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The Therapeutic vs. Constructive Approach to the Transformative Character of Collective Intentionality. The Interpersonal Level of Explanation

Human behaviour is the product of development of a broader system than just the system or a person's individual functions: specifically, systems of social connections and relations, of collective forms of behaviour and social cooperation. (Vygotsky, 1999, p. 41)

Accounts that ignore the social dimension of human cognition and focus only on information processing will not only distort many facts about human cognition, but also will be incapable of explaining even the most rudimentary phenomena of human self-understanding. (Tomasello, 1993, p. 182)

Abstract. In their article, Andrea Kern and Henrike Moll (2017) argue in support of a certain vision of shared/collective intentionality and its role in understanding our cognitive capacities. This vision is based on two aspects: a negative one, i.e. a theoretical diagnosis of the contemporary debate on shared/collective intentionality, and a positive one, referring to the proposals for shared/collective intentionality. As regards the negative aspect, the main thesis concerns the arbitrary assumptions underlying the whole debate on shared/collective intentionality. According to Kern and Moll (2017), this assumption prevents us from capturing the transformative character of shared/collective intentionality and therefore the uniqueness of the human being. This paper is not so much a detailed criticism or discussion of said article, as rather an opportunity to formulate my own position in the colloquy with Kern and Mole's position. This approach states that understanding the transformative character of SI/CI requires taking into account a broader approach to the constitution of the mind, in which, apart from the personal and the sub-personal level of explanation, there is also a third level of explanation — the interpersonal level of explanation. Thus understood,

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the ILE is a part of multi-level analysis and mechanism-based explanation, whereas shared/collective intentionality is one of the main mechanisms of the ILE.

Keywords: collective intentionality; shared intentionality; the interpersonal level of explanation; the shared intentionality hypothesis; mechanism-based explanation; M. Tomasello; L. Vygotsky

1. Introduction

The concept of intentionality was introduced into the contemporary debate on the nature of the mind by Franz Brentano (1874/1973). He claimed that intentionality, or being *about* something, is the mark of the mental (Crane, 1998). Thus, he distinguished mental from physical phenomena and defined the mind as an autonomous field for research. Nowadays, the notion of intentionality is used more broadly to attribute the feature of intentionality, inter alia, to activities that fulfil certain objectives, intentions, or a plan (Searle, 2010).[1] In this context, questions are posed on how to explain the fact that, for instance, two subjects intend to do something together, paint a fence, write an article, or go for a walk. In other words, philosophical analyses are focused on identifying the conditions for necessary and sufficient actions which depend on collaboration, where the actors share the same goals, intentions, or plans. Many contemporary analyses by authors such as Michael Bratman (2014), Margaret Gilbert (1989, 2013), John Searle (1990, 1995, 2010) and Raimo Tuomela (2007, 2013) refer to the notion of shared/collective intentionality (henceforth SI/CI)[2] as the *analysans* of activities based

[1] "Many philosophers think that the primary forms of intentionality are belief and desire. But we should see these as derivative and etiolated forms of the more biologically basic forms of intentionality in action and perception" (Searle, 2010, p. 39).

[2] In the article Kern and Moll talk about SI/CI while in the existing literature there is an intensive discussion, both philosophical (Schweikard & Schmid, 2013) and cognitive (Rakoczy, 2016), on various aspects of collective intentionality which results in a multitude of concepts and taxonomies of this concept, such as those by Tomasello (2015), De Vecchi (2011, 2014) and Jankovic and Ludwig (2017). In particular, Tomasello in his shared *intentionality hypothesis*, more on which below, distinguishes between individual intentionality and shared intentionality, while the latter concept involves both joint intentionality and collective intentionality. Indeed, when Kern and Moll refer to collective intentionality, they have in mind a concept that is equal in scope to the technical concept of shared intentionality by Tomasello. For example, Moll does so in (Moll, 2016), in which she writes about shared intentionality and

on collaboration (Tollefsen, 2015; Schweikard & Schmid, 2013). Such a strategy raises the questions of whether shared/collective intentionality is a primitive feature or is reducible to individual intentionality, and whether, in relation to SI/CI, it is proper to apply methodological individualism or methodological holism. The answers thus tend to generate different views — in other words, the issue of shared/collective intentionality (henceforth SI/CI) has instigated a debate. Moreover, psychologists or cognitivists (practitioners of cognitive science) have also considered this philosophical debate so productive that attempts were made to operationalize SI/CI, and hence to treat this ability or the set of abilities as the *explanans* in explaining actions based on collaboration. Within this perspective, questions are posed about the cognitive nature of SI/CI as well as its role in the processes of ontogeny and phylogeny. Tomasello and his collaborators (e.g. Tomasello & Rakoczy, 2003, 2007; Tomasello et al., 2005a) are representatives of such a noteworthy strategy. As Tomasello and his collaborators emphasize:

> Consequently, my colleagues and I began to apply the basic concepts of philosophers of action such as Gilbert, Bratman, Searle, and Tuomela to our empirical problems. The result was [...] arguing that indeed what most clearly distinguishes humans from other great apes, from a psychological point of view, is that humans operate with skills and motivations of shared intentionality [...]. The resulting theoretical account thus represents an application of philosophical concepts of shared intentionality to empirical phenomena. (Tomasello, 2016b, p. 60)

As regards the skills and motivations of SI/CI, they regard humans as unique in possessing them.

In their article "On the transformative character of collective intentionality and the uniqueness of the human", Andrea Kern and Henrike Moll (2017) argue in support of a certain vision of SI/CI and its role in the understanding of our cognitive capacities. This vision has two aspects: a *negative* one, concerning a critical theoretical diagnosis of the contemporary debate on SI/CI, and a *positive* one, referring to the proposal of the concept in relation to SI/CI, emphasizing its transformative character, and recognizing as its bearer the specifically human collective

attaches to Tomasello the additive account of shared intentionality. Although classifying collective intentionality as a philosophical concept and shared intentionality as a cognitive science concept would intensity the arguments in this article, I opt for a more neutral solution by writing about shared/collective intentionality at the same time.

