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How are we creative together?: comparing sociocognitive and sociocultural answers

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How Are We Creative Together?
Comparing Sociocognitive and Sociocultural Answers

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The present article aims to distinguish between a sociocognitive and a sociocultural approach to forms of "collective" creativity. While the first is well-illustrated in studies of group or team creativity, the second has generally supported investigations of collaborative creativity, most of them performed in the last few decades. The comparison between these two fields takes different levels into account, from the epistemological position adopted to issues concerning the theories and methods used. Special attention is given to reviewing models of creativity. While the literature on group creativity contains several cognitive models, there is a scarcity of such constructions for collaborative creativity. This is why a secondary aim of this material is to introduce a sociocultural theoretical framework and discuss its implications for developing situated models of creativity. In the end, the similarities and differences between the two paradigms are examined with reference to both theory and research and arguments are given for why it would be beneficial for sociocognitivists and socioculturalists to engage in a more consistent dialogue.

The title question, despite having a "long history" of theoretisation, has only benefited from what can be considered a relatively "short past" of intensive psychological research. By and large, in both psychology and related disciplines, most efforts have been devoted to understanding how *the individual* is creative. Historically, accounts such as that of Le Bon (1896), generally exemplified the negative influence of "others" (the crowd) upon the mental functioning and behaviour of the person. Added to this background, that greatly inspired theories of social influence, another difficulty made answering creativity questions even more problematic and that is the *obscure* nature of the creative process. There is little doubt that creativity is an important value in our contemporary society and, consequently, it became object of study for a variety of disciplines. Only in psychology creativity has been explored using diverse theoretical frameworks such as: biological, behavioural, clinical, cognitive, psychometric, developmental etc. (see Runco, 2004). Still, after intensive investigations, starting from the 1950s, there are authors who still assert that "creativity is something we desperately need, but we do not know how to get it, and we are not really sure what it is" (Smith et al., 2006, p. 3).

Considering the above, it is not difficult to understand why, in the beginning at least, the main research question was not "how are we creative together?" but "*can* we be creative together?" A tradition of embedding creativity into the mind of the person, supported early on by the studies of Galton (1869) on hereditary genius, led to an exclusivist and decontextualised focus on individual creativity (Hennessey, 2003). While plenty of published materials contemplated the image of the *lone genius*, the influence of group factors on creativity received limited attention and when it did it was generally to show its negative consequences (Paulus and Nijstad, 2003). Strong reactions against this state of affairs emerged mostly since the '80s and today's literature shows an increased interest in understanding the larger social and cultural dynamics of creativity. Recognizing the individualism inherent in previous accounts was a crucial step for allowing researchers to think more beyond the "I" and towards the "We" of creativity.

It is in the process of transition from an exclusively individual psychology of creativity to a more socially orientated one that three concepts emerged: *social creativity*, *group creativity*, and *collaborative creativity*. The first reflects a rather theoretical approach (e.g., Fischer et al., 2005) referring to the social origins and manifestation of the creative process as opposed to a picture of the creative individual working in a social vacuum. The other two notions consider more particular instances of at least two individuals working together to generate a creative outcome. But, as argued next, there are profound differences between the images of creativity proposed by researchers looking at creative groups and creative collaborations, differences that can only be explained in terms of the general approaches underlying them. Important to note, in this article, partially due to space constrains but also in order to use a unitary criteria of analysis, the focus will be on the literature dedicated to creativity *per se*, as opposed to a broader literature on related topics such as collaborative work and learning, knowledge construction or conceptual change. Therefore the conclusions presented next are derived from the literature on group and collaborative creativity, meaning the generation of new and useful ideas or products by two or more persons who *deliberately* engage in a creative/idea generation task.

Framing the Debate: The Sociocognitive and Sociocultural Approaches

The main distinction made in this article is that between a sociocognitive approach and a sociocultural approach to the study of "collective" creativity (creative activities that rely on multiple participants). If the *sociocognitive stance* largely supports studies of "group creativity" or "team creativity", the *sociocultural stand* endorses most of the writings on "collaborative creativity" or "creativity in collaboration". What this segmentation suggests is that the rather new interest for collective forms of creativity has lead to a mass of studies that is quite diverse and that, as summarised in Table 1, the two approaches have relatively little in common. In fact, this situation reflects and is in part a consequence of a deeper division that began to be felt in social

psychology especially since the '80s when a series of authors (see Shweder, 1990; Bruner, 1990) have started to criticize the unwanted effects of the cognitive revolution and laid the modern foundations of the cultural or sociocultural psychology.

Before proceeding and showing how exactly these paradigmatic changes impacted the study of group forms of creativity three observations should be made. First, the sociocognitive and sociocultural approaches discussed in this article encompasses, as mentioned earlier, only a facet of these broader "traditions", and that is the one applied to group and, respectively, to collaborative creativity. Consequently, the distinctions between the two are significant in this context but may be less so when other areas of research are considered. Moreover, the distinctions included in Table 1 mainly exist "in theory" in the sense that any particular study on creativity may present characteristics from both orientations and individual authors don't often position themselves explicitly as sociocognitivsts or socioculturalists. Even so, these differences are real, and, as we shall see, they are beginning to be more and more acknowledged as such. Third, this analysis, while trying to give a *balanced* account of both approaches, may seem at times inclined towards the sociocultural orientation, the one that I am personally using for understanding creativity in general and particularly in the case of groups. Since this is basically an emerging approach to creativity, much work remains to be done in this sector and, as a secondary purpose, in this article a framework for collective creativity from a sociocultural perspective is proposed and its assumptions compared with those of well-known sociocognitive models.

