Inferentialism naturalized: norms, meanings and reasons in the natural world

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1 Synopsis

The philosophical foundations of *inferentialism* were presented in Robert Brandom's book *Making It Explicit (*1994), where he developed a new theory of linguistic meaning in terms of rule-governed social practices. Since then, it has been adopted and developed by a large number of authors and also has attracted various criticisms (Lance & O'Leary-Hawthorne, 1997; Rockmore, 2005; Hattiangadi, 2007; Stekeler-Weithofer, 2008; Kukla & Lance, 2009; Wanderer, 2008; Weiss & Wanderer, 2010; Turbanti, 2017), while Brandom himself has provided further elaborations (2000; 2008). Thus it has grown into one of the most discussed philosophical doctrines of the twenty-first century to date.

We have ourselves contributed to this development over the years (the major contribution of the PI of this project is Peregrin 2014b; see also Beran et al., 2018, for reactions to his book). However, we are concerned that inferentialism is usually conceived of as a purely philosophical doctrine that provides a new perspective on uniquely human rational and expressive capacities, but which does not intersect with what science tells us about us as creatures with a natural, cultural and developmental history.

We find this a missed opportunity and our intended project of *naturalizing inferentialism* proposes to bridge this yawning gap. It is based on the idea that inferentialism can be mined as a rich resource of ideas that can be reconstructed in direction to a philosophical *naturalism*, according to which philosophy should be continuous with science (Bashour, & Muller, 2014; Quine, 1960; 1995). The theoretical innovations of inferentialism might in turn fertilize current scientific research. More specifically, we aim to naturalize inferentialism by reconstructing, rethinking and quite possibly revising its account of *the nature of rules, reasoning,* and *meaning* from the two main perspectives on man as a natural being: namely *phylogenesis* and *ontogenesis*. The methods of philosophical analysis and modeling to be used to this end will be both inspired and disciplined by the current theoretical frameworks, models and hypotheses of various evolutionary sciences, psychology (developmental, cognitive, experimental) or anthropology. In this way, we aim to break new philosophical ground.

2. State of the art and general aims of the project

2.1 Brandomian inferentialism

Two main ingredients that shape Brandom's inferentialism are the convictions, that firstly, meaning is the role of the expression within our "language games" and, secondly, that these "language games" are essentially rule-governed. The first of these ingredients is nowadays called the *use-theory of meaning* and it is often associated with the inventor of the term "language game", the later Wittgenstein (1953). But of course, this view of meaning has also suited other philosophical approaches, such as the pragmatists' and the later neopragmatists' – like Quine (1960) or Rorty (1979) – as well as, in some aspects, exponents of the school of ordinary language philosophy (Chapell, 1964; Hanfling, 2003). What is distinctive about Brandom is the peculiar *normative* twist he adds to the use-theory: meaning is not just a pattern of employment, meaning worth the name is the *role* of the expression conferred on it by the *rules* which govern it.

Brandom's normative use theory was a development from two precedents. There is the "rule-following discussion" concentrating on the views of Wittgenstein (for whom rules do play an important role in our "language games"), which flourished after the seminal work of Kripke (1982). And Brandom's philosophical mentor Wilfred Sellars (1949; 1953) also emphasized the essential role of rules for our linguistic activities. Brandom's main contribution is his development of Sellars' idea that the rules governing our linguistic practices – and specifically those that constitute meanings – must include

broadly conceived *inferential* norms. Such rules determine which linguistic items it is correct or appropriate to publicly display (assert) in the context of previous performances of the same kind and/or in response to environing stimuli, as well as which non-verbal actions are appropriate as responses to such performances.

Here Brandom's view diverges significantly from mainstream philosophy of language in seeing language not as a matter of individual cognition, but rather as a kind of social institution. Specifically, it contrasts with the prevailing *representationalism* (Fodor, 1981; Millikan, 2004; Tye, 1995; Chalmers, 2012), predicated on the idea that what grounds our ability to develop language is our ability to produce and manipulate inner representations of the world. For Brandom, by contrast, what distinguishes us is not primarily our proficiency at representing our environment but our proficiency at skillfully interacting with it and, in particular, at building an unprecedented kind of sociality erected atop of rules and norms, which then determines also our way of skillful copying with the environment. This does not contradict the assumption that linguistic abilities build on more elemental perceptual and cognitive skills. But once in place, language affords a brand new medium of conceptual thinking not available antecedently and independently. Brandom thus puts forward a *transformative* view of human cognition and rationality.

2.2 Naturalism

Naturalism is a philosophical position maintaining, as Quine (1960) put it, that "knowledge, mind, and meaning are part of the same world that they have to do with, and that they are to be studied in the same empirical spirit that animates natural science." Therefore, the traditional subject matters of philosophy (such as "knowledge, mind, and meaning") are to be studied with methods that are in principle not different from those of the sciences. This brings about a picture of philosophy continuous with science and differing from it perhaps only in the amount of speculation it allows itself (De Caro & Macarthur, 2008; Braddon-Mitchell & Nola, 2009; Bashour & Muller, 2014; Kelly, 2016).

