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BOUNDED RATIONALITY IN DIALOGIC INTERACTION

Most approaches to dialogic interaction are built on a very special model of human being: the rational optimizing decision maker. A better understanding of dialogic interaction could be obtained from other notions of rationality that are less abstract than the models based on means and ends optimization and are closer to bounded rationality. The main idea is to satisfy rather than to optimize some goals (H. Simon). Rules of thumb appear in procedural rationality and axiological rationality as an extension of means-ends rationality. So we could speak of cognitive rationality as a kind of procedural rationality.

Therefore, the space of values appears, framing the context and pointing to a pragmatic notion of rationality that arises as a minimal condition for interactions to be possible. The analysis of controversies could be improved if some of these notions of procedural and bounded rationality were used to describe practical and historical cases of scientific debates.

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> And now, O Muses, dwellers in the mansions of Olympus, tell me- for you are goddesses and are in all places so that you see (and know) all things, while we know nothing but by report (uncertainty)...
> (Homer, Iliad II: 483-487)

> "I don't know how we can mathematically represent vague knowledge, but I believe that this is what is called for... It is not that people have a precise view of the world but communicate it vaguely; instead, they have a vague view of the world. I know no model which formalizes this".
> (Lipman 2001: 11-12)

The majority of approaches to dialogic interaction have been built on a very special model of the human being, i. e., the rational optimizing decision maker. This is a very special agent that has at least three unbounded capabilities: it has, at any time, all possible information and computational abilities, it has no limitations and it is able to achieve an optimal degree of communication with the constraints on and means (language) for its feasible set of actions. Obviously, this is the case even with Grice's Cooperative Principle and its four maxims. Although there are some scholars who use Grice's view as an approach that goes beyond the standard vision of rationality, they are usually closely related to some kind of *substantive rationality* rather than to *procedural rationality* (using concepts coined by Herbert Simon):

> "The former is concerned only with finding what action maximizes utility in the given situation, hence is concerned with analyzing the situation but not the decision maker ... Procedural rationality is concerned with how the decision maker generates alternatives of action and compares them. It necessarily rests on a theory of human cognition" (Simon 1997b: 18).

I believe that those who tend to collapse Grice's maxims or conventions into a single or twofold principle (such as the Relevance Principle, for example) are going the wrong way. For instance, Sperber and Wilson say: "Language use is not governed by any convention or maxim of truthfulness", which is a good approach; but immediately afterwards they say: "Whatever genuine facts such a convention or maxim was supposed to explain are better explained by assuming that communication is governed by a principle of relevance" (Sperber and Wilson 2000: 1). Many thinkers consider that this change of direction could open some spaces for pragmatic considerations; however, I will show that a model of a stan-

dard rational human being is once again involved (a model that is both empirically inadequate and theoretically naïve). So they assume an inaccurate model that is unsuccessful in building and developing a pragmatic view of dialogic interaction.

For several reasons, these reductionist tendencies are unable to deal with the pragmatic issues adequately. I will try to show one of the reasons: a better understanding of dialogic interaction could be obtained from other notions of rationality, from a less abstract notion than the usual idea of optimizing means and ends that appears in these models. We need to move closer to bounded rationality, a "procedural rationality". In Simon's terms:

> "People do have reasons for what they do, but these reasons depend very much on how people frame or represent the situation in which they find themselves, and upon the information they have or obtain. Their rationality is a procedural rationality; there is no claim that they grasp the environment accurately or comprehensively. To predict their behaviour in specific instances, we must know what they are attending to, and what information they have" (H. Simon 1997b: 8-9).

D. Wilson and D. Sperber rightly insist on distinguishing their approach from other related views linked to norms or maxims. Even if this is a step in the right direction, it is clearly insufficient. When they propose the first principle of relevance - the cognitive principle - they say (Sperber and Wilson 2000: 18): "The human cognitive system tends toward processing the **most** relevant inputs available" (emphasis is mine), and "what we do, essentially, is assume that she [the agent] will pay attention to the potentially **most** relevant stimulus, and process it so as to **maximize** its relevance" (Ibid.: 8). If we remove "most" from this sentence and replace maximize with satisfy, this new set will maintain the mutual predictability that is necessary to achieve a real act of communication. However, we are not, at the same time, able to obtain a single, deterministic output from each dialogic interaction. But why is obtaining these unique results a real or an important goal?

