

(34) Mary (with a sad tone of voice): Yes, let's watch the new Star Wars movie.

The prosody seems now not to help communicate the proposition, but rather an array of weakly implicated assumptions, that help to recover a satisfactory interpretation but it is not essential. Wharton (2012, p. 579) states that:

> It is now recognised that prosody encodes something far less precise, and perhaps hard to pin down in conceptual terms. So rather than a particular tone encoding a concept such as 'detachedness' or 'reservation', the tone encodes information that indicates how the speakers intends the proposition she is expressing to fit in with what she believes the hearer knows or believes at a particular point in the conversation.

Mary's sad tone of voice may encode a wide array of weak implicatures, conveying an impression about her state of mind rather than a strong implicature. Assuming a relevance-comprehension heuristic, the hearer of (37) may probably pick up that unexpected prosody and process it. Some weak implicatures that Mary is sharing is that she is not excited to watch the movie, that she assumes the movie is not as good as people assume, etc. At the same time, (37) may communicate the speaker's emotional state of mind.

2.4.3 FACIAL AND BODILY EXPRESSIONS

Facial and bodily expressions may be understood as natural, instinctive indications of people's emotions. It is possible to observe a person and know if they are happy or not, miserable, cold, depressed. Wharton (2009) posits that the meaning they carry is factive: a smile indicates naturally that the person is happy, a cry indicates some kind of distress, a shiver indicates the person is cold.[29]

[29] The fact is that we read facial expressions automatically: we can tell a particular mental or emotional state of the default speaker just by observing her face.

For Wharton (2009, p. 115),

> […] when natural coded behaviours are put to use in ostensive–inferential communication, the automatic decoding processes that govern their interpretation are supplemented by other equally specialised automatic – but this time inferential – processes that govern the interpretation of ostensive stimuli.

The most important feature to observe is that, even if natural behaviours are not produced deliberately (they are natural), they are intentional if there is a deliberate intention of showing the behaviour. In cases of facial or bodily expressions deliberately shown, there is an intention of revealing an informative intention. The only difference between a case of showing (shivering) or meaning$_{NN}$ (a linguistic utterance) is the evidence provided: in the first case, it is relatively direct; whilst in the later, it is relatively indirect. Relevance theory accounts for all cases in the continuum between overt showing and meaning$_{NN}$; although, for most cases of showing, there is the need for "an extra layer of inference in order to recognise the communicator's full informative intention" (Wharton, 2009, p. 41).

Consider a dialogue between Jack and Mary in (35), and an alternative answer in (36).

(35) Jack: Would you like to grab some dinner?
Mary: I would.

(36) Mary (smiling happily, with a pleased tone of voice): I would!

If we consider Mary's answer in (35) and (36), what is linguistically encoded is the same proposition: Mary wants to grab some dinner. However, there is a clear difference between both answers in terms of Mary's emotional state toward what is being expressed. In (39), Jack may be able to read Mary's emotional state and decide if she is pleased, excited, or thrilled about going out for dinner. According to Wharton (2009, p. 119), Jack can interpret different shades of happiness because of his "ability to discriminate subtle (sometimes tiny) variations in (…) tone of voice". Facial expressions and other natural behaviours can help speakers and hearers calibrate their emotional responses to an utterance.

Sometimes, it is possible to convey the same information conveyed by a facial expression with a linguistic utterance, such as (37).

(37) Mary: I would be so happy to grab some dinner.

However, if (37) is not accompanied by a smile and an affective prosody, the utterance would sound strange, and probably Mary would not be able to express effectively her feelings and emotions.

In Wharton's (2003b, 2009) proposal, when natural behaviours are part of an utterance, they encode a procedural activation of a range of attitudinal and emotional assumptions, constraining the inferential search for relevance. Facial and bodily expressions may provide information about the speaker's intended meaning, contributing to the proposition expressed, or they may help construct a higher-level explicature conveying emotions or attitudes. (36) is an example of how facial expression builds a higher-level explicature, 'Mary is happy that Jack and Mary will grab some dinner'; whilst (38) is an example of how they may contribute to the proposition expressed.

(38) Jack: How are you today?
Mary (crying ostensively): I feel awful.

In (38), Mary's ostensively cry is salient enough to be picked up by a relevance comprehension heuristic, and it will help to interpret the meaning of 'awful'. Her crying indicates how sad she is, which is probably sadder than if she answered without crying. The merge of natural behaviour with the linguistic content may lead to a basic explicature such as 'Mary feels AWFUL*', implying that the concept is narrower than AWFUL.

2.5 CHAPTER SUMMARY

The main objective of this chapter was to argue for Wharton's (2009) natural pragmatics, in which natural behaviours are part of communication. Based on Sperber and Wilson's (1995) relevance theory, intentional communication would involve both verbal and non-verbal meaning, in a continuum between showing and meaning$_{NN}$. In order to discuss that, the first section of this chapter was dedicated to

briefly present Grice's (1989) approach to meaning, and it was followed by a concise description of the main points of relevance theory. The second section covered Wharton's natural pragmatics, as well as an exploration of how procedural meaning is encoded in language. The last section presented how natural behaviours and communication interplay.

Overall, it was possible to observe that natural behaviours (facial expression, prosody, and interjections) that fall into the showing and meaning$_{NN}$ continuum are relevant inputs and are picked up by relevance-comprehension heuristic. Furthermore, they alter the salience of cognitive effects, and they encode procedural rather than conceptual meaning, which may:

(i) constrain the higher-level explicature by conveying an expressive speech-act or
(ii) propositional-attitude information or by conveying an emotional attitudes to a proposition;
(iii) constrain the basic explicature, by adjusting what is linguistically encoded;
(iv) communicate emotions.