This view of philosophy appears to be very different from that offered by Brandom and some of his fellow inferentialists, for whom the goals of science and philosophy are quite divergent. **What underlies our intended project is the conviction that inferentialism can be stripped of this kind of anti-naturalism without loss. Naturalized inferentialism gains an empirical tractability that allows it to incorporate scientific insights and to contribute more deeply to our self-understanding.**

Let us stress that we do not conceive of naturalism as implying a rampant reductionism ("everything is atoms in the void"). Rather, our naturalistic approach is premised on the idea that social (including linguistic) normativity is a phenomenon reflecting the natural condition of social animals dependent on coordination, cooperation and communication, with a particular biological, cultural and developmental history (in the sense of Price, 2013). There is every reason to expect that substantial light can be shed on this phenomenon from the empirical perspective of sciences. This *relaxed naturalism* aims to be continuous with *any* pertinent empirical research (across borders).

Furthermore, we do not think that only natural sciences are qualified to tell us relevant things about our human world. On the contrary, our project is based on the conviction that even philosophy (such as Brandom's inferentialism) that does not aim at interacting with science has the potential to provide vital leads to more naturalistic projects such as ours. (Hence we endorse what Sharp, 2013, calls *methodological naturalism* – in contrast to *reductive naturalism*, and, for that matter, in contrast to Brandom's *analytical pragmatism*.)

In our view, a representative example is the claim that humans are basically "creatures not of *habits*, but of *rules*" (Sellars 1949). This idea, crucial for the philosophical systems of Sellars and Brandom, was proposed by them in a speculative vein; but recently its main tenets have started to be surprisingly vindicated by the findings of empirical sciences (see Section 3). It has started to be evidenced that a feature that plays a crucial role in human development, both phylogenetic and ontogenetic, is the ability

and proclivity to assume ever more complex "normative attitudes", classifying matters as "right" or "wrong" from various viewpoints. This remarkable convergence between the speculative tenets of inferentialism and the results of empirical research shows the way for a further exploitation of inferentialistic ideas within the realm of science.

2.3 Previous results of the members of the team

Senior members of the project team – **Peregrin, Risjord, Koreň and Hlobil** – have already published results contributing to various aspects of naturalization of inferentialism. Indeed, this has brought all of them together and this has made them develop the current project, for they realized that while the individual contributions may be significant, the synergy brought about by working in the team might not only accelerate their individual research subprojects, but also initiate a genuine philosophical breakthrough – an integral interconnection of two "incommensurable" doctrines with the result of opening brand new horizons for philosophy and its cooperation with science.

Both the foreign members of the team, Risjord and Hlobil, have been closely connected with the University of Hradec Králové. Risjord has had two fellowships there a 2011-12 Fulbright Fellowship and a 2018-19 "Mobility for International Researchers" grant; and he has been also participating in the 2017-2020 "Inferentialism and Collective Intentionality" project funded by the Czech Science Foundation and *Fonds zur Förderung der wissenschaftlichen Forschung* (a project the PI of which was Koreň and in which also Peregrin participated). Hlobil was a member of the project team of the project "Man as a normative creature" which was part of the "Excellency of the University of Hradec Králové" scheme (a project the PI of which was Peregrin and in which also Koreň participated).

Peregrin has been working on inferentialism almost since its very beginning, and has brought significant contributions to the program (Peregrin, 2006; 2009; 2010a; 2010b; 2012a; 2012b; 2013; 2014a; 2016a; 2016b; 2018a; 2018b) culminating in his 2014b book. During the recent decade, he has been ever more diverging from the orthodox Brandomian program in the direction of its naturalized version. He has suggested that it is "normative attitudes", which might serve as the meeting point between inferentialism and a naturalistic description of human communities; and in Peregrin (2018a) he has already sketched a program for the naturalization of inferentialism.

Koreň, a former student of Peregrin, has been approaching inferentialism mostly from the naturalistic perspective, focusing especially on its account of the social nature of reasoning (as implemented in the game of giving and asking for reasons) and the expressive role of logic (Koreň, 2018, Koreň forthcoming). He brought to bear the genealogical and evolutionary approach to both issues, including the comparison with the current naturalistic accounts of reasoning as a social competence that evolved primarily for interpersonal justification, argumentation, bargaining or collective decision-making. He is also one of the editors of the most recent contribution to the inferentialist literature (Beran, Kolman, & Koreň, 2018; including an extensive review of the state-of-the-art – Koreň & Kolman 2018).

Risjord is renowned especially as a philosopher of social science (see Risjord 2009; 2014). His first book (2000) concerned the anthropological study of reasoning and the role of logic in translation. He came into contact with inferentialism especially in two areas. One of them concerned the large conceptual shifts associated with the movement away from the idea that both mind and culture are composed of representations, which is related to the shift in philosophy away from representationalism of which inferentialism forms a part – see Paleček & Risjord (2013); Risjord (2014). The other area is general philosophy of science focusing on the question how scientific theories and models can represent (Millson, Khalifa, & Risjord, 2018; Khalifa, Millson, & Risjord, forthcoming).

Hlobil, a former student of Brandom, has been approaching inferentialism especially from the side of epistemology and logic. He strived to determine how norms of reasoning – especially norms governing *hypothetical* reasoning – underlie the relation of consequence as studied by logicians (Hlobil, 2016a, 2018a, 2018b, forthcoming-a). Relatedly, he has worked on the philosophy of reasoning and the sense in which reasoners must be aware of the norms of reasoning (Hlobil, 2014; forthcoming-b; forthcoming-

c) as well as the psychology of reasoning (Hlobil, 2016c). He also defended the thesis that reasoning, the norms governed activity of "giving and asking for reasons," and human hyper-sociality developed in interdependence with one another (Hlobil, 2016b).