In the first principle of relevance, the problem might appear to be a simple, careless formulation, but the difficulties are more acute when the authors formulate their second principle of relevance, which concerns *optimal relevance* of an utterance: "The Second, or Communicative, Principle of Relevance: Every utterance conveys a presumption of its own

optimal relevance" (Ibid.: 19). However, if we speak about degrees of relevance, or levels of satisfaction with relevance, we will obtain a quite different picture of conversational or dialogic interaction. To start with, we need some pragmatic tools. We could understand this to be a simple nuance, but it is a decisive one. For instance, with the idea of optimal relevance, we would not be able to understand nonlinear order in relevance. However, with a quite different notion, the maximal level of relevance, we would obtain several possible equilibria in the action game of language. This plurality would be blurred if we used an optimal notion. Maximal relevance is opposed to optimal relevance. Even if all the maximals were identical, it would be very important to start with a pluralist approach to degrees of relevance. In other cases, the majority of the explanations that have been built on the relevance principle appear to be *ad hoc* reconstructions. For example, they are unable to incorporate either the bargaining process or the roles that the participants are playing. Therefore, in these linguistic reconstructions, the agent is like Laplace's demon, who is able to know everything about the communicative action, even what the optimal relevance is.

The main idea of the alternative conceptions of rationality I want to explore here is to satisfy rather than optimize some goals (H. Simon). For example, both the attention to silence as a linguistic phenomenon and the difference between no response and real silence (Cortini 2001) fit in naturally if we understand dialogic situations using this new kind of model. Intentional silence could be one of those rules of thumb (some people consider this to be a fault of Grice's principles) that come up as the main traits of procedural rationality. Moreover, these rules may be considered either as part of the context where dialogic interaction is taking place or as tools for obtaining a better result when additional considerations are available (such as the cost of deliberation) (Rubinstein 1998: 22).

In dialogic interaction, agents use some of these rules to improve their communicative performance, but they learn to use the rules either by adopting some values, by reasoning from them and acting according to them, or even by extracting reasons to act from the values.

Some sociologists have remarked that an axiological and cognitivist rationality is necessary "to avoid the Charybdis of the irrational models and the Scylla of the narrow versions of rationality the Rational Choice Model endorses" (Boudon 2001: 120). This notion of rationality leads to the delineation of a rather different set of agents' models than the set that arises from instrumental or consequentialist rationality. In my opinion,

although space constraints do not allow a full explanation here, there are very important links between procedural rationality (Simon's view) and axiological cognitivist rationality (Boudon's approach). Many procedures could be understood as frugal and simple mechanisms to put our values –values that are giving us reasons to act- into action. We are instrumentally rational agents, but we also exhibit axiological rationality. There are two different notions of rationality but we act with both of them in a single communicative situation.

I like to talk about the fabric of rationality, with expressive or axiological rationality as the warp and instrumental rationality as the weft. A similar metaphor appears in Michela Cortini's paper. The space of values frames the context and points to a pragmatic notion of rationality (a synthetic notion) that arises as a minimal condition within which interactions may be possible.

The approach of the study of controversy, as defined by M. Dascal, could be improved if some of these notions of procedural and bounded rationality were used to describe practical and historical cases in the study of science. Some of the problems that arise when we try to understand polemics or controversies may be solved by attending both to participants' spaces of values and to the overlapping zone of these spaces. A first step, an empirical one, could be to delineate the boundaries of the space of values that the participants try to occupy. Their goal is not, or not only, to optimize some singular variables (such as truth, rhetorical force or consistency), but to satisfy a set of values that they regard as important; their own authorship or agency could even be one of these values. Perhaps, with these tools, we can analyse the continuum between refutation and reputation (Dascal 2001) and some other non-traditional epistemological questions. The main idea is that some features of the context could generate rules. Usually we are prone to ascribe these rules to the participants' cognitive capabilities, but these rules are the output of the relationships themselves. We do not need to suppose Olympic participants in the dialogue, with absolute and common knowledge (each one knows what the others know); all we need is some flesh and blood human beings in contextual interactions.

These real agents cannot be blurred; they must always remain at least as a parameter of the interaction. In the standard view of rationality, the Olympic agents could be eliminated, because each agent is similar to every other one; as they are all epistemic gods, none of them is necessary. They upgrade to some kind of Popperian third world where they can

achieve objective knowledge. However, we always need a concrete agent: objectivity is not a view from nowhere, it is a view from somewhere (Sen 1993). We cannot eliminate the particular agent; we always need it at least as a parametric reference. Other approaches try to put a grammar, an inner language, several absolute capabilities or innate abilities into human beings, and that is why we cannot understand the bargaining process itself. We are rational but less than gods.

As I have mentioned, theories of dialogic interaction usually assume a very debatable notion of rationality. This notion comes from economic studies, but nowadays many discussions show that it is a very weak notion. An important part of dialogue studies accepts this standard notion as a datum. Although it has pretended to supersede the vision of language as a code and has incorporated inferential components, this notion maintains a background that assumes an ideal of rationality that is absolutely attached to cost-benefit analysis; consequently, it needs some common or shared knowledge as a key to achieve some equilibrium in communicative transmission.

