Converging towards what?
Pragmatic and Semantic Competence

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Abstract. The paper tries to build a bridge between results in commonsense reasoning and inferential theories of meaning. We focus on the problem of communication and the contrast between two views of communication, the "expressive" view and the "convergence" view. According to the convergence view (and local holism which supports it) the meaning of a sentence is the set of inferences to which speakers converge in a discourse context. The problem is that we have no idea about the strategy of this convergence, even if it is apparent that the convergence of inferences depends on contextual clues and pragmatic factors. We claim that in order to accept the convergence view we need to supplement the idea of meaning as inference with recent results in multi-context theories. Our solution to the problem is based on a distinction between semantic competence and contextual competence defined as rule-governed pragmatic competence.

1.   Two views of communication

The aim of this paper is to build a bridge between multi-context theories as developed in A.I. and theories of meaning as developed in the philosophical tradition. The bridge is given by the link between analysis of commonsense reasoning and the inferential approach to meaning (to know the meaning of a word is to master referential and inferential uses of sentences in which that word occurs). We try to make the best use of the two fields of research to give an overall view of communication.

We start with a basic contrast between two views on communication: the "expressive view" and the "convergence view". We will see the problems arising from both of them and try to use some results from A.I. to solve a problem in the convergence view of communication.

1.1 Communication as sharing

The "Expressive view" claims that communication is the passage of contents from one mind to another[1]. The expressive view has two components:

(i)   meaning-sharing: in order to communicate properly we need to have a common language, that is to share the meanings of the words.

(ii)   content-exchange: by sharing the meanings of the words, in communication we "pass" different contents from one mind to another:

Philosophers of the linguistic turn rejected the idea that what is exchanged are mental pictures. But they did not put in question the general view. The first explicit challenge to the expressivist view, mainly to component (i), has been posed by meaning holism. The holistic view claims that the meaning of a word depends on the totality of the accepted sentences and inferences in which the word occurs.

Michael Dummett [6] [7] has strongly reacted to meaning holism. He has just remarked that if the meaning of a word (sentence) depends on the totality of the accepted sentences and inferences in which it occurs[2] – since speakers don't share all the same sentences and inferences - then no two persons will associate the same meanings to the same words.[3]

But if two persons will not share the meanings of the words they use, there will be no possibility to agree or disagree, and communication will become impossible. A holistic theory of meaning leads to destroying the possibility of communication.

1.2 Communication as converging

An answer to Dummett's objection to holism is that the problem obtains only if we keep the first component of the classical view of communication (communication presupposes the sharing of meanings). We may abandon that claim suggesting an alternative view of communication as "convergence": starting with two different sets of beliefs or theories, two speakers *converge* towards the same meanings, elaborating a common theory which is built up during the dialogue[4].

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[1] As discussed by Gauker [10], the expressive view represents the "classical" view of communication, beginning with Aristotle and developed with Locke and eventually with Grice. Obviously – while we reject some aspects of the expressive theory – we do not reject much of the results of Grice, like the concept of conversational implicature.

[2] Given that here is no principled distinction between analytic and synthetic – or between uses that are meaning-constitutive and uses that are not

[3] In artificial intelligence holism is generally accepted at least since Quillian's semantic networks: at any point of a semantic network there are paths towards any other points and meaning is measured as distance between two points of the networks.

[4] According to Donald Davidson [4], any speaker has a certain set of beliefs before beginning interaction with another speaker. Let us call this set of belief (and rules) "prior theory", which includes the expectations about the meanings and beliefs of the other's point of view (what it is expected to be shared presuppositions). As the dialogue goes on, some expectations may be frustrated and the speaker should

This stance is akin to certain ideas of Wittgenstein about language games as complete languages used in a particular situation, where the meaning is given by the totality of the rules of the language game. Following this analogy, we may define "local holism"[5] as a theory of meaning which is coherent with the convergence view of communication. Shortly, local holism is the view that the meanings of words and sentences are totally defined by the accepted inferences and the rules on the use of other words in a local situation (the meaning of a word depends on the theory used in the process of localized reasoning – about localized reasoning see for instance [11]).

The main point of this discussion is that, in order to have a common theory, we do not need to start from the sharing of meanings[6]. Speakers may start with different sets of beliefs and inferences but, through the dialogue, they converge towards a locally shared theory. They arrive at sharing common meanings as the result of the process of convergence.