Additionally, those behaviours communicate weak implicatures, expressing an informative intention to inform about emotions, impressions or moods. In Sperber and Wilson's account, an informative intention is the intention to modify not the hearer's thoughts, but their cognitive environment. When what is being conveyed is not propositional, the effects of communication may be described as weak communication, resulting in weak implicatures. Wharton explains that:

> […] utterances are rarely uttered in a behavioural vacuum: they typically involve a mixture of strong and weak communication, with non-verbal behaviour generally contributing to the weaker side. Relevance theory provides a framework in which this fact can be accommodated and explained." (Wharton, 2009, p. 192-193)

In the next chapter, I will argue that communication always involves some kind of emotional effect, which is non-propositional and non-compositional. As we have seen in this chapter, it is of utmost importance to assume a broader pragmatics, where verbal and non-verbal inputs help the audience to recover speaker's meaning.

The notions of strong and weak communication will play an important role in the next chapter, as they are bound to speaker's emotional meaning.

CHAPTER THREE – "HERE COMES THE SUN, AND I SAY IT'S ALRIGHT"

There's nothing you can do that can't be done
Nothing you can sing that can't be sung
Nothing you can say, but you can learn how to play the game

Beatles

3.1 INTRODUCTION

We are used to talking about things we can see or that we can describe. We look at the sky at night and we see stars, some planets, and the moon shining. If we look at that with a powerful telescope, we may be able to see other stars and galaxies that are not possible to be seen with bare eyes. This is the so-called bright matter, and it is one of the main topics in astronomy and physics. However, scientists do not only try to explain bright matter (like stars), they wonder about what they cannot see but know it is there: dark matter. They know it is there because they infer from its gravitational effects on bright matter.

Why am I talking about dark/bright matter? I think it is possible to make a parallel with language and communication, by creating a metaphor to explain emotional communication. Informational communication is the bright matter: we can see it, and certainly there are a lot of studies among linguists. Emotional communication, on the other hand, is the dark matter: we know it is there, we kind of know how to describe it, and we know it affects the bright matter. The problem of emotions in communication is that they cannot be exactly described; they cannot be laid down on a surgical table and dissected. We can infer some of their properties based on how they behave and interplay with propositional communication. In this chapter, I am going to focus on how emotional effects may affect the proposition expressed by the speaker.

The overall aim of this chapter is to show how we colour our speeches to convey emotions – or information about our feelings, based on the discussions approached in the previous chapters. For that, I will assume that emotions are non-propositional and non-conceptual. Propositions have logical proprieties and they interact with other logical forms and other concepts, which does not seem to be the case for emotions. They are non-compositional as well, because you cannot combine

parts of the discourse to understand the whole – you instinctively understand them. As we have seen in the previous chapter, natural behaviours have been described as conveying procedures that guide the utterance interpretation and may affect the propositional content of a communicative act.

In this chapter, I will focus on the third research question, *How does relevance theory account for emotions in communication?*, and analyse the following hypothesis:

- There are two levels of communication: a propositional one and an emotional one, both guided by relevance. Non-verbal communication and loose uses of language encode emotional-reading procedures that help guide the comprehension process to yield affective effects.

To evaluate it, this chapter is organised as follows: firstly, I will present how relevance theory accounts for weak communication, especially when talking about impressions. After that, I will describe emotional communication, discussing the difference between propositional and affective effects, and propose an emotional-reading procedure (following Wharton, 2009).

3.2 RELEVANCE THEORY AND WEAK COMMUNICATION

Propositional or non-propositional effects are a special issue worth discussing in pragmatics. Proposition is what is expressed by a declarative sentence to say something true or false about the external world. When we study pragmatics, what falls under the scope of a theory is normally related to the propositional content an utterance conveys: we calculate inferences, and we develop an explicature in order to create a proposition that carries a truth value. In communication, some aspects of an utterance are not coded, and need to be supplied by a pragmatic process (disambiguation, for example). Propositions are, thus, sensitive to the context of utterance. According to Moeschler (2009), a propositional effect is the result of utterance contextualisation. He defines it as “set of hypotheses or assumptions that are constructed utterance after utterance. In technical terms, contexts are subsets of the mutual cognitive environment.” (Moeschler, 2009, p. 456).

On the other hand, if propositions are suitable objects for pragmatics “because they have structural and logical properties that allow them to interact with other propositions, and other objects with similar properties (such as logical forms), in predictable ways” (Pilkington, 1994, p. 202), non-propositions do not have an easy definition, because they cannot be described as discrete objects with definable properties that relate to other objects in a predictable way. Assuming emotions as non-propositional, Pilkington (1994, p. 203) states that “Affect is vague, subjective, and possibly even epiphenomena”. Moeschler (2009) affirms that non-propositional effects cannot be reduced to propositions because they do not have a propositional content. They “result from the interaction between accessible hypotheses or assumptions during the utterance processing process and other sources of information affecting or causing the mental state of the speaker and/or the hearer” (Moeschler, 2009, p. 456).

In a relevance theory approach, when an utterance is processed, the hearer will not always operate on a full proposition, because sometimes words are loosely used and they do not encode a determinate proposition, which is the case of metaphors, or natural behaviours. In Sperber and Wilson’s (2015, p. 4) words, “there are some cases of speaker’s meaning where *The speaker meant that* ___ cannot be properly completed, not because the speaker failed to communicate a meaning, but because that meaning is not a proposition.” The question is what meaning is being communicated. To answer this question, observe examples (39) and (40), adapted from Clark (2013, p. 206):

(39) Jack: What do you think about Lily’s painting?
Mary (hesitantly): Well…

(40) (Jack and Mary have been working a lot, and they found out they still have a lot to accomplish before going home. They meet in the cafeteria.)
Jack (sighing): Oh, life.