form of life. In this paper, I want to critically discuss both the negative and positive aspects mentioned above. It is noticeable that the interpretation of this debate is controversial. In fact, the metaphilosophical nature of Kern and Moll's argumentation is carried out in a Wittgensteinian, i.e. therapeutic spirit, in which the aim is to dissolve problems rather than to solve them. In this article (particularly in the second part), I present a *constructive* attitude towards the debate on SI/CI as well as towards the transformativity of SI/CI. Since I agree with the authors that SI/CI has a *transformative* character, I derive my model of thinking of transformativity from Vygotsky's tradition of which the most significant representative is Michael Tomasello, criticized by Kern and Moll for representing an additive account. I propose the concept of the interpersonal level of explanation as the level of transformation (Żuromski, 2020), where Vygotsky's theoretical framework is the paradigmatic case, and the accounts by Tomasello and his collaborators are its contemporary continuation. In the above-mentioned model, the elements that Vygotsky and Tomasello described, e.g. internalization, mediation, or shared/collective intentionality, instantiate the *mechanisms of mind transformation*. Thus, I do not intend to propose a specific position on the issue of SI/CI as a *minimal* approach. This approach states that understanding the transformative character of SI/CI requires taking into account a broader approach to the constitution of the mind, in which, apart from the personal and the sub-personal level of explanation, there is also a third level of explanation — the interpersonal level of explanation (henceforth ILE). Thus understood, the ILE is a part of multi-level analysis and mechanism-based explanation, whereas shared/collective intentionality is one of the main mechanisms of the ILE. Hence, this paper, rather than expressing a detailed criticism or discussion of the article by Kern and Moll, provides an opportunity to formulate my own position in the colloquy with this article. However, before I proceed with the presentation of the said constructive approach, I will first focus on the reconstruction of Kern and Moll's argumentation and the two aforementioned aspects: negative and positive.

2. The therapeutic approach to the SI/CI debate and the differentiation between transformative vs. additive accounts of SI/CI

The negative aspect of Kern and Moll's argumentation reflects a certain version of the Wittgensteinian metaphilosophical attitude expressed in the slogan "philosophy as therapy" (Wittgenstein, 1953/2010).[3] In explication of this aspect, it is worth referring to the distinction proposed by Michael Williams, i.e. therapeutic diagnosis vs. theoretical diagnosis in relation to a particular discourse or debate. While the first diagnosis consists in recognizing certain problems and discourses as pseudo-problems, the latter is more complex and sophisticated, and consists in questioning the naturalness or intuitiveness of the assumptions on which the debate is based (Williams, 2001). The aim of the formulation of theoretical diagnosis is to *dissolve* the problem rather provide a *solution* to it. An example of such a strategy is Williams's application of theoretical diagnosis to the problem of scepticism (Williams, 2001), or Rorty's (1979/1981) attitude to, inter alia, the mind-body problem, the modern version of the problem of reason and problems of consciousness (Rorty, 1979/1981).[4]

Such a strategy of theoretical diagnosis is adopted by Kern and Moll towards the debate on SI/CI. Their aim is not to accuse the debate of pseudo-problematicity, but rather to formulate a therapeutic diagnosis for it, i.e. a diagnosis concerning arbitrary assumptions underlying the entire SI/CI debate. Obviously, such a strategy requires reconstructing the basic issues of the debate. According to Kern and Moll, the debate on SI/CI is constituted by the following three questions:

> (1) Is the capacity for collective intentionality one that can be accounted for by the capacity for individual intentionality? Or is it

[3] Cf. "The philosopher's treatment of a question is like the treatment of an illness." (Wittgenstein, 1953/2010, §255) and "There is not a philosophical method, though there are indeed methods, like different therapies" (Wittgenstein, 1953/2010, §133).

[4] Cf. one of the representative examples: "In the present chapter, I shall stick to the question: Can we find any relevance to traditional philosophical problems concerning *knowledge* in actual or expected results of empirical psychological research? Since I wish to say that these 'philosophical problems' should be dissolved rather than solved, it is predictable that I should give a negative answer" (Rorty, 1979/1981, pp. 219–220).

> irreducible to any kind of individual intentionality? Call this the *reductionism/antireductionism* question.
> (2) Is the capacity for collective intentionality human-specific? Or do humans share this capacity with other animals? Call this the *human-uniqueness* question.
> (3) Is the capacity for collective intentionality one that develops phylogenetically and ontogenetically out of more primitive forms of intentionality? Or are we dealing with a capacity for which no developmental account can be given? Call this the *developmental continuity/discontinuity* question. (Kern & Moll, 2017, p. 316)

Kern and Moll reconstruct these questions on the basis of discussions with the authors of canonical works on this subject, namely, Michael Bratman, John Searle, and Michael Tomasello. According to Kern and Moll, the common denominator for these problems, i.e. what makes them reasonable, is two implicit assumptions:

- the individualistic account of SI/CI — the bearer of SI/CI is an individual, and
- the additive account of SI/CI — SI/CI is only of additive character, i.e. in such an account SI/CI is understood as:

> (i) [...] a specific capacity that is added to other, pre-existing, capacities of the individual and that is exercised whenever the individual engages in cooperative activities such as carrying a table or painting a house with others.
> (ii) The capacity for **individual intentionality is untouched**, that is, not influenced by collective intentionality. (Kern & Moll, 2017, p. 316 points (i), (ii) and bold font were added by me (D.Ż.))

If, based on the analysis results, we make these assumptions explicit, in Kern and Moll's opinion, we will understand their arbitrariness. In such a case — and this is the aforementioned positive aspect of Kern and Moll's vision of SI/CI — it will allow the proposal of other assumptions constituting the SI/CI debate. However, while selecting these assumptions, the authors are guided by the therapeutic approach, i.e. the assumptions concerning the character and bearer of SI/CI are to be formulated in a way that would prevent formulating questions (1–3) that can arise. Thus, the rejection of two, in Kern and Moll's opinion, arbitrary assumptions constituting the SI/CI debate (the individualistic and the additive account of SI/CI) and their substitution with others, following a therapeutic approach, entails that questions (1–3) lose their meaning, as does the entire SI/CI debate.

What assumptions are discussed here? The answer to this question directs us to the *positive* aspect mentioned above. First of all, the rejection of the individualistic approach to SI/CI is achieved by accepting the thesis that individuals are not proper subjects of SI/CI — rather a Wittgensteinian "form of life" are, being both the "collective form of life" and "specifically human form of life". As Kern and Moll argue:

> If one grants the idea of a "collective life form" then the question of whether collective intentionality is a reducible or irreducible capacity no longer makes sense. The problem of (ir)reducibility would simply dissolve because collective intentionality would permeate any other vital capacity and would manifest in any activity that a bearer of such a collective form of life exhibits. (Kern & Moll, 2017, p. 320)

Secondly, Kern and Moll reject the *additive account* of SI/CI, i.e. they argue in favour of the adoption of the *transformative* account of SI/CI: "Collective intentionality thus leaves its mark on or transforms all the intentional capacities that a human individual possesses" (Kern & Moll, 2017, p. 317).

