

Children as Investigators of Brunerian “Possible Worlds”. The Role of Narrative Scenarios in children’s Argumentative Thinking

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Abstract

Referring to the notion of “possible worlds”, the paper aims to investigate an intriguing aspect of children’s thinking: the function that play narrative scenarios in sharing with other partners (peers and adults) the child’s understanding of the physical and social reality. The idea of possible worlds to which this work relates, can be considered in some way as the legacy of Piaget’s pioneering research on symbolic thinking, currently referred in Harris’s perspective as “work of imagination”. Over the past few decades now, the notion of possible worlds has supported a new representation of the child’s thinking that is based on the idea that imagination allows children to explore alternative and multiple versions of reality. Among other things, imagination permits to the child to use sophisticated forms of causal reasoning and understanding of the rules of social life. By reconsidering a part of the literature on “possible worlds” and presenting two empirical observations, this paper wants to draw attention to the central role played by explorative thinking in child’s argumentative activities. Angelo, the three-year-old who is the protagonist of the episode reported, is a child like many: constantly relating to the social world, attentive to what is happening around him and, in particular, to the events in which he finds himself involved. Surprisingly equipped to position himself and act in the routines that he knows, but also capable of adopting effective strategies with respect to events that he cannot foresee and that are built constantly, and in a manner situated during interpersonal events. From a certain point of view, he acts in a competent way in the present, but thanks to previous experiences he seems equally ready to anticipate the activities that follow each other in the many scenarios of reality and fiction of which his daily experience is made up. In the example above, Angelo shows a precise interpretation of the situation (evidently based on previous experiences) and provides a solidly argued answer to his mother’s request. The reference to the socio-material context fully supports his argument with the use of a perceptive fact that is difficult to contest. As highlighted by the short sequence presented, the dialogue between Angelo and his mother undoubtedly takes on the characteristics of an argumentative activity. As in a court debate, the child/lawyer explores the relationships with the other participants, offering to the jury “material” evidence. This will allow him both to challenge his mother’s point of view and to defend his own authoritatively. To give an account of the variety of thinking strategies that Angelo exhibits and also to illustrate the exploratory function of argumentation in children, this paper will explore the idea

that during social interaction each participant builds narrative versions of the world from his own point of view. As Bruner (2002) wrote, possible worlds offer the possibility of throwing new light on the “real” world. On a theoretical level, this rapid exchange in the family can be defined as an illustration of sophisticated thinking activities (partly argumentative) in a three-year-old child. In fact, only a few sequences of observation of the unstoppable activities of Angelo are sufficient, as they are of any other child in everyday life situations, to obtain a large number of useful elements to understand the active role of younger generations in challenging the rules of social worlds and in reproducing and creating new cultural forms during social interactions (Corsaro 1997). More specifically, this paper aims to showcase firstly how this way of acting in the physical and social reality emerges early in children’s development, especially in situations where they have to defend their point of view or try to convince someone to do something. Secondly, it wants to show that these early thinking strategies are displayed by children mainly as activities of exploration of narrative scenarios (possible worlds) that emerge during social interactions. In order to answer these central questions for the study of thinking in children, this paper will a) analyse the notion of “possible worlds” as Bruner refers to it, b) present two transcripts of social interactions that allow clear examples of the children’s thinking activity, and c) discuss studies that support the acceptance of early cognitive activity in children and the multipurpose and flexible nature of child’s learning capacities (Gopnik and Meltzoff 1998).

Keywords Children argumentation · Children thinking · Social interactions · Possible worlds

A three-and-a-half-year-old boy, Angelo, sitting with his parents and brother in an open-air café, orders some chips.