In (39), Mary is expressing how she feels about Lily’s painting, but it is hard to pin down exactly the proposition she is expressing. We could say she did not like the paining, but not that she hated it; she is criticising it, but not in a very comfortable position. However, we do understand vaguely that she is communicating a criticism, but that she avoids expressing a full proposition. A similar process happens in (40), in

which Jack is expressing he is feeling tired of all the work he has to do, and perhaps he wants to go home. Jack's meaning in (40) is harder to determine than Mary's in (39), because the proposition being expressed is much vaguer. Sperber and Wilson (2015) explain that the best meaning of (40) is an open disjunction of propositions, and not a full proposition.

Inside relevance account, "it is possible to derive implicatures without constructing full representations of the proposition expressed or indeed of any explicatures of the utterance" (Clark, 2013, p. 206). What matters is which assumptions the speaker intends to make manifest and in which degree. The implicatures conveyed in an utterance may be either strongly manifest, in which the hearer can almost avoid recovering them, or weakly manifest. According to Sperber and Wilson (1995, p. 199),

> Strong implicatures are those premises and conclusions […], which the hearer is strongly encouraged but not actually forced to supply. The weaker the encouragement, and the wider the range of possibilities among which the hearer can choose, the weaker the implicatures.

What Jack is expressing in (40) are very weak implicatures, and the responsibility to derive them is Mary's.

Relevance theory seems to accommodate the range of weak communication under poetic effects, which "result from the accessing of a large array of very weak implicatures in the otherwise ordinary pursuit of relevance" (Sperber and Wilson, 1995, p. 224). They are described as creating impressions rather than knowledge. It is worth asking, though, how do poetic effects alter the cognitive environment of speakers and listeners? According to Sperber and Wilson (1995, p. 224):

> They do not add entirely new assumptions which are strongly manifest in this environment. Instead, they marginally increase the manifestness of a great many weakly manifest assumptions. In other words, poetic effects create common impressions rather than common knowledge.

To account for the differences in what is being expressed, Sperber and Wilson (2015) propose a continuum between determinate and indeterminate meaning. At one end of the continuum, there are cases where the speaker's meaning is fully determinate, and at the other end, there are cases involving the communication of impressions – and the speaker's meaning may not be paraphrased.

3.2.1 COMMUNICATING IMPRESSIONS

In Sperber and Wilson's original model, "no one has any clear idea how inference might operate over non-propositional objects: say, over images, impressions or emotions" (1995, p. 57). They are too vague, too subjective, too unpredictable to be part of any systematic theory of language – they are mysteries, in Chomsky's words. As Pilkington (1994, p. 202) states: non-propositional effects are "highly embarrassing phenomena for a pragmatic theory to handle". Despite this harsh assumption, Sperber and Wilson (1995, 2015) propose that relevance theory explains how we communicate an impression. They define it as "a noticeable change in one's cognitive environment, a change resulting from relatively small alterations in the manifestness of many assumptions" (Sperber and Wilson, 1995, p. 59). To illustrate it, it is interesting to analyse one of their examples:

(41) Robert, working at his desk, is wondering whether to take a break and go for a walk. He gets up and opens the window: the sky is grey; the air is chilly; clouds, some of them rather dark, are moving fast. The impression he forms of the conditions outside make him change his mind. He will stay at home. (Sperber and Wilson, 2015, p. 14)

They explain that, just like the formation of a belief, an impression may, theoretically or practically, bring a change of mind. In their example above, if Robert was asked by Mary whether to go take a walk or not, he could have answered *No*, or *The weather is meh*, or he may just open the window and point to the cloudy sky. In this continuum of possible answers, while the first conveys an exact proposition, the last one only forms an impression, and it is up to Mary to infer that he does not want to go for a walk. After the dialogue, both share the impression and the conclusion of not going for a walk.

An important concept of impressions is the notion of manifestness, which depends on the strength of belief and on salience. Even having different nature (one is epistemic and the other is cognitive), those two factors work together to make a proposition more or less manifest. The greater the degree of manifestness (an increase in epistemic strength and salience, accessibility) of a proposition, the greater the effects in the individual's thought and behaviour. It means that the

probability of a proposition influencing someone's thought will depend on two factors: a higher possibility of access and a higher degree of acceptability of it being true.

Sperber and Wilson (1995) use the notion of manifestness to give a more precise account of communication of impressions. In (44), when Robert opened the window, an array of propositions became more manifest to him: they are more likely to be accessed and more likely to be taken as true. The authors explain that Robert may be aware of the increase of manifestness without entertaining all of them as a distinct proposition. A weak array of propositions – or the impression formed – may be part of the inferential process, and it will be enough to implicate a conclusion, such as *Robert does not want to go for a walk*. In Sperber and Wilson's (2015, p. 18) words, " an array of propositions have become manifest to you, and although you are not aware of them individually, this overall change in your cognitive environment warrants the inference".

> Vague communication typically involves an intention to bring about a marginal increase in the manifestness of a very wide range of assumptions that are weakly manifest in the cognitive environments of both communicator and audience, resulting in an increased degree of similarity or mutuality.

Any ostensive communicative act aims to make mutually manifest an informative intention – to make manifest or more manifest to the audience an array of propositions *I* (Sperber and Wilson, 1995, p. 58). The array of propositions being conveyed may be identified by an enumeration – listing all members (an explicature plus any implicatures the speaker wants to make manifest); by a description (the propositions that have become more manifest to both speaker and hearer); and by metacognitive acquaintance (a certain change in the hearer's cognitive environment). The last way of identifying the array of propositions is not something new:

> We know it when our understanding of what others have in mind pleases us, angers us, shames us, makes us feel proud, and – less emotionally – makes us see things in a new light, makes us like or dislike things, makes us rethink the past and anticipate the future differently. We are often aware of the fact that a change of mind (whether or not we could spell out its exact content) was brought about by what we understood of the minds of others. What people do when they communicate is precisely to overtly reveal something of their own mind in order to bring about such changes of mind in their audience. (Sperber and Wilson, 2015, p. 20).