	Sociocognitive Approach	Sociocultural Approach
Epistemological Position	The 'social' as external and creativity embedded in the mind	The 'social' as intrinsic to creativity; creativity embedded in interaction
Terminology	Group creativity, team (or workgroups) creativity/innovation, brainstorming etc.	Collaborative creativity, creative learning, intersubjectivity, co-construction of knowledge etc.
Theories	Social influence, Social comparison, Cognitive Theories	Vygotskian approach, Dialogicality, Symbolic interactionism
Models	Componential; Interrelated elements	Genetic; Interdependent elements
Methods	Often quantitative (especially experiments); short-term tasks	Often qualitative; field studies; longitudinal research
Data analysis	Statistical analysis of results	Conversation/interaction analysis

Participants	Mainly adults; students or persons from organisations	Adults as well as children and youth; educational environments
Purpose	To understand the mechanisms and to optimize group creativity	To understand/describe and to promote creative collaboration
General attitude	Sceptic about the efficiency of group or team creativity	Enthusiastic about the power of collaborative creativity

TABLE 1. Contrasting the Sociocognitive and Sociocultural Approach

Group Creativity: The Sociocognitive Approach

The key to understanding the sociocognitive approach rests in its epistemological position and set of assumptions about creativity and groups. What is specific about the cognitive stance, not only in relation to creativity but within social psychology in general, is considering the social as "external", a type of ontology referred to as *monological* by Ivana Marková (2003, p. xiii). She notes that, in this case, the individual and the social are seen as two separate units that establish relationships and interact without losing their distinctiveness. Most sociocognitive theories, inspired by cognitive psychology, envision the person as a "unit" that processes information from the environment and the environment as a set of variables that come to offer diverse types of stimulation. In this case then the social *conditions* a series of activities and outcomes of the individual, including the creative expression. It is this perspective of Ego and Alter as interacting that has inspired much of the theorising around *social influence*, or the way in which the social environment facilitates or constrains individual expression.

Adopting this epistemological position where creativity is concerned leads to the idea that "one universal about all creative products is that they emerge from the minds of people" (Smith et al., 2006, p. 4). Creativity as a phenomenon is therefore embedded primarily at an *individual* level and, furthermore, localised within individual cognitive processes. A second assumption, in tone with this positivistic approach, is that creativity can be "objectified" in a type of product or behaviour and therefore can be *measured*. Ideally the measurement should not be dependent on subjectivity or social judgement, the attribute of "creative" being somehow embodied in the outcome. Finally, the process of creativity in groups is portrayed as an interaction of distinct "units" (persons) and their mental functioning, units and functioning that nevertheless are impacted by the presence of others and their mental functioning. This doesn't mean of course that the interaction between members is seen as secondary since it is this interaction that offers the "inputs" and takes over the "outputs" of each individual, allowing the creative process to continue.

The sociocognitive approach is primarily reflected in studies of *group creativity*. Defining a group as a number of individuals focused on some common activity (Paulus et al., 2006), the work of researchers within this paradigm uses "laboratory settings and focuses on detailed analyses of social and cognitive processes in the short term" (Paulus and Nijstad, 2003, p. 5). The focal point is on the process and especially its cognitive dimension and on the outcome and its level of creativity (usually the dependent variable). This type of research became in time quite easily identifiable and represented for decades the only way of "scientifically" studying group creativity. Accordingly, it capitalised on quantitative methodologies available within social and cognitive psychology, and especially in social experimental psychology:

"The typical features of laboratory research on group creativity have included the following: experimental, random assignment, use of noninteractive control groups, short sessions, use of student participants, primarily a focus on ideation, assigned problems, broad domain problems, no self-selection, no facilitators, and objective outcomes" (Paulus et al., 2006, p. 75).

But also qualified here under the sociocognitive approach is another type of studies investigating *team creativity* or *team innovation*. Historically, group creativity and team innovation research have been in constant dialogue: while the first took to the laboratory some practical ideas belonging to the second (see the case of brainstorming; Osborn, 1957), persons promoting team innovation became naturally interested in the results. In fact, what sets these two "camps" (Paulus et al., 2006) apart is the theoretical emphasis of group creativity compared to the practical focus of team innovation. Team members, as a special kind of group, "have interrelated roles and are part of a larger organization" (Paulus et al., 2006, p. 70) and innovation is seen as including both idea generation (associated with creativity) and idea implementation. As a result, while group creativity research proceeded experimentally in comparing individual with group performance, team innovation studies used mainly nonexperimental methods to understand how creativity can be enhanced in teamwork (Paulus, 2000; Paulus et al., 2006). Despite these quite pronounced differences in methodology and final aim, for the purpose of this article the two subfields will be situated within the sociocognitive approach for sharing a similar epistemological position. It is to be noted though that group creativity stands at the core of this approach while some applications of creativity theories in organisations are currently shifting towards a more sociocultural standpoint (with an emphasis on creative collaboration; see Henry, 2004).