Giuliano [Angelo’s older brother]: *can you give me some of your chips?*

Angelo: [gives his brother a chip]

Mother: *but you’ve chosen the smallest!*

Angelo: *it’s not the smallest* [he looks for another chip smaller than the one he gave his brother

and shows it to his mother], *it’s a “medium” one.*

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“Brunerian” Possible Worlds

About 30 years ago, Jerome Bruner wrote the book “Actual minds, possible worlds” (Bruner 1986), considered an important turning point in the understanding of the mind and its development. In some way, inspired by the narrative turn in psychology that had characterized the second half of the century 1900 (Sarbin 1986), Bruner’s book was a revolutionary proposal that principally displayed the fundamental role the narrative mode of thought plays in the mind’s shaping, the identity’s formation and in allowing

altogether the interpretation of reality in children and adults. By referring to the philosophical, anthropological and literary knowledge acquired up to that moment, Bruner presented the child's interpretative activity of reality as a sort of continuous elaboration of narrative versions of the world. This "narrative turn", as Bruner has proposed recent decades, is somehow the result of his 50-year awareness into how the mind, in the process of perceptual and conceptual construction of reality and sense making, can actively go beyond the given information (Bruner 1973). According to this standpoint, the Bruner version of "possible narrative worlds" seems to offer the child very broad and highly complex imaginative scenarios in which to explore reality before and while acting upon them. Goodman (1978) and Bruner (1986) support the idea (later expanded by other authors) that children (and adults) constantly produce "narrative" versions of the world. More generally, Bruner makes narration a mode of understanding and putting into shape reality on the part of human beings: "In the deepest sense, then, a principal function of the narrative is to explore alternative versions of the human condition, 'possible worlds' as it were. It is the vehicle par excellence for exploring troubles and the possible ways of coping with them" (Bruner 2006, p. 58). Although the notion of "possible worlds" has long been at the center of a larger debate that has seen logicians, philosophers, and literary critics as its leading protagonists, developmental psychology has more recently recognized an interest in taking narrative thinking into account (Bruner 1990) and the role of the imagination in the child's thoughts (Harris 2000). In practice, the Brunerian narrative perspective shows that children build narrative versions of reality in which they are involved (games, psychological tests, interactions with educational purposes) and that these versions of the world, in many cases, differ from those that adult has in mind when interacting with children in the role of a teacher or of a Piagetian psychologist. In these situations, children's argumentations are often of real exploratory activities in the adult's worlds and of defending the coherence of their own version of reality. Children's argumentations give the impression of exploring alternative aspects of the surrounding reality, making predictions about the functioning of the physical and social world, while trying on this basis to influence the behavior of others and/or to defend a certain "theory" about the world or the principles that make it work.

This kind of powerful way of building and acting in counterfactual realities is generally recognized by recent psychological development theorists as child's imaginative work (e.g., Harris 2000; Byrne 2005; Gopnik 2009; Pelaprat and Cole 2011; Zittoun and Gillespie 2016; Larraín 2017). From these different perspectives, the authors seem to generally agree that the role of imagination would be to create versions of reality that allow the child to hypothesize about what is going to happen or what she or he would like to see happen.

Young Explorers of Possible Worlds and their Resources

In recent decades, developmental psychology has produced a significant amount of research on the way in which children from the first years of life understand the world

(Bruner 1986; Bruner and Haste 1987; Meadows 1993; Gopnik and Meltzoff 1998; Harris 2000; Harris 2012).

In a classic contribution, Bruner and Haste (1987) recall the first important steps in the history of these studies. They argue that, in a first phase of the “quiet revolution in development psychology” (p.1), children are considered “active scientists”. They construct hypotheses and reflect on the experience they have with their physical and social environment. In a second phase, which Bruner will fully develop with the subsequent “culturalist” proposal, the image of the child evokes the dimension of a child as a well-equipped participant in the events of social life. This progressive entry into social events is at the basis of opportunities for the child to negotiate the meaning of events as well as of the reality as a whole. The “child as a lone scientist” of the first phase gives way to a socially competent child who is constantly immersed in a shared social context. The idea of participation, along with that of joint construction of meaning, makes the vision of culture as a linear transmission of knowledge obsolete. Children develop in a world where interaction and cognition are interwoven and in which the intersubjective processing of meanings is constantly required through the negotiation of subjective interpretations of what happens and what is about to happen (Bruner and Watson 1983).