In communication, the array of propositions may communicate some strong proposition that may be enumerated, plus some further cognitive effects, as in (42), an example from Sperber and Wilson (2015).

(42) Jack: Do you live in London?
Mary: I live in Chelsea.

Mary's utterance implies two propositions: the explicature that she lives in Chelsea, and the she lives in London. However, if some natural behaviour is added, such as a condescending tone of voice, Mary's utterance may be carrying further implicatures, such as she does not want to see him again, or she belongs to a different social group.

The insertion of a new way of identifying a cognitive effect seems to be a very important step toward the explanation of how we communicate emotions. In the next session, I will suggest that emotional communication can be explained inside the relevance theory architecture without compromising its foundation.

3.3 EMOTIONAL COMMUNICATION

I would like to propose that communication involves two levels of comprehension, both guided by relevance: the first one involves the communication of propositions, assumptions and beliefs, in line with what has been studied in pragmatics. The second level involves emotional communication, and it is in line with a much broader understanding of pragmatics and language use, as it was proposed in the second chapter. I will call the different levels of communication as propositional communication and emotional communication.

Both levels are guided by relevance (Sperber and Wilson, 1995), which means a balance between cost and benefit: the amount of mental effort required to interpret an input compared to the derived contextual effect. In this model of ostensive-inferential communication, two properties cannot be dissociated: it has to be ostensive, on the speaker's side, and inferential, on the hearer's side. As it can be seen in Figure 3, what differentiates both levels of communication is the nature of what they yield. On one side, there are propositional effects, which are responsible

for dealing with assumptions. On the other side, there are affective effects, which are responsible for the communication of emotions.

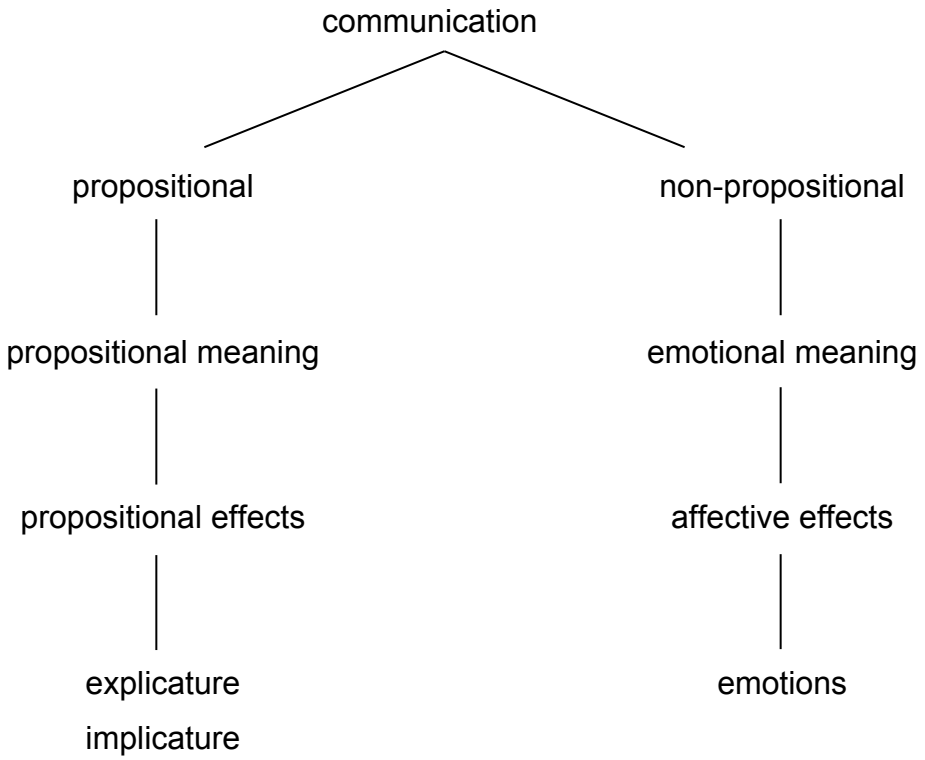

Figure 3: Levels of communication
Source: the author.

Besides that, the two types of communication are responsible for triggering positive cognitive effects, but of different natures. On one side, an utterance yields cognitive effects by means of strengthening or weakening existing assumptions; contradicting and leading to elimination of an existing assumption; or generating contextual implication, that combines the new assumptions with existing ones. On the other side, an utterance may yield an affective effect, which activates emotions. It is important to make clear that, by activating emotions, I am referring to any kind of change of the hearer's mind, similar to metacognitive acquaintance. It does not always mean the activation of a specific emotion, because sometimes what is being emotionally expressed cannot be put into words.