As previously mentioned, group creativity research started by comparing individual and group creativity and from these comparisons one conclusion came out repeatedly: *groups are bad for creativity* (Paulus et al., 2006, p. 70). Looking at group performance and analysing foreign-policy fiascos coming out of groupwork, Janis (1972) pointed to the phenomenon of groupthink, or

the "mode of thinking that people engage in when they are deeply involved in a cohesive in-group" (p. 9). The striving for unanimity and the need to conform seem to have disastrous consequences for the group outcome and this includes diminished creativity. Evidence also amounted against the use of brainstorming giving what seemed to be the final blow necessary for an altogether dismissal of group creativity. For example, Taylor and colleagues (1958) discovered that brainstorming groups produce less ideas, less unique ideas and of lower quality than individuals alone. This result, confirmed on different occasions, was in need of explanation and the literature abounds in this regard: social loafing, conformity, production blocking, and downward norm setting (Thompson, 2004, p. 187); topic fixation and social inhibition (Sawyer, 2007); social comparison processes leading to convergence (Larey and Paulus, 1999); reduced motivation to share divergent ideas and concerns about the evaluation of others (Paulus et al., 2006). Under these circumstances, authors like Nemeth and Nemeth-Brown (2003; also Nemeth et al., 2003) problematised the idea that it is the nature of groups causing a decrease in the quality of creative outcomes and started looking for ways to counteract group creativity slump through minority dissent. Moreover, studies began to show that while adverse effects were found in artificial laboratory conditions, real-life teams working together for a period of time had better chances of being innovative (Paulus et al., 2006; Milliken et al., 2003).

In an excellent summary of the social and cognitive factors that impact on group creativity, Paulus (2000, p. 242) distinguished between two categories: social inhibition/social stimulation and cognitive interference/cognitive stimulation. Groups perform low in terms of creativity when they face *social inhibition* factors like social anxiety, social loafing/free riding, illusion of productivity, matching, downward comparison and *cognitive interference* factors like production blocking, task-irrelevant behaviours, and cognitive load. On the contrary, the creative performance is high under conditions of *social stimulation* including competition/accountability, upward comparison/goals, and *cognitive stimulation* as a result of novel associations/priming, heterogeneity/complementarity, attention, conflicts, divergent style, and incubation. The generation of such conclusions as a result of intensive research brings together group creativity and team innovation researchers in designing and testing effective ways for the enhancement of creativity in various applied settings (Smith et al., 2006). Because of its results, as well as its solid methodological apparatus, the sociocognitive approach became a fertile paradigm for research, a fact illustrated by the numerous models it has produced over the years.

How Does Group Creativity Work? Reviewing Sociocognitive Models

Most of the models proposed within the sociocognitive framework are *componential*, distinguishing between elements/blocks and their relations in the process of creating the novel outcome. For example Nijstad and Paulus (2003, pp. 332-333) differentiate between the following

elements of group creativity: group members, group processes, and group context. From their perspective, the whole process starts from individual members and the resources they bring to the group (information, skills, abilities, expertise, etc.). The potential for creativity depends on how group processes take place (discussion, information sharing, collaborative reasoning, voting, etc.) and this is in turn influenced by the social environment. In a similar vain, organisational creativity is conceptualised by West (2003, pp. 245-246) as depending on "input" variables such as the task that groups have to perform (e.g., provide health care, sell mobile phones), the composition of the group (in terms of functional, cultural, gender, and age diversity), and the organizational context (e.g., manufacturing, health service, large or small, etc). The whole group creative process is depicted as an *input-process-output structure* where group processes (levels of participation, support for innovation, leadership, and the management of conflict) mediate the relationship between input and output factors. The output in this case is described by two criteria: number of innovations and innovation quality (radicalness, magnitude, novelty, effectiveness). As easily observed, the idea of information-processing, typical for cognitive psychology, is extremely influential in most of the models.

This influence is best portrayed by cognitive models of group creativity, many of which have as a starting point cognitive models of individual creativity. Having the individual process as a reference is what Smith et al. (2006, pp. 14-13) proposed when considering the cognitive system as an analogue for "collective" creativity. Their *Cognitive Model of Group Creativity* lists the cognitive structures that support individual creative expression (sensory systems, response systems, long-term memory and working memory) and suggests that group members should try, with no one-to-one correspondence, to carry out the functions of creative cognitive systems (executive control attention to input from the environment, representation of the problem, representation of the current solution plan, storage of knowledge, and retrieval of knowledge). The image of the group as a mind goes little beyond cognition. Authors like Paulus and Brown (2007, p. 249), in an attempt to offer a more comprehensive framework, proposed the *Cognitive-Social-Motivational Model* of group ideation. The focus here is on how social-cognitive factors (cognitive diversity, group cohesion, group size, norms/expectations, social facilitation, task goals, matching) influence individual cognitive processes involved in idea generation by affecting the amount of attention paid to other group members' ideas. The whole process of idea generation is again embedded in the mind of the person and within it the role of memory is considered central.

Based on the parallels between free recall and idea generation (Nijstad and Stroebe, 2006), the *Search for Ideas in Associative Memory Model* (SIAM) is one of the most promising cognitive models of group creativity. As presented by Nijstad and colleagues (2003), this model starts from the clear assumption that "idea generation is essentially a cognitive or mental process that occurs within the individual group member's mind" (p. 144) but at the same time is "affected" by the action of others through communication. According to SIAM, what takes place in a brainstorming

context is a repeated search for ideas in associative memory. Simply put, the contributions of others constitute search cues in the (long term) memory and result in the activation of an image from a more general "chain" of associated images (organised as a complex network). The whole process is therefore "probabilistic and dependent on the strength of the association of the elements of the search cue to the features of the image" (p. 145). This process of idea generation based on memory searches takes place also outside of group conditions and, when it happens in a group, it can be either stimulated or interfered with by communication with others.