This vision, progressively confirmed by research in different areas of cognitive and linguistic development, significantly questions those explanations of psychological development based on the assumption that the mind, in the first years of the child’s life, is uniquely irrational, self-centered and amoral (Gopnik 2009) and that it develops in isolation from the social and material context. Thanks to increasingly refined methodological approaches, along with the refinement of the analysis categories used by researchers, these empirical works have brought out the richness of the multiple and sophisticated thinking strategies that children use to not only understand and predict events but also to interact with peers and adults. These results have also allowed researchers to analyze the effects of social interactions on cognitive development and the actualization of the logical competences so as to reconsider the experimental settings adopted (Carugati and Perret-Clermont 2015). Attention first shifted to the context and finally to the conditions of the thinking space (Perret-Clermont 2004; Iannaccone and Zittoun 2014; Perret-Clermont 2015). Of course, the child’s “navigation” in multiple worlds also requires being able to anticipate the events and actions of those with whom he interacts.

In this respect, based on the data collected over the last 30 years by developmental psychologists, the need to postulate an ability in the child to elaborate real theories from the minds of others has also emerged. Today, Theory of the Mind [TOM] (Premack and Woodruff 1978; Wimmer and Perner 1983) is at the center of an active and partly controversial debate. As far as the present contribution is concerned, it is interesting to consider how, from a socio-constructivist perspective (Antonietti et al. 2014; Antonietti et al. 2006), the child’s representation of the other’s mind is considered an essential element in explaining how the child can anticipate and influence the activities of the partners with whom she or he interacts.

Obviously, one of the common denominators of the works as those mentioned above that emphasize a child’s participation in social life is the relevance

attributed to the joint construction of the meaning of events and, above all, to the pragmatic and dialogical dimensions of communicative processes (Linell 2009). The linguistic turn has brought to light how language plays a decisive role in the constitution of knowledge and even in reality itself. From a dialogical perspective, language can be considered only one of the multiple semiotic instruments with which human beings interact with their environment. Per Linell states that “language does not function by itself; it is interdependent with the world ‘out there’ and with the body, and with human action, interaction and thinking” (p. XXVII).

Young Explorers in Action

Two excerpts are presented below in which close attention paid to the social interactions and dialogue between adults and children allow for the description of the role of thinking in children’s strategic activity and the demonstration of their efforts to make sense of their environments (both the material and the symbolic environment): children are young explorers of the world - in fact, of the multiple “possible worlds” - that they discover and in which they try to navigate.

1st Case: “Talking Animals”

The following event involves children (4- to 5-year-olds) engaged in a conversation with an adult (researcher) in a Piagetian setting. The extract comes from the PiagetArg project (see footnote 1)¹. The corpus looks at a version of the classical liquid conservation task (Piaget and Szeminska 1941). In the mentioned study, researchers try to investigate the relevance of the social and narrative contexts of such a Piagetian task (Donaldson 1978; Light and Perret-Clermont 1989; Iannaccone 2010; for review: Carugati and Perret-Clermont 2015; Miserez-Caperos 2017). The setting was designed with the intent of decentering the children from their asymmetrical relation to the adult: stuffed animals were introduced, and the children were told by the researcher that these animals were being used to celebrate a birthday. The researcher offered glasses to the animals (of different shapes because she had nothing else at hand, she said) and asked the children to be fair when sharing the juice. The conversation has been transcribed in accordance with the Jefferson system of transcription notation (Jefferson 2004, simplified and adapted