How? The problem is to define what can lead us from different individual theories to a unified local one. The first answer is that the common world we share will compel us to converge. This is not enough, and Davidson speaks also of general *strategies* governing the process of convergence in dialogue among speakers. What two speakers need for communicating is "the ability to converge" towards minimal, locally shared, theories and inferences.

In what follows we will try to show a blindspot in the "convergence" view as devised by Davidson and we will use some recent work in artificial intelligence to correct the difficulties of such theory. We end up suggesting a strong correlation between what we will call "contextual competence" and semantic competence.

2.   Communication and competence

According to the inferentialist theory of meaning, the meaning of a sentence is given by the relevant inferences connected to it[7]. We suggested that speaking of communication as convergence amounts to understanding communication as converging towards the same set of inferences. The problem is *which* inferences must be shared in the communication process – which inferences define the common meanings we reach at the end of a successful communication. Note that this is analogous to the problem at the origin of commonsense reasoning since McCarthy's advise taker.

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change slightly his theory to make it compatible with the reactions and the utterances of the other person, building a "passing theory". The "passing theory" may become a common theory between the two speakers. In this common theory we may imagine that the two persons converge – with some luck - in all the beliefs about the limited situation they are interacting with. Therefore they may build a common holistic theory limited to that situation, as if the language they use were just a fragment of the total language of each person, a fragment that can function locally as a complete language.

[5] See [1] where Bilgrami discusses some aspect of local holism. See also [14] and [15].

[6] This criticism is coherent with the view of Recanati [16], who claims that there is no "literal meaning", but meanings depend strictly on the situation and on the presuppositions of the speakers.

[7] A discussion of conceptual role semantics, or inferential semantics is given in [3]. Brandom takes it for granted that the inferences that constitute the meaning of a sentence are on the side both of the premises that justify the truth of the sentence and of the consequences that derive from it.

2.1 A Blinspot in Davidson's theory

Davidson thinks that any attempt to give a set of rules constituting semantic competence as an "ability which is shared both by speaker and interpreter" is unsuccessful. He claims that any sentence can be uttered in contexts that cannot be predicted by any general theory of semantic competence. Although he speaks of an "ability which is shared both by speaker and interpreter" and call it a "strategy" for interpreting sentences through different contexts, he remarks, with some disdain, that "'strategy' is a gracious word for the mysterious process through which a speaker or a hearer uses what he knows in advance plus the data of the moment to produce a passing theory". Here we find a double blindspot in Davidson's approach:

a)   The fact that contexts are unpredictable does not imply that our ability to work with them is undetectable or unpredictable. Therefore, if we are able to define the basic features of this ability, the strategy of convergence cannot be defined as "mysterious".

b)   To say that we cannot presuppose shared (literal) meanings does not imply the impossibility that at least some features of meanings are shared, depending on general rules of language and local situations. Therefore there is room for a context dependent semantic competence.

2.2 Strategic backbones

Le us begin with the point a) above. Why does Davidson think that the ability to converge is a "mysterious process"? His main worry is that any expression is so strongly context dependent that no definition of meaning may take care of all its possible different uses. However he does not consider that for clarifying the ability to converge towards a common local theory we need something different from a theory of meaning. We need a general theory of reasoning, a theory of the kinds of operations performed in accessing the conceptual space of an interlocutor. Among many attempts to give a theory of this kind, a prominent role has recently been played by multi-context theories. It is exactly from researches in artificial intelligence that we find the best attempts to show that the strategy hinted at by Davidson is not mysterious at all, but has some defined guidelines.

Benerecetti-Bouquet-Ghidini 2000 (from now on BBG) have firstly tried to give a general framework of the abilities with which we master our moving from one context to another. BBG define three "dimensions" of contextual dependence, which corresponds to three dimensions of representation: *partiality*, *granularity* and *perspective*. The three dimensions can be described as kinds of ability, or kinds of reasoning processes:

(a)   the ability to isolate some *partial aspect* of a situation in order to reason cutting off part of the story;

(b) the ability to reason filtering the level of detail of our description, cutting irrelevant features, and assuming a *schematic aspect* for the entire story;

(c) the ability to individuate *different perspectives* from which we may consider the same situation.