> "Stimulation occurs when the ideas suggested by others lead to the generation of ideas that would otherwise not be generated, and interference occurs when idea sharing disrupts the individual-level cognitive process of idea generation. Productivity losses (group members are outperformed by individuals) are found when interference is stronger than stimulation; productivity gains (group members outperform individuals) are possible when stimulation is stronger than interference" (Nijstad et al., 2003, pp. 153-154).

One conclusion to be drawn from this model is that group diversity in terms of accessible knowledge can play an important role for group effectiveness. As the authors argue, when the overlap in accessible knowledge between group members is high, there is a pronounced tendency to activate associations from just a few domains. The underlying assumptions of SIAM have been tested in several studies (see Nijstad et al., 2002, Nijstad and Stroebe, 2006) and are reflected in current attempts to simulate creativity processes with the help of semantic networks (e.g. Paulus and Brown, 2003).

In summary, the models of group creativity within the sociocognitive approach are generally unified by the tendency of looking at individuals and at groups as information processors (Nijstad et al., 2003, p. 154). The main advantage of these conceptualisations rests in their capacity to *produce and test hypotheses* about the creative process and from them to conceive more productive group interactions. However, the sociocognitive stance is limited by *a severe individualisation* of the group creative process. In fact, as seen from above, the whole process seems to take place more in the mind of each person than in the actual interactions between participants. Adopting such a position makes studies vulnerable to the risk of methodological reductionism, or the focus on intrapsychic processes to the exclusion of other levels of the phenomenon (Montuori and Purser, 1997), something that researchers promoting a sociocultural view struggle to overcome.

Collaborative Creativity: The Sociocultural Approach

From a sociocultural perspective creativity is considered social in nature and located in the space "in between" self and others. This standpoint doesn't deny the role of the individual mind in the creative process but, in agreement with Sawyer (2007, p. 74), envisions the human mind as more social than we would normally realise. The interdependence between self and other (person, group, community, society) is at the core of what became known as *cultural or sociocultural psychology* (see Shweder, 1990; Cole, 1996). In contraposition to mainstream social psychology as developed in the West after the cognitive revolution, a cultural psychological perspective on any phenomenon (including creativity) will essentially look at processes of symbolic mediation through cultural artefacts, at the role of activity and social practices and the co-construction of knowledge and self through social interaction. As an epistemological position this is described by Marková as a *dialogical ontogeny* within which:

> "There would be no *Self* without *Others* and no self-consciousness without other-consciousness: one determines the other. It would be meaningless to refer to the *Ego-Alter* outside of the realm of communication; the *Ego* and the *Alter* are generated in and through symbolic communication" (Marková, 2003, p. xiii).

It is this vision of the social as operating both from "outside" *and* "inside" the person, as determining and not only conditioning psychological functioning that is specific for the sociocultural approach. In what creativity is concerned, this perspective was confronted with the ubiquitous image of the creative genius or lone creator. It is only in the last decades that propositions have been made to look beyond this "myth" (Montuori and Purser, 1995, 1999), to rediscover Vygotskian perspectives to the creative process (John-Steiner, 2000) and formulate a cultural psychology of creativity (Glăveanu, 2009).

This is the epistemological position that supports much of the research today on the topic of *collaborative creativity*. As a field of inquiry, creative collaborations have been studied since the '80s but remained until recently quite a marginal subject in research (Sonnenburg, 2004, p. 254), at least compared to group creativity. Nowadays though we find signs of development, observed both in terms of published books (see Littleton and Miell, 2004) and journal issues (see the special issue "Collaborative creativity: Socio-cultural perspectives" in Thinking Skills and Creativity, 2008). Reviewing these we can distinguish between two important meanings of collaborative creativity, as depicted also by Grossen (2008). In a *restricted* sense the majority of studies look at particular moments of collaboration between two or more individuals and their creative results. In a *broader* sense, and this is fundamental for the sociocultural approach, the process of collaboration has deep implications for creativity and learning and defines all parties through their interaction. Although

the role of collaborations is often masked in everyday life, even apparently solitary creative activities have a pronounced social dimension (Ivinson, 2004).

A new vocabulary is proposed by these theorists, one in which "emphasis is put on mutuality, sharing, negotiation of a joint perspective or shared meaning, coordination, intersubjectivity" (Grossen, 2008, p. 248). The focus of investigations, centred again around *process* elements, turns also to issues related to *content* (what is actually being created and with what resources) and *context* of creativity (how the collaboration is embedded within wider social and cultural networks). One important characteristic of collaborative creativity is that it usually takes place and is studied as an on-going and long-term activity, including not only face-to-face but also mediated contact (see De Laat and Lally, 2004). Second, creativity at the individual and group levels is considered not only in its cognitive dimension and attention is paid also to the socioemotional, motivational, cultural and identity dynamics sustaining it (Littleton and Miell, 2004; also Moran and John-Steiner, 2004). Third, researchers working within this paradigm are interested in genetic and developmental aspects, both the macro-genesis (with a focus either on childhood or life-long partnerships) and the micro-genesis of creativity in daily interaction.

