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Dossier

## Artifacts and fields of action

Artefatos e campos de ação

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### ABSTRACT

The aim of this paper is to defend a theory of artifacts based on the concept of field of action, as an alternative to functional, intentional and double-nature theories. The proposed theory is realistic about the existence of entities that are artifacts, and praxiological about the nature of such entities. The basis of the theory is the concept of action; from this concept, the concepts of field of action and participants in a field of action, namely, agents and objects, are introduced. An artifact is defined as an object that has a part and role in the achievement of an action.

**Keywords:** action, field of action, function, role, artifacts.

### RESUMO

O objetivo desse texto é defender uma teoria dos artefatos com base no conceito de campo de ação, como uma alternativa às teorias funcionalistas, intencionalistas e também às de dupla natureza. A teoria proposta é realista quanto à existência de entidades que são artefatos, e praxiológica quanto à natureza de tais entidades. A base da teoria é o conceito de ação; a partir desse conceito introduzem-se os conceitos de campo de ação e de partícipes de um campo de ação, a saber, agentes e objetos. Um artefato é definido como um objeto que tem parte e papel na consecução de uma ação.

**Palavras-chave:** ação, campo de ação, função, papel, artefato.



## 1 Introduction

The theory of artifacts concerns a kind of entity that differs from natural kinds, kinds that are merely possible, and also imaginary kinds. A fork and a phone, but also a statue and an airplane, are candidate objects for belonging to entities of the artificial kind. Here I will argue that artifacts exist and have a specific identity. In the current debate, none of these claims are decided. Some argue that there are no entities that are artifacts, while others argue that there are artifacts, but they do not have a defined identity either because they do not have a nature or essence, or because they belong to different ontological categories. The position I will expose and defend claims that our universe is such that some entities that compose it are artifacts, in the sense that the composition and structuring of the universe as a reference domain, and not just as a universe of discourse, includes artificial items. This position is implemented through a second claim that states that artifacts are entities with a determined but correlational and contextual identity based on the concept of action.

## 2 Multiple realizability and action

The proposal concerning the identity and existence of artifacts follows the direction suggested by the theories which have, first, the concept of action as a basis for the explanation of the concepts of perception and language (Briscoe, Grush, 2015; Glenberg, Gallese, 2011) and, second, and more decisively, the theories that defend the concept of action as prime (O'Brien, 2017; Thompson, 2008, p. 116-118). These theories indicate that the concept of action has a basic explanatory use and that many concepts can be derived from it or else assume it as already applied. The strategy explored here consists of referring the concept of artifact to the concept of action, in the sense of doing and making, as long as the existence of an artifact implies the occurrence of an action and the identity of an artifact implies, for its determination, the reference to an action. The concept of action would then be explanatory to what concerns the concept of artifact and would also be sufficient to place the concepts of function, intention and mind as secondary, as implying agency and action for their application.

An artifact is not an extra-natural thing, yet it does not seem to be a natural kind. An artifact is the product of an action. We say that a house and a wicker basket are artifacts, but that bird nests built by *Furnarius rufus* and *Turdus rufiventris* are not. Houses and baskets are considered cultural kinds, while nests are natural kinds, according to theorists since Dilthey (2010). However, under an analysis in terms of functions and structures, there is no relevant and explanatory difference, causal and material, that allows this distinction. The only difference is that while the former are objects made by *Homo sapiens*, the others are made by birds. If we accept the theory of evolution, these types of objects can be easily located in an uninterrupted series of successful adaptations that provide favorable conditions for the continuity of the respective species. From the perspective of causal and physical effectiveness, these constructions are very effective in providing shelter for the offspring. Where is the difference, then, if there is any?

The answer lies in the correlation between the concepts of action and multiple realization. All *Turdus rufiventris* make nests of branches, grasses, and clay in the shape of a basket embedded in the branches of a tree, and all *Furnarius rufus* make their nests of clay and grasses over a branch or some other sort of support. However, not all humans, even though belonging to the same natural species, make houses and wicker baskets. Furthermore, if they make objects with the same function to accomplish the same purposes, they do so with different materials and structures, in addition to making these objects for other functions and with other intentions. From this, artifacts can be delimited as those objects made on the recurring exploration of multiple realizability. Artifacts are the result of making and can be identified by that action. Orange-headed thrush birds and the Kamaiurá people do not find nests and houses in nature; they need to do something in order for a nest and a house to come into existence. This making

brings an artifact into existence and determines its identity. Nests and houses are dated as they were made during a specific time and not another, and also are located, as they are made in a particular place by the particular action of particular agents.

The difference lies in the generative process that grounds this making. The *Kamaiurás* make *ocas* in their village, but they also make them in a museum of contemporary art, and they also make them simply to show to other humans how to make *ocas*. However, a *Kamaiurá* may not make an *oca* but make a brick house instead, while orange thrushes make nests exclusively during breeding and mating season. Let us provisionally call the *Kamaiurás'* making an action, and call the thrushes' making an activity. Thus, we can characterize an object as an artifact due to the fact that it is an effect of an action. An action can be characterized as an activity of one or more agents, that may or may not be performed, that is, that is the result of agency and not of a causal and material drift. Multiple realizability is at the root of the concept of action. An agent is any actor or performer who may act and may also not act, or, yet, act differently. When stating that a house and a wicker basket are artifacts, we thus imply this manner of approaching agency and multiple realizability. Furthermore, when stating that bird nests are a natural kind, we imply that they are made by birds but also that the birds are unable not to make them.

