

The subject matter of culture: constraints, attunement and information

O tema da cultura: constrangimentos, afinação e informação

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ABSTRACT

Naturalistic accounts of culture share the assumption that culture is nothing more than information in people minds/brains and the environment. They do not provide, however, neither a definition nor a theory of information. I address this lacuna adopting a theory of information called "Situation Theory" (Barwise and Perry, 1983). I argue that the notions of *constraint* and *attunement* allow to account for cultural information, and, furthermore, that culture is, at a fundamental level, constituted by a set of constraints. Constraints are necessary for information to flow, and attunement to constraints is necessary for an organism to exploit such cultural information.

Keywords: Situations, situation theory, naturalistic theories of culture, cultural groups, constraints, conventions.

RESUMO

Os relatos naturalistas da cultura partilham o pressuposto de que a cultura não passa de informação nas mentes/cérebros das pessoas e no ambiente. No entanto, não fornecem nem uma definição nem uma teoria da informação. Abordo esta lacuna adotando uma teoria da informação chamada "Teoria da Situação" (Barwise e Perry, 1983). Defendo que as noções de *restrição* e de *sintonia* permitem explicar a informação cultural e, além disso, que a cultura é, a um nível fundamental, constituída por um conjunto



de constrangimentos. São necessários constrangimentos para que a informação flua, e é necessário a sintonia com os constrangimentos para que um organismo explore essas informações culturais

Palavras-chave: Situações, teoria da situação, teorias naturalistas da cultura, grupos culturais, constrangimentos, convenções.

Introduction

When social sciences started to consider culture as a proper object of study, Tylor (1871) famously provided a definition that conditioned how social scientists would think about culture:

Culture (...) is that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society (Tylor, 1871, p. 1).

Culture is a complex phenomenon. It comprises various kinds of items together. Items that range from ideas to artifacts: from things that are in people's minds, to things that are external to their minds. As Jesse Prinz puts it, Tylor's definition of culture "packs in too much" (Prinz, 2011, p. 2).

Naturalistic approaches to culture try to explain culture in causal and material terms without appealing to supernatural entities such as collective minds or souls. In my view, the three main contemporary theories are *memetics* (e.g. Dawkins, 1976; Dennett, 1999; Blackmore, 1999); *the standard evolution* approach (Cavalli-Sforza and Feldman, 1981; Boyd and Richerson, 2005), and the *epidemiology of representations* (Sperber, 1996; Claidière et. al, 2014).¹

Despite their various terminological, methodological and conceptual differences, they share at least one metaphysical assumption about culture. Independently of the kind of item they use to define the subject matter of culture —representations or memes—, or which notion is taken to explain cultural items —traits, ideational and empirical units, instructions...—, naturalistic approaches agree in defining culture as information.² They all assume that culture basically consists in a collection of items such as ideas, beliefs, songs, fashions, political ideals, tools, artifacts, cooking recipes, ethnic prejudices, folktales, rules, skills and so on, which are best characterized using the notion of information. More precisely, according to them, culture is the information repeatedly distributed in a group through chains of non-genetic (social) transmission, and it is by such information that cultural items are individuated.

Thus, information is the most basic notion in the explanation of the subject matter of culture; what "information" means and how organisms obtain, store and share it becomes crucial. These approaches, however, do not provide a proper definition or even a preliminary characterization of the notion of information where they ground their conception of culture (Lewens, 2015, p. 44).

In this paper, I try to fill that lacuna using the theory of information provided by Situation Theory, and I show that, in fact, such a theory of information makes apparent some limitations of naturalistic

¹ Although they currently label the approach "cultural attraction theory" (CAT) (Scott-Phillips et. al, 2018, p. 162) I prefer to keep the term "epidemiology of representations" for the purposes of this paper.

² "'Culture' refers to this widely distributed information, its representation in people's minds, and its expressions in their behaviors and interactions" (Sperber and Hirschfeld 2004, p. 149).

"Culture is information capable of affecting individuals' behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission" (Boyd and Richerson 2005, p. 5).

"[W]hat is such a habit made of? What gets passed from individual to individual when a habit is copied? Not stuff, not packets of material, but pure information, the information that generates the pattern of behavior that replicates. A cultural virus, unlike a biological virus, is not tethered to any particular physical medium of transmission" (Dennett 1999, p. 317-318).

theories of cultures. In particular, these theories ignore basic constituents of culture like implicit conventional regularities that are the conditions of possibility of information and, hence, of cultural items. Within Situation Theory we can deal with these regularities via the notion of *constraint*. Constraints are fundamental to information (Israel and Perry, 1990, p. 3) and *being attuned to constraints* is a necessary condition for organisms to get information from the environment (Barwise and Perry, 1983, p. 10). If I am right, these notions are crucial for the explanation of culture; not just because they are useful conceptual tools for explaining cultural information, but, most importantly, because culture in its most fundamental level is made out of constraints, as I argue.

