

## What Can be Done with an Egg? Creativity, Material Objects, and the Theory of Affordances

### ABSTRACT

This article offers a reflection on the role of material objects in the creative process and explores the potential links between creativity and the theory of affordances (Gibson, 1986), conceptualized from a sociocultural perspective. From this standpoint, creativity can be defined as a process of perceiving, exploiting, and “generating” novel affordances during socially and materially situated activities. Illustrations are offered for each of the above from a research project investigating traditional Easter egg decoration activities in rural Romania. This brief case study exemplifies the discovery of existing action potentials, the generation of objects with novel affordances, and the transgression of conventional procedures, all resulting in creative forms of expression. In the end, some conclusions are drawn regarding the ways in which an affordance theory of creativity can enrich our understanding of the phenomenon and contribute to the development of a new program of research concerned with situated and distributed creative acts.

*Keywords:* distributed creativity, material objects, affordance, intentionality, normativity, Easter egg decoration.

An article addressing the topic of material objects, and the physical environment more generally, is relatively unusual considering past and present literature on creativity, and psychological literature as a whole (with a few notable exceptions, see Csikszentmihaly & Rochberg-Halton, 1981). While psychologists concern themselves with persons and particularly the mental processes of individuals, they tend to disregard a fundamental reality: *that people necessarily live in a material world*. This undeniable fact has received extensive attention in connected disciplines such as anthropology and even sociology, and today the study of “material culture” is flourishing (see Dant, 1999; Gell, 1998). However, psychology is lagging behind and, while still struggling to incorporate the materiality of the human body into its theories, it largely considers what is outside the mind as also exterior to its interests. The old Cartesian split remains very much situated at the core of the discipline, despite repeated challenges in recent decades (see Jovchelovitch, 2007). This dichotomy between mind and body, psychological and material, inner and outer is all the more

problematic for the study of creative phenomena which necessarily involve a creator working in a simultaneously social and material environment to produce oftentimes tangible, physical outputs (Getzels & Csikszentmihaly, 1976). Traditional approaches to the study of the creative person (Barron & Harrington, 1981) or process (Ward, Smith, & Finke, 1999) do little to conceptualize the determinant role objects and their properties play in creative production.

There are, however, certain developments within philosophy and cognitive science that are trying to correct this state of affairs and introduce the physicality of the world in theories of psychological functioning. Examples of these are found for instance in current discussions of the embodied (Lakoff & Johnson, 1999) and distributed mind (Hutchins, 1995). What these perspectives are arguing for is a relocation of mental processes from “inside” the brain to “in between” mind and body, person and the surrounding environment. Creativity studies were not totally indifferent to such ideas, although the notion of “distributed creativity” (see Miettinen, 2006; Sawyer & DeZutter, 2009) is far from a clear theoretical formulation and used more to consider collaborative creation rather than “physical” aspects. This is also the case for the growing sociocultural literature on creativity (Glăveanu, 2010a; John-Steiner, 1997; Sawyer, 1997) which, despite elaborating a Vygotskian understanding of creative work in relation to a series of mediating artifacts, generally focused on social interaction and less on the interaction between creator and material tools. These approaches need, to properly unpack the material nature of creative production, a theory of what the environment has to “offer” in relation to the creator and how it guides, facilitates, and also constrains human activity. This is precisely what Gibson’s (1986) notion of affordances was designed to capture and, it will be argued here, a sociocultural understanding of affordance theory can revitalize the study of creativity as a *situated, materially grounded, and distributed process*.

In this context, the aims of the article are twofold: to propose a model of creativity based on different types of affordances that can be exploited by creative action, and second, to apply this model to an analysis of creativity in Easter egg decoration in rural Romanian communities. Folk art is a particularly good example of an activity deeply engaged with the materiality of objects while at the same time immersed into a world of customs and repeated practices (Cooper & Allen, 1999; Giuffre, 2009), and the specific craft of egg decoration captures very well this double—material and cultural—determination of creative expression. In the end, and in light of this example, potential benefits of adopting an affordance perspective of creativity will be outlined for both theory and research.

### THE THEORY OF AFFORDANCES, A SOCIOCULTURAL PERSPECTIVE

However, before outlining an affordance model of creativity, it is important to consider briefly the theoretical grounds for this proposal and clarify the present use of the notion. The term affordance and its initial development took place in the 1960s in the work of James Jerome Gibson. His well-known theory of visual perception (see Gibson, 1950, 1966) needs to be acknowledged here not only for making

one of the most significant contributions to ecological psychology but also for reopening and trying to “solve” the longstanding debate over the mental and the material in psychological studies. Drawing inspiration primarily from Gestaltism (Heft, 2003), Gibson invented the notion of affordance to be able to make reference simultaneously to the “animal” and the “environment.” In an oft-cited definition, “the *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill” (Gibson, 1986, p. 127; see also Gibson, 1966, p. 285). For instance, surfaces afford posture, locomotion, manipulation; fire affords warming and burning, etc. His basic proposal was that we should stop conceptualizing objects in our perception theories as a sum of static “qualities,” but dynamic affordances, since this is what the person actually pays attention to from the environment. The ontological assumption that “meaning” exists also in the world and is not solely a construction of the isolated human mind resonates widely with both contemporary distributed cognition views (Hollan, Hutchins, & Kirsh, 2000; Hutchins, 2000) and old scholarly sources, from Russian cultural-historical theory to American pragmatism.