These abilities are defined in BBG as corresponding to "high level rules" of contextual reasoning, linked to the variation of elements of a context (intended as a set of axioms and rules, parameters and their values). Guha and McCarthy 2003 (from now on GM) have taken over the BBG approach, speaking of "varieties of contexts": these abilities are described as different forms of lifting rules, varying from each type of context, *Projection Context*, *Approximation Context*, *Mental State context* (mapped on the three dimensions given in BBG), to which a fourth is joined, *Ambiguity Context* (in this fourth case the represented ability is basically similar to conceptual blending, but more on this later).

These high level rules emerge from the meta-theories of common sense reasoning which accept the notion of context as a tool for defining the operations we make in entering, exiting and passing from one context to another. We claim that we should interpret these rules as (formal) expressions of the strategies we need (or in fact we have) to converge towards common contents in communication. These rules are –we might say – the strategic backbones of communication. By these means, we may give substance to what Davidson calls "strategy" of convergence. Before addressing this point, let us check the second aspect of the blindspot in Davidson's theory.

2.3 A starting point for convergence

According to Davidson we do not necessarily share "conventional" meanings of our words, because our respective idiolects will almost inevitably diverge. Conventional or constitutive meanings are a desideratum, a normative ideal, which is not realized in actual communication. Before starting a conversation we have the maximum uncertainty on the meanings other people may attribute to words. However, in order to begin a conversation, there must be something shared among speakers from which to start. Just high level rules for navigating across contexts – even assuming that they are an *explanans* of what Davidson calls "shared strategy" – are not enough, if nothing is shared at the level of the individual beliefs and inferences[8]. To accept the idea of a common starting point however seems to lead us again to the traditional "expressivist" view of the sharing of meanings. How much shall we concede to the traditional view of communication? Among different possibilities a peculiar form of "local holism" has emerged in the discussion[9]: in order for people to communicate properly it is not necessary that there is some meaning constitutive use they share, but it is necessary that they share *something* about the word they use

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[8] Apparently we need also a sharing of referential competence, as discussed in [13]; however a referential competence can always be considered as a starting point for possible inferences (or a justification for assertions), as remarked by [3].

[9] For a review of the different alternatives see [14] and [15]. The kind of local holism discussed here has been traditionally given the label of "weak molecularism". See also [13] and [14].

(notice the different scope of the operator of necessity). May be they use the word "atom" in very different ways, being one a scholar and the other an ignorant. However the scholar easily will share with the ignorant the inference "*x* is an atom, therefore *x* is very, very small, certainly smaller than a grain of salt". This might be enough to start a conversation.

In other words, even though we cannot say in advance exactly which inferences (or which aspects of meaning) are shared before starting a communication, still communication starts only when *some* inferences are shared. Another example (freely taken from Bilgrami): if a physician and a layman speak of "water", maybe most of the knowledge of the first (that water is H_2O, boils at 100°, and so on) is not shared by the second; but, according to the goals of the situation, they probably share some content, e.g. that water is drinkable if the goal is to find something to drink or that water cleans is the goal is to use water to clean something.

If in order to communicate, two persons need to share *some* common use of the expressions, we cannot give an *a priori* definition of *which* uses or which set of inferences are relevant[10]. Certainly we may assume also that a common language (let us say "Italian", "English" or a relevant subpart of them) has a normative character, and that meanings are associate to words following certain epistemic standards. However, given the network of contexts in which the same expression can be used with different meanings (inferences), to understand the working of communication we need to rely on contexts and goals[11].

3.   Sharing, communication and competence

Summarizing the data we have reached so far, we may say that a convergence view of communication should face three levels of what is shared:

(i)   a general strategy (according to Davidson "mysterious", according to us "rule governed") shared among speakers before starting a dialogue;

(ii)   a minimum sharing of data of the local situation on which to start (and it may also include some general knowledge of the world) plus some inferences depending from goals and contexts.

(iii)   the result of the convergence process, that is a rich-enough theory of the local situation.

The first two kinds of sharing should be part of the means for the explanation of the working of linguistic exchange; the third is what needs to be explained through

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[10] Penco 2001 remarked that this position of weak holism is unstable, because it is easy to ask how do we find which properties are *de facto* shared, or which would be the best property to share among most people, and in this way we are led back to the robust molecularism and to the meaning-constitutive uses. However we might, with all its difficulties, try to accept this weak-molecularist stance to see to what extent it can be followed.