In section 1, I present some basic notions of Situation Theory: *situation*, *constraint* and *attunement*—which, as I argue, are key to rethink the subject matter of culture. In section 2, I develop and explain various *modes of being attuned*. In section 3, I develop my own approach, which I call “Constraint-Based,” and results from an application of the situation theoretic notions to the analysis of culture. Finally, I draw some general conclusions.

1. Elements of a theory of information for culture

The basic notion of Situation Theory is the notion of *situation*. Situations are parts of the world, which are taken as primitives of the theory. It corresponds, roughly, to our intuitive notion of a situation: me, here right now typing these words; the football match in Camp Nou yesterday; our family dinner in Bilbao last Christmas ... Small or big, remote or in my closest vicinity, situations are *parts* of the world we live in, they are “basic and ubiquitous. We are always in some situation or other” (Barwise and Perry 1981, p. 668).

We can cause situations to come about (e.g. I’m typing these words now); we perceive them (Alan saw the football match in Camp Nou yesterday); we think about them (I think that our family dinner in Bilbao last Christmas was fun) or talk about them (as I’m doing now). We do all this because our cognitive activity (in thought and action) classifies situations in terms of “objects having attributes and standing in relations to one another at locations—connected regions of space-time” (Barwise and Perry 1981, p. 668).

There are many things going on in situations. Whatever the size of situations, there is an indeterminate number of things going on in them. In the situation I characterize as “me, here right now typing these words,” all the following is going on:

- I am sitting on a particular chair.
- I am in front of a particular computer.
- I am typing on the computer’s keyboard.
- I am breathing.
- The computer is on.

Those states and events that occur in situations are what Situation Theory calls *states of affairs*.

Since there is an indeterminate number of states of affairs going on in a situation, we, as living organisms products of evolution, pick up the ones relevant to us and identify situations according to those relevant states of affairs. If I am crossing a street, I see a car that is coming towards me while crossing and the driver is not slowing down, I would not identify the situation as “the driver of the car is breathing,” “the driver is sitting in the car,” “the car is red,” and so on. I most probably will identify the situation as “a car coming towards me”. It is relative to what we identify is going on in situations that we behave in one way or another. Thus, if I identify the situation as “a car coming towards me” my way of behaving would be to run, which may not occur if the situation is identified otherwise.

Objects, relations and space-time locations are the building blocks of states of affairs. Situation Theory pulls those out from real situations and takes them as “primitives” for representing the “internal structure” (Barwise and Perry, 1983, p. 53) and the relations between situations. In short, objects are real

individual things like me, a particular chair, or a croquette; *relations* are also part of the “furniture” of the world, e.g. sitting on, scoring, eating. Relations have arguments. Relations with only one argument are called *properties*; and *locations* are spatio-temporal chunks of space and time, that is, regions of space and moments or time intervals, such as here, now, Camp Nou yesterday (5 to 7pm), or the US during the last two months.³

Objects, relations and locations are items that we find and recognize across situations. Think about the following situation, me sitting on a chair at Starbucks now (March 8th, 2021, at 11:00 am). The objects (me and the chair) and the relation (SITTING-ON) were also part of other situations, for example, the situation in which I was sitting on the same chair yesterday at X. In short, objects, relations and locations are invariants or “uniformities,” using situation-theoretic terminology. Pulling out those uniformities allows us to identify that a real situation *s*, for instance, is a situation of various sorts or types. As we have seen there is an indeterminate number of things going on, but can classify it by the state of affairs $\sigma < \langle \text{SITTING-ON, me, chair, at Starbucks - March 8}^{\text{th}}\text{-11am; 1} \rangle \rangle$.⁴

s is a real situation that supports, among others, a state of affairs in which some objects stand in a relation at a particular location. The objects (me and the chair) and the relation (SITTING-ON) are also part of other situations, for example, the situation in which I was sitting on the same chair yesterday at Starbucks. They belong to the type of situation in which I am sitting on a chair at Starbucks, no matter when; or to the type of situation in which I am sitting on a chair somewhere, sometime... The point should be rather obvious by now. Abstracting from the constituents of a state of affairs, we can build all sorts of types of situations.

