Computational Aspects of Autonomous Discursive Practices

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Abstract. A "pragmatic conception" of computation can help to isolate (1) what capacities and abilities are common to human and non-human animals, and machines and (2) what capacities and abilities are typical of human beings. I'll show the motivation for a pragmatic philosophical approach and, in particular, the original application of "Analytic Pragmatism" to AI. The results of this analysis is a form of weak AI, which admits some important differences between animal and non-animal reasoning[1].

1. INTRODUCTION

To choose a pragmatic strategy is to presuppose that we understand pragmatism in a distinctive way. So, it is useful to distinguish between a "narrow" interpretation and a "wide" one [1]. Why should we adopt this distinction?

Classical pragmatism of Charles Peirce, Williams James and John Dewey is a form of narrow pragmatism that rests on Peirce's famous maxim in "How to make our Ideas Clear": Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of those effects is the whole of our conception of the object. It has a verificationist character "our idea of anything is our idea of its sensible effects". So we mean by wine something that has certain distinctive effects upon the senses. This idea introduces the difference between reality and truth. The first is what has some effects on our senses, whether the second depends on the agreement in the scientific community; the final opinion is the truth and the object represented in it is the real. James has a different conception of truth, which rests on the idea that beliefs are made true by the fact that they enable us to make accurate predictions of the future run of experience. James seems to show other similar interpretations of the "goodness of belief". For instance, the truth of a theological proposition is due to the fact that it has "a value for concrete life". The idea of God possesses a majesty, which can "yield religious comfort to a most respectable class of minds". A theoretical important consequence is that pragmatism is the role of practice to contribute to the constitution of objects. Dewey conception is more radical about the problem of "fixing"

a situation, which is indeterminate at the beginning of the research. He uses "logical forms" as ideal instruments that help us to transform things and to resolve our problem. So, we can underscore a peculiar conception of experience that overcomes classical empiricism, namely the fact that experience is "full of inferences". This is because what we experience is shaped by our habits and expectation. So are shaped also our representations of reality, namely the content of our thoughts. The content of a belief is determined by its role in our action, namely what we should do in the light of our desires and our background knowledge. According to James and Dewey all our concepts and theories are instruments to be judged by how they achieve theory's intended purpose. Peirce develops the famous theory of signs, which rests on the triadic sign-relation: a sign or thought is about some object because it is understood, in subsequent thought, as a sign of that object. Because of the role of the subsequent thought as interpretant we can observe that the content of a thought is determined by the ways in which we can use it in inference and the planning of action.

Tradition apart, we can consider important pragmatic issues from C. I. Lewis, Murray Murphy and G. Herbert Mead. I would like to embrace Bob Brandom's suggestion for including some perspectives in the "wide" interpretation of pragmatism [2]. The reason for enlarging the notion is the search for a role of practices, which is not restricted to an instrumental nature. If we think to the use of language we think that it constitutes the content or meaning of linguistic expressions. We can distinguish between:

1. Methodological pragmatism: the content of linguistic expression must be explained in terms of some distinctive characteristic of their use (Dummett, Tarsky, Quine);
2. Semantic Pragmatism: the speakers constitute the meaning or content by using expression in a manner that determines the association between expression and content;
3. Fundamental Pragmatism: the capacity to know-that or believe-that is parasitic of a more primitive know-how, namely the capacity to adapt to environment (early Heidegger, Dreyfus and Haugeland);
4. Linguistic Pragmatism: to take part to linguistic practices is a necessary condition to have thoughts and beliefs in a strict sense (Sellars, Davidson and Dummett).

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This distinctions help to introduce Brandom's analytic pragmatism that focuses on the normative regulation of our practices; in particular, practices involved in reasoning and cognitive activities. He follows Sellars according to which rationality means the ability to recognize the force of reasons and this very capacity is a kind of activity that allows us to take responsibility for how well we reason and act.

2. A SOCIAL MODEL FOR THE GAME OF "GIVING AND ASKING FOR REASONS"

Brandom's enterprise in his most relevant book *Making It Explicit* is devoted to develop a new social model for describing the Sellarsian "game of giving and asking for reasons" [3]. Beyond the classical conception of representation, the notion of content or meaning of linguistic expressions is intended in inferential and social terms. Social practices are discursive practices (inferentially articulated), which confer content to expressions and actions according to a precise normative vocabulary. The idea of learning the inferential use of a concept is bound to social attitudes that imply "responsibility'" and " authority". The game of giving and asking for reasons becomes, therefore, dependent on the social practices by which we recognize commitments and entitlements. The "scorekeeper" takes the place of the Sellarsian knower and becomes a "social role". The scorekeeper is the one who is able to reliably recognize inferentially articulated commitments that constitute the content of beliefs. He possesses an "expressive" rationality as the capacity to perform inferences in the game of giving and asking for reasons.