Therefore, such an attitude presented by Kern and Moll proclaims that:

- the proper SI/CI bearer is a Wittgensteinian "collective form of life", not an individual;
- SI/CI is transformative, not additive in character;
- the thus understood "collective form of life" is a "specifically human form of life".

3. The distinction between the additive vs. transformative accounts of SI/CI and Tomasello's shared intentionality hypothesis

In Kern and Moll's argumentation, the distinction between the *additive* and *transformative* accounts of SI/CI is the weakest element. First of all, with the dichotomic contraposition of the transformative vs. the additive account of SI/CI, Kern and Moll put the reader in the trap of bipolar thinking. However, the transformative account of SI/CI and the additive account of SI/CI can be seen as two extreme poles of a single continuum rather than as a dichotomous division. Let us examine the concept of additivity. It is understood as the two above mentioned elements (i) and

(ii). While the first element does not raise serious doubts, the adoption of the second is problematic. Why is it impossible to state that *adding* a certain capacity as part of the cognitive system in the process of ontogeny or as a specific adaptation in the process of phylogeny cannot cause a transformation of some or all of the remaining cognitive capacities of this system? Therefore, to be more specific:

As the *transformative character of a given capacity* C, as e.g. SI/CI, I understand at least two moments of a certain process:

T1. The capacity C_1 of a subject S enables the participation in social interactions *SI*.
T2. The capacity C_1 together with *IS transforms* the remaining (some/all) capacities of P $\{C_2, C_3, \ldots, C_n\}$.

For Kern and Moll, however, such a definition will beg the question, as is so in the case of the additive account of SI/CI:

> Against the additive conception of collective intentionality, we will advance the idea that collective intentionality cannot primarily be conceived as a capacity whose subject is an individual like you, me, or Jim. Instead, it must first and foremost be conceived as a capacity whose subject is something general, a "form of life."
>
> (Kern & Moll, 2017, p. 317)

Thus, according to Kern and Moll, SC/CI can be attributed neither to the capacity C_1 of the subject S nor to a set of such capacities $\{C_2, C_3, \ldots, C_n\}$, but at least to all these elements as a whole: $\{\{C_1, C_3, \ldots, C_n\}, S, SI\}$. However, the same accusation of begging the question can be formulated in opposition to the stance of Kern and Moll who in an arbitrary manner define the additive account of SI/CI, i.e. as such as negates the content of the T2 point above.

Indeed, everyone who reads works by Tomasello, whom Kern and Moll accuse of fluctuating between these poles, will notice that both views adumbrated by Kern and Moll are extreme, whereas Tomasello represents quite a different and moderate position.[5] It is one which, by being

[5] Cf. "Finally, I would like to respond to the very important point raised by Moll. She believes it is of utmost importance not to think of shared intentionality as an additional skill that humans have evolved, but rather as a transformative mode of operation. This is something with which I could not agree more. Classical approaches in evolutionary psychology, for example, those of Tooby and Cosmides, are modular and so additive. Each module has its own adaptive conditions and its own evolutionary function. But what I tried to argue in this book was that shared intentionality is no

positioned somewhere in the middle between these extremes, allows the maintenance of the additivity of shared intentionality (SI/CI) in relation to individual intentionality and simultaneously the transformation of the latter into joint intentionality and ultimately into collective intentionality. Indeed, as can be seen below, this involves two transformations in the phylogenetic aspect: from individual intentionality to joint intentionality, and further, from joint intentionality to collective intentionality.

While it seems appropriate to agree with Kern and Moll when they say that the early debate about SI/CI was dominated by approaches based on methodological individualism, which will be further discussed below, it is not apparent that the additive concepts of SI/CI were somehow specifically implied by methodological individualism. In fact, it allows the proposal of an explanation different from that proposed by Kern and Moll. This explanation requires distinguishing between the philosophical concepts of SI/CI and the psychological ones or, more broadly, the concepts of cognitive science. A general thesis can be formulated as follows: the canonical philosophical concepts of SI/CI were based on a conceptual analysis, where the aspect of SI/CI transformativity is elusive. Only empirical research based on a method — let us call it after Vygotsky (the father of thinking of cognitive processes in the categories of specific transformations) — the "genetic method" (Wertsch, 1985), may reveal the transformative character of certain cognitive processes. Thus, failure to notice SI/CI transformativity does not result from the fact that an individualistic approach was used towards SI/CI, but rather from the application of a conceptual analysis, the results of which were consistent with the current state of empirical research.

The philosophical concepts of SI/CI are concerned with SI/CI analysis, i.e. *the formulation of necessary and sufficient conditions* for assigning mental states to a group agency or formulation of necessary and sufficient conditions for a shared agency (Tollefsen, 2015). Contemporary canonical works on these issues are the publications by such authors as John Searle, Margaret Gilbert, Raimo Tuomela, and Michael Brat-

ordinary adaptation because it is an adaptation concerned with how one relates to others and this affects all of the relationships and interactions that have a social dimension, including interactions with the physical world in so far as others — or their products, such as a language — are involved. A central point of the book, in addition, is that these forms of interaction change humans' modes of cognitive representation, inference, and self-regulation. And so indeed, to quote myself, the emergence of shared intentionality 'changed everything' " (Tomasello, 2016c, pp. 122–123).

man. Bratman's analysis is a paradigmatic example in which he provides necessary and sufficient conditions for a "shared intention":

> We intend to J if and only if
> 1. (a) I intend that we J and (b) you intend that we J.
> 2. I intend that we J in accordance with and because of 1a, 1b, and meshing subplans of 1a and 1b; you intend that we J in accordance with and because of 1a, 1b, and meshing subplans of 1a and 1b.
> 3. 1 and 2 are common knowledge between us.
>
> (Bratman, 1999, p. 121)

In John Searle' conception, SI/CI is distinct from individual intentionality and represents an ability responsible for creating social and institutional reality. However, Searle rejects Bratman's analysis and assumes that "shared intention" is primitive and irreducible: "we-intentions cannot be analysed into sets of I-intentions, even I-intentions supplemented with beliefs, including mutual beliefs, about the intentions of other members of the group" (Searle, 1990, p. 404). What they have in common, however, are the assumptions in the form of methodological individualism and a certain methodology in the form of a philosophical analysis.