We can say that being aware of the situation I’m living in is to *classify* it in terms of the types of situation it belongs (or doesn’t belong) to. In other words, identifying the state of affairs supported by a situation amounts to classifying the situation as belonging to certain types. Types of situation are central to distinguish the information *contained* in a situation and the information *carried* by it.

1.1 Constraints

Constraints are relations between types of situations (*S*, *S'*,...), for example the relation between situations containing some kind of tree with a number of rings and situations involving their age. This is how a constraint can be formalized: *S involves S'* ($S \Rightarrow S'$) states that if there is a situation of type *S*, then there is a situation of type *S'*. For example, if I am holding a pen and I drop it, then it will fall. It can be formulated like this:

C: if an agent drops the pen she is holding, then the pen will fall.

There are mainly two kinds of constraints: natural and conventional. Natural constraints are “inviolable patterns in nature... patterns that are usually called natural laws” (Barwise and Perry, 1983, p. 98). One may be tempted to think that since these constraints are inviolable they always hold. Nonetheless, natural constraints are environment dependent, i.e. they are local. *C* is a natural constraint that holds in a certain environmental setting (*the planet Earth*). In the International Space Station, however, *C* does not hold. This is because, apart from being natural, *C* is also conditional. If I recognize the situation *s* as a type of situation *S* in which someone is dropping a pen, thanks to *C* I’ll anticipate an immediate situation *s'* of type *S'* in

³ See Barwise and Perry (1983, p. 7-9, 50-51) for a detailed account of these concepts.

⁴ The number 1 is the polarity item of the state of affairs, which represents that the arguments stand in that relation at that spatio-temporal location. The state of affairs with the same relation, arguments and spatio-temporal location but with a 0 as the polarity item is called the dual of $\sigma 1$.

which that pen falls.⁵ However, if I am in the International Space Station and one of my companions drops the pen she is holding, C will provide me wrong information about the next situation, since in the International Space Station C does not hold. Instead C' holds in the International Space Station.

C' : If an agent drops the pen s/he is holding, then the pen will float.

Natural constraints are thus the constraints that scientists look for. This is, in few words how constraints are basic to the phenomena of information. A real situation s carries information about a situation s' relative to the constraint C : $S \Rightarrow S'$. s can be classified as being of the type S and s' of the type S' . And when an organism is *attuned* to this constraint, it exploits the constraint to extract information about s' from s . Notice that based on this we can explain how bacterium can get information from their environment without the need of representations.

1.2 Conventional constraints

The notion of attunement has clear parallelisms with notions such as know-how and implicit knowledge (and cognition). However, going further than an intuitive elucidation of these concepts is beyond the scope of the present work. My concern is with humans and their culture, and as it will become clear, a distinction between explicit (representational) knowledge and attunement will prove useful. It will be helpful to say a bit more about conventional constraints, which are the most important ones for our topic. As we shall see, "cultural constraints" are conventional constraints with some special features.

Conventional constraints are the ones that "arise out of explicit or, more often, implicit conventions that hold within a community of living beings" (Barwise and Perry, 1983, p. 98). Examples of conventional constraints are giving two kisses to a person when greeting her, or ringing the bell to let students know that the class has finished.

These constraints arise in a community of living beings and hold if they are exploited in their community environment. That is to say, conventional constraints are local. For example, the way of greeting varies in different places and my way of greeting people by giving them two kisses is only held by a particular community. I follow the constraint C_1 : if I give a person two kisses, then I am greeting this person, but in other groups the constraint might not hold. Instead, another constraint C_2 might hold: if I give two kisses to a person, then I am offending that person and her family.

Another important feature of conventional constraints is that they are *violable*. These constraints relate two situations in a way such that they "only [constrain] the way things fall out when the convention is not violated" (Barwise and Perry, 1983, p. 18). For example, conventional constraints "governing" greetings can be violated. There is a constraint operating in my community environment that relates a person greeting some other person, and that other person returning the greeting. However, you may greet me, but I can violate the constraint by, for whatever reason, not greeting you back.

The existence of conventional constraints depends on people exploiting them. Conventional constraints are not imposed upon us by nature but established by us, both individually and socially, and are maintained as long as they continue being exploited. A clear example of this is the case of language.

The goal of Situation Semantics is to find out what the constraints in language are, and these constraints are conventional:

Our knowledge of language consists primarily of implicit knowledge about implicit conventional constraints. That is, to know English (...) is all knowledge about various conventional constraints that hold

⁵ See McIntyre et al. (2001) for an experiment involving catching a baseball in the space.

within our linguistic community. And it is this implicit knowledge that those of us who study language attempt to make explicit (Barwise and Perry, 1983, p. 98-99).