According to Hegel, the very nature of negation is incompatibility, which is not only formal but also material, i.e., entails material properties as, for example, "triangular". In this sense, we can say that *non-p* is the consequence of anything materially incompatible with *p*. From an idealistic point of view we cannot objectively acknowledge relations of material incompatibility unless we take part in processes and practices by which we subjectively acknowledge the incompatibility among commitments. This is the reason why to apply a concept is to occupy a social position, i.e., to undertake a commitment (to take responsibility of justifying it or to be entitled to it). Thus, judgments, as the minimum unit of experience, possess two sides: the subjective side which indicates who is responsible for the validity of his claims, and the objective one, which indicates whatever the speaker considers as responsible for the validity of his/her claims. Through specific attitudes we can specify the social dimension of knowledge. The *de dicto* ascription such as "he believes that…", determines the content of a commitment from a subjective point of view, i.e., from the point of view of the one who performs a certain claim. The *de re* ascription such as "he believes **of** this thing that…", determines the content of a commitment from an objective point of view, i.e., the inferential commitments the scorekeeper must acknowledge [4]. How does this acknowledgment happen? We can use the above mentioned ascriptions. If, for example, I am a scorekeeper who performs the *de dicto* ascription «Vincenzo says that this golden agaric must be cooked in butter» and contemporarily I acknowledge that the mushroom is totally similar to an *amanita caesarea* (a good golden agaric) yet it is dangerous because it is an *amanita muscaria* (an evil golden agaric), I can isolate the content of Vincenzo's assertion through the *de re* ascription «Vincenzo says **of** this golden agaric that it must be cooked in butter» and make explicit the commitments I undertake and the ones I refuse from an objective point of view [5].

2. AUTONOMOUS DISCURSIVE PRACTICES AND AI

Making It Explicit aims at describing the social structure of the game of giving and asking for reasons, which is typical of human beings. *Between Saying and Doing* has a different task: it pursue the pragmatic end to describe the functioning of autonomous discursive practices (ADPs) and the use of vocabularies [6]. ADPs start from basic practices that give rise to different vocabularies and the analysis is extended to nonhuman intelligence.

The so-called "analytic pragmatism" (AP) represents a view that clarifies what abilities can be computationally implemented and what are typical of human reasoning. First, Brandom criticizes the interpretation of the Turing's Test given by strong artificial intelligence or GOFAI, but he accepts the challenge to show what abilities can be artificially elaborated to give rise to an autonomous discursive practice (ADP). What is interesting to me is that AI-functionalism or "pragmatic AI" simply maintains that there exist primitive abilities that can be algorithmically elaborated and that are not themselves already "discursive" abilities. There are basic abilities that can be elaborated into the ability to engage and ADP. But these abilities need not to be discovered only if something engage in any ADP, namely there are sufficient to engage in any ADP but not necessary. Brandom's view could be seen as a philosophical contribution to the discussion about how to revisit some classical questions: the role of symbols in thought, the question of whether thinking just is a manipulation of symbols and the problem of isomorphism as sufficient to establish genuine semantic contentfulness. It becomes interesting to continue the Wittgensteinean trend in the theory of action, which brings light on the differences between proper action and bodily movement, which are mechanical as in the case of machines, and the problem of rule following that is related to the question of the peculiarity of non-human and human learning. I just would like to remember Habermas early essay *Handlungen, Operationen, körperlichen Bewegungen* [7], in which several fruitful distinctions are introduced. To summarize:

- humans have a kind of consciousness of the rule-following as in suitable circumstances they can make explicit the propositional content of the rule they are following,
- non-humans have a kind of derived consciousness according to which we make sense of their rule

following and we give an interpretation of their behaviour,

- we speak of mere behaviour in case of absence of implicit consciousness of rule following so that there is only a minimal capacity of action.

Very interesting ideas come from the book *The Shape of Actions: What Humans and Machines Can Do*, in which Harry Collins and Martin Kusch propose a thoughtful theory of action that sets the boundaries between humans and machines [8]. Humans can do three things: polymorphic actions (actions that draw on an understanding derived from a sociological structure); mimeomorphic actions (actions that are performed like machines and do not require an understanding derived from a sociological structure) and they cam merely behave.