At this point, it is worth noting that methodological individualism does not have to be an extremely individualistic position. As Tollefsen (2017) convincingly demonstrates, within the framework of methodological individualism a number of positions can be distinguished, including those which assume a certain social aspect. Tollefsen (2017) considers positions in the debate about SI/CI from the perspective of the old debate between methodological individualism and holism. The latter dispute concerned the proper methodology underlying social sciences, and it involved, among others, Max Weber and Emile Durkheim. According to Tollefsen (2017), if methodological individualism is understood not as a position in the dispute about the proper methodology of social sciences, but rather as a position towards a method of explaining social facts, then the debate on SI/CI is based on methodological individualism. Thus understood, methodological individualism boils down to "the thesis that social phenomena (facts, objects, events, states, etc.) should be explained solely in terms of individual intentional states and the relations between those individuals" (Tollefsen, 2017, p. 392). Tollefsen analyzes three exemplifications of the position as:

- atomism ("it is possible for human beings to develop all the capacities characteristic of human beings in complete isolation from other humans" (Tollefsen, 2017, p. 391)).

- "singularism" ("the thesis that social facts, concepts, events, are explainable solely in terms of the conceptual scheme of singular agency" (Tollefsen, 2017, p. 391)).
- intentionalism ("it insists that explanation needs to appeal to individual psychology. But the individual psychological states to which one appeals have to do with how individuals perceive themselves *vis-á-vis* other group members" (Tollefsen, 2017, p. 393)).

Tollefsen demonstrates that the canonical representatives of the debate on SI/CI (the "Big Four": John Searle, Margaret Gilbert, Raimo Tuomela, and Michael Bratman)[6] not only do not accept but even reject the strong forms of methodological individualism, i.e. atomism and "singularism". In fact, they adopt a specific position, i.e. intentionalism, where the social aspect is required.

Let us now move on to cognitive approaches to SI/CI. These are focused on cognitive and motivational capacities for participating in or sharing mental states. In particular, they emphasize the cultural, ontogenetic, and phylogenetic foundations of SI/CI and the transformative character of SI/CI itself. This approach stems from Vygotsky's more general concept concerning genetic research and an analysis of mental processes as a result of different mechanisms of transformation, specific to a given "genetic domain".[7] (Wertsch, 1985, p 19).[8] While the contemporary debate on cognitive science invokes the concepts of *The Extended Mind* (Clark & Chalmers, 1998) or *The Shared Mind* (Zlatev et al., 2008), researchers referring to Vygotsky's ideas speak of *The Transformative Mind*. In *The Transformative Mind: Expanding Vygotsky's Approach to Development and Education* Stetsenko writes:

[6] Cf. "intentionalism requires that members view themselves in a particular way *vis-à-vis other group members*, either as jointly committed with others (Gilbert), as potential contributors to a group action (Searle), as sharing mental states (Tuomela), as intending to *J* along with others (Bratman), or as sharing collective ends (Miller)" (Tollefsen, 2017, p. 394).

[7] Cf. "Whereas genetic analysis is often limited to ontogenetic comparisons, Vygotsky included other types of comparisons, such as phylogenetic and sociohistorical, as well" (Wertsch, 1985, p. 19).

[8] Surely, in Vygotsky's concept, terms such as "SI/CI" or "joint attention" do not appear; however, he put a lot of emphasis on the influence of social cooperation as an orgin of higher psychological functions, cf.: "higher mental functions (an inseparable part of which is the use of signs) arise in the process of cooperation and social interaction" (Vygotsky, 1999, p. 53).

> The mind in this approach is understood as a facet (or an emergent property) of a simultaneously social and individual process of contributing to the future-oriented dynamics of *transformative* shared social practices of communal life in their world-changing and history-making status. (Stetsenko, 2016, p. 5)

Although the genetic method in psychology is not a novelty, and was not even in Vygotsky's lifetime, some elements of his theory lend its specific character to it. The genetic method is based on the assumption that the functioning of the mind can only be understood from the point of view of its development from elementary to higher mental functions. In this context, Vygotsky distinguished a certain base of cognitive abilities, "elementary mental functions" which we share with the great apes and which are the starting point in explaining the mind, i.e. "higher mental functions".[9] Furthermore, he distinguished between the "natural" and the "socio-cultural" line of development of mental functions. He claimed that "higher mental functions" arise from the "elementary mental functions":

- owing to the participation in and internalization of *social* linguistic interactions;
- as a result of which mediated semiotic cognitive processes emerge;
- and such processes are the basis for the creation of new psychological systems,[10] such as voluntary attention or logical memory;
- the process itself is "revolutionary" and not "evolutionary" in nature.[11]

[9] A detailed analysis of Higher Psychological Functions (HPFs) in Vygotsky's concept is carried out by Toomela (2016). According to him, HPFs are: "(1) psychological systems, (2) developing from natural processes, (3) mediated by symbols, (4) forms of psychological cooperation, which are (5) internalized in the course of development, (6) products of historical development, (7) conscious and (8) voluntary (9) active forms of adaptation to the environment, (10) dynamically changing in development, and (11) ontogeny of HPFs recapitulates cultural history" (Toomela, 2016, p. 91).

[10] "Higher mental functions are not built up as a second story over elementary processes, but are new psychological systems that include a complex merging of elementary functions that will be included in the new system, and themselves begin to act according to new laws; each higher mental function is thus a unit of a higher order determined basically by a unique combination of a series of more elementary functions in the new whole" (Vygotsky, 1999, p. 43).

[11] "The history of each of the higher mental functions development is not the direct continuation and further improvement of the corresponding element functions, but undergoes a radical change of direction in development and a subsequent movement of the process to a completely new plane; each higher mental function is thus a specific neoformation" (Vygotsky, 1999, p. 42).

What are the ontogenetic foundations of this process?