[11] This was also a point of Grice Cooperative principle (even if he speaks of "common intent" and not of "common goal").

the first two. In the paragraphs that follow we try to clarify the first two aspects as tools for explaining the third one**.**

On the one hand we have suggested focusing on some of the most basic rules and strategies to navigate through contexts as what enables us to converge in communication. We have said that the strategies with which we converge towards a common understanding of what we say are some basic abilities we share, common strategic "backbones" of our communicative activity. This is the level (i) of shared abilities.

On the other hand, describing a form of local holism, we have introduced the problem of a minimal semantic competence. If in order to communicate, two persons need to have a starting point, some shared use of words, even if not always predictable, it seems that we have to assume a basic or minimal semantic competence, interpreted as the ability to make some elementary inferences needed for starting a dialogue. We have decided to reject the idea that we have to assess in advance *which* inferences are more basic or meaning constitutive (if we accepted a stronger claim of meaning constitutive uses, the point of semantic competence would just become even stronger). This is the level (ii) of locally sharing minimal inferences.

We might therefore distinguish a double level of competence, which is supposed to be shared by people (or intelligent systems). The two levels concern, respectively, sharing high level abilities which help us to navigate through contexts, and sharing conceptual contents, at least partially. The first can be defined as "pragmatic" or "contextual" competence, while the other can be defined typically as "semantic" competence, or better "minimal semantic" competence.

3.1 Semantic and pragmatic competence

Going back to our previous example, if a normal, ignorant speaker asks an expert in chemistry for a glass of water, she need not share any chemical knowledge to interact with him. Given this context and the local goal (to drink a glass of water) they have to "distill out" what is needed for the use of the word in the local situation. The expert does not care to drive his interlocutor to believe all his beliefs, unless necessary to solve some other problem. However this beginning of conversation may also lead to share more information if more complex problems arise. In general, if needed, we will plug in the conversation the minimum amount of our beliefs to build a common set of beliefs towards which our interlocutor may converge.

At the beginning of a dialogue we have a basic problem to solve: how can we check which contents the interlocutor shares with us? The high level of "contextual" competence may give some help to answer the point. Our contextual competence enables us to organize some strategies to check what we share with the interlocutor, suggesting, for instance, how to individuate the compatibility relations of *my* inferences with *her* inferences. We might condense this result in the claim that the local holistic stance requires a form of dependence of semantic competence on contextual competence: *no semantic competence without contextual competence*. Semantic competence cannot be developed in isolation; we cannot build a personal semantic competence in the void, but only in the interaction with other people; in

order to ascertain which contents we actually share, which inference rules we both follow and which inferences we have in common, we need to rely on some high level abilities. These are used for instance to enter the cognitive context (or conceptual space) of another individual, or to check its compatibility with our conceptual spaces, and build local common conceptual spaces.

In the tradition of inferential semantics we have different ways to understand meanings as inferences shared among individuals. The strongest way – characteristic of strong molecularism, says that if two persons share a proposition p, there must be also a proposition q which is shared, let us say the proposition linked by inferential standards which are meaning constitutive of the terms used in proposition p:

(A) $\forall p \exists q (p \neq q \ \& \ \text{Nec} \ (p \text{ is shared} \rightarrow q \text{ is shared}))$

But according to local holism we do no need to individuate meaning-constitutive uses. There are no privileged sentences or inferences in which a word occurs and which are a priori constitutive of the meaning of the word at issue. Still, as stressed before, two speakers must share some uses of the word in order to understand each other. We should therefore replace (A) with (B).

(B) $\forall p \ \text{Nec} \ (p \text{ is shared} \rightarrow \exists q (p \neq q \ \& \ q \text{ is shared}))$

However, while A) is too strong since it demands the notion of analyticity, B) is too weak to capture the core of local holism. Suppose that p is "water is drinkable"; if two speakers believe that water is drinkable and that cats are mammals, then b) is satisfied. The problem is that when we require that speakers share some beliefs, we want such beliefs to be about water. We should strengthen (B) as

(C) $\forall p \ [\alpha_1 \ldots \alpha_n] \ \text{Nec} \ (p \ [\alpha_1 \ldots \alpha_n] \text{ is shared} \rightarrow \forall i_{1 \leq i \leq n} \ \exists q \ [\alpha_I] \ (p \neq q \ [\alpha_I] \ \& \ q[\alpha_I] \text{ is shared}))$

where $\alpha_1 \ldots \alpha_n$ are words occurring in p.