However, Gibson’s original formulation was often contradictory about the features of perceiving affordances. His central claim seems to be that affordances are perceived and guide behavior *directly* (see Heft, 2003), and this means that a person does not need to have learned or to reflect on what the affordance of an object might be, it just reveals itself “in ambient light” (Gibson, 1986, p. 140). Gibson also stated the “independence” of affordances relative to observers and the invariant nature of the former. In any case, he did acknowledge the dynamic and action-oriented aspects of our perception. Affordances make themselves “apparent” only to an actor who is engaged with the environment and tries to navigate it effectively. What the above suggests is that Gibson’s thoughts on the topic of affordances were evolving and somehow left unfinished, explaining why the theory has known several refinements and reformulations in recent years (Jones, 2003). Perhaps one of the most systematic accounts to date has been offered by Chemero (2003) who defined affordances as relations between the *abilities* of the subject and the *features* of the environment. In his formalization, the logical structure is “Affords- $\phi$  (environment, organism)” where  $\phi$  is a behavior, something more loosely translated as “the environment affords behavior  $\phi$  to the organism” (Chemero, 2003, p. 187). In other words, the function defined by affordances needs *both* the environment term, represented by its features or properties, and the organism term, represented by its abilities (see also Greeno, 1994).

Taking this relation between features of the environment and the organism as a starting point, a novel conception of affordances will be offered in light of socio-cultural psychology sources and along the lines of Costall’s (1995, 2006) critique of Gibson’s theory. Cultural or sociocultural psychology (see Cole, 1996; Valsiner & Rosa, 2007) is a theoretical orientation that, not unlike ecological psychology, considers how objects mediate psychological functioning, the action and development of the person. It assumes that we live in an “intentional world” made up of “intentional (made, bred, fashioned, fabricated, invented, designed, constituted) things”

(Shweder, 1990, p. 2; see also Boesch, 2007). This “intentionality of objects” converges with what is commonly meant by affordances while stressing the basic fact that objects bear the mark not only of their physical properties but also of the intentions of their designers and users. It is because manmade objects are considered to be concomitantly “natural” and “cultural,” “material” and also “symbolic” (meaningful), that they are usually grouped by cultural psychologists under the notion of *artifacts*. Following Cole (1996, p. 117), “an artifact is an aspect of the material world that has been modified over the history of its incorporation into goal-directed human action.” Reflecting a typically Vygotsky (1978) line of thought, artifacts, from chairs and pottery to language, are considered to mediate our relation to the world and our relation to other people.

Considering the above, we can conclude that “the affordances of artifacts are themselves, therefore, a focus of enduring, and cumulative, social influence” (Costall, 1995, p. 471). As previously mentioned, the mere assertion of “direct” or “unmediated” perception (combined with granting affordances “reality” independent of the human organism) is highly problematic. This is because, as members of certain communities, we engage with the environment in cultured ways, we “learn the affordances of things *through* other people” (Costall, 1995, p. 472), with or without explicit instruction. The infant might arrive into a world that seems external and strange but is in fact the result of centuries of human activity and, from the first months of life, this unfamiliar environment starts to be “tamed” through constant interaction with caregivers (Cole, 1996; John-Steiner, 1997). Material potentialities are commonly “matched” with a set of cultural rules and restrictions; this facilitates our encounter with the world and allows us to continue transforming it in specific ways, according to our needs. Objects can never be perceived with a “naked eye” by a socialized individual, and this is how culture becomes not a second nature, but the *one and only nature* we know (see also Costall, 1989). It is indeed the fact that culture ultimately “determines how we make use of and live with things” (Dant, 1999, p. 14; also Csikszentmihaly & Rochberg-Halton, 1981, p. 50). In fairness to Gibson, this particular insight concerning the sociocultural-physical nature of affordances did not completely escape him. By claiming that we must “learn to see” what things really are (Gibson, 1986, p. 142), and through his well-known mailbox example (one must know about post to use the affordance of sending/receiving letters), he also hinted at the culturally mediated aspects of perception and action.

In summary, we need the notion of affordances to theorize our relationship with material objects since it eloquently captures the mutual dependence between our goals and action, on the one hand, and what the environment can offer us to attain goals and facilitate action on the other. It is also important for considering affordances *equally* dependent on the physical properties of objects and the psychological and physical abilities of users. What the sociocultural approach contributes to is a consideration of such properties and abilities as co-developing in a cultural and historical context, and thus largely constructed rather than simply “predetermined,” often “potential” rather than just “given.” It is this aspect of potentiality that creates a direct and necessary link between affordances and a discussion of creativity.

Indeed, the sociocultural theory of affordances is concerned with the dynamic and supple relationship between creators and world. Affordances, just like objects and persons, are subjected to constant transformation and sociocultural change which ensure that “new entities with novel affordances are introduced into the culture, new affordances of familiar objects are realized, familiar affordances are sustained over time through continued use, and affordances fade from the scene through disuse” (Heft, 2003, pp. 175–176). As such, we can conclude that what we mean by creativity and what we mean by affordances often overlaps and creativity can be defined as *the process of perceiving, exploiting, and “generating” novel affordances during socially and materially situated activities*. This tentative formulation will be refined with the help of an empirical example, but first we need to outline the exact components of the model advanced by the present article.