However, a simple review of the benefits and drawbacks of economic theory could show the way out of this enclosure. It is necessary to open our minds in order to build a pragmatic orientation that is not going to be reduced to some kind of sophisticated semantics. Perhaps it would be a good idea to look at the conceptions of rationality from other sides.

There are some similarities between these problems and those that have appeared in economic welfare theory with the economic notion of utility. Trying to reduce any economic variable to a single utility generates some very important difficulties for understanding economic processes. Once we have superseded the code view of language, we would reject notions such as truthfulness or relevance as the main purpose of language. The communicative process is usually shown as a mechanism with a single and one-dimensional output (related to some kind of utility or cooperative disposition such as some kind of happiness in economic studies). Even the relevance principle (or the two relevance principles) is heir to these one-dimensional economic notions.

In order to reconstruct the dialogic interaction process, we must not only make its communicative component explicit but also include spaces where interlocutors can express their individuality: spaces that could be considered to be other dimensions with their own values that the participants try to satisfy to various degrees. So it is very important to include dimensions related to power, emotions, and affections; to sum it up, an

n-dimensional set of values. This set becomes a group of criteria that we try to satisfy in our dialogic interactions, and if we draw this kind of set, we must implement an empirical program that is sensitive to these differences right from the beginning.

Our models are always idealizations, as we can have no other kind of models, but this is not necessarily a bad thing in itself. The mistake appears when we opt for reductionism. Trying to reduce all the variables to a single one, with a single unit of measure, is the main obstacle to understanding the complexity of dialogic interaction. There are several parameters that we must maintain *ab initio*.

When economists have proposed other ideas opposed to both single utility and optimization, they have mainly unfolded two different views. As Selten says: "One way to model limited search without giving up the ideal of optimization is known as optimization with decision cost taken in account, also referred to as *optimization under constraints*" (Gigerenzer and Selten 2001: 5). The other option has been the idea that "models of bounded rationality use fast and frugal stopping rules for search that do not involve optimization". The first models become even less psychologically plausible because "the knowledge and the computations involved can be so massive that one is forced to assume that ordinary people have the computational capabilities and statistical software of econometricians" (Ibid.). Some movements in the linguistic analysis of dialogic interaction show a similar drift (for instance, Optimality Theory and Relevance Theory). Herbert Simon's idea of bounded rationality offers another, more radical, option. Simon used the metaphor of a pair of scissors, where one of the blades is the "cognitive limitations" of human beings and the other one is the "structure of the environment", cognitive rationality and ecological rationality, as Gigerenzer calls them. The most important thing is that "minds with limited time, knowledge, and other resources can be nevertheless successful by exploiting structures in their environments" (Gigerenzer and Selten 2001: 7).

Increasing the complexity of a task does not necessarily imply a corresponding complexity of individuals. Sometimes a better comprehension of the environment could help carry out the task. A system of relationships could sometimes allow some fast and frugal mechanism to produce better results than those that an optimal rationality with a high computational complexity is assumed to produce.

As Frank Liedtke says: "Whatever notion of relevance may be chosen, it is clear that the relevance of an utterance in a dialogue is something

which may be assessed in a different manner by the participants of a conversation" (Liedtke 2001: 244). He acknowledges that "this aspect has not been discussed in the foregoing literature" and also says: "I want to claim that relevance is something which may be negotiated between the participants of that dialogue". These situations appear because usually everybody adopts (explicitly or not) the optimization idea of rational action, and, therefore, relevance is not a fixed-in-advance definite property of utterances (because it is not fixed, it is impossible to speak about its optimization). In fact, a possible alternative appears in F. Liedtke's paper:

> "The relevance has to be conceived as a property of utterances in a dialogue which is not fixed in advance, but which may change and may be subject to acts of negotiation between the participants" (Ibid.: 251).

However, it could be useful to understand relevance as a relationship between utterances, speakers and hearers. It is a relationship that they try to satisfy to different degrees, as if they were involved in an action game.

To work with a complex system such as the communicative process does not necessarily entail more formal complexity, but it represents a complete departure from the one-dimensional criteria of rationality. Having more information is not always an advantage for participants in a communicative action game.