If local holism is true, then there is no absolute semantic competence, for each speaker possesses his own. We should then work with "minimal" semantic competences, where some inferences can be shared by the speakers, given that we cannot know in advance *which* inferences. The difficulty with such a local holism is to explain the way we reach shared uses of words or common inferences. The answer we have suggested is that the definition of shared contextual high level rules helps to express the abilities which drive us to the sharing of meaning.

3.2   How contextual competence filters semantic competence

After having considered the concept of minimal semantic competence, we need now to define contextual constraints for identifying which part of the semantic competence is activated in a dialogue and how. Here high level contextual rules are the leading

factors in filtering which inferences in semantic competence can be used as common ground in a dialogue or in any interaction of intelligent systems.

Take, for example BBG's presentation of the notion of context dependence by the metaphor of the box. A context dependent representation presents three components: a set of sentences about a given domain, inside the box, and a collection of parameters and relative values, outside the box. The dimensions of partiality, granularity and perspective correspond to these components. The set of sentences isolates a domain, the parameters determine the granularity and their values determine a perspective. The dimensions of contextual dependence help us to describe speakers' semantic competences as converging towards a common ground of inferences.

Keeping our preferred example, suppose an ignorant asks a scholar for a glass of water. Presumably, the set of beliefs of the ignorant will diverge drastically from the set of beliefs of the scholar. Still they are reasoning about a local domain: drinking water. Therefore, each of them will reason inside a particular box of sentences and inferences involving the word "water". The partiality dimension restricts the number of inferences that the two speakers associate to the box within which they are locally reasoning.

Still, the box of the ignorant will differ from the box of the scholar. For instance, having studied chemistry, the scholar knows al lot about chemical composition and properties of water, while the ignorant does not. On the other hand, the ignorant might have some less bookish knowledge about water, which the scholar lacks; for example he might believe that insects of kind F live near water.

The scholar and the ignorant have different axioms inside their boxes:
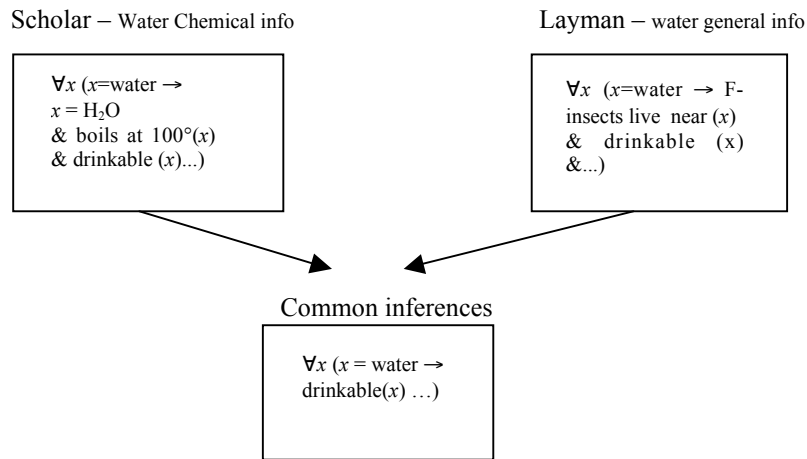
Scholar   Layman

$\forall x$ (x=water $\rightarrow$
$x = H_2O$
& boils at 100°(x)
& drinkable(x) ….)

$\forall x$ (x=water $\rightarrow$
F-insects live near (x)
& drinkable(x)
& tasteless (x) …)

Their beliefs are compatible, but some of them are useless for the goal of the conversation. The dimension of granularity allows the speakers to isolate and keep some beliefs (inferences) inside the box and to rule some others out. By means of the mechanism of "push", the scholar moves the information that water is H_2O from the inside to the outside of the box, encoding that information in some other folder. Similarly, the ignorant moves the less bookish knowledge about water outside his belief box encoding it in some parameter.