### AN AFFORDANCE FRAMEWORK FOR CREATIVITY THEORY AND RESEARCH

One basic conclusion from the previous section is that “any object or situation we encounter has a *limitless* number of affordances (although this does not mean that we can do *anything* with *anything*)” (Costall, 2006, p. 24). The last remark leads to an interesting question for any creativity researcher: what constrains our possibilities of acting and, specifically, of creating new artifacts? It is argued here that, to understand this aspect, we need to consider what *the environment affords* in relation to two other crucial factors: the *intentionality of the actor* and the *normativity of a given cultural context*. Figure 1 graphically depicts the three factors above and outlines the significance of using this tripartite model for theorizing creative acts (see also the world installation theory; Lahlou, 2008). In this figure, the first thing that can be noticed is a large central area in which intentionality (what a person would do), affordances (what a person could do), and normativity (what a person should do) intersect. This is the space of ordinary of everyday action, of “what is usually done” considering physical, personal, and sociocultural constraints (something associated also with “canonical” affordances of objects; Costall, 1995). However, of special interest for a theory of creativity are actually the marginal segments of the figure, the ones that contain “unperceived,” “uninvented,” and “unexploited” affordances. Let us explore these in turn.

The sector of *unperceived affordances* holds all those possibilities of action which are materially achievable and do not violate any particular cultural norms, but do not represent for various reasons what the person “would do” in the situation. The individual (or group) has no explicit intention of making “use” of these affordances because, typically, he/she (or they) are not *aware* of their existence. In a concise formulation, Gibson referred to this problem in the following terms: “the central question for the theory of affordances is not whether they exist and are real, but whether information is available in ambient light for perceiving them” (Gibson, 1986, p. 140). Being able to actually recognize existing affordances (a question that moves us further away from the strict hypothesis of “direct perception”) has preoccupied researchers for some time, see for instance the work of Norman (1988, 1999) on the

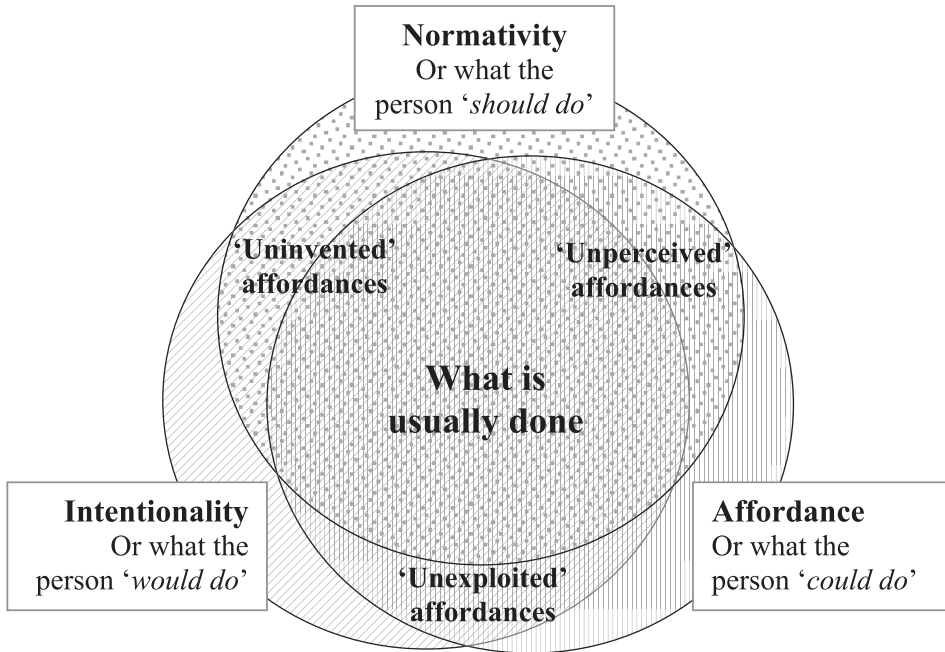


FIGURE 1. A sociocultural model for an affordance theory of creativity.

activity of designers. When designing objects, it is not so much an issue of them affording action X, but being able to signal effectively the fact that action X is afforded; indeed, “affordances are of little use if they are not visible to the users” (Norman, 1999, p. 41). Perhaps the most straightforward link to creativity in this context can be made through the notion of creative insight (see also Sternberg & Davidson, 1999). Duncker’s well-known candle box problem is paradigmatic in this regard. In his classic experiment participants were asked to attach a candle to the wall in a way that would prevent wax from dripping on the table below, and they had at their disposal a box of tacks, candles, and matches. Failure by many to use the box as a candle holder was explained in terms of functional fixedness—a mental block preventing the use of an object in a new way that is required to solve a problem (Duncker, 1945). The fact that the box can support the candle is entirely “affordable” and does not contravene cultural norms. Yet, to allow the creative solution, this affordance had to be properly perceived or discovered in the situation.

Another type of missed possibilities lies with all affordances that, although wanted by the person and granted by society, are not “invented” or yet available. The word invented needs to be used here with great care since it can easily be argued that affordances, as relations between features of the material world and an agent’s abilities (Chemero, 2003), either exist or not, they cannot be generated in any literal sense of the word; for instance water (and liquids more generally) “affords” getting

wet through contact and there is nothing we can do to fundamentally change its nature (this excludes altering condensation states). However, there is something we can do to protect ourselves from getting wet on a rainy day, should this be our intention, and for this purpose we have “invented” umbrellas and raincoats. In this case as well the logic applies that impermeability as a feature was not created, objects that make excellent use of it were. It is in this sense that we consider here “*uninvented affordances*” as new collections of affordances generated by the combination or transformation of basic (existing) potentials. Complex or compound affordances describe in fact most of the artifacts produced and re-produced by human societies and cultures since we live in a world of objects that have more than one property and can “obtain” additional capabilities through processes of invention. To take an example, Will Gibson (2006, p. 184), when referring to the sound of music instruments, noted that they afford “the production of some sounds and not others” while at the same time “through alterations in technique or indeed the objects themselves, new sets of action possibilities are realized and the boundaries of possible musical action shift.” An illustration coming again from the area of creative problem solving is Köhler’s (1925) famous chimpanzee studies which reflect the “invention” of affordances (or, more accurately, of objects holding new affordances). In reaching the remote bananas, chimpanzees were able to assemble sticks together and/or pile up boxes to stand on, in both cases “shrinking” the unaffordable and expanding their possibilities for action.