The strategy of AP is based on a "substantive" decomposition that is represented in algorithms. Any practice-or-ability P can be decomposed (pragmatically analyzed) into a set of primitive practices-or-abilities such that:

1. they are PP-sufficient for P, in the sense that P can be algorithmically elaborated from them (that is, that a*ll* you need in principle to be able to engage in or exercise P is to be able to engage in those abilities plus the algorithmic elaborative abilities, when these are all integrated as specified by some algorithm); and

2. one could have the capacity to engage or exercise *each* of those primitive practices-or-abilities without having the capacity to engage in or exercise the target practice-or-ability P.

For instance, the capacity to do long division is "substantively" algorithmically decomposable into the primitive capacities to do multiplication and subtraction. Namely, we can learn how to do multiplication and subtraction without yet having learning division. On the contrary, the capacities to differentially respond to colours or to wiggle the index finger "probably" are not algorithmically decomposable into more basic capacities because these are not things we do *by* doing something else. Starting from Sellars, we can call them *reliable differential capacities to respond to environmental stimuli* but these capacities are common to humans, parrots and thermostats [9]. Along the line introduced by Sellars, Brandom intends ADP typical of human practices in an "inferential" sense and strictly correlated with capacities to deploy an autonomous vocabulary (namely a vocabulary typical of human social practices). They are grounded on the notion of "counterfactual robustness" that is bound to the so-called "frame problem". It is a cognitive skill namely the capacity to "ignore" factors that are not relevant for fruitful inferences. The problem for AI is not *how* to ignore but *what* to ignore. This is a way to overcome the analogical notion of intentionality that connotes Sellars' thought, by introducing a "relational" one. Basic practices that provide the very possibility to talk involve the capacity of attending to complex relational properties lying within the range of counterfactual robustness of various inferences.

CONCLUSION

I sketched the classical ideas from Pragmatism and introduced new conceptions, which enlarge the classical notion to overcome an instrumental sense of the philosophical research. Analytic Pragmatism has the advantage to introduce the logical structure of discursive practices that are typical of human beings while retaining a fruitful relation with basic practices characterizing machine learning. I would point on Brandom's thesis that only creatures that can talk can do that, because they have access to the combinatorial productive resources of a *language,* which allows humans to attend to many complex relational properties. But, I do not intend this thesis as a way of stating a primacy for human practices, rather the weaker descriptive end to analyze different practices we can observe in natural, artificial and social reality.

REFERENCES

[1] C. Hookway. *Pragmatism. The Stanford Encyclopedia of Philosophy*. http://plato.stanford.edu/entries/pragmatism, (2013).

[2] R. Brandom. Pragmatics and Pragmatism. In: *Hilary Putnam:Pragmatism and Realism*. J. E. Conant, U. M. Zeglen (Eds.). Routledge, London. UK. (2002).

[3] R. Brandom. Making It Explicit. Harvard University Press. Cambridge. USA. (1994).

[4] R. Brandom. Making It Explicit. Cambridge University Press. Cambridge. USA. Chap. 8. (1994).

[5] R. Giovagnoli. Razionalità espressiva. Scorekeeping: inferenzialismo, pratiche sociali e autonomia. Mimesis. Milano. Italy. (2004); R. Giovagnoli. On Normative Pragmatics. A Comparison between Brandom and Habermas. *Teorema*, XXIII; 51-68, (2003).

[6] R. Brandom. Between saying and Doing. Oxford University Press. Oxford. UK. (2008); R. Giovagnoli, Representation, Analytic pragmatism and AI. In: *Computing Nature*. G. Dodig-Crnkovic, R. Giovagnoli (Eds.), Springer, Germany, 2013; R. Kibble, Discourse as Practice: from Bordieau to Brandom. In: *Proceedings of the 50th Anniversary Convention of the AISB*, Goldsmith, UK, 2014.

[7] J. Habermas. Vorstudien und Ergänzungen zur Theorie des kommunikativen Handelns. Suhrkamp. Frankfurt am Main. Germany. (1984).

[8] H. Collins, M. Kusch. The Shape of Actions: What Humans and Machines Can Do. The MIT Press. USA. (1999).

[9] W. Sellars. Empiricism and The Philosophy of Mind. Harvard University Press. Cambridge. USA. (1997); D. MacBeth, Inference, Meaning and Truth in Brandom, Sellars and Frege, www.haverford-academia.edu

Material-Discursive Practice. Birk Weiberg, PhD. Lucerne University of Applied Sciences and Arts / Zurich University of the Arts. Like other aspects of computational photography, raw data features structural simi-. larities to phenomena of older photographic dispositifs and that suggest comparisons. such as in this case with latent photochemical images.