3. Specific objectives of the project

If social normativity is reconceived as a phenomenon arising from the natural condition of social animals with a particular biological, cultural and developmental history, it suggests itself to study it naturalistically from the perspective of *phylogeny* and *ontogeny*. Firstly, the challenge is to tell an evolutionary story by which rule-using animals could arise from non-normative beings (taking into account also the comparative evidence from cross-species research). Secondly, the challenge is to understand children's capacity to develop into mature, norm-responsive social beings. This, however, presupposes that we have a working account or model of rule-following, norm-responsivity, etc. – ranging from more rudimentary to more complex. And inferentialism, we submit, can be mined as a particularly rich resource of such accounts or models (though, of course, it should not be taken uncritically).

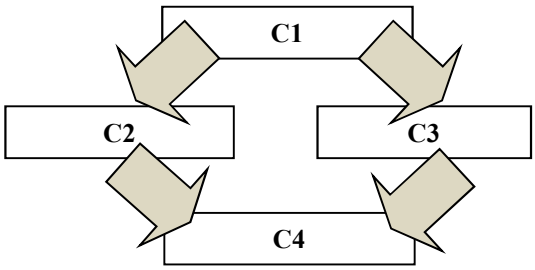
In view of this, the following thematic components make up the backbone of the project:

C1 The nature of rules and inferential rules

C2 Phylogenesis of rules and inferential rules

C3 Ontogenesis of rules and inferential rules

C4 The nature of reasoning



Despite its clear interdisciplinary character, the emphasis of this project will be on philosophical analysis and on searching out such new interconnections between theoretical and empirical results that have not yet been reflected upon and analyzed. The principal aim of the project is thus a clear articulation of relevant questions and problems and a stepwise specification of promising directions of research (including "putting aside" problems that turn out to be too arduous for the present stage of the research or which turn out to be without a philosophical potential).

C1 The nature of rules and inferential rules

In this component of our project, we would like to elucidate the kind of normativity induced by social rules in general and especially by rules of inference in particular. In general, it is clear that many rules rest on the normative attitudes of members of the corresponding societies, and that many inferential rules are of this kind – they rest on the propensities of speakers to correct arguments they perceive as inconclusive, to reject inferences that they feel are inappropriate and eventually to dismiss as incompetent any speakers who refuse to reject such inferences and arguments. To elucidate the nature of the rules and the nature of the corresponding normativity, we will have to analyze the mechanisms that underlie normative attitudes and other cognitive-cum-behavioral patterns.

Our working hypothesis here is that this could be done by developing Sellars' concept of pattern-governed behaviour (Sellars, 1949; 1954; 1969; Peregrin, 2010). Sellars distinguishes between two kinds of prescriptions, which he calls "ought-to-do's" and "ought-to-be's" – while the former is just a straightforward command that something should be done (which must be addressed to an agent who is able to comprehend it), the latter are declarations of a desirability of a state-of-affairs (which may yield some "ought-to-do's" by way of a "practical syllogisms": if *S* ought to be, and doing *D* brings about *S*, one should do *D*). The interaction between these two kinds, according to Sellars, displays a kind of dialectic responsible for the perpetuation of language: speakers of a language observe its rules as

"ought-to-be's", which makes them force linguistic novices to instantiate the "ought-to-be's"; and, what is crucial, the novices come to not only instantiate the rules, but also to *grasp* them as "ought-to-be's", which forms them into the speakers tending to work towards the realization of the "ought-to-be's".

We want to further develop this model in a naturalistic direction (including by searching for analogies in the scientific approaches) and so as to applicable when we will address the issue of phylogeny and ontogeny of rules (see below). A part of this will consist in incorporating into the model Brandom`s crucial idea of pre-discursive normative attitudes underpinning *implicit normativity* and Haugeland`s (1998) account of social norms in terms of censuring responses reducing behavioral variability and ensuring social conformity. In this vein, we want to substantiate a progression from primitive to increasingly complex social practices, the differences reflecting especially the *kind of sensitivity* of agents to what *ought-to-be*, ranging from affective responses to a full-blown shared understanding of a norm as an agent-neutral standard, internalization thereof and self-regulation (cf. Tomasello 2014, 2016, Schmidt & Rakoczy, forthcoming). We will argue that this approach has a number of advantages over the extant accounts of norms and norm-psychology in terms of normative preferences or beliefs (cf. Bicchieri 2006, Brennan et al. 2013, Elster, 2009, Sripada & Stich, 2006).

We will also pay a special attention to *inferential* rules which are specific in that they equip our expressions with linguistic meaning. The role of the rules with respect to meanings, roughly speaking, is similar to that of the rules of chess with respect to the individual roles of chess pieces – just as what makes a piece into, say, a bishop, is the particular way it is subordinated to the rules of chess, so what makes a kind of sound into, say, the report that it is raining outside, again, is the particular way it is subordinated to the rules of language. The question, of course, is exactly what kind of rules they are. There are some empirical studies regarding the normative dimension of language learning (Koenig & Echols, 2003; Clark, 2007; Sabbagh & Henderson, 2007; Rakoczy & Tomasello, 2009); but the only empirical study of specifically inferential rules of language we know of is Blouw & Eliasmith (2018).