> Our studies led us [...] to a positive conclusion that the greatest genetic point in all intellectual development, from which purely human forms of practical and cognitive intellect arose, consists in uniting the two initially completely independent lines of development.
>
> (Vygotsky, 1999, p. 14)
>
> However, the most important event in the development of the child's thinking and speech occurs at approximately two years of age. It is at this point that the lines representing the development of thinking and speech, lines that up to this point have moved in isolation from one another, cross and begin to coincide. This provides the foundation for an entirely new form of behaviour, one that is an essential characteristic of man. (Vygotsky, 1987, p. 110)

The fundamental transformation of cognitive processes — "the revolution of the twenty-fourth month" (i.e. at the end of the second year of life), when the two lines of development, "natural" (pre-linguistic abilities) and "cultural" (linguistic abilities), collide and cause the semiotic mediation of higher mental processes. Such an explanation scheme combines in a coherent manner the additive and transformative account of mental functioning. Moreover, such a collision of the two lines of development occurs in the context of social interactions, as stated in his famous: *The general genetic law of cultural development*:

> every function in the cultural development of the child appears on the stage twice, in two planes, first, the social, then the psychological, first between people as an intermental category, then within the child as a intramental category [...]. Genetically, social relations, real relations of people, stand behind all the higher functions and their relations.
>
> (Vygotsky, 1997, p. 106)

The most spectacular exemplification of the said "law" is Vygotsky's studies on the relation between thinking and speech, where he presented verbal thought (inner speech) as the progressive internalization first of social speech, and then of private speech (Berk, 1992; Fernyhough, 2008). This aspect of his studies was developed in an appealing manner by Fernyhough (1996, 1997, 2008, 2009) in his "The dialogic mind" or "Dialogic thinking". Fernyhough argues that Vygotsky's study of the relation between thinking and speech can give us a certain insight into the dialogical structure of higher mental functions; in particular, internal speech or verbal thought (Fernyhough, 1997) and thus shed light on the thesis that

thinking is of a social character. According to Fernyhough, there exists a class of higher cognitive processes, dialogic thinking or inner dialogue, which is the result of the internalization of semiotically mediated social interactions — external dialogue (Fernyhough, 2009, p. 42):

> the internalization of dialogue necessarily entails the internalization of the alternative perspectives on reality manifested in that dialogue, and the consequent restructuring of cognition to enable the simultaneous accommodation of multiple perspectives upon a topic of thought.
>
> (Fernyhough, 2007, pp. 232–233)

As far as Vygotsky's tradition is concerned, its most significant representative today is Tomasello, criticized by Kern and Moll for being a representative of the additive account. Tomasello also emphasizes transformative social processes; nevertheless, in contrast to Vygotsky, he argues that they are of a pre-linguistic character. In Tomasello's model, these social origins have a pre-linguistic starting point and are based on interactions within SI/CI. Thus, the fundamental transformation of cognitive processes — "the nine-month revolution"[12] (Tomasello, 1999, 2019) is when two lines of development collide — "individualistic" (a general line of understanding of intentional action shared with great apes) and "cultural" (a uniquely human line with motivations and capacity to engage in different kinds of shared intentionality) (Tomasello, 1999, 2005b).

Currently, Tomasello and his team are the most influential representatives of this approach. This is owing to at least two reasons. First of all, he reached for the above mentioned philosophical analyses of the SI/CI problem in order to operationalize the basic concepts and apply them to empirical research on SI/CI.[13] Secondly, he did so to indicate the transformative character of SI/CI. As he points out:

[12] In the ontogenetic domain, before the ninth month of life, the child's interactions have the nature of a *dyadic engagement* (e.g. mother-child or object-child). This type of interaction is an important stage in the development process, which can be described, after Trevarthen (1979), as *primary intersubjectivity*. However, from the age of nine months onwards, the child is involved in triadic and collaborative engagement (e.g. mother-object-child), i.e. social experience structured, inter alia, by joint intentions and attention — already within the framework of *secondary intersubjectivity* — which have a radical effect on the transformation of the main cognitive abilities (Tomasello, 2002; Tomasello et al., 2005a).

[13] Cf. "I discovered that it is only in philosophy that people take seriously the social and cultural dimensions of human cognition and thinking, including its normative structuring." (Tomasello, 2016c, p. 123) and cf. "Bratman (1992) identified a trio of

> We argue for the importance of processes of shared intentionality in children's early cognitive development. We look briefly at four important social-cognitive skills and how they are transformed by shared intentionality. In each case, we look first at a kind of individualistic version of the skill — as exemplified most clearly in the behaviour of chimpanzees — and then at a version based on shared intentionality — as exemplified most clearly in the behaviour of human 1- and 2-year-olds. We thus see the following transformations: gaze following into joint attention, social manipulation into cooperative communication, group activity into collaboration, and social learning into instructed learning. (Tomasello & Carpenter, 2007, p. 124)

Kern and Moll stress that Tomasello paved the way for the transformative character of SI/CI, but finally his position fluctuates between the transformative and the additive account of SI/CI. As one of their arguments Kern and Moll quote Tomasello's thesis:

> Humans share many cognitive skills with nonhuman apes, especially for dealing with the physical world, but *in addition* have evolved special skills of social cognition (Herrmann, Hernández-Lloreda, Call, Hare, Tomasello, 2010, p. 102, emphasis added).
>
> (Kern & Moll, 2017, p. 322)

However, quoting such sentences is not a strong argument since it has not been demonstrated that Tomasello applies the expression "in addition" in the sense in which the additive account of SI/CI is defined, i.e. as excluding transformativity and entailing the claim that "the capacity for individual intentionality is untouched, that is, not influenced by collective intentionality" (Kern & Moll, 2017, p. 316).

In their criticism, Kern and Moll refer to *A Natural History of Human Thinking* by Tomasello (2014) in which he generalizes his previous position referred to as *the Vygotskyan intelligence hypothesis*, pursuant to which:

> Our claim is that participation in interactions involving shared intentionality transforms human cognition in fundamental ways. Most

characteristic features of shared collaborative activities: (i) mutual responsiveness (to each other's behaviour), (ii) commitment to a joint activity (including coordinating and meshing sub-plans necessary for joint success), and (iii) commitment to mutual support of each other in the respective roles. Mere social coordination exhibits (i), but falls short of (ii) and (iii) (Tomasello et al., 2005a) recently adapted this analysis for interpreting preverbal collaboration, attempting to operationalize Bratman's criteria" (Tomasello & Rakoczy, 2007, pp. 115–116).