The process goes on until the point is reached where the scholar and the ignorant share at least some residual sentences and inferences inside the boxes of their WaterContext. They might be said to build a common box, a "working context" where they share the same explicit information. These common inferences inside their WaterContext boxes build a microtheory towards which their semantic competences converge.

Scholar – Water Chemical info   Layman – water general info

$\forall x$ (x=water $\rightarrow$
x = H_2O
& boils at 100°(x)
& drinkable (x)...)

$\forall x$ (x=water $\rightarrow$ F-
insects live near (x)
& drinkable (x)
&...)

Common inferences

$\forall x$ (x = water $\rightarrow$
drinkable(x) ...)

In this perspective there is no unique "basic" or "fundamental" semantic competence, for each speaker possesses his semantic competence that might diverge from that of any other speaker. Despite that, communication is possible since contextual competence enables speakers to make their semantic competences converge towards common sets of inferences. Goal dependence is the first step to organize the granularity of our representation: if the need of water is to clean, drinkability is not the proper concept to refer to, or if the need of a conversation is to define new chemical compounds, probably only the chemical formula will be relevant. In this way the "dialogue context" [10], can be considered as a generalization of the traditional idea of "working context" in A.I. (a context where you plug in only the needed information to solve a problem).

The perspective dimension too, by the mechanism of shifting, enables speakers to make their semantic competences to converge towards a shared local discourse theory. According to BBG, the perspective dimension depends on the relationship between the values of the parameters of a context dependent representation. A speaker can add to the box of his local theory a sentence containing unresolved indexicals and at the same time postpone the assignment of semantic values to them, while taking advantage of some inferences connected to that sentence. Working on the base of those inferences, his reasoning engine might reach conclusions useful to communicate with his interlocutor.

Consider the following case. Speaker *A* hears speaker *B* to assert "he is P". *B*'s assertion is perspectival since it encodes a given semantic value, say John, among the values of the parameters forming the context dependence. *B*'s contextual representation is formed by the sentence "he is P" inside the belief box and by the parameter of the semantic value for "he" having John as its value. Before assigning a semantic value to "he", *A*'s contextual representation shifts the value of the parameter of the semantic value of "he" to the null value. Despite the null value, the box of *A*'s beliefs converge with the box of *B*'s beliefs to some relevant extent towards a shared

local discourse theory. They both believe that what is referred to by "he" is P, is a person, is a male, is the male person that is salient in the context of the utterance of "he is P" or is anaphorically connected to the conversation. From this amount of information *A* is able to derive some conclusions that are essential to communicate successfully with *B*. In the course of the conversation, *A* might arrive to shift the value of the parameter of the semantic value of "he" from the null value to John.

Another example might help to clarify the role of the perspective dimension in converging towards a shared local discourse theory. Speaker *A*, an expert in metallurgy, is engaged in a conversation with speaker *B* about the winner of the Olympic games. As expert in metallurgy, *A* knows that the color of gold is white. This piece of knowledge notwithstanding, in the course of the conversation with *B*, *A* might push the information about the color of gold by encoding it among the parameters of his contextual representation and shift the value from white to yellow. Therefore, *A*'s and *B*'s belief-boxes converge towards a shared local discourse theory that might count among its axioms the following one:

$\forall$x(x = gold → x is precious & $\forall$y(y is the winner of the Olympic games → y is awarded the gold medal) & $\forall$z(z is a gold medal → z is yellow) &...).

We can relieve ourselves of the duty to decide which between "gold is yellow" and "gold is white" is meaning-constitutive. Within certain domains of discourse - i.e. metallurgy - the former will be largely shared among speakers, whereas within other domains of discourse the latter will be.

By shifting the values of parameters, speakers encode different cognitive points of view and, consequently, give different contents to their local theory looking for partial overlapping with the theories of their interlocutors.

3.3   Some final remarks

Even if our purpose has been neither to improve the detailed presentation of these rules nor to choose among different proposals, we cannot avoid a short confrontation between BBG [2] and GM [12]. The main differences concern two features of the project: (i) the kind of classification and (ii) the things classified.