Finally, another class of affordances includes what a person would and could do, but still remains *unexploited* for cultural reasons. As argued earlier, there is a certain normativity guiding the use of objects and this is embodied in the “canonical” and socially accepted ways of thinking about or interacting with the material world. Arbitrary conventions (Norman, 1999) play a great role in determining what affordances we exploit and, indeed, what affordances we perceive (see the discussion about unperceived affordances above). Falling outside current norms of action can have potentially negative consequences. As Costall (1995, p. 472) reminds us, objects “*can* be used in other ways, but even when these alternative uses occur to us, there may be sanctions against such deviation”, resulting in embarrassment for our acts. Costall continues and points to the fact that norms tell us not only what objects “should” do but also who is entitled to use them in a certain way (raising issues of ownership, etc.). To illustrate unexploited affordances with the help of another problem solving exercise we can think about Bulbrook’s (1932) beads experiment. She gave participants a string of beads consisting of alternating small white “pearls” and bigger yellow beads, except for the middle portion where there were five white pearl-like beads. The task was to make a single regularly repeated pattern without un- or re-stringing the beads or knotting/breaking the thread; the solution was to use available tools (placed on a nearby table) and break the white beads. Despite the simplicity of the answer, not many respondents found it (or even thought of it) and this can be potentially accounted for in terms of a cultural norm: the integrity of objects needs to be respected, especially in the case of precious things such as pearls (see Zlate, 2006). “Overcoming” this principle offers here the appropriate response.

In summary, creative expression is associated in our model with an exploration of environmental affordances previously unavailable to the person due to either their unperceived, uninvented or unexploited nature. Before continuing with a case study that illustrates such creative explorations, it is important to make some final observations regarding the proposed schema. To start with, in every concrete situation there will always be a “mixture” of all three elements postulated here (intentions, affordances, and norms) and therefore the fact that the three particular areas holding potential for creativity in Figure 1 seem to “lack” one of the three can generate confusion. To be clear, actions that get to uncover previously unperceived affordances do not lack any intentionality, only the intention to exploit the affordance in question; actions meant to “invent” new affordances are not possible outside of any existing resources, but lack precisely the affordance being “generated”; and finally actions that explore affordances previously disregarded due to normative aspects are not outside any cultural norms, they contradict only a specific norm related to that particular object use. This makes us also think about “degrees” of creativity (e.g., the continuum from personal to historical novelty; Boden, 1994) and how they may be conceptualized within the present framework. Here we can certainly distinguish between affordances being perceived, invented or exploited *with reference to* individual action (where others may have “discovered” them already and there might even be a societal use that the individual is not aware of) and *with reference to* entire groups or societies. For example children, as they grow up, often learn the affordances of their environment through trial and error. A child’s “micro” acts of creativity should not be discounted in light of the above, but considered in relation to the intentions, norms, and affordance uses specific for that child (or children of that age). Finally, a temporal dimension needs to be always present in applying the model as it is intended to be a dynamic vision of human action in relation to environmental potentials. As such, creativity is not “in” the newly perceived, invented or exploited affordances themselves, but “in” the very acts of perception, invention, and utilization. This is important since the framework aims to unpack how areas situated outside canonical uses of objects are gradually discovered by people in their daily interactions and—once discovered, and if they are of value—often built into “what is usually done,” allowing new “areas of possibility” to emerge at the margins of routinized action in an ever-advancing cycle. Empirical examples of this dynamic are presented in the next sections.

### SO, WHAT CAN BE DONE WITH AN EGG?

To exemplify the use of this framework (Figure 1), let us now focus on the title question and take the case of a very common object: the egg. Bird eggs have a series of affordances we are familiar with, for instance they can break, they can usually be cooked and eaten, and are occasionally used as projectiles helping to express a state of discontent (something that unlucky politicians or performers know all too well). These rather “conventional” uses are exceeded though by a number of highly creative possibilities: eggs can make an interesting paperweight, empty shells can be used to store little items or turned into candleholders or even percussion instruments,



egg whites make good glue, yolks can serve as skin moisturizers, and so on. All the above afforded uses are based on a number of basic physical features such as eggshells being solid, egg whites being naturally sticky and yolks being rich in vitamin A. In this section though we will concentrate on a particular creative practice represented by *egg decoration*. Being able to ornate eggs is itself an action facilitated by a series of material properties that allow different elements to be applied on/to color the outer surface of the shell. This is how eggs came to be dyed, painted, decorated with leaves, with wax, with beads, applied miniature horseshoes on, or even have their shells artistically sculpted. Then again, the act of decoration is also impeded by other features of eggs, in particular their fragility, relatively small size, and distinctive shape, which make drawing patterns on the egg a real challenge, especially for beginners.