Sperber and Wilson (1995, p. 224) explain that affective effects are a ‘wide array of minute cognitive effects’, and they identify utterances with weak implicatures as creating affective rather than cognitive mutuality. Pilkington (2000, p. 190-191) disagrees with this idea, and he posits that:

> Although this "wide array of minute cognitive effects" may characterise and distinguish poetic effects from other kinds of stylistic effects in terms of propositions, it is not clear that the affective dimension can be reduced to such cognitive effects. In fact, I have argued for the view that the affective (or, more generally, qualitative) dimension is real and central to what is expressed and communicated via poetic effects. (Pilkington 2000, p. 190–191)

Gutt (2013) holds a similar position, stating that affective effects (which he called feeling effects) might be understood as cognitively beneficial, and it would count not as ‘an array of cognitive effect’, but as another kind of cognitive effect, which he calls “activation of feelings of emotion”. About the extension of the list, Gutt (2013, p. 6) says:

> This extension of the list of cognitive effects does not seem to be implausible from an intuitive point of view. As Sperber and Wilson suggest, one of the social values or rewards of ostensive communication is that it enlarges the mutual cognitive environment of the communication partners, e.g. with regard to shared beliefs. It seems true to experience that the sharing of feelings, too, enhances the relationship between people, and, in fact, if feelings are cognitive in nature, they, too, could arguably be part of the cognitive environment of people. Furthermore, just as understanding the beliefs of others can have important consequences for successful interaction with them, being aware of their feelings would seem to be also advantageous.

I will argue along Gutt’s lines, and propose that emotional communication is as important as propositional communication. Both levels of communication are always somehow present, more or less manifest. One can assume literature as an illustration where emotional communication is stronger than propositional communication, in which the main intention of the writer is to thrill rather than communicate a strong belief. At the other end, one can think about academic discourse, which is described as dealing with knowledge and beliefs. Even in this genre, there is some kind of communication of emotions being expressed – take for example the introduction of this chapter. I had the intention of communicating an emotion, appealing to a

metaphor to explain that emotions are always present. Emotional communication may be reduced in some situations, but I doubt they are absent.

3.3.1 AFFECTIVE EFFECTS

Assuming a two-level communication, utterance comprehension involves two kinds of cognitive effects: propositional effects and affective effects[30]. On one hand, propositional effects are traditionally related to communication, and they range from being more or less determinate, as Sperber and Wilson (2015) propose. The more determinate a proposition is, the more manifest it is to the audience; and the less determinate, less manifest. When an utterance conveys an indeterminate proposition, it communicates an impression, as proposed by relevance theory and discussed in example (41), which somehow changes the audience's cognitive environment.

On the other hand, affective effects are not traditionally studied, but they pervade everyday communication. As propositional effects, affective effects may be more or less indeterminate, in a sense that the hearer may infer more or less exactly what the speaker wants to reveal about their emotions[31]. However, opposed to propositional effects, affective effects are always indeterminate in some degree. As they are non-propositional and non-conceptual, it is difficult to pin down exactly which emotion is being conveyed and in which degree. Assuming that, it is possible to create a continuum of cases between more determinate and more indeterminate emotional effects (Figure 4).

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[30] I will use affective effect because that is how relevance theorists have referred to emotional effects. Under this concept, I will assume that any kind of emotional change in the audience mind (emotions, feelings, passions, etc).

[31] I have a hunch that more determinate emotional effects are attached to the recognition of basic emotions: fear, anger, disgust, happiness, sadness, and surprise (as Ekman describes). However, since I consider in this dissertation that emotions are a class of cognitive effects, I am not discriminating feelings from emotions. This is one of the possible directions of future research.

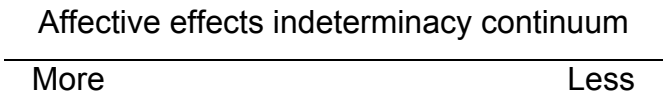

Figure 4: Emotional indeterminacy continuum
Source: the author.

On one side of the continuum, lie cases where the hearer is almost able to describe how the speaker feels. On the other side of the continuum, there are cases of less determinate emotional effects, when the utterance conveys an array of possible emotions. On this side, it is even harder to decide which emotion is communicated; all the audience experiences is some kind of change in their mind, without being able to spell out its content. In order to create a parallel with Sperber and Wilson's (2015) determinate-indeterminate continuum, we could say that, in emotional communication, what is conveyed is an array of affective effects. In this array, you may identify which emotions are being expressed or only have a sense that some emotion is present in that piece of communication.

Consider examples (43) and (44), Jack's answers to *Are you going to England this summer*?

(43) Jack (with a happy tone of voice and a big smile): To London.

(44) Jack (with a mildly depressed tone of voice): To London.

In (43), besides the propositional effects conveyed by the utterance (explicature *Jack is going to London* plus implicature *Jack is going to England*), there is a strongly manifest affective effect. Jack's answer implies that he is happy/thrilled/excited to go to London – observe that the exact emotion he feels toward the proposition cannot be recovered, but it is easy to perceive that he is neither absolutely angry nor sad about travelling to England. What guides the understanding of Jack's emotional state is his natural behaviours: tone of voice and facial expression. In (47), besides the same propositional effects having been conveyed, the emotional effects are harder to pin down, mainly because Jack's tone of voice is not as determinate as it is in (44).

There are two points that follow from those examples: the first is how they differ from the explanation provided in (42), and the second concerns the role of natural behaviours in communicating emotions.

The answer for the first question involves explicating the difference between impressions and emotions. There may be examples where an utterance conveys both impressions (an array of propositions, weakly communicated) and emotions (an array of affective cognitive effects). An example is provided in (45):

(45) Jack: Let's go to the mall.
Mary: (angrily): I'm felling tired.

(45) is an example that involves strong and weak communication, and emotional communication. It is possible to derive an explicature (*Mary feels tired*), plus a strong implicature (*Mary will not go to the mall*). Some array of weak implicatures may also be implicated (such as *You know I am tired; when I'm tired I don't like to leave the house; the mall is crowded this time of year*). The angry tone of voice indicates how Mary feels about Jack's question and not about what she feels toward the proposition being expressed. It reveals her feelings, and she makes them manifest to Jack through her prosody – it is an emotional effect. (45) is one example of how the same utterance may convey both impressions and emotions – they co-occur, but they are not competing with each other.