I think that this is right about language. On the one hand, by knowing a language we usually mean having an “implicit knowledge about implicit conventional constraints,” in my terminology, as we will see, that is to be *simply attuned* to conventional constraints. On the other hand, the conventional constraints of a language holding within a linguistic community involve a set of individuals having this implicit knowledge about those conventional constraints. But this is not the case, I think, for all conventional constraints.⁶

As I take the concept of convention and, hence, the notion of conventional constraints, it is possible for an individual to create a conventional constraint without the involvement of any group or set of other individuals. Take the example of my method of organizing the notes for my research. The colors of post-it-markers stand for various notions: blue is for “constraint,” green for “culture,” yellow for “epidemiology of representations” and red for “meme.” The post-its help me find those notions across the papers on my desk. As I use this method systematically, I establish four constraints, four systematic relations between types of situations, or regularities,⁷ where a tab of the color x on a page involves that the concept y appears on that page. I think these constraints deserve to be considered conventional even if they are entirely personal.

I am not giving a general account of what “conventions” are. But I think it is reasonable to label purely individual constraints, such as my post-it constraints, as conventional: they are violable (I can put in a yellow color post-it a note about “culture”), they depend on my (implicit) knowledge, and they are established by non-genetic means, if they are established at all.

Thus, as I take it, a conventional constraint does not require a community per se. We don’t need to think about conventional constraints as a coordination problem between individuals (Lewis, 1969), as regularities in action or belief, nor as products of an implicit or explicit “common interest” (Lewis, 1975, p. 4), requiring always more than one individual.⁸

If we accept that a convention can be purely individual, then, conventional constraints need not be cultural, while all cultural constraints are necessarily conventional.

2. Getting information: Modes of attunement

In Situation Theory there is no detailed elaboration on this, but I think it is reasonable to distinguish various modes of attunement. As we have seen, attunement is a fundamental relation between living organisms and constraints, a relation fundamental to the explanation of how the organisms cope with the world. We have contrasted attunement with knowledge. One of the main differences can be put like this: while attunement is a “direct” relation between organisms and constraints, knowledge is an indirect relation always mediated by the (explicit) representations of constraints.

I distinguish three different modes according to the organism’s level of awareness, or lack thereof, about its attunement to the constraint. This applies both to natural and conventional constraints, though it has a special implication for the case of conventional and cultural constraints. For the latter, it

⁶ Of course, this is oversimplified. I talk a bit more about our implicit knowledge of (or, as I prefer to say, attunement to) linguistic constraints below, but note that I am talking here about the implicit knowledge of a particular natural language, and not about the process of acquisition, which, admittedly, can be driven biologically (Chomsky, 1965). As I see it, we are naturally endowed to acquire any language, and that has to do with natural constraints. But then, as a product of the acquisition of one particular language and not another, we become attuned to one particular set of conventional constraints and not another.

⁷ It is generally agreed that conventions are “regularities in action, or in action and belief” (Lewis, 1975, p. 4).

⁸ Unless we take the past, present and future stages of a person as different individuals which coordinate.

will be worth looking at the different ways in which attunement to a constraint can be *shared* by a set of people. I'll discuss the last point in Conclusion.

2.1 Simple attunement

Simple attunement (s-attunement, for short) corresponds to the mode of attunement described by Barwise and Perry. Living organisms are attuned to natural constraints without needing any explicit representation of it. It is in their biological architecture, built upon genetic transmission, to be attuned to the constraint. They need not be aware of it. And often they are not. Living organisms on earth are attuned to the gravity of earth. Most of them are not aware of it most of the time.

Humans have the capacity of becoming aware of their attunement to some constraints, but they do not need to be aware of them to be attuned. As we have already said, when things work reasonable well, we are not aware of the constraints nor of our attunement to them. If we assume, as Situation Theory does, that a language is a set of conventional constraints, the members of a particular language community are attuned to those constraints. In a monolingual community, native speakers are not usually aware of the language they speak and they are not normally aware about their attunement to their own language.

I will use the term s-attunement for this kind of attunement of an organism to a constraint: the case in which *an organism is attuned to a constraint, without being aware of that fact*.

2.2 Aware attunement

When things go well, we often are s-attuned to constraints. For example, in your youth, you may not be aware that you speak a certain local variety of a certain dialect of a certain language. Then, one day, a guy from a neighboring region laughs at you because of your "accent;" and you realize that there are different dialects and local usages. You don't know how your dialect exactly is, but you become aware that you are attuned to a certain dialect. I call this "aware attunement" (aw-attunement), which can be defined thus:

The agent x is aw-attuned to constraint C if and only if x is aware that she is attuned to C.