¹ Project (PDFMP1-123102/1) "The development of argumentation in children's interactions within ad hoc experimental and classroom contexts", financed by the Swiss National Science Foundation, under the direction of Anne-Nelly Perret-Clermont and Francesco Arcidiacono. Data collection was carried out by Stéphanie Breux, Lysandra Sinclair-Harding and Céline Miserez-Caperos. The excerpt is part of the data corpus of Dr. Miserez-Caperos's thesis (2017) and it has already presented at the following meetings: 1. Iannaccone, A., Convertini, J., & Perret-Clermont, A. N. (2016). "Je te raconte une histoire pour t'aider à comprendre". Pluralité de perspectives conversationnelles et actualisation des pratiques argumentatives chez l'enfant. Presented at the Annual Congress of SSRE, Lausanne (Switzerland); 2. Iannaccone, A., Convertini, J., Perret-Clermont, A. N., & Rocci, A. (2016). Loss of meaning in trying to make the issue meaningful. Presented at the Special Interest Groups SIG 20 and 26 of the European Association for Research on Learning and Instruction (EARLI), Ghent (Belgium).

version), a qualitative analysis of dialogues was then carried out (roles of participants, discourse worlds, etc.), focusing on the arguments given by the children.

Analysis: In this test situation, the adult interacts with a group of three children. The researcher presents three soft toy animals, namely, a giraffe, a bear and a zebra, asking the children to name them.



She then explains that it is the giraffe's birthday and all the animals are thirsty. She presents three glasses and asks the children to pour equal *quantities* of juice into two identical glasses (A and A') and into a glass of a different shape, one that is lower and larger (glass B).



A



A'



B

Situation of the extract: In the excerpt the researcher is discussing with two children, Kate and Sally, about the *levels* of juice that have been poured in the glasses. The researcher reminds the children that they have to give the same amount of juice to each animal and asks the children if there is the same amount of juice in the glasses, or if one has more (or less) juice. Kate introduces (turn 2) the issue of the animals' mouths followed by Sally's assertion: "Yeah, the animals can't drink. They don't have an open mouth".

Participants: Two children, Kate and Sally, about 4 years old, and a researcher (the original conversation took place in French).

Turn	Speaker	Transcription	Translation
1.	Researcher	Mais, alors comment est-ce qu'on peut faire pour qu'on ait tous la même à [boire]?	But, then what can we do so that they all have the same [to drink]?
2.	Kate	[Ah] mais non, ils vont pas ouvrir la bouche	[Ah] but no, they're not going to open their mouths
3.	Researcher	Non non (.) mais comment est-ce qu'on peut faire?	No, no (.) but what can we do?
4.	Sally	Oue, les animaux ils peuvent pas boire. Ils n'ont pas de bouche ouverte	Yeah, the animals can't drink. They don't have an open mouth
5.	Researcher	Non, mais on a dit qu'on était dans le monde des animaux::	No, but we said that we were in the animals' world

Turn	Speaker	Transcription	Translation
6.	Sally	On est. des animaux alors	We're animals then
7.	Researcher	((la chercheuse prête sa voix à la girafe)) Alors, comment est-ce qu'on va faire pour que moi j'ai la même chose à boire que les deux autres?	(The researcher makes a voice for the giraffe) Then, what are we going to do for me to have the same drink as everybody else?
8.	Kate	Alors, ça c'est. pas la même taille((approche [B] à [A]))	Then, this isn't the same size (puts [B] closer to [A], referring to the level of the juice)