The practice of Easter egg decoration is widespread in the Christian world, particularly among people from Christian Orthodox communities, supporting previous observations that concern the cultural aspects of object design and use. The embellishment of eggs ceases in these cases to be a simple affordance or potentiality that is or not actualized and acquires all the characteristics and normativity of a *tradition* (informed by religion and folk beliefs), dictating what is to be made, by whom, in what number, when, and with what means. Nevertheless, it is important to notice the fact that eggs have been decorated for millennia, as indicated by evidence found around the globe, and carry with them a deep symbolism marked by ideas of life, fertility, and rebirth (see Gorovei, 2001; Marian, 1992; Newall, 1967). As such, the egg, in past and present human societies, is not simply a “natural” object, but a proper “artifact,” being defined, integrated, and utilized in culture-specific ways. The decoration of eggs certainly reflects this wealth of practices and meanings associated with the craft in different parts of the world (Marian, 1992). For example, Figure 2 illustrates several types of ornamented eggs from urban and rural Romania, showing the variety not only of motifs but also of work techniques and material resources involved by Easter egg making. Indeed, as many other folk arts, egg adornment is *embedded in a material universe* which, in the case of traditional Romanian decoration, includes besides eggs of different sizes (from quail, chicken and duck to goose and ostrich), also beeswax (melted to afford application on the egg surface), *chișite* (traditional instruments for “writing” on eggs made of a wooden stick with a tubular metal pin at the end), and color pigments (e.g., red, yellow, black, etc.), among others.

Considering this diversity of outcomes and resources as well as the intricate nature of craftwork itself, Easter egg decoration constitutes an excellent case study for creativity researchers and its underlining processes have been described in detail elsewhere (Glăveanu, 2012). For the purposes of this article, I will make use of several empirical examples collected through interviews and observation (including filmed observation) sessions with artisans from the village of Cioacănești, northern Romania. During these sessions folk artists repeatedly commented on the importance of the egg’s size, color, and actual shape. For instance, wider and more elaborate models can be depicted on a bigger surface, egg shells need to be perfectly white otherwise



FIGURE 2. Different styles of Easter egg decoration in Romania.

the overall color contrasts will be less noticeable, “elongated” egg shapes invite the artisan to depict specific motifs such as the “lost way” while “rounder” ones are perfect for making “belts” that go around the egg, etc. Craftspeople normally prefer duck eggs to chicken eggs because they have a more “shiny” and “smooth” surface, easier to decorate. Also *chișițele*, the instruments used to apply wax, need to have certain properties and, for example, vary in the “thickness” of writing (depending on the size of the metal pin). The work process of traditional wax decoration, corresponding to the central area of Figure 1—the “usual” of Easter egg making at least for rural artisans—involves repeated stages of drawing models with wax on the egg and immersing the egg in color (see Figure 3). In Ciocănești there are three phases of this process: “on white,” “on yellow,” and “on red,” referring to the work done to complete the model after the egg is inserted in each color. The basic principle (exploiting a central affordance of wax) is that, whatever segment is covered with beeswax on the surface of the egg, it keeps the color it had before wax was applied. In this sense, the act of egg decoration requires working on a “negative” image of



FIGURE 3. Drawing motifs with wax in the “white stage” of decoration (Valerica Jușcă).

what the final outcome will be. In the end, the egg is immersed in black and afterwards the wax cleaned off near a heat source, revealing all the intended patterns and colors.

### CREATIVITY AND AFFORDANCES IN ROMANIAN EASTER EGG DECORATION

As follows the case study of egg decoration practices will be used to illustrate creative action in terms of “expanding” the three areas of potentiality presented in Figure 1—unperceived, uninvented and unexploited affordances. An observation regarding the process of analytically identifying such cases is that oftentimes there are fine lines between uncovering one or the other type of unexplored environmental affordances and, in practice, *combinations* of the above are also possible (for instance some affordances may be unperceived also because they disregard “cultural norms,” etc.). As such, creative action can transcend these categories especially when a temporal dimension is included in the analysis: for example, in exploring more of the uninvented type of affordances, an artisan may also be exploiting some action potentials outside of normative control (in this case tradition or custom) and his/her action can further lead to becoming aware of formally unperceived affordances, and so on. For the sake of simplicity and brevity however, the presentation below will maintain more clear-cut distinctions between categories.

A great part of the creativity involved in this craft comes from gradually enlarging the area of “unperceived affordances.” Acts of *discovery* stand at the core of the practice just like they do in art (see Mace & Ward, 2002) and other creative fields where the outcome is a developing project and not an idea immediately transposed on a material support. This takes place both at a micro, individual level, and at the

more macro level of the craft as a whole. For the former we can include all those moments artisans consider to be “accidental” in the course of decoration. Accidents are the outcome of many potential factors, from material (e.g., the instability of a *chișița*’s metal pin) to environmental (e.g., the temperature in the room directly affecting how quickly wax “cools down”), and up to personal circumstances (e.g., how tired the decorator is, especially if working at night). Importantly, there is a huge creative potential inherent in apparent “mistakes” since they frequently open up a world of previously unknown possibilities (Zahacinschi & Zahacinschi, 1985). Indeed, it is not uncommon for decorators to comment on the fact that shapes or motifs “afford” some kind of combinations and not others and it is accidental gestures that open the door to novel developments of a current pattern. Of course not every accident turns into a discovery that can be creatively explored further and, oftentimes, decoration work resembles a “trial and error” type of exercise where, for example, artisans are curious to experiment with the properties of color pigments and wax. The actual making and use of colored wax is in fact a rather recent “discovery” and here is where we can distinguish broader processes of innovation and transmission of innovation taking place at the level of the craft-world in its entirety. As mentioned before, “old” Easter eggs in Romania are traditionally decorated with natural wax that is wiped off the eggshell in the end. The technique of “wax in relief” (drawing models directly with colored wax and keeping it on the surface of the egg) capitalizes on affordances previously in use (applying wax on the egg) and the discovery of new possibilities (in this case being able to color wax instead of coloring just the shell). This practice emerged about two decades ago and is now widespread in Romania, eggs with wax in relief becoming gradually associated with “neo-traditional” decoration. Furthermore, the perception of new affordances is a continuous process and, in our example, employing colored wax allowed for a diversification of colors and thus permitted drawing realistic pictures on the egg (e.g., landscapes, human figures), different from conventional geometric patterns.