You speak a certain dialect of a certain language, and now you are aware that you speak it. However, if asked the difference between your dialect and the neighboring region dialect, you cannot tell much more than that they are different, and that you speak one and your neighbors speak the other.

2.3 Fully conscious attunement

With some attention and study of your own linguistic practices and the contrast with other dialects you could get an explicit representation of your distinctive constraints. You can notice that if you want to denote butterflies you use "tximeleta." That's the constraint to which you are attuned. Your neighbors use different words. The ones in the West use "mitxeleta"; the ones in the North "pinpilinpauxa". And you make explicit other differences regarding not only the lexicon, but, say, phonological and phonetic features too. In cases like this, I talk about "fully conscious-attunement" (fc-attunement), which can be understood in the following way:

The agent x is fc-attuned to constraint C if and only if she is attuned to C and she is also aware that C consists in $S \Rightarrow S'$.

The difference is now that the agent has an explicit representation of the constraint she attuned to. In this sense, we can say that she *explicitly knows* she's attuned to constraint C: $S \Rightarrow S'$. This must not be confused, though, with mere knowledge of the constraint C: $S \Rightarrow S'$. The notion of fc-attunement to a constraint is different to the notion of knowledge of a constraint. In other words, the logical relation between these two statements is the following one:

If the agent x is fc-attuned to C: $S \Rightarrow S'$, then she knows C: $S \Rightarrow S'$.

However, it is not the case that

If the agent x knows C: $S \Rightarrow S'$, then she is fc-attuned to C: $S \Rightarrow S'$.

And the same goes for s- and aw-attunement. That is to say, knowledge of a constraint doesn't involve attunement (in any of its modes: s-, aw- or fc-attunement). You may now that your Northern neighbors are attuned to the following constraint:

"Pinpilinpauxa" means butterfly,

and thus your knowledge permits you to exploit (by means of a representation) that constraint when talking to them. You can understand their utterances and you can use that knowledge in yours. That doesn't mean that you are automatically attuned to the constraint. In everyday life, talking to people of your town or abroad you will tend to use the word "ximeleta" for butterfly, if that's the constraint you were attuned to from your childhood.

Think about pedestrian street crossing. When a pedestrian is about to cross a (double-direction) street in a right-hand traffic (RHT) country, vehicles come from her left, while in a left-hand traffic (LHT) country they come from her right. But the knowledge of this does not lead to the pedestrian to be attuned to it. This is what happened to me the first time I went to London. I knew that I had to look to my right before crossing the street—a friend had told me about it. I also noticed the warnings telling me "LOOK RIGHT". Anyway, being attuned to traffic in a RHT country, I involuntarily put myself in various dangerous situations, when I systematically looked to my left. Given my attunement, my explicit knowledge was quite useless. It took some time, and some angry car horns to get attuned to the constraint of LHT in the UK.

These various modes of attunement and their difference with explicit knowledge are central to the constraint-based approach to culture that I defend. It is in virtue of agents being attuned to constraints that they can extract information from situations. More precisely "[a]ttunement to these constraints is what *allows an agent to pick up information* from one situation about another" (Barwise and Perry, 1983, p. 94).⁹ So the information agents pick up depends on the constraints agents are attuned to. I show in the following sections how these distinctions shed some light on the notions of implicit and explicit knowledge, often invoked but rarely addressed in naturalistic approaches to culture.

3. What is culture about

According to my view, the fundamental subject matter of culture is constituted by what I call "*cultural constraints*," that is to say, *conventional constraints* to which a set of people are *attuned*. In a nutshell,

⁹ Emphasis mine.

it is the attunement of some individuals (more than one) to a conventional constraint that makes the constraint cultural, and also makes the set of individuals a cultural set. This is culture at its most fundamental level. More complex forms of culture arise out of this fundamental level. First, let me tell a story.

3.1 *Marta's mornings*

3.1.1 The story

Marta is new in town. She went to Bilbao from Madrid for a job as a researcher. She has already met her new co-workers. They seem nice. She will share an office with them. On her first working day, she arrives a bit late. She is shy and she is also a little nervous. She utters: "¡Buenos días!". Nobody answers. She thinks they probably didn't hear her. She'll have to utter it louder next time.

And she does. On day 2, she utters "¡Buenos días!" to make sure they hear her this time. Same result. Nobody answers back. "What's wrong with these guys? How can they be so rude? Or perhaps, it's me. Perhaps they don't like me," she thinks. Then Laura, the co-worker from Valencia arrives and utters "¡Buenos días!" with no answer either, not even from Marta. "So, it's not me," she thinks. Perhaps it's the language. She remembers someone had told her that, given the linguistic and cultural diversity of the members of the Institute, the working language at X was English. So on day 3, she tries uttering "Good morning!" but the result is the same as before.