In (45), Mary's spontaneous tone of voice and facial expression intend to implicate that she does not want to go to the mall, and that she is angry. Jack will probably have no difficulty in understanding what is being strongly communicated, and may be able to recover some weak implicatures. However, to understand the degree to which Mary is angry, Jack will have to decode the amount of anger indexed by her tone of voice, and it depends on his natural ability to recognise emotions.

Another important point that makes impressions and emotions look alike is the fact that they both are cognitively characterised by metacognitive acquaintance, which means that the identification of an array of effects (propositions or emotions) is neither by enumeration nor by description. The speaker wants to reveal something about their mind – a proposition, a belief, an emotion – that will bring some change of mind in the hearer. It means that an act of communication triggers certain psychological effects: it may please us, shame us, make us see things in a new light.

The second question relates natural behaviours and communication of emotions. As argued in the second chapter, natural behaviours (facial expressions, prosody, and interjections) encode procedural rather than conceptual meaning,

guiding the inferential process by constraining the explicatures or by communicating emotions. They alter the salience of cognitive effects; as well as communicate weak implicatures, expressing an informative intention to inform about emotions, impressions or moods. What I want to focus on here is the capacity of non-verbal behaviours to encode procedures that communicate emotions and that constrain the possible emotional effects of an utterance. In this sense, prosody, facial expressions and interjections are inputs that allow the hearer to infer the speaker's emotional state. In (45), the emotional meaning Mary conveys is only possible to be grasped through her tone of voice (and probably, one can imagine, through her facial and bodily expressions).

Non-verbal communication is so important that I believe without it emotions would barely be communicated. Take, for example, internet-based communication, where there is no space for prosody or facial expressions. In order to communicate what they are feeling rather than what they are thinking, speakers rely on different resources, such as emoticons, gifs or images. They also use repeated vowels or punctuation marks. According to Yus (2014, p. 514), "readers are pushed into supplementary mental effort to determine the feeling or emotion that underlies the emoticon and to work out its relationship to what has been typed verbally". I believe emoticons are a way of expressing this extra layer of communication, which operates with emotional meaning.

Obviously, emotional effects are not only conveyed trough non-verbal clues, but also from words of emotion (such as love, hate, disgust) and from descriptions of emotions, which relies on specially on loose use of language. Consider (46):

(46) I had such a hard time when I was writing, I felt like my brain was melting.

In (46), even if it were uttered with a neutral tone of voice, the hearer would create an image of how the speaker was feeling when he was writing. Once again, there may be some overlap with the communication of impressions, because the array of propositions expressed is vague. Another example of how words affect emotional communication is through metaphor or loose uses of language. Take as example (47).

(47) Juliet is the sun.

Sperber and Wilson (2015, p.24) describe that the comprehension of an utterance such *Juliet is the sun* is a case of communication of impressions:

> the explicature (one might say) is Juliet is the SUN*, where SUN* is an ad hoc concept whose meaning is (vaguely) specified by mutually adjusting explicatures and implicatures in order to satisfy expectations of relevance: the explicature that Juliet is the SUN* must carry an array of implicatures which makes the utterance relevant as expected, and the sense of SUN* must be such that the UCLWPL 2015 25 explicature does indeed contextually imply these implicatures. These implicatures are weak, and cannot be enumerated. Hence, the explicature that warrants these implicatures is itself weak. There is no paraphrase in an adequate metalanguage – or even in English used as such a metalanguage – that provides a plausible analysis or rendering of the speaker's explicit meaning. Even adding starred concepts to the metalanguage (as someone might suggest) would not allow us to identify a proposition as the speaker's explicit meaning, since what a starred concept does in this context is to vaguely indicate a range of possible interpretations that are all made more manifest (i.e., more probable and salient) without any one of them being THE correct interpretation. Just as Romeo need not have intended any one of these propositions to be taken as his exact meaning, so the audience need not, indeed should not, aim to attribute any exact meaning to him

However, if we assume that there is an emotional layer of communication, then a metaphor or a loose use of language conveys not only impressions, but in a certain degree, some kind of emotion. In this sense, instead of assuming that only an array of propositions is conveyed, it is possible to sustain that an array of affective effects are present in an utterance. The comprehension of (47) would involve, therefore, two levels of effects to the hearer, a propositional and an affective, as it is illustrated in (48).

(48) Propositional effects:
Explicature: Juliet is the SUN*.
Implicatures – an impression on Romeo about the sight of Juliet.

Affective effect
Emotion – how Romeo felt about the sight of Juliet.

We have seen that non-verbal inputs, words and descriptions of emotion and loose uses of language trigger affective effects. However, as it was assumed that they are guided by relevance, they must be part of some procedural reading.

3.3.2 EMOTIONAL-READING PROCEDURE

As emotional communication is also guided by relevance, it is important to assume that there is also a balance between the mental effort required to interpret an input, and the cognitive effect derived. In the emotional side of the game, inputs worth processing are natural behaviours and loose uses of language, while the effects derived are affective ones. In this sense, the greater the mental effort to process an input, the greater the affective effects derived, and greater its relevance. In this sense, the speaker has an informative intention to communicate their emotions to the speaker. It seems important to recall that a natural behaviour may be produced spontaneously, but it may still be relevant enough to be processed. As Wharton (2009, 2015) proposes, different cases that fall in the continuum between showing and meaning$_{NN}$ are cases of communication.

In line with Wharton's (2003a, 2009, 2015) ideas, I would like to argue that, in order to be processed, non-verbal inputs, words and descriptions of emotion and loose uses of language function as emotional-reading procedures that guide the emotional interpretation of an utterance[32]. When explaining about the nature of procedural meaning, Wilson (2011, p. 17) makes an interesting remark:

> The function of the procedural expressions in a language may be to activate such domain-specific procedures. In principle, these could be of any type at all, although in practice they are likely to be drawn from modules which play a significant role in linguistic communication: these include the modules (or sub-modules) involved in mindreading (Baron-Cohen, 1995), emotion reading (Wharton, 2003a,b; Wharton, 2009), social cognition (Malle, 2004; Fiske and Taylor, 2008), parsing and speech production (Levelt, 1993), comprehension (Sperber and Wilson, 2002) and so on.