### 3 Recognizing the existence of artifacts

An artifact is both the referent of certain terms and phrases and an object of certain acts of attention, while also being an ontic component of situations. Furthermore, I argue that *an artifact is a type of entity*. Consider the statue of a philosopher. Various linguistic expressions can be utilized and introduced to refer to this object, and several practices and actions can be performed with this object; this object can be seen from different perspectives, it can be thought, imagined, admired, and taken to another room, and yet, in addition to being something which is the object and the subject of what is said, and in addition to being an object of conscious and unconscious acts, I think that the assortment of things that are there will have to include this stone statue that resembles Nietzsche. In this sense, I will defend the position that among the things that exist, there are some which are artifacts. The universe is such that artifacts are part of it. I will also propose that artifacts are a specific type of entity, namely, entities historically dependent on actions and agents: *an artifact is an entity whose identity and existence result from an action, or course of actions, of use or production, performed by one or more agents*. Furthermore, an artifact can be effective beyond its action of production, as is it's being acted upon by an action that makes it what it is and makes it exist as an artifact.

Therefore, the proposal is that artifacts are products of activities of production; that is, an artifact is something that is made. For contrast, albeit still not accepting this distinction as fixed, consider a stone in a quarry. The stone itself is not an artifact; however, the bust of Nietzsche made by the sculptor with this stone is an artifact. The statue and the stone now share a substantial part, as 70% of the original stone now constitutes the statue of Nietzsche. The sculptor did not make, form, or generate the stone; the stone was formed by geological events and processes millions of years ago. The statue of Nietzsche, conversely, was formed by the sculptor's actions, of collecting a piece of stone and, using chisels, hammers, and sandpapers, make a statue of a philosopher. The difference between the stone, as a natural object, and the statue, as an artefactual object, is precisely in the action performed by the sculptor.

The stone-forming and statue-forming activities are different, so we say that the stone is *an effect* of certain activities, and the statue is *a product* of certain activities and actions. The theory of artifacts defended here adopts this distinction as basic, in the sense that the nature of the artifacts will be essentially referred to a specific type of activities, called "actions", which necessarily implies one or more agents. Artifacts, in general, are products resulting from *actions of making something* from something else. Now, not every artifact is a product of an action of making; however, every artifact is a product of

an action that takes something to perform a function or have a role in the course of an action. Thus, if someone uses a stone to prop a door, that stone becomes an artifact in relation to that action. This point is decisive since without referring to an action or a course of actions, something is not properly an artifact. The fact that the stone is an artifact is not exactly in the stone; instead, that being is given by an action that appropriates the stone to perform a role in some course of action. Therefore, a stone that has not been modified by a purposeful action can still be an artifact, as long as it is selected and taken as having an effective role in some action, and a piece of stone crafted and altered by a purposeful action can cease to be an artifact when set loose from some course of actions, remaining adrift of non-agentive causes and effects (Braidă, 2022, p. 48-65).

However, the very distinction between product and effect, action and event, is anchored in the distinction between agent and non-agent and implies some differences in the realm of activities. For in this view, *if there are artifacts, there are actions*, and for there to be actions, there must be agents. The strategy here will be to start from the contrast of types of activities, making clear the functional distinction between activities triggered by agents and activities triggered by non-agentive causes, considering that we distinguish, even grammatically (Wierzbicka, 1996, p. 372), between artifacts and non-artifacts, and psychologically (Carey, 2009, p. 158-159) between agents and non-agentive objects. Concerning the admission of artifacts, such distinctions seem indispensable. However, the admission of artifacts in the ontological field, meaning their inclusion in the list of what there is, still does not provide any information regarding the nature or consistency of these entities.

## 4 What characterizes something as an artifact

Aiming at a comprehensive analysis, artifacts are here considered to be the utensils, devices, technical and technological apparatus and instruments, artistic works, objects produced or selected for some purpose, concrete or abstract. A car is an artifact, but so is a bridge, a ring, and a nuclear power plant; the current periodic table is an artifact, and so is *La Gioconda*, a book and also Gödel's incompleteness theorems and the general theory of relativity, the 1988 Brazilian constitution and the Federal University of Santa Catarina. In general, intuitively, following the notion above, a stone, a tree, and a bird are not artifacts, and neither is a hydrogen molecule. However, according to the theory that will be developed here, even these items may come to be, as the previous ones may also not be, properly speaking, artifacts.