Perhaps it has something to do with the local language. She searches her dictionary and on day 4 she tries "Egun on!". No answer. So, after much hesitation, she reprimands the guys: "What's wrong with you? Why don't you reply when someone comes in and says 'good morning'?" They look at her startled. "What do you mean, we don't reply?" says Igor, "We always answer, don't we?". Mikel and Jon nod: "Yes, we do."

On day 5, Marta says "¡Buenos días!". They all answer "¡Buenos días!". When Laura arrives, and says "¡Buenos días!", they all answer "¡Buenos días!", including Marta.

On day 6, Marta says "Egun on!". They all answer "Egun on!". When Laura arrives, and says "¡Buenos días!", they all answer "¡Buenos días!", including Marta.

On day 7, Marta says "Egun on!", but there is no understandable answer. Igor has produced some unrecognizable sound; something like a grunt. Jon and Mikel produce no sound. When Laura arrives and says "¡Buenos días!" there is no grunt even. But Marta observes that they make a little upward movement of their heads.

On day 8, Marta says "Good morning!". No sound at all. She notices, however, that head movements were accompanied by small raisings of eyebrows. When Laura arrives, and says "¡Buenos días!", she guesses that the head movement and eyebrow raising are systematic.

From day 8 on, she's quite certain that that's the way Jon, Igor and Mikel respond to a greeting in the office. Whomever the greeter is, whatever language the greeter is using, they lightly raise their heads and eyebrows with or without producing an accompanying inarticulate sound.

3.1.2 The account

Our constraint-based account offers a natural explanation of what's going on with Marta's mornings. She's attuned to the following (cultural) constraint:

C_i : If x greets y , then y greets x back.

She never thought much about it. It might well be that she is not aware of the constraint and of her attunement to it. Until coming to Bilbao and meeting Jon, Igor, and Mikel, it always worked. That

means that the people she has met so far in Madrid, in Valencia and other places were attuned to C_1 , or perhaps, more specifically, to

C_2 : If x says “¡Buenos días!” to y , then y says “¡Buenos días!” to x .

C_1 and C_2 are conventional constraints. They are not transmitted genetically, but “culturally.” They are violable. As Marta has learnt by experience, people may choose not to respond to a greeting. In her experience, the constraint worked most of the time. And, again, since it worked, neither she nor her fellow citizens needed to be aware of the constraint and their attunement to it: “[c]hildren use words to convey information about their wants and needs long before they are conscious of words as words” (Barwise and Perry, 1983, p. 18).

Following our distinction between modes of attunement, we can say that Marta’s attunement to a constraint is a case of *s-attunement*. We can say now, that before coming to Bilbao mornings, Marta was *s-attuned* to C_1 and C_2 , as were her fellow citizens of Madrid and Valencia.¹⁰ As she never gave a thought to it, she does not even distinguish between C_1 , C_2 , or any other greeting constraint. No mental representation is presumed for *s-attunement*; just the capacity to recognize or identify a situation as a greeting situation type and act accordingly, by greeting back.

Marta’s *s-attunement* to C_1 and C_2 changes on day 1, when she gets no reply to her greeting. For one thing, she becomes aware that she is attuned to some greeting constraint; a constraint that, for some reason, seemed not to work that day. She might not have an explicit representation of what her greeting constraint is, but she is aware that she is attuned to a certain constraint; the same constraint that her fellows from Madrid and Valencia are *s-attuned* to. So Marta is now *aw-attuned* to C_1 and C_2 . *Aw-attunement* does not require Marta to have an explicit mental representation of C_1 or C_2 . It just requires her attunement to the constraints plus her awareness of it.

On day 2, she is not *fc-attuned* yet. She did not think again about the particular constraint she was attuned to, and at the time she thinks that, as far as she knows, the Basque guys might be attuned to the very same constraint. The problem might be a problem of perception. They just didn’t hear her utterance. So, she tries a louder greeting. When that doesn’t work, she starts considering other possibilities. She thinks about the constraints she is attuned to, and she explicitly thinks about C_1 and C_2 . She is now *fc-attuned* to C_1 and C_2 .

She thinks that Jon, Igor and Mikel might be attuned to C_1 and C_2 . After considering and abandoning various options, Marta thinks about the language. She thinks they may be attuned to C_1 but not to C_2 . So she tries C_3 and C_4 on days 3 and 4:

C_3 : If x says “Good morning!” to y , then y says “Good morning!” to x .