In my opinion, the participants in a dialogue use some kind of ignorance-based decision mechanism. As Peter M. Todd says: "When choosing between two objects (according to some criterion), if one is recognized and the other is not, then select the former" (Todd 2001: 56). This kind of mechanism is embodied in the *recognition heuristic* (Gigerenzer). The point is that usually our basic intuitions tell us that having more information is an advantage for the decision maker (Rubinstein 1998: 52), but this is only so if our belief system has some special structure. In fact, as Goldstein and Gigerenzer (1999) have investigated, adding more knowledge to the recognition heuristic in use - by increasing the proportion of recognized objects in an environment - can even decrease decision accuracy. This mechanism is named the *less-is-more effect* by Todd. To be precise: "Knowing more is not usually thought to decrease decision-making performance, but when using simple heuristics that rely on little knowledge, this is exactly ... what can be found experimentally" (Todd 2001: 57). "Simple strategies that use few cues can work well in real decision environments, and fast and frugal heuristics that exploit this feature

can satisfy the true bounds- temporal, rather than cognitive- of our ecological rationality" (Todd: 68).

It is a real commonplace to speak about vagueness in language. To understand this, I would say that we must first abandon the idea of complete order and unilinearity. We must give up the transitivity of preferences as an axiomatic notion. This idea is closely related to A. Sen´s view. Sen (1997) has left behind the one-dimensional space of utility and tries to build an n-dimensional space, the space of capabilities and functioning.

Weigand's work on dialogues as games of negotiation (Edda Weigand 2001: 63) is a good starting point, even if she remains within a standard notion of rationality in her interaction games. A small shift towards bounded rationality could be a good movement, but it's fundamental not to import game theory to studies of language without previously criticizing its uses.

Of course, several scholars have shown the similarity between Grice's proposals and game theory. Parikh (1991) is one of them. But the majority of these studies, Parikh included, are biased because they adopt the idea that "the speaker tries to have the maximum possible effect on the hearer's set of initial assumptions" (1991: 475). There is no claim that conversations are always cooperative (although they usually are). Instead, the root of the cooperative principle is not cooperation, but rather the idea of maximizing the effect on the hearer. From a different approach, if we assume these principles only as satisfying criteria, our comprehension would change a lot.

In the majority of economic studies, the relevance of bounded rationality has just appeared, so maybe the same process will take place in dialogic and pragmatic studies. A great number of philosophical approaches to language are also built on a standard notion of rationality that shares some kind of optimization idea and some kind of generic principle that speakers try to adopt. The idea is very similar to utility in neoclassic economic theory. If we try to understand the dialogic process only as a means to obtain an optimum of communication, whatever this is, developing a pragmatic approach would be irrelevant because it could always be reduced to semantics. However, I think that Grice's Maxims could be understood as procedural devices, as rules of thumb that the person participating in a dialogic interaction usually satisfies to some degree.

Nevertheless, some studies have just begun to analyze language with these tools and ideas related to bounded rationality. Barton L. Lipman's in his important study "Language and Economics" says: "Information

which is too specific may require more effort to analyze" (Lipman 2001:19) and "in short, it is not that people have a precise view of the world but communicate it vaguely; instead, they have a vague view of the world. I know of no model which formalizes this". (Ibid.: 20). Grice himself recognized this when he said: "It is the rationality or irrationality of conversational conduct which I have been concerned to track down rather than any more general characterization of conversational adequacy" (Grice 1989: 369).

It would be probably interesting to see what kind of goals we can achieve in using language by following Grice's maxims. If our goal is to transmit information, they are appropriate for achieving this end, but if we do other things while we are using language, i.e., we argue, dispute, try to defeat others, bargain, and so on, it is more difficult to accept the possibility of achieving these other aims with Grice's maxims.

As our language is not, or not only, a code for transferring information, we should not use the same tools to achieve different ends. The standard view of rationality works out rather well only if our belief system is systemically organized as a quotient set, a very well delimited and classified set. So we must modify this naïve idea. This can be accomplished in two ways: either by studying the complexity of rational agency in depth as Parikh proposes - "rational agency (in its mathematical form) is the principal missing element in contemporary studies of natural language semantics and pragmatics, whether from a philosophical or linguistic point of view. Ultimately, this is the source of language's efficiency. Supplying this missing element is an underlying concern of this book" (Parikh 2002: 7)- or using other agency models such as bounded and procedural ones (Rubistein, Gigerenzer, Lipman).

As we mentioned above, several approaches (i.e. Rubinstein, Lipman, and Parikh) try to apply game theory to language studies. It should, however, be taken into account that game theory itself has had its own problems and difficulties; therefore it is not a good idea to import game theory without attending to these fundamental problems.

Parihk´s new book has brought some new stimuli to these views, although it is built on a standard notion of rationality that I do not think is useful for analyzing the complexities of language. Other reflections appear in A. Rubinstein´s book: *Economics and Language*, and in the interesting research program that has been developed by B. Lipman, who tries to offer models of bounded rationality that can be used in studies of linguistic phenomena.

As has been shown, many issues remain open, and research on them will create a new space for the philosophical analysis of language.

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