These characteristics are present in most of the emblematic contributions in the field. For example, inspired by Fine, John-Steiner (2000, p. 81) considers collaboration as an "affair of the mind". Starting from a Vygotskian perspective, the author asserts that every collaboration context "provides a mutual zone of proximal development where participants can increase their repertory of cognitive and emotional expression" (p. 187). This claim is confirmed by looking at the course of long-term collaborations or partnerships between famous people throughout history (e.g., Simone de Beauvoir and Sartre, Braque and Picasso, or Pierre and Marie Curie). After a careful analysis of many instances of collaboration – using focused interviews, biographical data, narrative accounts, etc. – John-Steiner proposed four patterns of partnerships (distributed, complementary, family and integrative) and generally contrasted *integrative collaborations*, resulting in a transformation of both the field and the participants, with *complementary collaborations*, frequently based on a division of labour. In a similar vain, Sawyer (2007) was interested in both "visible" as well as less well-documented instances of long-term collaboration. One important conclusion for him was that, behind the lone genius, stands in fact a *group genius*. Focusing on "improvisational groups" and their dynamics, Sawyer proposed that group genius emerges in conditions of *group flow* understood as "a peak experience, a group performing at its top level of ability" (p. 43). His contribution is also methodological in that he documented the technique of *interaction analysis*, a "time-consuming method of analysing verbal gestures, body language, and conversation during collaboration" (p. 14).

On the topic of *methodology*, one common note for most sociocultural investigations of creativity is the use of field observations and qualitative methods. The repertoire of possibilities is quite vast though, including biographical analysis of testimonies (John-Steiner, 2000), both

experimental/observational and case study methodologies (Moran and John-Steiner, 2004), videotaped observation, interviews and grounded theory (Seddon, 2004), etc. A growing number of empirical studies exemplify this approach, many of them performed in an educational context and looking at episodes of collaboration between children. For example Vass and colleagues (2008) focused on children's classroom-based collaborative creative writing and relied on longitudinal observations in third and fourth year students, while Fernández-Cárdenas (2008) investigated the collaborative construction of web pages in History by a third year group of children in a primary school using an "ethnography of communication" approach. The methodology in both cases presupposed a detailed analysis of the interaction between children and the identification of discourse patterns and collaborative strategies.

The main advantage of such studies is that they offer a *comprehensive* view of creativity, contextualising the creative process, and also aim to "study and promote collaborative creativity in diverse educational settings with children and adults" (Littleton et al., 2008, p. 175). By comparison to the generally sceptical sociocognitive approach, authors from this paradigm tend sometimes to *romanticise* the social, largely considering that "when we collaborated, creativity unfolds across people; the sparks fly faster, and the whole is greater than the sum of its parts" (Sawyer, 2007, p. 7). This tendency, which could be qualified by sociocognitvists as falling prey to the "illusion of group productivity", resides to some extent in the process-orientation of the approach (the fruitfulness of collaborations for both our psychological and social functioning) as opposed to emphasizing the end-product, its novelty and usefulness (outcomes that are "more" *versus* "less" creative). Of course, authors have documented also the types of problems faced in collaborations, especially those caused by impatience, ownership, conflict, and unfriendliness (Moran and John-Steiner, 2004) and the ever-present possibly of not being able to unify dichotomies (John-Steiner, 2000). Overall though, sociocognitivists would consider the research basis of collaboration studies as "weak" (Paulus and Nijstad, 2003) and often relying on dangerous interpretative inferences (like inferring psychological activity from discourse; Grossen, 2008).

Towards a Sociocultural Framework for Creative Collaborations

Unlike the sociocognitive approach that has been intensively used after the half of the last century and has by now proposed a series of models, a number of of which have been reviewed earlier, the sociocultural approach to creativity re-emerged relatively recently and has yet to develop suitable frameworks for explaining how people are creative together. This situation made some researchers affirm that "what exactly is understood by collaborative creativity and above all, how it is examined, appears not to be the focus of well-founded analyses" (Sonnenburg, 2004, p. 254). In reality it is not a lack of analysis but one of *direction* and socioculturalists have been known to use a series of perspectives in their empirical work from dialogicality and cultural-historical

psychology up to discourse or activity analysis. But although particular mechanisms for collaborative creativity have been proposed until now (see the processes of sympathetic and empathetic attunement; Seddon, 2004) and stages of creative collaboration differentiated (dialogue, familiarity, collective consciousness and engaging differences in perspective; Creamer, cited in De Laat and Lally, 2004), the literature is still scarce of sociocultural models of creativity in collaborative/group circumstances.

For this reason what will be introduced in the present article is a framework for understanding "collective" creativity based on the ideas of potential space and representational resources. The notion of framework used here instead of model reflects the different aims of this theoretical construction: to guide the *description* of collective forms of creativity and to propose a set of concepts and processes that can potentially help researchers both in their *exploration and explanation* of the phenomenon. At present this conception is only a sketch, but one that both leads to the formulation of new research questions and could grow through the assimilation and integration of empirical observations.