Our hypothesis here is that the rules of language are just a specific kind of the rules which emerge in human societies in the implicit form we hope to elucidate in the Sellarso-Brandomian vein. Just as there are socially *appropriate ways of doing things* ultimately instituted/maintained by corrective or supportive responses of social actors, there are *appropriate ways of handling expression*s (*making inferential moves involving them*). However, language makes it possible to make the rules and attitudes explicit in verbal form and make them subject to social negotiation, providing a new form of normative friction that can be self-reflectively turned onto itself. We expect to develop a naturalistic account of this idea that we will further exploit (in the component C3) to give an account of the norms of reasoning in general and of logical reasoning (inference) in particular.

C2 The phylogenesis of rules and inferential rules

Our approach is based on the idea that an explanation of the workings of rules and norms can be achieved via elucidation of the way they come into being, both phylogenetically, within the history of mankind, and ontogenetically, within the development of individual humans. In this component we would like to address the former aspect, in particular we would like to analyze the way rules entered the scene during evolution, and the kind of benefit they may have bestowed on human societies to be evolutionarily successful.

Here our hypothesis is twofold. First, humans became hypersocial due to having evolved into rule-followers. Second, humans became rule-followers due to having evolved a proclivity to assuming normative attitudes to what other people (as well as themselves) were doing, which resulted into their taking certain patterns of behavior as something that *ought-to-be* (*ought-not-to-be*), and, in this sense, to following implicit rules (in the sense of Brandom, 1994). Here we expect that surprising parallels may be found in comparing extant evolutionary models of the emergence of cooperation with the generalized Sellarsian model of pattern-governed behavior as elaborated in C1.

There is a consensus that the emergence of cooperation in animal, and especially human, societies cannot have been caused just by the occurrence of some pro-cooperation mutation, for such a mutation alone would have been quickly wiped out, as it reduces fitness. There must be some other supporting mechanism which makes cooperation sustainable. Proposals such as *altruistic punishment*, *ostracization of non-cooperators*, *group selection* (West et al. 2007) certainly aim in the right direction; however, none of them seems to offer a straightforward solution, they rather seem to be pieces in a larger mosaic.

We want to show that the generalized Sellarsian model suggests one more piece – which, we believe, might be a crucial one – namely human normativity in the sense of the tendency to grasp certain social pressures as manifestations of "ought-to-be's". We propose that this is connected with the establishment of "cultural evolution", which came to piggyback on the genetic one and which accelerated our development in an unprecedented way. Fortunately, recently empirical findings corroborating this thesis have started to appear (Castro & Toro, 2004; O'Gorman et al., 2008, Castro et al., 2010; Gürerk *et al*. 2006, Chudek and Henrich, 2011, Richerson & Henrich, 2012; Henrich, 2015). In particular, there is a growing agreement that human hypersociality and culture co-evolved with certain unique mechanisms (such as imitation, social learning, natural pedagogy, etc.) of social transmission and cumulative fine-tuning of locally adaptive patterns of behavior. Since social conformity and norms are recognized to be crucial for the evolution of human sociality and culture, the Sellarsian model of the emergence and propagation of patterns in a social group as something that *ought to be* is arguably of the greatest interest. Applied specifically to language and communication, we will compare the model with the theory considering the rules as resulting from the spontaneous solution of coordination problems (Lewis, 1969; Skyrms, 2010), theories which consider the rules of language as resulting from the ritualization of the results of co-evolution of "mind-reading" and "manipulation" (Krebs and Dawkins, 1984; Knight, 2008), and also theories that account for the emergence of rules of language in terms of conventionalization and communalization of preexistent communicative activities serving to coordinate and facilitate cooperation (Tomasello 2008, 2014).

C3 The ontogenesis of rules and inferential rules

The role of normativity within the development of human infants has recently been attracting the attention of the empirical sciences (e.g. Casler et al., 2009; Clément et al., 2011; Kenward et al., 2011; Schmidt et al., 2016, Michael et. al 2016). It is becoming clear, and well documented, that one of the crucial *specifica* of us humans is the uncanny tendency to classify actions as not only possible/impossible, but also as right/wrong, in several senses. Being initiated into our human world (or "enculturated") crucially involves learning to understand the *rules* of human societies (even when they are not explicit and detectable merely by the "social friction" which their violation incites), and also learning that along with following these rules, members of the society should also take part in their upholding.

What holds about human practices in general, holds also about *linguistic* practices. Learning language involves being initiated into a complex system of rule-governed practices. The point is not only to acquire the kind of know-how that allows the infant to handle words and phrases in skillful and useful ways, but also to gain the knowledge of the *limits* of language – to learn which ways of handling linguistic items would betray lack of understanding. And it is precisely these limits that amount to the crucial inferential rules *delimiting* our linguistic games and thus *constituting* them.

Our aim is to confront the inferentialist background theory of normativity with what we know about the ontogenetic role of normative assessments, and especially with the role normative assessments play within language acquisition. By now, it seems to be relatively clear that normative classification is something which is vital for the orientation of children within their societies, and for building the micro-niche via which they become the members of the society (Rossano, 2012; Rakoczy & Schmidt, 2013; Schmidt & Rakoczy, forthcoming, Rochat, 2015). Of course language also plays a vital role in this development and cannot avoid entanglement in the normative edifice delimiting one's world.