The concept of artifact is introduced from the concepts of agent and agency related to a field of action delimited by an ongoing action or a course of actions. Whether or not the agent is human is not decisive, but the assignment of agency and a part or function (role) to something in the context of an action is. If a bird selects, adapts, and uses a stick to remove a caterpillar from a hole and does it repeatedly in the action of feeding itself, then, for this concept, the stick is an artifact. Examples of this are recent observations (Lapuente et al., 2016; Huto, Gray, 2004) that show animals adapting objects to achieve something unachievable within the available natural means. What makes something an artifact is the agency that picks it up and appropriates it as an instrument for carrying out an action. Therefore, if a robot, when interacting with the environment, selects and adapts a material from the environment to perform a role or function in the context of an activity, that material should be described as an artifact, such as the branches used by animals. Outside the context of the action of obtaining food, they are branches and not artifacts, but when selected and adapted and used, in the course of this action, they are artifacts. By artifact, I mean any item used to perform an action in which to have a part and a role in the action is implemented by the agency of some agent.

Consider the case (1) of an agent using a stone to hold a leaf so that it is not carried away by the wind and the case (2) in which a stone rolls down a hill and falls on a leaf, holding it so that it cannot be moved by the wind. I suggest that the stone in case (1) is an artifact, and the stone in case (2) is not,

although they have the same property and the same causal relation in the situation. The sequence of events of a stone rolling, falling on a leaf and holding it in place is not an action or a course of actions attributable to an agent, and that makes all the difference as it results that there is no action in progress in which the stone was granted agency to perform the function of holding the leaf. The stone in case (1), in contrast, plays the role of holding the leaf in the course of an action of holding the leaf so that the wind does not carry it away. In the context of this action, the stone has a *role* or *propriety*, but this role is not to be confused with the *property* of holding the leaf, as it is determined only by the agent's action of holding the leaf to avoid the wind from carrying it away. The difference can be described in terms of multiple realizability, since what distinguishes one case from the other is the possibility given in case (1) of using another object and also of using that same stone to perform another action. Ultimately, however, it is the reference to the action of holding the leaf that makes the stone a leaf-holder.

From this conception, both technological objects such as the phone used to send a message as well as a stone used to hold a leaf can be artifacts in this sense, since what defines whether an object is an artifact is determined, first, by its being picked up and appropriated in the course of an action, and secondly, that its role or function is selected, assigned or implemented by an agent in the course of an action. In English and grammatical analysis, the word that best captures this concept is "instrument". In the examples above, the stone and the phone are said to be instruments used to perform the action. We could reserve the word "artifact" exclusively for made, modified, or built things; however, the concept of artifact also includes those things simply selected (Dipert, 1993), without being crafted or made, to fulfill a function that they do not have by themselves or naturally. Thus, the concept of artifact is defined by the attribution or implementation of proprieties such as having a part, role or function to something in the course of an action, and not due to the fact that something is crafted or altered by an intentional action, and also not due to having this or that property in itself.

The concept of artifact is then thought relationally and contextually, primarily in an interagency manner, meaning that "being an artifact" is a predicate relative to a (possible) action, or course of actions, of an agent in relation to an environment, or an agent in relation to other agents and an environment. What makes something an artifact is the fact that it plays a role-function (causal or not) in the course of an action, rather than its shape or material. Only the role or function in the course of the action matters, being this role what determines the selection of shapes and properties while the artifact has an operative role in performing the action. The soccer ball is a typical example of an artifact, as is a piece of charcoal used to write. Today, what counts as a soccer ball and as instruments for writing are very sophisticated technological artifacts; nonetheless, the technological sophistication of balls and pencils is guided by the role to be played in the actions of playing ball and writing. If someone asks what this is, a ball and a pen, the answers that mention the actions of making something to play soccer and to write are enough.

The absence of agency causes an object to lose immediately and concomitantly the condition of artifact. A forgotten ball in the yard and a statue thrown in the garbage are objects only subject to natural laws, relationships, and activities, that is, they are no longer "a soccer ball" and "a statue" as these functions and roles have no part in the natural context. This aspect, however, immediately generates the illusion that the artifactual condition of an object is given by the intentional consciousness that apprehends the object and constitutes it as a specific artifact. The theory developed here rejects the intentional constitution of artifactuality with the argument that being an artifact is not determined by the intentional awareness and even less by the perception of an observer, but by the taking part in the field of an action. The recognition of an object *as being a statue* is the projection of a possibility of action provided by an object, but this does not imply that the object is previously an artifact or a statue. A stone or a branch may well be taken as statues in the course of an action. Therefore, the recognition of a statue as a statue is the recognition of a possibility of action, that is, the possibility that that object can play the role of a statue, or that it was used before as a statue, or that it was a stone crafted to be a statue, etc. The decisive point lies in the allocation of the object in the field of an action, current or possible.



## 5 Artifactual analytics

A well-established conception concerning the nature of artifacts proposes that artifacts be defined according to function. For Hilary Kornblith (1980), the nature of artifacts “is its function and at least for the most part, it seems that what makes two artifacts members of the same kind is that they perform the same function” (p. 112). According to this theory, artifacts are conceived as functional objects, meaning that the essence or identity of these objects is constituted by their function. The function of the object determines what kind the object is. The defining point of this conception is that artifacts are functional objects selected and produced by a cultural group of users and creators to perform certain functions. Without function, there are no artifacts.