> importantly, it actually creates new forms of cognitive representation, specifically, perspectival or dialogic cognitive representations. (Tomasello & Moll, 2010, p. 344)
>
> Our Vygotskyan intelligence hypothesis is that participation in interactions involving shared intentionality transforms human cognition in fundamental ways. (Moll & Tomasello, 2007, p. 7)

In *A Natural History of Human Thinking* Tomasello (2014) formulated *the shared intentionality hypothesis*: "Thinking for *co*-operating" (Tomasello, 2014, p. 125). The general outline of this hypothesis is as follows.[14] Thinking is understood here as a cognitive process comprising three constitutive elements such as off-line cognitive representations, inferential simulations based on an understanding of causal, intentional, and logical relations, and cognitive self-monitoring. Like Vygotsky who distinguished a certain base of cognitive abilities, "elementary mental functions", Tomasello perceives individual intentionality as such a base. It is a cognitive asset of the last common ancestor of great apes and homo sapiens, the evolutionary evidence for which is obtained by examining the capacities of modern-day great apes (chimpanzees and bonobos). Then, as a result of ecological pressure, the life of primitive man had to become oriented towards collaboration. The natural history of human thinking involved two stages that can be distinguished through the emergence of two different collaboration models:

• Small-scale collaboration, i.e. second-personal joint intentionality. This is a model of pre-cultural cooperation between two primitive people, including the ability to take on an individual role, an individual perspective, and the ability to create joint goals and joint attention. In addition, this model considers the capacity of cooperative communication (natural gestures of pointing, pantomiming). The cognitive abilities of pre-linguistic and just-linguistic human infants constitute the empirical model for testing the evolutionary hypotheses of joint intentionality. Second-personal joint intentionality creates specific forms of thinking, i.e. specific processes of representation, inference, and self-monitoring (cf. Table 2 below: the shared intentionality hypothesis).

• Large-scale collaboration, i.e. collective intentionality. This is a collaboration model characteristic of modern humans, encompassing culture, language, conventions, and institutional realities. Collective intentionality also creates specific forms of thinking — objective-reflective-

[14] I write more broadly on this topic in (Żuromski, 2017).

normative thinking, i.e. specific processes of representation, inference, and self-monitoring.

The shared intentionality hypothesis by Tomasello can be summarized as presented below. The table depicts the elementary transformations of thinking:

		Shared intentionality	
Intentionality	**Individual Intentionality**	**Joint Intentionality**	**Collective Intentionality**
the main features of thinking	– competition – intentional communication	– dual level collaboration – cooperative communication	– group-minded culture – conventional communication
representations	schematic/imagistic representations	perspectival/ symbolic representations	objective/conventional representations
inferences	causal/intentional inferences	socially recursive inferences	self-reflective inferences
self-monitoring	cognitive self-monitoring	second-personal self-monitoring	normative self-governance

Table 1. *The shared intentionality hypothesis* (table after Tomasello (2014))

4. A constructive approach to the transformative character of SI/CI: The interpersonal level of explanation

What is the influence of the social in the constitution of the mind and cognition? Instead of postulating "collective forms of life", I propose a more minimalist approach to shared/collective intentionality and the role of the social factor in explaining the mind and cognition. The general idea is as follows. To explain the specificity of social processes of a transformative character that generate the mind and cognition, we must, from the methodological point of view, refer to a multilevel analysis of explanation and distinguish between the autonomous and specific social level of explanation. For example, referring to Daniel Dennett's distinction (Drayson, 2012, 2014), this thesis could be formulated as follows: in order to understand and explain the processes of the mind and cognition formation, we need to go beyond:

- the personal level of explanation (e.g. level of beliefs, desires),
- the sub-personal level of explanation (e.g. neural or computational),

and posit the third level:

- *the interpersonal level of explanation* (ILE).

The introduction of the concept of the ILE is a proposal of a minimal approach as it does not oblige us to posit any "cognitive faculties", such as the "form of life", but rather refers to methodological tools. The intuition underlying the third level of explanation concerns the existence of specific areas where interpersonal interactions affect elementary cognitive capacities and processes, which may lead to their *transformation* into higher cognitive capacities and processes (Żuromski, 2020). Above, I present two examples, namely Vygotsky's *sociogenesis* of higher psychological functions and *the shared intentionality hypothesis* by Tomasello. The collection of all such domains constitutes the interpersonal level of explanation, and one of its main tasks is to describe different types and forms of the transformation. One of the most important transformative mechanisms is SI/CI.

However, it seems more promising to refer to a multi-level analysis and mechanism-based explanation (Bechtel & Richardson, 1993; Bechtel, 2008; Craver, 2009). In this context, to provide an *explanation* to a given phenomenon is to formulate a hypothesis concerning the mechanisms underlying this phenomenon. In turn, "a mechanism for a phenomenon consists of entities and activities organized in such a way that they are responsible for the phenomenon" (Illari & Williamson, 2011, p. 120). And although in cognitive science this explanation strategy was initially applied to computational, neural, and biological mechanisms, it is now also applied to social mechanisms:

> Social groups can also be understood as mechanisms, in which the parts are people and sub-groups and the relations are interpersonal ones such as communication. As indicated by the inclusion of anthropology as one of the disciplines of cognitive science, the field is open to the inclusion of the social dimension of thinking, so that attention to *social mechanisms* is a natural part of cognitive science. (Thagard, 2013, p. 600)

Thagard (2008, 2013) in an interesting manner combines mechanism-based explanation and multi-level analysis into explanatory pluralism. The author of *Hot thought: Mechanisms and applications of emotional cognition* uses this strategy to show the mechanisms underlying those forms of thinking that employ emotions and are responsible for activities such as decision making, legal reasoning, scientific discoveries, and religious beliefs. Understanding and explaining such cognitive activities

and processes requires the integration of different levels of explanation: molecular, neural, psychological, and *social*:

Mechanisms	Components	Relations	Interactions	Changes
social	persons and social groups	association, membership	communication	influence, group decisions
psychological	mental representations such as concepts	constituents, associations, implication	computational processes	inferences
neural	neurons, neural groups	synaptic connections	excitation, inhibition	brain activity
molecular	molecules such as neurotransmitters and proteins	constituents, physical connection	biochemical reactions	transformation of molecules

Table 2. *Constituents of mental mechanisms* (table after Thagard (2008, 2013)

However, in order to capture the social mechanisms of mind transformation — in particular those presented in Tomasello's *shared intentionality hypothesis*, where joint intentionality and collective intentionality mechanisms are presented as underlying diverse forms of social cooperation — the very category of the social or of social mechanisms seems to be more complex (Hedström & Swedberg, 1998; Ylikoski, 2017) and should thus be subjected to multilevel analysis.