We find it promising to view language not as an "ability" which must be "mastered" by the novices entering the community, but rather as a crucial part of the *cultural niche* to which the novices must adapt (Boyd & Richerson, 2011; Kendal, 2011). Seen from this perspective, linguistic and social rules become familiar in a way similar to the way in which an infant familiarizes herself with the boundaries of the physical spaces in which she is to live. The normative attitudes of the members of the society structure her "playground" just as physical constraints do.

Summing up, in this component we will crosscheck the Sellarso-Brandomian conception of rules (and our elaboration of it) against the data coming from empirical studies of children entering our rule-governed world and learning the inferential rules of language. We want to confirm the hypothesis that normative attitudes, as proposed by Brandom, are a real phenomenon and that coming to live in the human world is mostly to learn to live "under a normative eye." Also we would like to verify our thesis that language (with its inferential rules) is best seen in an "ecological" way, that is, as part of the human hypersocial niche to which newcomers adapt, rather than as a tool, which they must learn to use.

C4 The nature of reasoning

Reasoning is a capacity unique to humans that is intimately connected to practical or theoretical rationality. As such, it has been a topic studied by both philosophers and scientists, especially cognitive and social psychologists. Until recently, neither has been concerned with the ultimate question of why human possess the capacity of reasoning in the first place. If we are to take the phylogenesis of linguistic and social rules seriously, we must inquire into the evolutionary emergence of reasoning. These issues have now become prominent in connection with the so-called dual-process accounts of reasoning (Evans, 2003) and Mercier and Sperber's (2017) increasingly influential interactionist theory of reasoning as primarily designed for social justification and argumentation.

Mercier and Sperber's approach, in particular, has some affinities to the inferentialist account of reasoning. They argue that the evolutionary function of reasoning is justification and argumentation – both intimately connected to language and the ability to verbalize and assess reasons. We want to compare the inferentialistic account of the nature of norms of reasoning with the accounts of their origins suggested by Mercier and Sperber, Henriques (2011) and Tomasello (2014) respectively (Tomasello explicitly refers to both Brandom and Sellars). We hypothesize that reasoning, the norms governing the activity of "giving and asking for reasons," and human hyper-sociality developed in mutual interdependence. The argument, in a nutshell, rests on the following interrelated claims that we shall flesh out in more detail: i) social norms can structure individual practical reasoning (Hlobil, 2016b, Koreň 2016), ii) social norms structure reasoning because they structure argumentation (Koreň forthcoming), and iii) human hyper-sociality and norms structuring argumentation are interdependent.

From a more abstract vantage point, the inferential rules, interconnecting certain sentences (premises) with other sentences (conclusions) establish the relation of *consequence*, which is the subject matter of logic; and it is crucial to elucidate the road which leads from inferential rules to the consequence relation. Inferentialists are certainly together in rejecting the idea that we should explain consequence, in the final analysis, in terms of truth-preservation; however, they disagree about what the correct alternative is, i.e. the precise way in which the inferential rules ground consequence. While some hold that we should understand consequence and inferential rules in terms of proofs (Prawitz, 2006; Francez, 2015). Others think that consequence is best understood in terms of commitments and entitlements (Brandom, 2008). The so-called "bilateralists" (Restall, 2005; Ripley 2013) then hold that consequence must be explained in terms of both assertions and denial (which are irreducible to each other). This disagreement has substantive implications, e.g., for which structural principles, such as transitivity or monotonicity, inferentialists should accept. From our viewpoint, there is a natural phenomenon of certain norms being in force in a community and these norms determine both the relation of consequence and the meanings of the expressions used in that community (Peregrin, 2014a; Hlobil, forthcoming-a). Within the project, we will concentrate on the question of what consequences naturalism has for how inferentialists should think about the consequence relation.

Inferential rules are often seen as means of expanding or updating our knowledge of the world. Many think that inferential rules "guide" us in our attempts to increase knowledge in a straightforward way, namely by obliging us believe in their conclusion whenever we believe in their premises. However, this view has been challenged from a broadly naturalistic viewpoint. Harman (1986) argued that if we think of rules of inference on the model of logical laws of deduction, then inference, as a cognitive process, has little to do with our being guided by rules of inference so conceived. Inferentialists endorse this objection (cf. Peregrin 2014b, Brandom 2018). According to them, the laws of logic do not dictate what we are to think, say or do. Rather, they make explicit the very structure of the space of legitimate inferential moves, within which reasoning takes place in the first place. And to the extent that the idea of warranting or justifying something presupposes such an inferential space – the space of reasons – logic does seem to have a very special role to play in our system of beliefs, knowledge or theories. This, we think, can crucially contribute to the resolution of the dispute concerning what exactly the inferential rules oblige us to do (Steinberger, forthcoming).