The intentional conception, conversely, highlights the constitutive role of the producers’ intention to create an object of a specific type as a decisive factor. Risto Hilpinen (2011) and Amie Thomasson (2007) reject the functional conception as they understand that natural objects also perform functions. According to them, the difference between natural and artifactual objects lies at the origin of the function, which they consider as dependent and relative to intentions, conceived as mental states of producers and users. An object is an artifact only if it was produced with the intention to be of a type and to fulfill a particular function. Therefore, artifacts are entities whose identity, existence, and function depend on a mind. According to Thomasson, an object is an artifact if it satisfies two conditions:

*Necessarily, for all  $x$  and all artifactual kinds  $K$ ,  $x$  is a  $K$  only if  $x$  is the product of a largely successful intention that  $(Kx)$ , where one intends  $(Kx)$  only if one has a substantive concept of the nature of  $Ks$  that largely matches that of some group of prior makers of  $Ks$  (if there are any) and intends to realize that concept by imposing  $K$ -relevant features on the object. (Thomasson, 2003, p. 600).*

Following this definition, neither the performance of a function nor the design or configuration of the object count as primary, but what counts is being the pole of an intentional relation. There seems to be a confusion in this point, between properties (*property*) and the being appropriate (*proprieties*) of an object. Indeed, it is said that the existence of some property of the artifact is dependent on its intended character, expressed in the condition of dependence (Hilpinen, 1992, p. 65). The existence of some properties of the artifact depends on the author’s intention to make an object of a certain type. This condition induces Thomasson to state that artifacts are “creations of the mind” (Thomasson, 2007, p. 52). This conflation between having properties, such as having a mass of 150 g, and being appropriate, such as being profitable as Nietzsche, does not seem to be a good theoretical point.

Under a more concrete analysis, the intentional, as well as the functional, conception of artifacts can be accused of being idealist, since it defines artifacts based on relational properties that are outside the object itself. Whether the function or the intention, the fact is that, in these approaches, the constitution of the very thing that accomplishes them is secondary. A third position corrects this deficiency by conceiving the nature of artifacts as determined by both the internal structure and the purpose or use of the object. Artifacts would be defined by their purpose and use, in addition to their internal structure (Losonsky, 1990). Losonsky suggests that recognizing the internal structure, purpose, and method of use in the nature of an artifact provides an approach in which regularities and predictions can be accounted for, and a scientific treatment in nomological terms becomes feasible. A clock, then, contrary to functionalist and intentional conceptions, is not defined only by the function of tracking time or being taken as a time tracker. The internal structure and material composition are decisive. An hourglass, a grandfather clock, and a winding clock are all time trackers, but the manner in which they do so, that is, their mechanism, is very different. The difference in the mechanism or internal structure alters the manner of use and the propriety or lack thereof for certain actions. The multiple realizability of the same function

and the same intention does not imply the ontological equivalence of the objects that perform them. Risto Hilpinen (2011) defends a position in which the problem of the nature of artifacts is considered central. The point is that an artifact is something made by an author or producer, so the concept of artifact implies the concept of producer (Hilpinen, 1993, p. 156–157): an object is an artifact if and only if it has an author. However, Hilpinen maintains the intentional position, since the very concept of agency that constitutes an author is intentionally defined.

From these considerations, a hybrid position that combines intentional and functional conditions becomes visible. Artifacts are intentionally designed to perform functions; on the one hand, they depend on the intention of their creators to be what they are; on the other, artifacts have their own structures and capabilities that are independent of their creators and users; therefore, artifacts ontologically depend on intentions or purposes, but are what they are while effectively have proper functions (Baker, 2004). The proposal makes the hybrid character of artifacts explicit. Baker suggests that artifacts have a dual nature, as in addition to their function, they would have an intentional nature. The material nature would explain the functional properties; however, it is the mental or intentional nature that would explain the functions of the artifact. Baker states that in addition to a dual nature, artifacts have a flexible relation between the function and the material base. Thus, a hammer has a material composition, as an aggregate of wood and metal, and proper function, “determined by the intentions of its designer and/or producer” (2004, p. 102). According to this approach, an object is an artifact if it was made or designed to fulfill a function that performs the intentions of its projectors or builders, and if it is constituted of an appropriate material, selected and arranged to perform a specific function. In this characterization, the concept of “being appropriate” is decisive. A material object is appropriate in relation to the performance of a function, and this refers both to its material properties and to its intentional propriety to its author’s intention.

The hybrid position refers to both the identity and the existence of artifacts. An artifact is the artifact that is due to the intersection of an intention and a material arrangement, as proposed by Kroes and Meijers (2006). The proposal assumes that the human world is constituted by the articulation of two centers of apprehension, which is shown in our thoughts and works. On the one hand, we apprehend the world in terms of the interaction between physical objects and complex causal interactions, and on the other hand, we apprehend the world in terms of agents with mental states such as beliefs, thoughts, and desires. The program transfers this double apprehension to artifacts, that is, to human constructions and creations. Therefore, the proper description of the artifacts must include, in addition to their physical and causal description, the description of the intentions and purposes of the intentional agents in mental terms (Kroes, Meijers, 2006; Vermaas et al, 2011). This aspect of the theory is relevant since the identity and existence of artifacts is not given in the perception or by its compositional and structural description, as in this manner its function and the intention that presides over it is not apprehended. In its strong sense, this proposition implies that the identity and existence of an artifact can be verified by a complete description in which a physical object and function are specified (Houkes et al, 2011, p. 199). In this formulation, it becomes explicit that an adequate description must make use of terms that refer to human intentions and actions, namely, terms such as “use”, “purpose”, “design”, “function”.