This means that non-verbal inputs, words and descriptions of emotion and loose uses of language encode emotional-reading procedures that will guide the comprehension process, and they will be interpreted to form an affective cognitive effect. For example, when someone is angry, different inputs may raise different expectations of relevance depending on subtle differences on tone of voice, facial expressions, choice of words, etc. As Wharton (2015, p. 12) states:

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[32] A very interesting investigation is to link emotional-reading procedure with theory of mind. However, this issue will not be discussed here.

> The procedural information encoded by linguistic expressives, interjections, facial expressions or tone of voice puts the user into a state in which emotional procedures are highly activated, and are therefore much more likely to be recognised and selected by an audience using the relevance-theoretic comprehension procedure.

A proposal to an emotional-reading procedure is explicited in (49):

(49) Emotional-reading comprehension procedure

a. Follow a path of least effort in computing affective effects: Test interpretive hypotheses about the emotional input that is being expressed in order of accessibility.

b. Stop when your expectations of relevance are satisfied.

The emotional-reading procedure intends the hearer to build an appropriate hypothesis about the affective content via decoding of the inputs plus any inferential process that are necessary to understand the speaker's emotional meaning. Assume, for example, that a person is talking about their memories with their grandparents and just starts crying. The hearer would pick up the natural behaviour (spontaneously produced) as emotionally relevant, and that will produce some affective effect by metacognitive acquaintance.

However if the same person is talking about their work problems, and some tears start dropping because he has some kind of allergy, that input would not be emotionally relevant, and therefore it would not be picked up by the emotional-reading procedure. In this scenario, the hearer may ask the person if that input is relevant, in order to corroborate their hypothesis.

Besides that, in the approach presented here, despite expressing emotions, non-verbal behaviours and loose uses of language may interplay with propositions, facilitating the retrieval of higher-order explicatures, conveying expressive speech-acts or propositional-attitude descriptions, as well as constraining the basic explicature, as demonstrated in the previous chapter.

Imagine Jack asks if Mary wants to go for a walk, and Mary, with an extremely depressed tone of voice, says *I don't know*. If Mary's tone of voice is understood as a relevant input, it will raise some affective effect that will interplay with the

propositional comprehension of the utterance, creating an expressive higher-level explicature: *Mary is telling me sadly that she doesn't know if she wants to go for a walk.* However, if Jack has serious problems interpreting emotions of others (he cannot state the difference between mildly sad or extremely depressed, for example), he may not grasp Mary's tone of voice, and therefore he cannot neither understand the affective effect nor create a higher-level explicature.

Imagine now that Mary's answer was *I'm really sad*, with a depressed tone of voice and a sad facial expression. Assuming that natural behaviours are procedural, they will guide Jack to (i) understand how Mary is feeling, and (ii) constrain the basic explicature, implicating how sad she was. This constraint would be indicated by a starred concept (Mary is really SAD*), as explained in chapter 2[33].

3.5 SUMMARY

Assuming a distinction proposed by Costa and Strey (2014b), communication of emotion may be perceived in language through verbal and non-verbal marks: if the aim of a natural pragmatics is to describe how the hearer infers the speaker's meaning based on the evidence provided, verbal emotions are expressed verbally through words of emotions, metaphors, loose uses, expressives, and other stylistic effects (such as morphemes, for example); and non-verbally through prosody, bodily and facial expression, interjections.

It is also interesting to observe that some affective conditions may have an important role in interpreting an utterance. It is possible to assume an emotional context, which seems to be always present in communication. It is present before, during or after the communicative act. Independent of the communicative interaction, emotions always seem to be present. Even in academic discourse – where technically there is no room for emotions – sometimes it is possible for one to be impressed by how beautiful a theory is or to grasp if the author is insecure or not

[33] I believe that this emotional-reading procedure operates in different types of communication, like arts and music, for example. Imagine you are contemplating a Van Gogh painting. Some inputs of the canvas are picked up by this procedure, and they yeld indeterminate affective effects – and you cannot exactly describe it, you just feel something. I am not in a position to state which inputs are responsible for triggering those effects, because I am not an expert in arts

about their work. Strey and Presotto (2015) argue that emotions are pervasive in communication, so they have to be present in all communicative acts, from literature, where pleasure and emotions are desired, to academic discourse, which is formal, rational. I will assume, though, that *verbal emotions* are expressed in different degrees depending on the occurrence. Thus, on a scale from 1 to 10, literature is the one that most triggers impressions, while academic speech is where emotions are mitigated, precisely because of its rational and informational quality.

Overall, this chapter aimed to elucidate how we convey our emotions through our speech, based on the discussions made in the previous chapter. The main contribution was the proposal of two levels of communication: one propositional and one emotional, both relevance-driven. At the same time, I showed that non-verbal inputs, words and descriptions of emotion and loose uses of language encode an emotional-reading procedure, which guide the comprehension process in order to yield affective effects.

In emotional communication, there is a parallel with the determinate-indeterminate meaning continuum, which was called emotional indeterminacy continuum, because emotions are non-propositional and non-conceptual. On one end, the speaker intends to make strongly manifest his emotions, and on the other end, there is an array of weak possible emotions. Both of them somehow change the hearer's cognitive environment.

What I proposed here was not an ad hoc solution in order for relevance theory to account for emotions, but a more specific explanation of how emotions are expressed in communication. The proposal does not compromise the theory, it just reorganises what other authors have already studied.