The inferentialist construal of the nature of inferential rules can be also elaborated to bring a substantive contribution to the recent discussion about the justification of logical rules (Wright, 2004; Enoch & Schechter, 2008; Boghossian, 2014). The considerations behind the discussion are whether basic rules of logic can be justified either *a priori* (non-empirically) or *a posteriori* (empirically) or either *non-inferentially* or *inferentially*. According to us, inferentialism offers an attractive, naturalistically-oriented resolution of this ongoing debate, namely that rules are correct if and only if they have evolved into something that is respected by the speakers of the corresponding language. Thus, for inferences to be correct is a matter of there being rules that come into existence with social-linguistic practices whose participants ultimately sanction some rather than other moves (including the moves containing the logical vocabulary – see Peregrin & Svoboda, 2017). Note that this does not mean that rules of logic are anything like empirical generalizations; though finding out which rules a given community endorsed may be an empirical enterprise (Risjord 2000).

Summing up, in this component we will substantiate the hypothesis that reasoning, the norms governing the activity of "giving and asking for reasons," and human hyper-sociality developed in mutual interdependence. And we want to explore its ramifications for the debates of the nature and epistemology of reasoning and logic at the interface of philosophy and science (especially psychology).

References

Adler, J. E. & Rips, L. J., eds. (2008): *Reasoning*, Cambridge.

Bashour, B. & Muller, H. D., eds. (2014): *Contemporary Philosophical Naturalism and its implications*. New York.

Beran, O., Kolman, V. & Koreň, L., eds. (2018): *From rules to meaning*, New York.

Bicchieri, C. (2006): *The grammar of society,* Cambridge.

Blouw, P., & Eliasmith, C. (2018). Using Neural Networks to Generate Inferential Roles for Natural Language. *Frontiers in psychology*, *8*, 2335.

Boghossian, P. (2014): What is inference?. *Philosophical Studies* 169, 1–18.

Boyd, R. P., Richerson, J. & Henrich, J. (2011): The Cultural Niche. *PNAS* 108, 10918–10925.

Braddon-Mitchell, D. & Nola R., eds. (2009): *Conceptual Analysis and Philosophical Naturalism*, Cambridge (Mass.).

Brandom, R. (1994): *Making It Explicit*, Cambridge (Mass.).

Brandom, R. (2000): *Articulating reasons*, Cambridge (Mass.).

Brandom, R. (2008): *Between saying and doing*, Oxford.

Brandom, R. (2018): From Logical Expressivism to Expressivist Logics, Beran et al. (2018), 151–164.

Brennan, G., Eriksson, L., Goodin, R. E. & Southwood, N. (2013): *Explaining norms*, Oxford.

Casler, K., Terziyan, T., & Greene, K. (2009): Toddlers view artifact function normatively. *Cognitive Development* 24, 240-247.

Castro, L. & Toro, M. A. (2004): The evolution of culture, *PNAS* 101, 10235–10240.
Castro, L., Castro-Nogueira, M. A. & Toro, M. A. (2010): Cultural transmission and social control of human behaviour, *Biology & Philosophy* 25, 347–360.
Chalmers, D. J. (2012): *Constructing the World*, Oxford.
Chappell, V. C. (1964): *Ordinary Language*. Englewood Cliffs.
Chudek, M. & Henrich, J. (2011): Culture-gene coevolution, norm-psychology and the emergence of human prosociality. *Trends in Cognitive Science* 15, 218–226.
Clark, E. V. (2007): Conventionality and contrast in language and language acquisition. *New Directions for Child and Adolescent Development* 2007, 11-23.
Clément, F., Bernard, S., & Kaufmann, L. (2011): Social cognition is not reducible to theory of mind. *British Journal of Developmental Psychology* 29, 910–928.
De Caro, M. & Macartur, D., eds. (2008): *Naturalism in Question*, Cambridge (Mass.).
Elster, J. (2009): Norms. In P. Hedström, & P. Bearman (Eds.), *The Oxford handbook of analytical sociology* (pp. 195-217). Oxford.
Enoch, D. & Schechter, J. (2008): How Are Basic Belief-Forming Methods Justified?. *Philosophy and Phenomenological Research* 76, 547–579.
Evans, J. S. B. (2003): In two minds. *Trends in Cognitive Sciences* 7, 454–459.
Fodor, J. (1981): *RePresentations*, Cambridge (Mass.).
Francez, N. (2015): *Proof-theoretic semantics*, London.
Gürerk, Ö., Irlenbusch, B., & Rockenbach, B. (2006). The competitive advantage of sanctioning institutions. *Science*, *312*(5770), 108-111.
Hanfling, O. (2003): *Philosophy and Ordinary Language*, London.
Harman, G. (1986): *Change in View*, Cambridge (Mass.)
Hattiangadi, A. (2007): *Oughts and thoughts*, Oxford.
Haugeland, (1998): *Having thought,* Cambridge (Mass.).
Hlobil, U. (2014): Against Boghossian, Wright and Broome on inference. *Philosophical Studies* 167, 419-429.
Henrich, J. (2015): *The secret of our success*, Princeton: Princeton University Press
Henriques, G. (2011): *A New Unified Theory of Psychology*. New York.
Hlobil, U. (2016a): A Nonmonotonic Sequent Calculus for Inferentialist Expressivists. In P. Arazim & M. Dančák (Eds.), *The Logica Yearbook 2015* (pp. 87-105), London.
Hlobil, U. (2016b): Social norms and unthinkable options. *Synthese* 193, 2519–2537.
Hlobil, Ulf (2016c): Chains of Inferences and the New Paradigm in the Psychology of Reasoning. *Review of Philosophy and Psychology* 7 (1):1-16.
Hlobil, U. (2018a): Choosing Your Nonmonotonic Logic: A Shopper's Guide. In P. Arazim & T. Lávička (Eds.), *The Logica Yearbook 2017* (pp. 109-123), London.
Hlobil, U. (2018b): The Cut-Free Approach and the Admissibility-Curry. *Thought* 7, 40-48.
Hlobil, U. (forthcoming-a): Faithfulness for Naive Validity. *Synthese*.
Hlobil, U. (forthcoming-b): Goodness-Fixing Isn't Good Enough: A Reply to McHugh and Way. *Mind*.
Hlobil, U. (forthcoming-c): Inferring by Attaching Force. *Australasian Journal of Philosophy*.
Kelly, J. C., ed. (2016): *A companion to naturalism*. Oxford.
Kendal, J. R. (2011): Cultural niche construction and human learning environments. *Biological Theory* 6, 241–250.
Kenward. B., Karlsson, M., & Persson J. (2011): Over-imitation is better explained by norm learning than by distorted causal learning. *Proceedings of the Royal Society B* 278, 1239-1246.
Khalifa, K.; Millson, J. & Risjord, M. (forthcoming). Inference, Explanation, and Asymmetry. *Synthese*.
Knight, C. (2008): Language co-evolved with the rule of law, *Mind & Society* 7, 109-128.
Koenig, M. A. & Echols, C. H. (2003): Infants' understanding of false labeling events: the referential roles of words and the speakers who use them, *Cognition* 87: 179–208.
Koreň, L. (2016): Trust, norms and reason, Risjord (2016), pp. 245-264.
Koreň, L. (2018): Propositional contents and the logical space, Beran et al. (2018), pp.196-2018.