The flexibility indicated by Baker is a symptom of difficulties for this theory. It concerns the fact that the same function can be performed by different material media; also, the same material medium can perform different functions (Baker, 2006). The perspective developed here can avoid this difficulty by characterizing the artifact condition directly by fitting it into an action. In doing so, the problem of multiple realizability disappears, since an artifact is the artifact that it is only in relation to an action. Since the identity of the artifact, the kind of thing that it is, is given by the action in which it has a part, multiple realizability does not affect the identity of the artifact. Multiple realizability also concerns function and material structure. The same function can be performed by different structures, and the same structure can perform different functions. However, this is part of the artifact’s description only while it is a part of an action and has a role in performing this action.

The function remains a determining factor in the definition of artifacts since when the function is absent, the type of the object in question becomes indeterminate, especially given multiple realizability. Something made to be a watch, but that does not fulfill this function is not a watch but does not stop being an artifact. In this direction, both the generic name and the type of artifact are indicated by the common name used to designate them: nail for nailing, sander for sanding, printer for printing, sailboat for sailing, etc. An artifact seems to have essentially its function, in the sense that it constitutes its identity. Not only its ontological consistency, but also its persistence or existence as the artifact that it is, seems to depend on its function to remain the same.

The point to be highlighted is that the admission of artifacts in the analytical platform of kinds of entities that constitute the reference domain is anchored in the fact that such admission is needed to explain the events and situations that constitute the universe in its material and causal web. The concepts of purpose, intention, and mind are not ontologically indispensable for this since the concept of action is sufficient and explanatory clearer. Artifacts, contrary to what the intentional theory states, do not depend on intentions and desires to have roles and perform functions in a field of actions. If a chipped stone is used in the action of cutting, then that stone is an artifact, even if it has not been chipped for this purpose.

Consider the following definitions, analyzed in the article "Technical Artifact: An Integrated Perspective" by Stefano Borgo and others (Borgo et al., 2011). The first is related to the ontological class of artifacts:

*An artifact a is a physical object which an agent (or group of agents) creates by two, possibly concurrent, intentional acts: the selection of a material entity (as the only constituent of a) and the attribution to a of a quality or capacity (p. 5).*

According to this definition, an artifact does not need to be the result of a production process. However, the explanation of the artifactuality of the artifact remains within the scope of intentional theory, since the property of being an artifact is given or constituted by the acts of selection and use. The situation is described as creating a new entity; a stone becomes a paperweight. This is not the best description, however, as the stone has not disappeared, and a new entity has not been added beside the stone. What happens in this case, instead, is the granting agency to an entity with certain proprieties for the execution of an action in which the entity has a role, but without changing its properties. The identity of the artifact is given by its material constitution and by the intentional act that grants agency to it. A second definition, proposed by Kitamura and Mizoguchi for engineering artifacts, accentuates the production process:

*A technical artifact a is a physical object created by an intentionally performed production process. The process is intentionally performed by one or more agents with the goal of producing the object a which is expected to realize intended behavior in some given generic technical situation (Borgo et al., 2011, p. 7).*

In this definition, although the terms for intentionality and purpose are still present, the concepts of agent and production process are explicit. Thus, the existence and identity of the artifact gains precision and determination; furthermore, the definition correctly locates the production of artifacts in the field of an action, therefore advancing in the acknowledgment of the objective and the effective character of the action for the existence and identity of artifacts. This aspect becomes explicit and operative in the definition of technical artifacts proposed by Houkes and Vermaas, which is formulated as follows: "A technical artifact a is a physical object created by the carrying out by an agent (or by agents) of a make plan for an object with a physical description." (Borgo et al., 2011, p. 9).



In this characterization, although concerning only technical artifacts, the terms used in the description are all objective and circumscribed to the domain of the effective action of agents; furthermore, the concept of plan of use is also addressed. The authors propose an integration of these definitions, which is presented from a scheme that correlates the concepts of physical entity, action of selection, and action of production. The actions of selection and production assign properties to the physical entity and make it an artifact. Although recognized as the central position of the concept of action, this concept is not approached correctly in accordance with what it demands. However, in the 2008 article "Artefacts and Roles: Modeling Strategies in a Multiplicative Ontology", Vieu, Borgo, and Masolo, when indicating the central element of intentionality, directly referred to action while also linking to it the role performed by an object to make it a particular artifact:

*we intentionally select objects in order to use them for a purpose perhaps physically modifying them to suit our tasks. Intentionality then is part and parcel of the process of attributing functionalities (capacities) to objects, i.e., of the process in which artefacts are created. The intentionality involved in this process is not a property of artefacts and even less so of the selected entities, it's a property of the agents who created them. Artefacts are the results of agents' intentionality, so their existence depends on an action of entities external to them. These observations lead to consider artefacts as ontologically separated from other physical entities like water and trees, and therefore to entity-stacking: the paperweight is not the pebble, it is co-located with it and constituted by it. Indeed, it can be argued that the pebble does not depend on any creation event, nor on any agent, that it is not meant to hold papers, and that it is older than the paperweight. (Vieu, Borgo e Masolo, 2008, p. 124)*

The central point of this characterization is the recognition, although not explicitly explored, that intentionality is an aspect of agents and that the existence of artifacts depends on an action, and, in accordance with what this concept requires, that artifacts are defined by roles that only make sense in the field of an action. With these additions, it is possible to arrive at a complex theory of artifacts that is effective in recognizing their existence and guaranteeing them a specific identity. However, in justifying the theory, the concept of action based on intentionality and mentality is still employed, thus preserving the core of dual nature theory. This dual nature has its ontological price: the same item counts twice in the account for one of the entities in the universe. Indeed, according to this theory, the stone is a separate entity from the paperweight, right there where the stone is the paperweight:

*A central element in this formalization of artefacts is the assumption that the artefact (the paper-weight) is not the endurant of which it is made (the pebble). As said above, the paper-weight starts existing when it is created, generally well after the pebble does; the two objects, although co-located when both present, have different properties, in particular different lifetimes, and are therefore different. In addition, the paper-weight depends on — here, is constituted by — the pebble but not vice versa (Vieu, Borgo e Masolo, 2008, p. 126).*

This is a result that must and can be avoided. If in a room there is a stone and this stone is used to hold papers over the table, what there is in this room is a single *entity*, the stone, and an ongoing *action* of holding papers over the table. In no way are there two entities, the stone and the paperweight. Being a paperweight is a role in an action. Yes, we talk about being a paperweight, and that the stone is the paperweight, but these uses of inflections of the verb 'to be' simply indicate *the thematic role of an item relative to the action indicated by a verb*, in this case, the action of holding papers. Finally, it is worth mentioning the theory proposed by Schyfter (2009), which refers to the dual nature of artifacts as hybrid types in which natural and social factors are combined. Artifacts are artificial types founded on natural types, but whose existence and identity are determined in the context of social practices of

collective reference. From the perspective of the theory outlined here, this aspect is extremely relevant for introducing both the concept of social activity and the concept of practice.

My proposal is directed towards unifying these definitions based on the concept of action: artifacts are what they are, are structured as they are, have the materiality they have and have the function they have due to the action of production that produced them and the action in which they have a part and causal role. These actions circumscribe a field of action. An object that is not a part of and has no relevant role in the achievement of an action is not an artifact, but a natural object. Artifactuality is given not only by function and material structure, but by the effective role (Cummins, 1975) in performing a function, which must refer to an ongoing action. With this, a basic characteristic of artifacts is obtained from the start, that is, that artifacts are dependent entities regarding identity and existence. My suggestion is that this ontological dependence is primarily on actions or activities, and not on other entities and even less on minds and intentions.

The problem of functional and intentional proposals, especially the proposal of dual nature, lies in the theory of presumed action, and also in the theory of intentionality, that presupposes the dichotomy or else the mental anomaly. Acting and doing, according to these theorists, is a dual event; on the one hand, it is a physical event, on the other, a mental event. Artifacts would inherit this duplicity. This point, however, is not obvious. Agents being entities with a dual nature, physical and mental, does not entail that the artifacts they produce also have a dual nature. A fork is not a mental entity, but a purely physical one; even a phone is purely physical. The design, the shape, and the logic of the fork and the phone are not mental either. The function or role of the fork and the phone, for a given use, is not mental either. Some argue that, yes, forks and phones are not entities endowed with mentality, but would be entities endowed with an incorporated, so to speak, intentionality. There would be an intentionality in the thing itself, in its design, in its shape and structure. However, this is an exaggeration. A fork is not an intentional entity and has no intentionality either. The concept of *intentio* does not apply to it.

This duplicity and ambiguity must be eliminated. People could be dual entities, endowed with a physical body and an intentional mind. However, in order to understand the concept of artifact, it is necessary and unavoidable to recognize that artifacts are made things, that is, that the concept of artifact implies the concept of making, and this concept is a subtype of the concept of action. For the theory of artifacts, what matters is that there are agents and actions, not minds and intentions. Indeed, precisely by assuming the concept and phenomenon of action as *prime*, one can, by abstraction concerning actions, courses of actions and fields of action, introduce the concepts of making and planning, of intending and suffering, as well as the concepts of mind and purpose. These concepts always have their field of application limited by an action or activity. The concept of artifact is thus also introduced. First, an agent and an action are recognized; then, a purport or direction of action is recognized; if the action is performed by the appropriation of an object, or if it is performed through the production or alteration of an object, therefore one can introduce the concept of artifact to apprehend these objects to which a part and role in a course of action has been assigned, or to objects resulting from the completion of the action. The fork and the phone, their shapes and structures, as well as their functions, can then be thought of as intelligible from their having part and role in the context of an action. The action and its direction explain the shape, structure, and function of these objects. The concepts of mind and intention could be introduced now, but they apply to the agent and not to the objects that have a role in the action.