The basic processes at the interpersonal level would include those which Wertsch (1985) described as "interpsychological" and:

> interpsychological processes [which] involve small groups (frequently dyads) of individuals engaged in concrete social interaction and are explainable in terms of small-group dynamics and communicative practices. (Wertsch, 1985, p. 60)

The inclusion of "interpsychological" processes in the ILE would allow us to avoid the two reductionisms that Wertsch (1985, pp. 60–61) warns against. The Scylla of *individual psychological reductionism*, which brings "interpsychological" processes down to individual psychological processes, and the Charybdis of *sociological reductionism*, which reduces "interpsychological" processes to sociological or economic processes. One of Tomasello's main theses stemming from his *A Natural*

History of Human Thinking (2014) and *A Natural History of Human Morality* (2016a) advocates that there exist phylogenetic and ontogenetic grounds to treat "interpsychological" interactions as a starting point in the study of social mechanisms of mind and cognition transformation; in particular, the joint intentionality mechanism, which encompasses two-person pre-linguistic and pre-cultural interactions. A different level of social mechanisms of mind and cognition transformation is represented by the collective intentionality mechanism, where language, norms, and social conventions play an essential role.

An analysis of social ontology which reveals different levels of social mechanisms is provided by the psychosociological concept of the Emergence Paradigm proposed by Sawyer (2005, p. 211). Sawyer presents the Emergence Paradigm as a synthesis of two other paradigms: the Structure Paradigm and the Interaction Paradigm. The former focuses on aspects of social reality emphasized by Thagard, i.e. the Social Structure (i.e. Level E in Table 3). The Interaction Paradigm, on the other hand, highlights the dynamics of the "interpsychological" processes indicated by Wertsch. Thus, the very category of the social is complex and multi-layered, and involves dynamic interaction and the emergence of subsequent social levels. Each of the levels presented by Sawyer (2005, 2011) contains separate social mechanisms, consistent with the mechanistic paradigm and the thesis that the explanation is a multilevel one.

Social Structure (Level E) Written texts (procedures, laws, regulations); material systems and infrastructure (architecture, urban design, communication, and transportation networks)
Stable emergents (Level D) Group subcultures, group slang and catchphrases, conversational routines, shared social practices, collective memory
Ephemeral emergents (Level C) Topic, context, interactional frame, participation structure; relative role and status assignments
Interaction (Level B) Discourse patterns, symbolic interaction, collaboration, negotiation
Individual (Level A) Intention, agency, memory, personality, cognitive processes

Table 3. *The Emergence Paradigm* (table after Sawyer (2005, p. 211)

Therefore, how to understand the social transformation mechanisms? How does an interpersonal experience structured by shared intentionality (joint intentionality and collective intentionality) affect and transform an individual's mind and cognitive abilities? It is not easy to provide a simple definition of transformation, as it is possible to talk about transformations operating at different time scales. In the Vygotsky-Tomasello model at least three time-planes can be distinguished (Wertsch, 1985, p. 54; Tomasello, 1999, pp. 202–203)[15]:

- phylogenetic or evolutionary, where the shared intentionality mechanism is understood as a homo sapiens-specific biological adaptation to the social environment. The main transformation processes are based on individual intentionality, which is transformed into joint intentionality and subsequently into collective intentionality (Tomasello, 2014).[16]
- historical-cultural, where the shared intentionality mechanism enables cultural learning processes, sociogenesis, cultural creation and thus cumulative cultural evolution (Tomasello, 1999).
- ontogenetic (Tomasello, 2019), where social experience structured by a shared intentionality mechanism enables a homo sapiens-specific development path of the individual.

However, there is a general scheme of transformation mechanisms that can be identified. Shared intentionality theory (Tomasello, 2019), or rather the fragment of theory that describes the mechanism of transformation from individual intentionality to joint intentionality (Tomasello, 2014) can be used as an example of the transformation scheme. In the Vygotsky–Tomasello models, which in this paper are treated as paradigmatic cases of description of mechanisms of mind transformation to the ILE, the following elements of transformation structure can be distinguished (T):

(A) The domain of T: "a base of abilities being transformed" of individuals at the input of the transformation process.

[15] Cf. "And so, from a meta-theoretical perspective, my claim is that we cannot fully understand human cognition — at least not its uniquely human aspects — without considering in detail its unfolding in three distinct time frames: in phylogenetic time [...], in historical time [...], in ontogenetic time" (Tomasello, 1999, pp. 202–203).

[16] Cf. "The emergence of shared intentionality thus effected a restructuring, a transformation, a socialization, of all the processes involved in individual intentionality and thinking — an unusual, if not unprecedented, evolutionary event" (Tomasello, 2014, p. 132).

(B) The range of T: "the result of transformational abilities" at the output of the transformation process.
(C) Transformation abilities and processes T, i.e. those that carry out transformations from the domain (A) to the range (B)[17].

The transformation domain (A) encompasses individual intentionality abilities that we share with the great apes and that are possessed by children before the ninth month of life, such as: gaze following, social manipulation, group activity, social learning.[18] The skills and motivations of shared intentionality, in the discussed aspect, are the transformational abilities and processes (C), which are a unique and specific evolutionary adaptation to the social environment and which are the basis of the uniquely human forms of interaction and social practices. The shared intentionality mechanism, which brings individual intentionality to joint intentionality, is described using the cognitive model: the dual-level structure (simultaneous sharedness and individuality):

> When individuals participate with others in collaborative activities, together they form joint goals and joint attention, which then create individual roles and individual perspectives that must be coordinated within them. (Moll & Tomasello, 2007, p. 2007)

The essence of Tomasello's position is that the shared intentionality mechanism is a part of biological development. However, to achieve a result of transformation processes, i.e. a set of capabilities (B), such as joint attention, cooperative communication, collaboration and instructed learning, it is necessary to have an *interpersonal* experience structured by skills and motivations of shared intentionality. This *interpersonal* experience makes possible, inter alia, the process of internalization, "the process whereby the individual, through interaction with others, actively reconstructs external, shared operations on the internal plane" (Fernyhough, 2008, p. 227). Internalization not only enables the reconstruction of external social practices (e.g. the dialogical question-and-answer structure) on an individual plane, but also the reorganization of said internal plane by internalizing the perspectives of the participants in these practices:

[17] By this I do not mean that transformation is a function or a specific relation with mathematical properties. I use the above concepts to explicate various essential features of the concept of transformation.