Koreň, L. (forthcoming): Wherein is reasoning social?, Koreň et al. (forthocoming).
Koreň L. & Kolman, V. (2018): Introduction: Inferentialism Years of Travel and Its Logico-Philosophical Calling, Beran et al. (2018), 1-46.
Koreň L., Stovall, P., Schmidt, H.B., & L. Townsend (forthcoming) eds.: *Groups, norms and practices*, the book series *Studies in the philosophy of sociality*, Dordrecht.
Krebs, J. R. & R. Dawkins (1984): Animal signals: mind-reading and manipulation, *Behavioural Ecology* (ed. Krebs, J. R. & Davies, N.B.), Oxford, 380–402.
Kripke, S. (1982): *Wittgenstein on Rules and Private Language*, Cambridge (Mass.).
Kukla, R. & M. N. Lance (2009): *"Yo!"and "Lo!"*, Cambridge (Mass.).
Lance, M., & O'Leary-Hawthorne, J. (1997): *The Grammar of Meaning*. Cambridge.
Lewis, D. (1969): *Convention*, Oxford.
Michael, J., Sebanz, N, & G. Knoblich (2016): *The sense of commitment, Frontiers in psychology* 6.
Millikan, R. G. (2004): *Varieties of meaning*, Cambridge (Mass.).
Millson, J. A., Khalifa, K. & Risjord, M. (2018). Inferentialist-Expressivism for Explanatory Vocabulary, Beran et al. (2018), 155-178.
O'Gorman, R., Wilson, D. S. & Miller, R. R. (2008): An evolved cognitive bias for social norms. *Evolution of Human Behavior* 29, 71–78.
Paleček, M. & Risjord, M. (2013): Relativism and the Ontological Turn in Anthropology, *Philosophy of the Social Sciences* 43: 3-23
Peregrin, J. (2006): Meaning as an inferential role, *Erkenntnis* 64, 1-36
Peregrin, J. (2009): Inferentialism and Compositionality of Meaning, *International Review of Pragmatics* 1, 154-181
Peregrin, J. (2010a): The Enigma of Rules. *International Journal of Philosophical Studies* 18, 377–394.
Peregrin, J. (2010): Inferentializing Semantics, *Journal of Philosophical Logic* 39, 255-274.
Peregrin, J. (2011): Creatures of norms as uncanny niche constructors, T. Hříbek and J. Hvorecký (eds.): *Knowledge, Value, Evolution*, London, 2011, 189-198
Peregrin, J. (2012a): The Normative Dimension of Discourse, K. Allan and K. Jasczolt (eds.): *Cambridge Handbook of Pragmatics*, Cambridge, 209-225
Peregrin, J. (2012b): Inferentialism and the Normativity of Meaning, *Philosophia* 40, 2012, 75-97
Peregrin, J. (2013): Inferentialism and Normativity, M. Beaney (ed.): *Oxford Handbook of the History of Analytic Philosophy*, Oxford, 2013, 1082-1097
Peregrin, J. (2014a): Rules as the Impetus of Cultural Evolution, *Topoi* 33, 531–545.
Peregrin, J. (2014b): *Inferentialism*, Basingstoke.
Peregrin, J. (2016a): Social normativism, Risjord (2016), 60-77
Peregrin, J. (2016b): Should one be left or right Sellarsian?, *Metaphilosophy* 47, 251–263
Peregrin, J. (2018a): Inferentialism: where do we go from here, Beran et sl. (2018), 249-260
Peregrin, J. (2018b): Is inferentialism circular?, *Analysis* 78, 2018, 450-454
Peregrin J. & Svoboda, V. (2017): *Reflective equilibrium and the principles of logical analysis*, Routledge, New York,
Prawitz, D. (2006). Meaning Approached Via Proofs. *Synthese* 148, 507-524.
Price, H. (2013): *Expressivism, Pragmatism and Representationalism*, Cambridge.
Price, M. E., Cosmides, L. & Tooby, J. (2002): Punitive sentiment as an anti-free rider psychological device. *Evolution of Human Behavior* 23, 203–231.
Quine, W. V. O. (1960): *Word and object*, Cambridge (Mass.).
Quine, W. V. O. (1995): *From Stimulus to Science*, Cambridge (Mass.).
Rakoczy, H. & Schmidt, M. F. (2013): The early ontogeny of social norms. *Child Development Perspectives* 7, 17–21.
Rakoczy, H. & Tomasello, M. (2009): Done wrong or said wrong? *Cognition* 113: 205–212
Restall, G. (2005): Multiple Conclusions. In P. Hájek, L. Valdés-Villanueva & D. Westerståhl (Eds.), *Logic, Methodology and Philosophy of Science*, London.