In this extract, the children use arguments that are adequate from their perspective: in their narrative, soft toy animals cannot drink. This is plausible and coherent with a representation of the toys that takes seriously into account some important socio-material characteristics of the objects that they have at hand (Iannaccone 2017). Indeed, these puppets cannot “materially” drink. It is a matter of fact in the world in which the children see them. The researcher’s narrative scenario is quite different: in her world, the soft toys “should” drink, a pre-condition for her to conduct the Piagetian test according to its script. Probably what happens is that the girls start by considering the possible (symbolic) world referred to by the researcher. But, they are then asked by the adult a question about quantities that could concern this fictional world but also another possible world, i.e., the “real” non-fiction world of the present material objects. Their knowledge of this material reality makes it impossible to see how these soft toys could materially drink. As a result, the children do not know in which possible world they are supposed to operate: imagine a fiction in which stuffed animals can drink but then why not also imagine that quantities could be equal even when they are not? Or a non-fiction world but then stuffed animals cannot drink, so what is the question? Have we understood it properly? The rules that the researcher considers valid for the possible world of her narrative scenario are not obvious to the children (and let’s note that these rules are contradictory: if one may imagine, in a pretend play (an “as-if” play), that the stuffed toys can drink why not imagine as well that the quantities are equal without referring to the fact that in the “real” world they are not). In their discussion, in which they offer arguments to the researcher, the two girls seem to be exploring the rules of the adult’s world (and therefore the representation of the world as the adult imagines or sees it). The researcher seems not to understand the children’s moves and that their questions are exploring in which possible world she is locating her question. Here, as in many similar cases in our research data, there is a central problem of communication with the child: the researcher seems prone to interpret what is being said as deficient (language deficit or reasoning deficit) but less able to recognize that the children are “competent partners” trying, via their questions, to make sense of events and cause-effect systems.

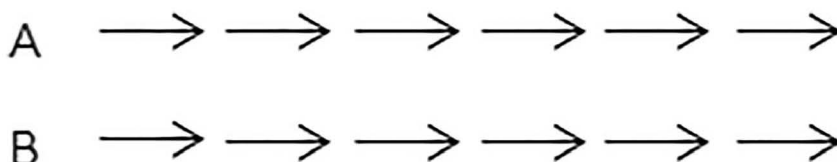


Fig. 1 Initial arrangement of matches

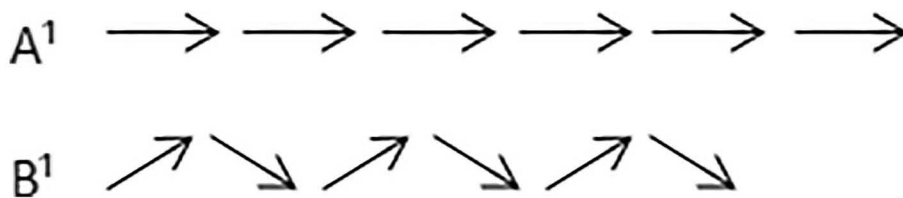


Fig. 2 Modified arrangement of matches

2nd Case: “Conservation of length when changing a path”

The second excerpt is part of a body of data collected in the PiagetArg project (see footnote 1) in 2009 in a village school in the mountains of French-speaking Switzerland. The researcher intends to conduct Piaget’s task of conservation of length with two 5-year-old girls sitting around a table with her in a schoolroom. She places two rows of matches on the table arranged in a straight line and parallel to each other and tells the children that they are two “paths”. She then asks them whether, if an ant walks along the first path (a row of matches) and another ant walks along the second path (another similar row, see Fig. 1), will one ant walk more or less than the other, or are they both going to walk “the same”? (The adult has in mind that the two rows are of equal length and hence require the same length of walking.)

Then the adult modifies one of the two lines, creating a zigzag path, as shown in Fig. 2. Piaget (Piaget et al. 1948) reports that young children are then led into making mistakes because of the perceptual configuration: they tend to think that the length of the second row is shorter because its arrival point is closer to its departure point.

The researcher asks the same question again to the children. The following excerpt presents the girls’ responses.

Participants: Two children (Alice, Eve) and a researcher.