[18] Cf. also Table 1 above, *the shared intentionality hypothesis*.

> Processes of internalization enable children at some point to reflect on and to evaluate their own thinking, and to construct multiperspectival concepts that require a coordination or integration of perspectives.
>
> (Tomasello, 2019, p. 187)

Internalization thus understood leads to the skills of executive self-regulation (Tomasello, 2019, pp. 302–303), while the result of the processes of internalization and transformation are abilities unique to humans, i.e. Vygotsky's higher psychological functions (Toomela, 2016). Hence, in order to capture the specific mechanisms indicated by Tomasello's shared intentionality hypothesis, Thagard's category of what social in concept should be complemented by specific mechanisms constituting the ILE:

Mechanisms	**Components**	**Relations**	**Interactions**	**Transforma-tions**
interpersonal	joint goals, joint attention, individual roles, individual perspectives, common ground	joint intentionality, internalization	collaborative activities, communication	representa-tions inferences self-monitoring

Therefore, the ILE is a proposal of a *minimal* approach in which the social impact on mind formation would be explained at the posited interpersonal level of explanation (Żuromski, 2020) as a set of mechanisms that transform cognitive capacities (Tomasello & Carpenter, 2007; Moll & Tomasello, 2007). The ILE is of an autonomous character and allows the capturing of mechanisms of the mind and cognition transformation not visible from other levels of explanation. One of the initial research objectives pursued at the ILE is the identification and taxonomy of the mechanisms and processes of a transformative nature. The above-mentioned two models of such mechanisms are those by Vygotsky and Tomasello. The Vygotskyan model treats internalization and semiotic mediation as responsible for the transformation from elementary to higher mental functions. Tomasello's model, in which *the shared intentionality hypothesis* is formulated, illustrates in the phylogenetic and ontogenic aspect the transformations of forms of thinking, i.e. pro-

cesses of representation, inference, and self-monitoring first within joint intentionality and then collective intentionality.[19]

Currently, among the positions pointing to the importance of the social factor in the constitution of the mind and cognition, a discussion is taking place about "where" to locate the said social factor (Carpendale et al., 2013, 2016; Tomasello & Carpenter, 2013; Moll, 2016; Tomasello, 2016c; Kern & Moll, 2017). From the viewpoint of the concept proposed above, this dispute can be viewed as concerning the "nature" of social mechanisms. In such a case, it is possible to specify the following examples of adopted views:

(S1) SI/CI mechanism as a specific adaptation, whose activation requires social interactions (Tomasello).
(S2) Relationism which rejects the first part of the S1 thesis and emphasizes the second part of the proposition (Carpendale et al., 2013).
(S3) "collective forms of life" (Kern & Moll, 2017) are the bearers and generators of the mechanism of SI/CI.

It is conceivable that a deeper analysis of these positions that took into account the ILE and Sawyer's concept of The Emergence Paradigm would reveal that (S1)–(S3) are not at all mutually exclusive, but point to different facts, from different levels, of the social factor.

From Thagard's concept point of view (in the sense of Thagard — Table 2), Kern and Moll's accusation against Tomasello and the participants in the philosophical debate on SI/CI can be presented as an accusation resulting from the confusion of explanation levels, i.e. the fact that mechanisms concerning SI/CI, which are social in nature, have been placed by them at the level of psychological mechanisms. However, it is possible to propose a more ecumenical interpretation of these positions as two strategies of generating and testing evolutionary hypotheses (Buss, 1999/2008, pp. 45–49). In such an instance, Kern and Moll's thesis (the proper bearer of SI/CI is the Wittgensteinian "collective form of life", not an individual) can be understood as a theory-driven or "top-down"

[19] Undeniably, it is also possible to point to other concepts which indicate various aspects of transformative mechanisms at the interpersonal level of explanation, where the mind or cognition are "distributed" (Hutchins, 1995), "scaffolded" (Sterelny, 2010) or socially extended ("mental institutions") (Gallagher & Crisafi, 2009; Gallagher, 2013). Moreover, there is an ongoing critical debate on the explanatory power of shared intentionality (Susswein & Racine, 2008).

strategy, i.e. a general theory dealing with the transformative account of SI/CI, from which particular hypotheses related to transformative mechanisms can be derived. On the other hand, Tomasello's approach shows the individual as a medium or a domain of specific mechanisms from the ILE level, transforming specific cognitive capacities. With such an interpretation of this dispute, it would be a debate on the starting point in explaining the mind and cognitive processes and the "nature" of social mechanisms, rather than a dispute between the transformative and additive accounts of SI/CI.

5. Conclusion

In this paper, I have presented my attitude towards Kern and Mole's position and their critical approach towards the debate on SI/CI. According to Kern and Moll, the debate in question is based on arbitrary assumptions: the individualistic explanation of SI/CI (the medium of the SI/CI is the individual), and the additive account of SI/CI. The two assumptions, from Kern and Moll's point of view, make it impossible to understand the transformative character of SI/CI. Therefore, in Kern and Moll's opinion, these assumptions should be replaced with others, in particular with the assumption that individuals are not proper SI/CI entities, but rather Wittgensteinian "forms of life", which are also "collective forms of life". Such a revision of the basic assumptions will make it possible to capture the transformative character of SI/CI and the "specifically human form of life", and thus, the uniqueness of human beings. The paper expresses reservations as to the reasons why it is impossible to grasp the transformative nature of SI/CI, as well as the arbitrary division of understanding of the transformative account of SC/CI vs. the additive account of SI/CI. It has been noted that Vygotsky and Tomasello advocate intermediate positions which contain certain elements of the additive account of a given capacity C, but which do not exclude the transformative account of the capacity C; on the contrary, the latter aspect lies at the very heart of both Vygotsky's and Tomasello's theoretical framework.

In its constructive aspect, a proposal is formulated in this paper to express a thesis proclaiming that the social factor has a constitutive influence on the mind and cognition in the form of a statement that there exists an autonomous level of explanation, i.e. the ILE, one of the

fundamental features of which is the transformation of cognitive abilities. Thus understood, the ILE constitutes a part of multi-level analysis and mechanism-based explanation. SI/CI is one of its main mechanisms.

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