C_4 : If x says “Egun on!” to y , then y says “Egun on!” to x .

But they do not work. She is starting to lose hope with these people, and to think that they are not even attuned to C_1 . And that’s when she reprimands them. But they are surprised. As far as she could tell after challenging them, they were attuned to C_1 and C_2 . Now, how do we explain their answer, assuming they were being sincere?

We have again a natural account of the events. After Marta’s reprimand, they explicitly represented the constraints C_1 and C_2 . So, we can say that they know the constraints, they accept them, and they

¹⁰ I will shortly distinguish between various modes of sharing attunement to a certain constraint, at the plural, social or cultural level.

believe they are attuned to them. If they were attuned to them, they would be fc-attuned to them. But they are not fc-attuned; not even aw-attuned or s-attuned. Knowing a constraint does not involve being attuned to it, as being attuned to a constraint doesn't imply knowing (having an explicit accurate representation of) it (Acosta, 2017).

Jon, Igor and Mikel know the constraints C_1 and C_2 ; they have an explicit representation of them and they can act upon them. They can exploit them. On day 5 and 6 they do it. They use their mental representation of C_1 and C_2 and respond accordingly to Marta's and Laura's greetings either in Basque or Spanish. But it didn't last. Two days acting according to C_1 and C_2 was not enough to get them attuned to them. Whatever Jon, Igor and Mikel think about the greeting constraints they are attuned to, Marta has noticed that there is another constraint holding in the office among the five researchers:

C5: If x says "¡Buenos días!/Good morning!/Egun on!" to y, then y raises their head and eyebrows to x.

And that C_5 always holds only when x belongs to the set {Laura, Marta} and y belongs to {Jon, Igor, Mikel}. She likes C_2 in whatever language better than C_5 , but she is afraid it might evolve into

C6: If x raises their head and eyebrows to y, then y raises their head and eyebrows to x,

with x and y ranging over the whole set of researchers in room C_8 of the institute. Still that would be better than abandoning any attunement to C_1 altogether.

3.2 Cultural constraints and groups

I am now in a position to state in more precise terms what I take to be the fundamental notions of culture. Standard naturalistic approaches to culture define it as "widely distributed, long-lasting representations" (Sperber, 1996, p. 57) "that are widespread and enduring in a social group" (Sperber, 1996, p. 25). Our first and most important difference with that view concerns the subject matter of culture. In our view, it consist not in representations, but constraints; and not any kind of constraints, but just conventional constraints; and not any conventional constraints, but those to which more than one individual is attuned.

The notion of *attunement* involves systematicity, that is, persistence in time of the cultural subject matter. There is no attunement without regularity or systematicity, and that means time.

On the other hand, the notion of sharedness captures the notion of distribution of cultural content and its spread within a society, as well as for the various notions of *cultural group* in place. In its basic sense, a cultural group is nothing but a set of people defined by its members' individual attunement to a conventional constraint. That makes the constraint cultural and the group (i.e. the set) cultural as well. There is no need of any other glue to make a group out the set of individuals (Acosta, 2017). The individuals may have come out perfectly with their attunement to the same constraint entirely individually, without any sort of transmission (imitation, communication or whatever) among them. This can be true of any sort of mental or public representation they share. We can talk of micro-, meso- and macro-cultures and cultural groups. We can talk of more or less ephemeral or long-lasting cultures. But we do not need to find or postulate any chain of representations at work within the group. Culture in its basic form is a matter of distributed s-attunement of a plurality of people to a constraint.

I do not mean to say that representations and their transmission do not play a role in the explanation of cultural phenomena. My claim is rather that it is insufficient to explain culture in its more basic forms; the forms that make representations and their transmission possible.

The notion of common aw-attunement captures a stronger sense of a cultural group: the sense in which individuals are aware that they are attuned to a constraint. In this sense, individuals are aware

that they belong to a cultural group with members that are also aware that they belong to the group. But still at this level, the population that is commonly *aw*-attuned to the constraint need not share any explicit representation of it. When they have it, we are talking about *fc*-attuned people that fully share the constraint.

These distinctions serve to capture quite naturally how culture works in its most fundamental forms. Let's illustrate this with a fictional example.