Another important source of creative expression in craft has to do with the “invention”/“generation” of new affordances or, better said, the *generation of new artifacts* helpful for expanding existing possibilities of decoration. The historical trajectory of folk art in Romania is, in this regard, also a history of innovations having to do with the development of the material support (new tools) and of the decoration technique (new methods of working on eggs). In fact the two stand closely interrelated and depend on each other for shaping the future of this particular craft (see also Gibson, 2006; for an account of musical instruments). Already hinted at above, Romanian Easter egg decoration has known some radical transformations in the last couple of decades, building on the regained free participation in religious practices and the emergence of a national and international market for the selling of folk objects. Particularly with the appearance and consolidation of the market, decoration styles also evolved, shifting from simpler to more complex and artistic forms (a tendency noted in craft by Becker, 2008), and several innovations had to be implemented to allow the conservation of eggs and the realization of more intricate designs. These innovations required “extending” some of the affordances of the

material support. Starting with the eggs, they afford being kept, but not for an indefinite period, especially when “full”. Thus, eggs began to be emptied of content, normally with the help of a syringe, to prolong their conservation. Moreover, “old” or traditional Easter eggs were not varnished at the end and this made their colors fade much faster with time. Today varnish is used on a large scale to generate a “new” affordance for the decorated egg: that of preserving the colors better and especially the wax applied on the surface (for eggs with wax in relief). With reference to work instruments, while the *chișița* was in use for a long time in Romanian rural communities, its basic affordance of helping to “write” on the egg needed further innovation, especially to support much more minute and intricate forms of decoration. For this purpose, the size of the metal pin used to store wax was altered and nowadays artisans have not one, but a set of *chișițe* to work with, some drawing “thinner” and some “thicker” lines (the latter employed for “filling” the model on yellow and red).

Egg making as a community practice is not only deeply immersed in the materiality of the world but it also draws from a whole symbolic universe situated at the intersection between religion, folklore and art. The normativity of a tradition is certainly present in this case and what was mentioned earlier about established techniques, work instruments, and patterns of decoration contributes to the set of constraints (the “should” part) over what is afforded by both actor and environment (the “could” and “would” parts). Unsurprisingly then, another significant source of creativity in this craft comes from *transgressing certain norms* and thus “exploiting” more of the perceived affordances of decoration. An important observation however, and what defines the traditional folk art context here and in other similar crafts, is precisely the fact that norms are transgressed without being completely violated (see also Layton, 1991) since that would make the outcome not creative, but void of all meaning (Glăveanu, 2010b). On the other hand, as any “living” tradition, egg decoration is constantly expanding its area of possibility and, in the following section, we will consider this process from the perspective of “breaking” some (but not all) normative aspects of the craft. Looked at through these lenses it could be argued that many of the examples presented before (the discovery of wax in relief techniques, expansion in colors, use of more minute designs, and varnish for the final stage, etc.) were all ways of transgressing previous principles of decoration. However, from a more technical standpoint, they merely expanded rather than contradicted the “usual” procedures. For instance, wax was already employed by artisans and so were color pigments, while the varnish does not fundamentally change the motifs being depicted. To take a more clear example of transgression we can think about a very recent development of the craft in a rather unexpected direction: the creation of Christmas eggs. Eggs decorated for Christmas are becoming fairly common and what they do in essence is to make use of all the typical affordances of Easter egg decoration while changing the thematic register (typically they represent Santa Claus, Christmas trees, etc.). The reception of such novelties is quite mixed although they do have the great advantage of offering artisans a whole new opportunity for selling their products in another season and making the most of their craft. Indeed, it is

very much the intention to produce more “beautiful” and “attractive” eggs for customers to like and buy that is the driving force behind the exploitation of an increasing number of affordances previously obscured by convention or lack of awareness.

In summary, what this case study of Easter egg decoration comes to show are some specific ways in which creativity becomes manifest in craftwork through acts of spontaneous discovery, invention of techniques and transgression of norms. These processes, going back to our theoretical schema (Figure 1), are able to expand action potentials in relation to unperceived, unvented, and unexploited affordances, respectively. As a word of caution, they are not the only “mechanisms” that can help in exploring more environmental affordances and further empirical work (both in folk art and other domains) can shed light on a larger repertoire of creative processes and the ways in which they interact and complement each other in concrete situations.

### WHY USE AN AFFORDANCE MODEL OF CREATIVITY

This article has attempted to establish links between the sociocultural, the material, and the psychological in the case of creativity through the use of affordance theory. What this theoretical perspective does is present creativity in a new light, much different from previous understandings that often reduce it to the individual and, “inside” the individual, to the cognitive (Glăveanu, 2010a). To conceive of creativity in terms of affordances, in a way similar to what has been proposed in Figure 1, means to adopt a fundamentally *dynamic, relational, and action-oriented approach* to the phenomenon, something the field has been trying to move toward in recent decades (Barron, 1995; John-Steiner, 1997; Sawyer, 1995). This vision is dynamic since, as demonstrated by the brief example of Easter egg decoration, what exists at some point as “unperceived,” “uninvented” or “unexploited” affordances may very well become part of regular practice, leading to further cycles that expand the core area of the “usual” in thought and action. It is relational because, just like affordances (Gibson, 1986), creative activity depends simultaneously on the agent’s abilities and the features of the material and social world. Finally, it is an action approach since the framework put forward can only be applied when creators actively and directly engage with their symbolic and physical environment.