Turn	Speaker	Transcription	Our translation
			(18:32)
22	Researcher	la p’tite fourmi qui marche ici ((montre du doigt le chemin rectiligne A ¹)) elle marche plus ou elle marche moins ou la même chose que la p’tite fourmi qui marche ici ((montre du doigt le chemin en zigzag B ¹))	the little ant walking here ((points to the straight path A ¹)), she’s walking more or she walks less or the same as the little ant walking here ((points to the zigzag path B ¹))
23	Alice	ah celle-là elle marche moins et celle-là elle marche plus parce qu’ici ((montre du doigt les deux chemins d’allumettes A ¹ et B ¹)) c’est. plus grand et ici c’est. moins long	ah this one is walking less and this one is walking more because here ((points with her finger to the two paths of matches A ¹ et B ¹)) it’s bigger and this one is shorter
24	Researcher	grand long? c’est. quoi qui est. juste?	big long? what’s right?
25	Eve	c’est. celui-là qu’est. long ((montre du doigt le chemin rectiligne A ¹))	it’s this one over here that’s long ((points with her finger to the rectilinear path A ¹))
26	Researcher	c’est-à-dire que la p’tite fourmi qui marche ici ((montre du doigt le chemin en zigzag B ¹)) elle marche plus ou la même chose que la petite fourmi qui marche là? ((montre du doigt le chemin rectiligne	that is to say that the little ant who walks here ((points out the zigzag path B ¹)) she walks more or the same thing as the little ant walking there? ((points to the straight

Turn	Speaker	Transcription	Our translation
		A ¹) laquelle est. la plus fatiguée ou elles sont fatiguées la même chose?	path A ¹) which one is the most tired or are they both as tired?
27	Eve	c'est. celle-là ((montre du doigt le chemin rectiligne A ¹) qui est. la plus fatiguée	it's this one ((points to the straight path A ¹)) who's the most tired
28	Alice	non c'est. celle-ci ((montre du doigt le chemin en zigzag B ¹)) parce qu'elle a de la montée	no it is this ((points to the zigzag path B ¹)) because it goes up
29	Researcher	ah elle a de la montée celle-là? mais j'ai fait à plat sur la table, mais c'est. vrai qu'elle a des contours	ah that one goes up? but I made it all flat on the table, but it's true that it has turns
30	Eve	ouais mais celle-là ((montre du doigt le chemin rectiligne A ¹) elle est. quand même plus longue.	yeah but this one ((points with her finger to the rectilinear path A ¹)), it's longer nevertheless
31	Alice	ah mais celle-ci elle est. moins et celle-là elle? [marche	Ah but this one is less and this one? [walks]
32	Researcher	[viens viens] tout près parce que là je vois ce que tu dis car quand tu dis celle-ci je sais pas laquelle c'est. tu veux venir là?	[come come] closer because I see here what you're saying because when you're saying that I don't know which one you're talking about. Do you want to come closer over here?
33	Alice	ben celle-ci elle marche plus longtemps ((montre du doigt le chemin en zigzag B ¹)) et celle-ci moins ((montre du doigt le chemin rectiligne A ¹))	well this one is walking for a longer time ((points to the zigzag path B ¹)) and this one less?(points with her finger to the rectilinear path A ¹))

In this extract it is evident that Alice's and the researcher's interpretations of the situation differ. For the researcher, the central question addressed in this experimental setting is the conservation of equal lengths despite changes in spatial arrangement of the employed material (two lines of matches). From this point of view, the task (in the adult's mind) aims at verifying whether the child has acquired the conservation of lengths. But Alice says that the ant facing the zigzag path walks more. In reality (i.e., in the possible world in which Alice places herself), as can be seen from Alice's subsequent statements, the ant, according to her, is following a *mountain path* with hairpin bends and for this reason it is longer. The child has imagined the Piagetian task of comparison of lengths in a precise narrative scenario: an uphill path that is justified by the presence of curves. Alice's interpretation is supported by a multimodal argument: she points with her finger to the zigzag path and says (turn 26): "no it is this because it goes up". Alice's thinking takes place in a narrative scenario different from that of the researcher. In order to interpret what the adult says, Alice probably situates the scene in her well-known environment: the mountain surrounding her village. The experience in the physical world has taught Alice that the more a route zigzags the steeper the mountain. In her experience, walking on a steep road with curves takes more time than following a straight path in the valley. Her reasoning makes sense when situated in her possible world and not in the researcher's abstract world made up only of flat paths.