The fundamental assertion of the framework proposed here is that creativity, including collaborative creativity, takes place in a *representational space*. In conceptualizing this notion I rely heavily on the work of D. Winnicott (1971) who introduced the concept of third or potential space, a place that is simultaneously individual and collective and develops from early childhood through processes of social interaction and communication. For him this space is the one where our cultural experience takes place, where we can creatively "play" with our artefactual resources, a space shaped by social and collective systems of thought and ever-changing through communication and interpersonal life experiences. The third space is fundamentally a representational space (Jovchelovitch, 2007), a space of intersubjectivity and mediation between self and other, self and community, self and culture. Within it we find a vast range of symbolic or representational elements that, according to Zittoun and colleagues (2003), *once employed* in our interactions, turn into symbolic resources. For the purposes of this paper, the notion of symbolic/representational resources will be used in a broader sense, as both "potentially used" and "in use". In practice this distinction fades though since it is very hard to appreciate which symbolic elements are potentially to be used by group members and something can be observed as a symbolic resource only when employed to generate and transform meaning.

From this perspective, *in a collaborative situation, individuals use symbolic resources intrinsic to their particular system of knowledge and, through communication, generate new and useful artefacts (the creative outcome) within a representational space of the group.* The notion of resource designates: a) elements of informational nature (concepts, beliefs, arguments, etc.); b) elements of procedural nature (techniques, procedures, etc.); and even c) elements of material nature (like objects). All of these are considered "*symbolic*" or "*representational*" because ideas, procedures and objects alike are always defined by a certain *meaning*, they "represent" something

for each of the participants and the group as a whole and it is this *signification* that *mediates the relationship between self and other* in the creative activity, making resources become shared, communicated, negotiated, contested, accepted or rejected and some effectively used by the group.

Each individual, when confronted with a creative task (whether alone or in a group), first starts from representing the situation s/he is in and framing this representation in the wider system of cultural models that are activated by the specific creative task. In other words, the person is guided in his/her creative process by a broad cultural frame which is the *personal representational space*. At the same time, in a collaborative situation, individuals communicate and therefore build a *common representational space*. It is in this common representational space where the group's creative dynamics takes place and it is here where different thinking styles collide and by this spark the creative process (Bilton, 2007). All is achieved of course if members communicate with one another, don't withhold information and allow the free flow of ideas (Gloor, 2006), and therefore both intend to share and participate in the construction of a common space. As it often happens, personal representational spaces are not the same for everyone and they have bigger or smaller "areas" of uniqueness (accounted for in terms of personal and socio-cultural differences). These *unique representational spaces* are the sources of differentiation and also, in a collaborative situation, here stand symbolic resources that can prove to be valuable for the creative process (at the "boundaries" of the common representational space). By exploring/communicating these unique representational spaces members come to "realise" other ways of understanding or doing things. It is by communicating or *sharing these resources* (in the form of ideas, experiences, procedures, etc.) that unique representational spaces open themselves (although never completely) to the common representational space. This "fusion" facilitates the emergence of a *new representational space*, the space of the creative solution (action or material outcome), a space that is "new" since the solution or creative idea (or ideas) are dissimilar to the current knowledge of the participants. The novel outcomes therefore emerge from the common representational space and end up enriching it as well as the personal representational spaces of each participant.

Important to note, the notion of common representational space is different from that of shared mental models as used for example in teamwork and decision-making studies (Cannon-Bowers et al., 1993; Mathieu et al., 2000; Lim and Klein, 2006). Shared mental models are common cognitive representations participants hold about different aspects of their interaction (such as the equipment, task, team and team interaction). Unlike common representational spaces, mental models exist at an individual level and can be shared from *before* the interaction between members takes place (but also developed through this interaction, see Marks et al., 2002). While shared mental models make collective action more uniform and effective, a common representational space requires efforts to accommodate divergences and tension because it is exactly from them that the potential for creativity arises. The marking difference between the mental models approach and common representational spaces is that between "*shared*" and

"*sharing*", between "existing commonalities" and the "sharing of novel resources". Of course, without common informational structures there are little possibilities for the on-going building of such structures, so, to an extent, shared mental models are a basis for the construction of common representational spaces, but exactly the basis members have to depart from in order to be creative.

From the above it becomes obvious that the central mechanism that facilitates collaborative creative performances within this sociocultural framework is the *explicitation/communication* of unique representational spaces and this basically means revealing more unique information and procedural knowledge and discovering more about the information and procedural knowledge others hold. It is through this process that the common representational space is constructed and we may hypothesize that whenever this process occurs naturally the group will prove a higher level of creativity. Some of the benefits of explicit sharing have been synthesized by Bruner (1996) with reference to externalizations:

> "They cause us to move from a vague mental conceptualization of an idea to a more concrete representation of it (…) making thoughts and intentions more accessible to reflection; (…) They provide a means for others to interact with, react to, negotiate around, and build upon; They contribute to a common language of understanding. Externalizations are critically more important for social interactions because a group has no 'head'" (cited in Fischer et al., 2005, p. 490).

Unfortunately there are many conditions that have to be met before the dynamics of sharing and using symbolic resources could lead group members to creative outcomes. Simply putting people together never guarantees these processes will take place and this is something that has been thoroughly documented in sociocognitive research (see Paulus et al., 2006; Thompson, 2004). One particular input coming from a sociocultural perspective, and especially one related to the Winnicottian notion of potential spaces, is the emphasis on the *emotional* dynamic of the group. The basic condition for the potential or transitional space to take shape in early childhood is, according to Winnicott (1971), the *trust* between baby and caregiver. In the absence of trust and, consequently, of safety, group members or collaborators will not take the "risk" of exposing their ideas or engaging with the ideas of others (see also Edmondson, 2003). The feeling of not being safe can have multiple causes, from unequal status of the members and lack of recognition up to the specificities of the situation and, most importantly, personal definitions of the situation (what is at stake? what is the most appropriate behaviour? who is leading the discussion? etc.).