At the same time, an affordance theory of creativity is not trying to replace previous models, especially those that fall under the umbrella of creative cognition (see Ward et al., 1999), but to *integrate and expand* their insights about the “intrapersonal” dimension of creative expression. As argued above, the notion of affordances is very useful for theorizing what the environment has to “offer” to creators and the ways in which it can direct their activity but, unlike Gibson’s assumption concerning “direct” perception, the sociocultural view supported here argues for the largely culturally “constructed” and mediated character of human action. The next conceptual step is therefore to articulate these two necessary dimensions: the psychological one (made up of cognitive representations, goals and motives, emotional reactions) and the behavioral one (in direct relation to the properties and resources of a material and social environment). A sociocultural model of

affordances is thus a first attempt to direct creativity theory toward a paradigm of situated action and distributed cognition (both in dialogue with each other; Hutchins, 2000). Moreover, this model can inspire a program of research in the psychology of creativity based on the analysis of “common” and “creative” uses of objects and other features of the physical world, uses that could be distinguished and discussed in ways illustrated by the egg decoration case study above. For this, the researcher would need to rely not only on direct observation of practices but also on information about the broader, cultural context in which action takes place (to understand issues of normativity and tradition, etc.) as well as information about the goals and intentions of the respondent. Studies can be envisioned in which the use of objects is analyzed in different creative domains, within the work of one or more creators, with participants at different stages of development, etc. In the end, the schematic framework proposed in Figure 1 can be refined by the following: (a) uncovering and classifying more ways of exploring unperceived, uninvented, and unexploited affordances, (b) observing how these uses vary according to personal variables and domain of action, and finally (c) constructing more specific models that consider the dynamics between different types of affordances and how explorations of one lead to the exploration of others in actual “chains” of creative action.

In conclusion, what we argued for here is a re-evaluation of the role of material objects in the conceptualization of creativity. Using the lenses proposed in this article helps us theorize, empirically study, and act upon what is “possible” in the world in ways that expand our capabilities for action and thought. The “doable” and the “thinkable” are deeply interconnected and it is only when supplementing the classic theory of affordances with sociocultural notions that a new, more comprehensive perspective can be achieved. What creativity offers the concept of affordances—to look in the end at the other side of the coin—is a more dynamic, supple account of what we, as individuals and as a species, can do in relation to our environment. This is an old interrogation situated at the core of thinking about creativity, something that Gibson (1986, p. 143) can be said to have dealt with in these terms: “Within limits, the human animal can alter the affordances of the environment but is still the creature of his or her situation.” What was argued for here is a slight amendment of this thought: *Within limits, the human animal constantly and creatively alters the affordances of the environment to an extent that makes him or her, at once, become a creature and a creator of any given situation.*

## REFERENCES

- BARRON, F. (1995). *No rootless flower: An ecology of creativity*. Cresskill, NJ: Hampton Press.
- BARRON, F., & HARRINGTON, D. (1981). Creativity, intelligence, and personality. *Annual Review of Psychology*, 32, 439–476.
- BECKER, H.S. (2008). *Art worlds*. Updated and expanded. Berkeley, CA: University of California Press.
- BODEN, M. (1994). What is creativity? In M. Boden (Ed.), *Dimensions of creativity* (pp. 75–117). London: MIT Press/Badford Books.

- BOESCH, E.E. (2007). Cultural psychology in action-theoretical perspective. In W.J. Looner, & S.A. Hayes (Eds.), *Discovering cultural psychology: A profile and selected readings of Ernest E. Boesch* (pp. 153–165). Charlotte, NC: Information Age Publishing.
- BULBROOK, M.E. (1932). An experimental inquiry into the existence and nature of 'insight'. *The American Journal of Psychology*, *44*, 409–453.
- CHEMERO, A. (2003). An outline of a theory of affordances. *Ecological Psychology*, *15*, 181–195.
- COLE, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge: Belknap Press.
- COOPER, P., & ALLEN, N.B. (1999). *The quilters: Women and domestic art, an oral history*. Lubbock: Texas Tech University Press.
- COSTALL, A. (1989). A closer look at "direct perception". In A. Gellatly, D. Rogers, & J.A. Sloboda (Eds.), *Cognition and social worlds* (pp. 10–21). Oxford: Clarendon Press.
- COSTALL, A. (1995). Socializing affordances. *Theory & Psychology*, *5*, 467–481.
- COSTALL, A. (2006). On being the right size: Affordances and the meaning of scale. In G. Lock, & B. Molyneux (Eds.), *Confronting scale in archaeology: Issues of theory and practice* (pp. 15–26). New York: Springer.
- CSIKSZENTMIHALY, M., & ROCHBERG-HALTON, E. (1981). *The meaning of things: Domestic symbols and the self*. Cambridge: Cambridge University Press.
- DANT, T. (1999). *Material culture in the social world: Values, activities, lifestyles*. Buckingham: Open University Press.
- DUNCKER, K. (1945). On problem solving. *Psychological Monographs*, *58*, 1–110.
- GELL, A. (1998). *Art and agency: An anthropological theory*. Oxford: Clarendon Press.
- GETZELS, J.W., & CSIKSZENTMIHALY, M. (1976). *The creative vision: Longitudinal study of problem finding in art*. New York, NY: Wiley.
- GIBSON, J.J. (1950). *The perception of the visual world*. Boston, MA: Riverside Press.
- GIBSON, J.J. (1966). *The senses considered as perceptual systems*. Boston, MA: Houghton Mifflin.
- GIBSON, J.J. (1986). *The ecological approach to visual perception*. Hillsdale, NJ: Erlbaum.
- GIBSON, W. (2006). Material culture and embodied action: sociological notes on the examination of musical instruments in jazz improvisation. *The Sociological Review*, *54*, 171–187.
- GIUFFRÉ, K. (2009). *Collective creativity: Art and society in the South Pacific*. Surrey: Ashgate.
- GLĂVEANU, V.P. (2012). Creativity and folk art: A study of creative action in traditional craft. *Psychology of Aesthetics, Creativity, and the Arts*.
- GLĂVEANU, V.P. (2010a). Principles for a cultural psychology of creativity. *Culture & Psychology*, *16*, 147–163.
- GLĂVEANU, V.P. (2010b). Creativity in context: The ecology of creativity evaluations and practices in an artistic craft. *Psychological Studies*, *55*, 339–350.
- GOROVEI, A. (2001). *Ouăle de Paște. Studiu de folclor* (2nd edn). București: Paideia.
- GREENO, J.G. (1994). Gibson's affordances. *Psychological Review*, *101*, 336–342.
- HEFT, H. (2003). Affordances, dynamic experience, and the challenge of reification. *Ecological Psychology*, *15*, 149–180.
- HOLLAN, J., HUTCHINS, E., & KIRSH, D. (2000). Distributed cognition: Toward a new foundation for human-computer interaction research. *ACM Transactions on Computer-Human Interaction*, *7*, 174–196.
- HUTCHINS, E. (1995). *Cognition in the wild*. Cambridge, MA: MIT Press.
- HUTCHINS, E. (2000). Distributed cognition. Available from: <http://files.meetup.com/410989/Distributed-Cognition.pdf>. [last accessed 1 October 2011].
- JOHN-STEINER, V. (1997). *Notebooks of the mind: Explorations of thinking*, revised edition. Oxford: Oxford University Press.
- JONES, K.S. (2003). What is an affordance? *Ecological Psychology*, *15*, 107–114.
- JOVCHELOVITCH, S. (2007). *Knowledge in context: Representations, community and culture*. London: Routledge.
- KÖHLER, W. (1925). *The mentality of apes* (Translated by E. Winter.). New York: Harcourt, Brace.