Regarding (i) BBG classify the different kinds of reasoning procedures relative to the metaphor of the box: enriching or diminishing the set of sentences in the box give the aspect of partiality of our reasoning; choosing the parameters to be explicitly given determines the granularity; shifting the values of the parameters determines a peculiar point of view or mental space. GM follow roughly the classification of BBG giving a unique tool for classifying the different dimensions of contexts, that is the rule of lifting – and the different ways in which this rule is applied. This step gains in generality, even if it loses in perspicuity. Lifting rules regulate the operation of using, in a context, knowledge gathered in other contexts: the knowledge is "lifted" from one context to another. Given that we cannot invent lifting rules for every pair of contexts, we need "a combination of good defaults and very general lifting rules".

The varieties of contexts are therefore determined on the one hand on assumptions and simplifications, on the other hand on the different kinds of lifting rules.

Regarding (ii) GM add a third dimension of contextual reasoning: ambiguity. The idea is well entrenched in the recent discussion, mainly under the label of "concept blending" [8]. The suggestion is welcome, even if the details are to be further analysed. Something of what is collected under the label of "ambiguity" (the use of indexicals without explicit assignement of values) is considered in BBG under the label of "perspective", because they encode perspectives among which it is possible to shift ("here"/"there"; "I"/"you"/"he"; "today"/"yesterday"). On the other hand GM place indexicals in the Ambiguity Context, because you may use an unresolved indexical in a context, postponing its evaluation. However, to speak of indexicals as "ambiguous" seems to us a step beyond the standard use of the concept of ambiguity. Indexicals, like pronouns, can cause misunderstanding if they are not explicitly evaluated. However they cannot be defined as "ambiguous" ("today" means today, even if I do not know which day it is and I have different opinion from yours). Therefore we prefer not to classify indexicals under the label of "Ambiguity Context". On the other hand the general idea of Ambiguity Context is something missing in BBG. Why? May be because their classification is intended to fix three elements: the set of axioms, the parameters and their values. They classify therefore three kinds of reasoning procedures. But ambiguity does not seem to be a kind of reasoning procedure, just because it implies an oscillation in the choice of different interpretations or context. Still the oscillation is what enables us to change context while interpreting an ambiguous expression. Let us make an informal example:

- they went to the bank *(financial institution: default interpretation)*
- with a pair of fishing-rods *(river: the normal place for using fishing-rods)*
- for taking money *(financial institution: the normal place of money exchange)*
- because they were pushers *(river: pushers typically hide far from public buildings)*
- pretending to be customers *(financial institution: where customers go to take money)*
- selling fishes *(rivers: waterfront is typical place where you sell fishes)*
- and so on.

This oscillation is given by typical reasoning processes based on inferences linked to typical situations (expressed in frames or scripts); the oscillation itself is not a kind of reasoning, but a sign of our attitude to *change* perspective or mental space depending on information (activated by relevant expressions). Besides oscillation is what enables the building of new concepts through the overlapping of contexts, as widely discussed in the literature on concept blending [8]. Therefore the idea of having a fourth kind of reasoning procedure to be placed in the classification of contextual reasoning is highly welcome and also BBG should account for it.

We will not pursue further the comparison between the two kinds of classification of contextual reasoning. Following MG we may classify inside the general schema kindness/normalcy assumptions, parameter suppression, database partitioning, approximations of different kinds, indexicals, homonomy, metonymy and polisemy, fiction, conterfactuals, propositional attitudes. MG and BBG would probably have some of the same subclasses placed in different categories.

The point of the confrontation is to show that, even if the classification is still uncertain and tentative, we are facing an attempt to develop a general framework for

representing contextual reasoning which develops the idea of contextual restrictions to semantic competence. In defining "contextual competence" as an area which tries to find a general framework, we might ask how contextual competence is related to the general topics that are traditionally discussed in pragmatics. In a *narrow* interpretation, contextual competence, as defined by the rules developed from the A.I. works in multi-context theories, can be considered as a proper subpart of pragmatics. In a *wide* interpretation we may suggest that typical discussion on context dependence in pragmatics could find a general framework in this kind of setting, where phenomena like conventional and conversational implicature, semantic and pragmatic presupposition could find a proper place. In such a way contextual competence might be equated with pragmatic competence. In the field of philosophy of language we have a growing attention to general features of context dependence, as in the case of Recanati [16]; a confrontation between these different attempts might help to build a better awareness of a new aspect of the interplay between pragmatics and semantics.

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