While suggesting possible explanations for how collective creativity manifests itself, along with the processes that might facilitate and also impede it, the sociocultural framework presented here is more at a "stage" of questions rather than definite answers. Among the most interesting aspects to be explored in research are the following:

1. How does the common representational space take shape and evolve in particular situations of creative collaboration? What is different about such spaces when group composition changes or when the creative tasks belong to different fields (scientific compared to artistic work for example)?

2. How do symbolic elements become used in practice and how are they introduced to the group and negotiated by collaborators? What makes some idea more prone to be used as symbolic resources (or more successfully used) than others?

3. Which are the processes that take place within the common representational space and allow for the new ideas to emerge and be recognized as creative by the group? Are there any stages of this process and if so, how do they vary according to the context of the collaboration and the creative task at hand?

4. How is the dynamics of the group modelled by the diversity of sociocultural backgrounds or experiences participants embody and express throughout the collaboration? What role do power relations or inequalities between participants play in the creative process?

5. How do participants come not only to share symbolic resources but also to engage with them collectively? What kind of interpersonal and intragroup relations facilitate this common activity?

6. What are the factors that disturb the common dynamics of a representational space and the creative use of symbolic resources?

As observed from above, in tone with the sociocultural emphasis on the *situation*, all applications of the proposed framework will explore "creativity in context". The number and type of representational resources and the way they are shared depend on the particular task or problem the group is confronted with and also on the way group members understand this task (including the meaning given to creativity itself), and from this perspective one type of resource that is beneficial for one context may be ineffective in others. In some cases it takes little "negotiation" or "sense-making" in building up a common representational space, especially for highly technical problems where basic definitions are taken for granted by specialists from the same field. On the other hand, community or organisational contexts for collaboration bringing together different "stakeholders" may well present a prolonged phase of building up a common space for dialogue and here issues of power inequalities can affect the sharing of unique resources for some of the participants. Similarly, if we were just to take into account the integrative and complementary collaborations proposed by John-Steiner (2000), it may be hypothesized that in the first case the unique representational spaces tend to almost merge into the common space while in the second the "boundaries" are better kept and contributions made by each side are more noticeable.

Similarities and Differences in Theory and Research

Although up until now most of this article has largely contraposed group and collaborative creativity research there are a number of similarities between the two that deserve more attention. What connects them from the beginning is the consideration given to *previous knowledge* in acts of creativity. This is very obvious in all cognitive models of group creativity (see SIAM), in which memory is considered in fact the key resource for individual and group creative processes. From a sociocultural perspective, representational spaces, either unique or common, are rooted in the previous knowledge and life experiences of the participants. In fact, this emphasis given to the idea that creativity as a phenomenon uses previously known elements to generate the new, is central to any social psychology of creativity opposing divine inspiration or hereditary explanations of creative genius.

A second aspect bringing the two approaches together is represented by the importance given by both to processes of *sharing and communication* between group members or collaborators. More or less explicitly, all models of group creativity take the sharing of resources into account. The importance of this idea has been underlined by Nijstad and his colleagues (2006), who argued that group performance in general should be seen within a "combination of contributions" framework. This conceptualisation presupposes that the two determinants of group performance are the resources members bring to the group (knowledge, skills, abilities, etc.) and the processes involved in the combination of these resources or contributions (p. 164). When applying this framework to creativity, the authors even come to refer to the group's "processing space" as the place where individual outputs are combined. From a sociocultural standpoint, the sharing of perspectives is the *sine qua non* of achieving the generation of a common representational space and therefore allowing for creative combination of resources and construction of new perspectives. Also in agreement with the sociocultural framework suggested earlier, Nijstad and Paulus (2003) claim that "if people do not share their unique information, or information is not taken into consideration, the emergence of creative group decisions is unlikely" (p. 329).

Finally, another similarity in both approaches comes from the value given by both to the issue of *group diversity*. In this regard Nijstad and Paulus (2003, p. 328) went as far as saying that if it were not for diversity there would be no point in pursuing creative collaborations. From a sociocultural standpoint, recognition is given in this case to the socio-cultural contexts that shape each person differently, leaving space for commonalities and also dissimilarities in the representational space of every creator. This types of explanation became known as the *value-in-diversity hypothesis* (Cox, Lobel, & McLeod, 1991). Unfortunately, the increased potential to perform creatively diverse groups have is not always or is not fully reflected by the actual performance. Milliken and colleagues (2003) argue that visible differences between members (like

in race, ethnicity, gender, age) may initially lead to low levels of trust, satisfaction, psychological safety and identification with the group. Despite these shortcomings, from an information-processing perspective, Mannix and Neale (2005) conclude that especially unobservable differences (often associated with a diversity of knowledge, skills and expertise) can only enhance creativity when group processes are carefully controlled.

If the common elements between sociocognitive and sociocultural approaches are often less salient, the differences between the two have been repeatedly pointed at throughout the article. First and foremost, what sets group creativity research apart from collaborative creativity studies has been a fundamental distinction concerning the "location" of the creative process: the individual mind in the first case and the in-between space of intersubjectivity in the second. This basic assumption has great *consequences* for the conceptualisation of the entire creative process, including one of its key components: the act of *sharing*. By using a dialogical ontogeny, sociocultural researchers consider sharing as having a profound impact on both the participants and their relationship, leading to transformation and perspective taking. Meanwhile, sociocognitive models conceptualise sharing as the way in which group members code and decode information, "translating" it from the private to the public realm and vice versa, while the moments of actual transformation happen inside the individual "mental processor".