- LAHLOU, S. (2008). Cognitive technologies, social science and the three-layered leopardskin of change. *Social science information*, 47, 227–251.
- LAKOFF, G., & JOHNSON, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought*. New York: Basic Books.
- LAYTON, R. (1991). *The anthropology of art* (2nd edn). Cambridge: Cambridge University Press.
- MACE, M.A., & WARD, T. (2002). Modeling the creative process: A grounded theory analysis of creativity in the domain of art making. *Creativity Research Journal*, 14, 179–192.
- MARIAN, M.B. (1992). *Mitologia oului*. București: Ed. Minerva.
- MIETTINEN, R. (2006). The sources of novelty: A cultural and systemic view of distributed creativity. *Creativity and Innovation Management*, 15, 173–181.
- NEWALL, V. (1967). Easter eggs. *Journal of American Folklore*, 80, 3–32.
- NORMAN, D.A. (1988). *The design of everyday things*. New York: Basic Books.
- NORMAN, D.A. (1999). Affordances, conventions, and design. *Interactions*, 6, 38–42.
- SAWYER, R.K. (1995). Creativity as mediated action: A comparison of improvisational performance and product creativity. *Mind, Culture, and Activity*, 2, 172–191.
- SAWYER, R.K. (1997). Introduction. In R.K. Sawyer (Ed.), *Creativity in performance* (pp. 1–6). Greenwich, Connecticut: Ablex Publishing Corporation.
- SAWYER, R.K., & DEZUTTER, S. (2009). Distributed creativity: How collective creations emerge from collaboration. *Psychology of Aesthetics, Creativity, and the Arts*, 3, 81–92.
- SHWEDER, R. (1990). Cultural psychology – What is it? In J. Stigler, R. Shweder, & G. Herdt (Eds.), *Cultural psychology: Essays on comparative human development* (pp. 1–43). Cambridge: Cambridge University Press.
- STERNBERG, R.J., & DAVIDSON, J.E. (1999). Insight. In M. Runco (Ed.), *Encyclopedia of creativity* (Vol. 2, pp. 57–69). San Diego, CA: Academic Press.
- VALSINER, J., & ROSA, A. (2007). Contemporary socio-cultural research: Uniting culture, society, and psychology. In J. Valsiner & A. Rosa (Eds.), *The Cambridge handbook of sociocultural psychology* (pp. 1–20). Cambridge: Cambridge University Press.
- VYGOTSKY, L.S. (1978). *Mind in society: The development of higher psychological processes*. In (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman Eds.). Cambridge, MA: Harvard University Press.
- WARD, T.B., & SMITH, S.M. (1999). Aalborg University cognition. In R. Sternberg (Ed.), *Handbook of Creativity* (pp. 189–212). Cambridge: Cambridge University Press.
- ZAHACINSCHI, M., & ZAHACINSCHI, N. (1985). *Elemente de art decorativ popular româneasc*. București: Ed. Litera.
- ZLATE, M. (2006). *Psihologia mecanismelor cognitive*. Iași: Polirom.

---

Vlad P. Glăveanu, London School of Economics

Correspondence concerning this article should be addressed to Vlad Petre Glăveanu, Department of Communication and Psychology, Aalborg University, Kroghstræde 3, 9220 Aalborg, Denmark. Email: vlad@hum.aau.dk

#### ACKNOWLEDGEMENTS

The author thanks the reviewers for their insightful comments and suggestions. The empirical study of egg decoration mentioned here was supported by the Economic and Social Research Council [grant number ES/H/13199/1].