The fact that something was made by humans does not qualify it as an artifact. The wood chips produced by the sculptor are not artifacts, but the statues that he makes are artifacts. The marks that humans produce when walking on the sand are not artifacts, but the marks they make to signal the way in the forest are artifacts. To mark this difference, three basic concepts are introduced in the theory of artifacts, the concepts of intention, function, and material design or structure. Although we can recognize the shape of wood chips and footprints in the sand, we say they do not have a function and were

not intentionally produced; primarily, they were not produced with this shape to perform a function that would satisfy a given course of action. In the case of the statue, the house, and the sign, these concepts gain determination, and so we say that these are typical artifacts; furthermore, they are artifacts of a particular type. Now, are these concepts sufficient to determine the existence and identity of artifacts and types of artifacts?

## 6 The identity of artifacts

The content analyzed in the previous topics allows the outlining of the conditions that an object must fulfill to be considered an artifact (AC). An object is an artifact if and only if it fulfills the following conditions: *intentional condition* (IC), to be a pole of an intentional relation; *functional condition* (CF), to perform a function in a situation; *structural condition* (SC), to have a structure designed and appropriate to perform a function; *material condition* (MC), to have a determined and appropriate material composition to fulfill the intention and perform the function. Thus, an object is typically an artifact of the type clock if and only if it is intentionally selected or built to have the function of tracking time, which requires it to be structurally and materially constituted to perform this function and fulfill this intention.

However, although these conditions are part of the description of the artifacts and allow the recognition of the existence of artifacts beyond natural entities, considering the analysis proposed here, they are not sufficient to identify an object as an artifact of a particular type. The general argument is that the *artifact condition* (AC) precedes these other conditions, and an object fulfills and accomplishes them due to its effectiveness. Bluntly, an object has a function, fulfills an intention, and has a material structure and composition relevant to its identification as an artifact of a particular type only if it has an active and effective part in the field of an action or course of actions of one or more agents. The artifact condition is none other than the condition of being an *effective part of an action* (EPC) of one or more agents.

Something is a clock in the action field of tracking time only if that something is given agency to perform this function and effectively performs it. Consequently, intention and function are not sufficient, and even less structure and materiality, given the possibility of multiple realizability, since it is having a relevant part and role in achieving an action that makes something an artifact and, above all, an artifact that is a clock. If an agent builds an apparatus from springs, levers, and gears to track the passage of time, we have an artifact, but we may not have a clock; on the other hand, we have a clock if an agent uses the shadow of a stone, naturally constituted and structured, to track time. The mechanism and the stone track time from their structural and material constitution, but they do it in distinct manners; the mechanism is typically a thing that was made, the stone is typically a natural formation; the device has its structure and materiality intentionally chosen to perform certain movements that allow the setting of measurement units; the stone casts a shadow according to the position of the sun without any human intervention, but the entire phase of the shadow's movement configures a phase space that also makes it possible to set measurement units. In both cases, intention, function, structure, and materiality are included in the description of the artifact condition; however, their articulation and agency while having a part and an effective role in the action of tracking time is what connects and unifies them. Outside this action field, neither the stone nor the device is a clock; furthermore, I want to conclude they are not an artifact.

The theory is directed towards admitting that the device, outside an action field, is not an artifact. The argument is that an apparatus built to perform a function that fulfills an intention, as a material structure, is a physical and natural entity as much as a stone on the top of a mountain. Both are subjected to natural drifts and forces. Only in relation to the field of an action circumscribed by the action of building clocks and tracking time is an apparatus an artifact and exemplifies a type of artifact; whether it was made for that purpose or not is irrelevant. The illusion is to assume that the identity and existence of an artifact are determined by something outside the action: the intention, the plan, the project, the structure, etc. How-

ever, the stone has none of these features and functions as a clock when used to track the passage of time. Furthermore, a metallic device can have all these features and not be an artifact of some kind. If the clock was forgotten hundreds of years ago under a rock and is now all rusty and fused with the rock, although we still say that it is a clock and therefore an artifact, we do so only by analogy and metaphorically. We actually recognize the traces of a clock artifact, but this is because we know what it was used for, that is, we know in what field of action it was effective, and we also know how it was made, that is, we know the field of action in which it was produced. Without these two remissions, we would not be able to identify it either as a watch or as an artifact. The example of the "Antikythera mechanism" illustrates this point well. Although we recognize the vestiges of a built apparatus, we cannot state what artifact it was, that is, to what type this apparatus belongs, and this happens due to a very clear reason: we don't know how and what it was used for. As long as we do not fix the action field in which this object has a function and role, we cannot say what type of artifact it is. However, doubt also hangs over the field of action in which a generative process produced it, and thus even its nature as an artifact is in question, since only by fitting it into an action of production or use can we eliminate the junction of its components by chance. Similarly to the "Phaistos disc"; although we can decipher its signs and turn them into a sentence in English, what that sentence states can only be determined by the action field in which this disc was produced and the field of action in which it had a function and a role in achieving an action.