1. Why don't adults easily recognize children's *exploration* of the "possible worlds" in which they seem to be invited to position themselves and think? On the role of the implicit in the study of reasoning in children and on some misunderstandings about their imaginations.

Taking into account the point of view of the young explorers in the above extracts makes their thinking skills evident. Nevertheless, this is not always the case, and misunderstandings occur in conversations between children and adults in which adults inadvertently often attribute failure to the children. These misunderstandings can have an important influence on the learning processes and can mislead the interpretation of research results (Lombardi et al. 2018; Kohler and Mehmeti, in 2018). The lack of awareness of the difficulty of establishing intersubjectivity (Schubauer-Leoni et al. 1992; Greco et al. 2017) raises more general questions: why are children not more easily recognized both as informed contributors to the social construction of the relationships (Binder 2017) and as competent social constructors of joint thinking? Indeed, it seems that several decades of research have been required to “recognize”, in a consolidated way, these early thinking skills of the child that have been alluded to above. In the following sections of this paper we will highlight what seems to us to be two important issues behind this insufficient recognition of the child’s thinking activity. The first concerns the role played by implicit elements in language and social interaction. The second considers the implications of prevailing “deficit theories”, which offer only a static negative view of children’s thinking and imagination. Borrowing from other authors, we will make suggestions to move beyond the limits of this state of the art.

Implicit. Dialogically oriented linguists (Rommetveit 1979; Linell 2009) have fully recognized how important it is for researchers, but also for interlocutors, to keep inferring the implicit of the conversation or of the joint activity. It is the non-visible part of verbal communication, the tacit part of the verbalized reasoning process. This presupposes the active nature of the process of understanding. “Implicit” can refer to multiple aspects of thinking and interpersonal communication. Let’s point here to two aspects: the first regards the difficulty of re-evocation of the procedural aspects of the lived experience, of recalling and verbalizing what has been experienced (Iannaccone and Cattaruzza 2015; Binder 2017). The past experience is not easy to recover (Vermersch 2012), especially when it comes to interactions between children and adults. The second regards the reconstruction of the parts of the reasoning that are not verbalized since both the child and the adult make tacit assumptions of a shared reality (or possible world), each from his/her own point of view without being aware that this “shared reality” is not shared as they are positioning themselves in different possible worlds.

Since the 1920s, authors such as Piaget (Piaget 1924, 1926) have posed the problem of how difficult it is to access the genuine reasoning of the child and have set up sophisticated methods of interviewing based on the adoption of specific conversational postures in the hopes of offering opportunities for children to display their reasoning. Piaget, in particular, emphasized the lack of efficacy of verbal requests that do not lead the child to consider different possible points of view and that do not investigate the reasoning behind the assertions made. Despite important turning points, which, since the early 1900s have revolutionized the investigative techniques in developmental psychology and the very image of the nature of children’s thought, up to the years 1970 and 1980, the models of analysis of the child’s cognitive activity have undoubtedly underestimated some relevant aspects of the implicit. One of the reasons is linked to the monological perspective that has dominated large areas of developmental psychology in the last decades (Linell 2009). Considering the thought of the (generic) child independently from the context in which she or he co-constructs the meaning of events with peers and adults, leads researchers into accessing only incomplete versions of cognitive activity. For example, they tend not to see

the dialogical and interactive nature of the process that leads the child to the progressive elaboration of argumentations (Muller Mirza and Buty 2015; Nonnon 2015; Iannaccone and Arcidiacono 2017). The monological analysis of verbal reports has often induced researchers to detect only fragments of the argumentative reasoning of students without taking into account those elements that are co-constructed and visible only if a dialogical unit of analysis is adopted (Muller Mirza and Buty 2015).