Overall, I think I just shed some light on the dark side of communication.

FINAL REMARKS

The present dissertation has achieved its goal to broaden relevance theory in order to account for emotions in communication, evaluating its descriptive-explanatory potential. In order to achieve my aims, this dissertation was organised in three chapters, and each of them comprehended one of the research questions and its corresponding hypothesis. They are somehow independent, even though it is possible to observe a thematic progression. In this sense, I aimed to build three distinctive chapters that work not only isolated from each other, but also in interaction.

In chapter 1, I approached the question *How do emotions relate to language and communication and why does this relationship have to be interdisciplinarily grounded?*. The hypothesis was that in a perspectival analysis, emotions are a complex object that can only be interdisciplinary studied. In this sense, to be part of a linguistic study, the investigation about language meaning has to start from what is explicitly expressed in the utterance and from what is part of its context. The hypothesis was corroborated by an exploration of some interdisciplinary areas, such as philosophy of language and neuroscience. In order to evaluate it, I described the interdisciplinary basis for the investigation, by firstly setting the grounds for an interdisciplinary study, followed by how philosophy of language explained emotions, and finally approached emotions and neuroscience. The findings in this chapter provided basis for the argument developed in the next chapter.

The second chapter aimed to answer the question *How to account for non-verbal aspects of communication?*. The hypothesis was that communication involves both verbal and non-verbal behaviours, such as facial expressions, and prosody. Those non-verbal aspects are picked up by a relevance-comprehension heuristic, and they may alter the salience of cognitive effects, encoding procedural rather than conceptual meaning. They also convey a wide array of weak assumptions, communicating emotions and impressions. The main objective of the chapter was to argue for Wharton's natural pragmatics, which is a proposal for understanding pragmatics in a broader sense. For that, firstly I briefly presented how Gricean pragmatics explains language in context, followed by a discussion about relevance theory framework. Then, I introduced Wharton's (2009) natural pragmatics, approaching natural behaviours and procedural meaning. Finally, based on that, I

described how interjections, prosody, and facial and bodily expressions affect communication. I focused mainly on their emotional aspects. This chapter is key for the development of the dissertation, because it set the basis of a broader pragmatics, and for the discussion of how emotions are communicated.

Finnaly, chapter 3 aimed to reorganise relevance theory in order to explain emotional communication. It answered the third research question*: How does relevance theory account for emotions in communication?*. I proposed that there are two levels of communication: a propositional one and an emotional one, both relevance-driven. I argued that non-verbal behaviours, words and descriptions of emotion and loose uses of language encode emotional-reading procedures that help guide the comprehension process in order to yield affective effects. To assess my hypothesis, I presented how relevance theory accounts for weak communication, especially how they conceptualise the communication of impressions. After that, I described emotional communication, mainly by discussing the differences between propositional and affective effects. Following that, I proposed an emotional-reading procedure, following Wharton (2009).

Overall, the main topic discussed here is an example of the recent developments in scientific search. There is a considerable number of works changing the rationalist paradigm and moving towards a more emotion-integrated one. The change of paradigm has also reached Linguistics. How to talk about language in use without explaining how words may have a cathartic effect on people's feelings? There is neuroscience research, for example, that shows that when in pain, uttering a taboo word may decrease the pain being experienced.

In the last chapter I created a metaphor concerning dark and bright matter in order to explain how emotions are so present in everyday communication, but we still know little about how they affect our comprehension process. I hope this dissertation shed some light on how emotion and communication are bound to each other. However, due to the complexity of the object, this dissertation limits itself to the three hypotheses proposed. It does not discuss every point about emotional communication, but it aims to be the tip of an iceberg, indicating future development in this research area. It is not intended to be a complete work, neither a description of the state of art. It was an attempt to look beyond the traditional semantic-pragmatic lamppost, trying to understand what is beyond the speaker's propositional meaning. As Sperber and Wilson (2015, p.25) state: "Like the proverbial drunkard in the night

looking for his glasses under the lamppost not because of any strong reason to believe that they were there, but because at least he could see there, students of language have stayed close to the lampposts of semantics and logic".

I finally would like to say that, given the complexity of the issue addressed, there is room for further research. In the near future, I hope I can address other questions that are result of what has been developed here, as well as questions that do not directly follow from this topic, but are very much related. Wharton and I (*forthcoming*) are currently working on a paper, and I hope we can discuss how the emotional indeterminacy continuum may interplay with the determinate-indeterminate continuum and the showing and meaning$_{NN}$ continuum. Another interesting point is how emotions affect different types of dialogue, and which verbal emotions work as triggers to emotional inferences (Campos and Strey, 2014a, 2014b). I would also like to observe how affective effects are present in different genres of text, such as literature and academic discourse, for example – research I have been undertaking with Presotto (2015). Another important question involves Brazilian Portuguese prosody, which not only expresses emotion, but also affects the proposition expressed (Monawar and Strey, 2014).

Overall, I hope this dissertation has contributed to a better understanding of how communication and the language of emotions are related, specifically regarding relevance theory's ostensive-inferential approach. I also hope this research will be somehow useful to further works in linguistics, as well other cognitive sciences and artificial intelligence areas.

Run, rabbit run.
Dig that hole, forget the sun,
And when at last the work is done
Don't sit down it's time to dig another one.

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Pontifícia Universidade Católica do Rio Grande do Sul
Pró-Reitoria Acadêmica
Av. Ipiranga, 6681 - Prédio 1 - 3º. andar
Porto Alegre - RS - Brasil
Fone: (51) 3320-3500 - Fax: (51) 3339-1564
E-mail: proacad@pucrs.br
Site: www.pucrs.br/proacad