All the above similarities and differences are of course reflected at a *practical level* in terms of how theory is applied and methodological devices used. The preferred method for studying group creativity is the experimental one, allowing for a rigorous control and measurement of variables. What is characteristic for sociocognitive researches is the strive for objectivity and universality of conclusions. In contraposition, sociocultural studies always tend to "connect" the creative output to the larger social background and, by proceeding in this way, to give a more comprehensive and contextual account of creativity. The problem in this case resides exactly in the difficulty of managing such complex images and accounting for all the possible influences. As a result, while most of the group creativity literature is based on hypothesis testing, the collaborative creativity one is much more descriptive and exploratory in nature. However there are also points of connection between the two research paradigms. For example, all researchers seem to pay considerable attention to the analysis of group members' interaction during creative activity episodes. Sociocognitivists consider these aspects under the broad category of "group processes" and are interested in them especially as an explanatory variable. In a similar vain, socioculturalists see interaction and communication patterns as decisive for creativity and have developed elaborate techniques to capture and analyse verbal and non-verbal aspects of collaborative activities.

Furthermore, researchers from both paradigms are interested to investigate the reasons behind the many instances of *reduced* creativity when working alongside others. Socioculturalists, while usually focused on the benefits of collaboration for learning and creativity, also acknowledge that the collaboration process in itself is composed of "sustained, shared struggles to

achieve new insights by partners in thought" (John-Steiner, 2000, p. 3). These struggles could lead to a breakdown of communication and not every partnership manages to reach its full creative potential. Such situations are very well documented in group creativity studies where, as it shown earlier, there is a strong tendency to be sceptical about the "romance of teams" (Allen and Hecht, 2004). It is especially sociocognivists that have asked the question of when we should use individuals and when groups for creative activities. One generally accepted conclusion is that individuals are better at idea generation but groups outperform them when it comes to idea selection or implementation (Nijstad et al., 2006, p. 176). Valuable insights came out from studies similar to these on how group creative activity can be encouraged, for example: splitting larger groups into dyads and periodically rotating the partners (Nijstad et al., 2003), setting clear goals, providing unambiguous instructions, subdividing the task, instructing participants to pay attention, increasing competition and setting high goals for the team (Paulus et al., 2006).

Concluding Thoughts: Can the Gap be Bridged?

Throughout this article it became clear that the answers given to the general question "how are we creative together?" differ depending on the "camp" the researcher belongs to. Although there may just as well be other approaches to "collective" forms of creativity outside of the sociocognitive and sociocultural ones, these two seem to be most visible at the moment in the literature. To some extent, the differences between the two paradigms relate to their somewhat different *aims*. While sociocognitivists generally investigate episodic instances of collaboration and the value of their end-product, socioculturalists are primarily interested in long term collaborations and their broader link to developmental and social processes. For the former the definition of the situation is given, while for the latter it is constructed through the interaction. Understood in this light, the two approaches *complement* and do not oppose each other. Could it be possible, therefore, to "reunite" two such different perspectives as the cognitive and the cultural one and, first of all, *should* the "gap" be bridged?

In answering this complex question one should look at both the benefits of and the challenges faced by such attempts. Undoubtedly, both approaches would potentially *benefit* from a closer dialogue. Group creativity studies might be enriched by taking more into account processes outside the individual mind that greatly contribute to the creative outcome. Reciprocally, collaborative creativity studies could start considering in more depth the intrasubjective aspects of creativity along with the intersubjective ones. Moreover, group creativity research could become more sensitive to the actual content and nature of the resources shared by the participants and how these are expressive of a larger sociocultural context. At the same time, researchers focused on collaborations might find it useful to consider the role of cognitive mechanisms (such as memory or attention) for both discovering and using these resources. Finally, the sociocognitive approach

could try to consider more the genetic aspects of group creativity and design more longitudinal studies, while the socioculturalists could work towards conceptual clarification and a more rigorous operationalisation of their terms. These are just a few of the "improvements" potentially achieved from bridging the gap between the two frameworks. Although appealing, there are also some serious *obstacles* in the face of any effort to design a unified perspective and most of them steam from the different epistemological positions assumed by members of the two "camps". As a result, we currently find dissimilar conceptualisations of key concepts (including creativity), preference for different types of methodologies and explanatory theories and, consequently, little dialogue between authors representing the two approaches (which could make any "hybrid" model come under the criticism of both parties).

For these reasons, at present, the first step to be taken would be to support a vision of sociocognitive and sociocultural standpoints as complementary rather than contradictory and to encourage more *dialogue* between researchers as well as the tendencies to capitalize on the findings and conclusions coming from a different perspective. Let's not forget that "the dialectics of co-authorship, creative collaboration, the creativeness of groups (…) – these are the problems on the frontiers of research and theory in the social sciences" (Barron, 1999, p. 58). And it is at the frontiers that most creative inter- and intra-disciplinary dialogues take place. It may just be the time for theorists of both group and collaborative creativity to put their knowledge and experience to use in establishing a *fertile and creative collaboration*. If both of them are right, working together should be superior to creating in the solitude of a single paradigm.

Acknowledgements

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