Imagination. To account for the underestimation of the reasoning of the child by the adult it is also central to analyze the role of the narrative scenarios (Bruner 1986, 1990, 2003) and of imagination in cognitive activity in general, and also more specifically, in argumentation (Larraín 2017). Many researchers have considered imagination negatively (i.e., out of topic as far as understanding the “real” world is concerned, echoing teachers who are afraid that students start distracted from the present reality of what they view as classroom activity, as well depicted in the poems of Prévert and Rodari). This is not the case of Piaget (1945), who took care to describe the growth of symbolic thinking as a major developmental stage (in which imagination and pretend play have important roles) nor of Harris (2000), who has developed major lines of research following up on Piaget’s initial suggestions. Harris emphasises, more than Piaget, the constructive aspect of imagination which, according to this author, is not subordinate to verbal or formal thought at all. Rather, it is a different way of exploring the multiple possibilities of acting in the world.

Referring more specifically to the role of imagination in verbal interactions, discursive psychology (Billig 1996) cultural psychology (Vygotsky, Vygotskij 1925, Vygotsky 1971, Vygotsky et al. 1929, Vygotsky 2004)) and narrative psychology (Bruner 2003) highlight the relevance of imaginative activities in conversation, in the creation of shared meanings and internalized psychological tools. Creating narrative scenarios (possible worlds), children seem effectively capable of anticipating the practical consequences of actions trying to establish causal links between events during the conversation (Harris 2000). In these kinds of theories, the imagination implies the creation of alternatives, of a sphere of experience that is in parallel to shared reality, and concerns what could have been different in the past, what might happen in the future” (Zittoun and Gillespie 2016, p. 32). By taking a similar path, Lillard (2001) suggests that children’s imaginative play functions basically as a “twin earth” to create parallel “spheres of experience” (Zittoun and Grossen 2012) essential to manipulate and explore meanings.

Conclusion

By reconsidering a part of the literature on “possible worlds” and presenting some empirical observations, this paper wants to draw attention to the central role played by the explorative thinking in child’s argumentative activities. The authors are well aware of the literature on distortions and misunderstandings that emerge in the experiment with children (Donaldson 1978; Grossen 1988). They have contributed to this literature on several occasions. However, this paper takes a different perspective. Starting from the assumption that the child in many cases agrees to play and interact with the adult, the present work tries to show how the child activity is a constant search for meaning that is defined according to the multiples narrative scenarios that emerge in the situation. As seen in excerpts, these exploratory “movements” give the impression of complicated games of interplay between events happening in the real world and event happening in

imaginative worlds (see also Coppola et al. 2015; Grazzani and Brockmeier (2019)). In fact, children show robust abilities to explore possible worlds taking also into account the constraints imposed by the real world. In the examples discussed in this work, it can be observed that children, in participating in conversations with adults, use arguments to position themselves in the required level of reality (according to the interpretation they make of the task and of the adult's expectations) but also to understand and test the rules that govern the frames of the interactions with peers and adults.

In the examples it seems quite evident how childrens' argumentations substantiate a continuous activity of "worlds exploration". The excerpts show also as a dialogical approach to children's argumentations (Perret-Clermont et al. 2019) is congruent with the idea that the deployment of children's reasoning in interpersonal situations constitutes an essential condition/consequence for their socialization (Völzing 1982; Banks-Leite 1999; Crowell and Kuhn 2014; Hannken-Illjes and Bose 2018; Fioretti and Smorti 2019). Children's argumentations are fostered during interactions at play and at school - but only if the social partners allow them enough space (material arrangements, quality of interpersonal relationships and communication, rules and assessments) to "explore" the real and possible worlds (Muller Mirza and Perret-Clermont 2009; Muller Mirza and Buty 2015; Schwarz and Baker 2017; Schär 2018). In this sense, thinking in social interactions can be considered an adventurous "sailing" among islands of real and imagined worlds. And specific argumentation practices are used in this journey for testing "reality", the world in which to talk and act. The idea of Jerome Seymour Bruner, who has tenaciously promoted the cultural and narrative turning point in psychology, has certainly played an essential role in this new representation of the child's reasoning. The short examples given above in this paper, which belong to broader and more ambitious research projects, encourage us to pursue this fruitful approach.

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