An important aspect concerns the constitution of the field of action in which an artifact has an existence and identity. I assume the preeminence of fields of action and practices grounded on the interaction of active and interactive agents. Thus, the artifact condition includes interactivity and interagency as vehicles by which a social group objectively agencies them to execute an action or perform a practice (Schuyter, 2009; Houkes & Vermaas, 2010). This predominance is the basis on which artifacts acquire independence from their creators and their actions, through a process of social objectification (Nilsson, 2001). Furthermore, both the notions of intention and mentality, as well as those of plan and regulation, can only be objectified in the context of a correlation of interactions and interagency between active and cooperative agents. Admittedly, the purely intentional, purely functional, as well as dual nature theories, are partial due to not explaining the basis on which they have an application.

The central point of the criticism of the intentional conception, which also affects the conception of dual nature, concerns the role of intentions and purposes, especially when these are thought of as mental realities. The fact is that function, shape, and material composition are not factors determined by intentionality or mental states. Therefore, I reason that one can refuse that artifacts are what they are and exist only as long as they are objects of an intention and a mind that constitutes them as having that function or that role in the performance of an intention. Intention and purpose are not sufficient, and mental states do not transform an object into an artifact. The electrical network, the telecommunications network, works of art, books, do not perform their functions and have a part in the operations that take place through them due to being constituted by intentional agents. Their functioning and effectiveness, the ability to produce effects, do not depend on the intention of an individual or group. Based on its effectiveness, however, there are actions of making, selecting, and building, and actions and courses of actions.

## 7 Agency and generative processes

The starting point was the acceptance that in the description of the world, the world as supposed in our practices and objective conversations in which mistakes and successes can be indicated, things such as statues and texts are included. Although there may be a world about which it can be said that there are no statues and texts, our world is such that there are statues and books whose pages contain determined and objectively identifiable texts. Statues and texts are typical cases of artifacts;



therefore, our world is such that one can safely state that there are artifacts. Our practices are such that copies of this type of thing are made, sold, bought, stored, and destroyed. Our world is such that many conversations and thoughts are acknowledged as correct or incorrect due to being indexed and referred to artifacts.

An artifact is defined as the result of an activity of production. Some artifacts require specific material support as a constituent without which they cease to exist, as is the case with statues and houses, while others do not; some artifacts require generic and replaceable supports, such as texts, projects, and institutions. I call the generative process, following the definitions of Davies (2004), the sequence of joint activities in which the final result is an artifact. The generative process of stone is different from the generative process of a statue, even if the statue is made of stone. The focus of appreciation is decisive. If I consider only the material object in its materiality, there are no artifacts. However, if I include the generative process, then it is possible to differentiate between artifacts and natural objects. Nevertheless, what is suggested here is that the focus of appreciation must include the field of an action of one or more agents to establish the existence and identity of artifacts, since outside of a field of action things are what they are and do not differ from others except due to their material properties and causal relations.

An action field, however, can only be delimited by an action or a course of actions. Moreover, actions imply agents, as an event that takes place without the assistance of an agent is a mere occurrence. Raining and snowing are occurrences. Now, if the rain and snow are caused by Joseph's action, they are then artifacts. We distinguish these events according to the grammatical structure that objectively expresses them. The verb "to rain" can certainly be used to indicate that it is raining. However, we also use this verb in phrases such as: "Joseph made it rain beer over the audience." In this case, the verb requests an agent. My proposal consists in making the concept of artifact grammatically dependent on an action verb that requires the filling of the thematic role of the agent. Thus, theories that require an author are contemplated. Nevertheless, it is the performed action that makes an agent an author. Without action, there are neither authors nor artifacts. When the word "artifact" is used as a predicate of an object, that object is either a product of an action or something caught and appropriated for the performance of an action. Moreover, an action is different from a natural event due to the effectiveness of multiple realization and the effectiveness of achievement and non-achievement. An action is an event that could not occur, which could also occur differently and with other supports, under the same circumstances. These characteristics are transferred from the action to the results of the action, the artifacts. An artifact is an object that could not exist and could also exist in a different manner and with other supports, under the same circumstances.

In short, an artifact is an effect of an action that produces effects after the action ceases. A city's water distribution and sewage piping system are a complex artifact that seems independent. However, it is still a finite object, built and explainable by the actions of distributing and collecting water and by the actions of directing, channeling, filtering, plumbing, pumping, and using water. Nothing that matters in the system escapes the concept of action by individuals and collectives. What escapes is fully explainable in terms of the sciences of natural types. Described in terms of mechanism, the system is a complex physical object. However, if we add the generative process to the focus of appreciation, the system is an effect of a sequence of actions. If we also add to this focus the action of which the generative process is a phase and a part, the system as a whole is an artifact given its appropriation and participation in the fulfillment of the action of water distribution, consumption, and collection by the city's inhabitants. Intention, function, design, and material structure, according to this description, have only a secondary role and are introduced only to make explicit the type of action that is performed through an artifact. When we make explicit the acts that produce, pick up, arrange, and appropriate something to perform an action, we explain both the existence and the identity of that artifact, without the need to introduce ontological and intentional duplications.



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