3.2.1 Z-lang. The language of Z-landers

Z-land is a remote island in the Pacific.¹¹ Z-landers have never had any contact with any non-Z-lander, and their language, Z-lang, though simple in some respects—for instance, they lack a word for the English indexical “here”—serves their basic communicative needs. All adult Z-landers are fluent speakers of Z-lang and their children acquire it naturally. From our point of view, Z-lang is just a set of conventional constraints, and Z-landers are distributively *s*-attuned to them, which together make the constraints cultural. For Z-landers, Z-lang is as natural as rain in Z-land. They do not distinguish raining in Z-land from raining in some other place because they are not aware of any other place but Z-land. When they speak, they don't distinguish between speaking Z-lang and speaking some other language, because they are not aware of any other language. Everything works fine, so they need not be aware of any of the Z-lang constraints they are attuned to. That's what we mean when we say that they are individually *s*-attuned to Z-lang and that the *s*-attunement is distributed among non-infant Z-landers.

One day a pair of Basque Jesuit missionaries arrived on the shores of Z-land causing some surprise and confusion to the few Z-landers who first met them, a small group of fisherwomen. After overcoming their initial shock at the missionaries' skin color, their dark costumes and lack of hygiene, the Z-landers spoke to them. And there came another surprise, the newcomers couldn't speak. They did produce some sounds, not very different from the sounds produced by some animals in Z-land, but it wasn't language. Were they humans? Were they dangerous? They left the strangers there and went into town to discuss the matter with their fellow Z-landers.

After some deliberation, they agreed on a couple of issues. They, the Z-landers, speak a language, Z-lang—that they name “the language,” a new word in Z-lang—and the strangers don't speak it. They are not sure whether the strangers couldn't speak at all or not Z-lang but something else. They need to do more research to decide that. They invent the Z-word “Barbarian” to name the (non)-language the strangers might (or might not) speak and also the newcomers themselves. We can say that it is at this stage when Z-landers passed from mere distributed *s*-attunement to Z-lang to common *aw*-attunement to it. Notice that they did not need, and did not have, an explicit representation of the constraints constituting Z-lang. They just spoke it and now they were aware that they spoke it and some other people didn't. But they didn't know what speaking it exactly consisted in. They didn't have the slightest idea about how to represent that.

Time and constant contact with the missionaries brought some further changes. The missionaries were amateur grammarians and with their help, a small group of Z-landers, named “The Academy of Z-lang” started to describe their language, to make explicit the constraints of Z-lang. Supposing that their descriptions were accurate, we can say that the members of the Academy of Z-lang became *fc*-attuned to their language and fully shared it. As it happened, given their contribution to the grammar of Z-lang, the Barbarians were named members of the Academy. In fact, they got to know the grammar of Z-lang better than any other member of the Academy, even if they never became fluent enough to participate naturally in an ordinary Z-lang conversation. This points to an important distinction that it

¹¹ The example is inspired by Perry's (1986) Z-land.

is worth emphasizing once again: the distinction between being attuned to and knowing a constraint.

We have illustrated the application of the distinction between s-, aw-, and fc-attunements of an individual to a constraint in a particular case.

Naturalistic approaches to culture take sharing the subject matter of culture as central to the explanation (Sperber, 1996, p. 82; Boyd and Richerson, 2005). To share among a significant number of people and for a significant amount of time a representation or a meme (that is, an information package of some sort) is what culture consists in, given that information is transmitted by non-genetic means. I would amend its details in two important respects.

First, culture, in its most fundamental form, needs no mental representation of its content in the minds/brains of the people involved. And second, to share a culture, in this fundamental sense, there is no need of transmission by imitation, copying or communication between people in a group.

Conclusion

As we have seen, the notion of constraints and our attunement to them is fundamental to the subject matter of culture. Current naturalistic approaches miss that point when they restrict their attention to information, items or representations:

Talk of 'culture' (whatever the preferred definition or theory of culture) is about this widely distributed information and about its material realizations inside people's minds and in their common environment (Sperber and Hirschfeld 2006, p. 149).

If I am right, constraints and attunement, which don't correspond to information and our representation of it, need to enter into the picture of culture. Constraints are needed to have a naturalistic account of what information is. Attunement is needed to account for how we get information and how we eventually end with representations of knowledge and beliefs.

There is a basic level of culture in which a set of people can be said to share a culture if they are distributively s-attuned to the same constraints. And that is something more common than it seems. This is how we can understand why a set of people behave in very similar ways with no informational packages represented and transmitted between them.

I have explained the crucial difference between knowing and being attuned to constraints. An individual can be attuned to and not know (have represented) the constraints to which is attuned, and vice versa. The level of awareness of individuals regarding their attunement allows us to explain various aspects of culture: the difference between different cultural groups (with distributed s-attunement, common aw-attunement and fully shared fc-attunement). It also offers a natural account for the birth, evolution and death of cultural constraints, that is, of cultures. But that will be the topic of a separate paper.

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