Richerson, P. & Henrich, J. (2012): Tribal social instincts and the cultural evolution of institutions to solve collective action problems. *Cliodynamics* 3, 38–80.
Richerson, P. J. & Boyd, R. (2005): *Not by genes alone*, Chicago.
Ripley, D. (2013): Paradoxes and Failures of Cut. *Australasian Journal of Philosophy* 91, 139-164.
Risjord, M. W. (2000): *Woodcutters and witchcraft: Rationality and interpretive change in the social sciences*, Albany.
Risjord, M. (2005): Reasons, Causes, and Action Explanations, *Philosophy of the Social Sciences* 35: 294-306.
Risjord, M. (2009): *Nursing knowledge*, London.
Risjord, M. (2014): *Philosophy of social science*, London.
Risjord, M. (2014): Structure, Agency, and Improvisation, J. Zahle & C. Finn (eds.): *Rethinking the Individualism/Holism Debate: Essays in Philosophy of Social Science*, Dordrecht.
Risjord, M. (2016a): Ecological Attunement and the Normativity of Practice, Risjord (2016), 175-193.
Risjord, M., ed. (2016b): *Normativity and Naturalism in the Philosophy of the Social Sciences*, New York.
Rochat, P. (2015): Self-conscious roots of human normativity. *Phenomenology and the Cognitive Sciences* 14, 741–753.
Rockmore, T. (2005): *Hegel, Idealism and Analytic Philosophy*, Yale
Rorty, R. (1979): *Philosophy and the Mirror of Nature*, Princeton.
Rossano, M. J. (2012): The essential role of ritual in the transmission and reinforcement of social norms. *Psychological Bulletin* 138, 529–49.
Sabbagh, M. A. & Henderson, A. M. (2007): How an appreciation of conventionality shapes early word learning. *New Directions for Child and Adolescent Development* 2007: 25-37
Schmidt, M. F., Butler, L. P., Heinz, J. & Tomasello, M. (2016): Young children see a single action and infer a social norm. *Psychological Science* 27, 1360–1370
Schmidt, M. F. H. & H. Rakoczy (forthcoming): On the uniqueness of human normative attitudes. In Kurt Bayertz & Neil Roughley (eds.), *The normative animal? On the anthropological significance of social, moral and linguistic norms*, Oxford.
Sellars, W. (1949): Language, Rules and Behaviour, *John Dewey* (ed. Hook, S.), New York, 289–315.
Sellars, W. (1953): Inference and Meaning, *Mind* 62, 313–338.
Sellars, W. (1954): Some Reflections on Language Games, *Philosophy of Science* 21, 204–228.
Sellars, W. (1969): Language as Thought and as Communication, *Philosophy and Phenomenological Research* 29, 506–527.
Sellars, W. (1974): Meaning as functional classification, *Synthese* 27, 204-228.
Sharp, K. (2013): *Replacing trurh*, Oxford.
Skyrms, B. (2010): *Signals*. Oxford.
Sripada, C., and S. Stich (2006): A framework fro the psychology of norms, In P. Carruthers, S. Laurence & S. Stich, eds., *Innateness and the Structure of the Mind*, Vol. II, New York: Oxford University Press, pp. 286-309.
Steinberger, F. (forthcoming): Consequence and normative guidance. *Philosophy and Phenomenological Research*.
Stekeler-Weithofer, P., ed. (2008): *The pragmatics of making it explicit*, Philadelphia.
Tomasello, M. (2008): *Origins of Human Communication.* Cambridge (Mass.).
Tomasello, M. (2014): *A natural history of human thinking.* Cambridge (Mass.).
Tomasello, M., & Rakoczy, H. (2003): What makes human cognition unique?. *Mind and Language* 18, 121-147.
Turbanti, G. (2017): *Robert Brandom's Normative Inferentialism*, Philadelphia.
Tye, M. (1995): *Ten Problems of Conscioiusness*, Cambridge (Mass.).
Wanderer, J. (2008): *Robert Brandom*, Stockfield.
Weiss, B. & Wanderer, J., eds. (2010): *Reading Brandom*, New York.
Wittgenstein, L. (1953): *Philosophische Untersuchungen*, Oxford.
Wright, C. (2004): Intuition, entitlement and the epistemology of logical laws. *Dialectica* 58, 155–175