AND INTENTIONS: TOWARDS A REFLEXIVE ONTOLOGY OF TECHNICAL OBJECTS

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ABSTRACT. A central issue in the contemporary debate in analytical metaphysics is the plausibility of the ontological inclusion of ordinary objects, especially artifacts. This paper explores the realist ontologies that include "intentional creations" such as artifacts in their programs, giving rise to a normative view of the world. It approaches the assumptions of two possible realist ontologies implied in the contemporary debate on artifacts. First, it makes a distinction between a reflexive and a non-reflexive ontology, stressing the hermeneutical stance of the former. Second, it focuses on the reflexive nature of the ontology being reconstructed. Third, it discusses its realist character, rejecting the objections that warn against the idealist implications of such a view.

KEY WORDS. Technical artifact; normativity; intention; reflexive ontology, Realism, analytical metaphysics.

I. PROPER FUNCTIONS, NORMATIVITY AND REFLEXIVITY

A central issue in the contemporary debate on analytical metaphysics is the plausibility of an ontology of ordinary objects, especially artifacts. As we will focus on artifacts, it is relevant to begin with a definition. Unlike natural entities, technical objects are classically understood as the intended products of human action (Hilpinen 1993). That is, in order to speak legitimately of an "artifact," the object referred to must be intentionally produced by an agent according to a specific description. This definition permits leaving outside the field of artifacts those collateral products and secondary effects that are not an intended result of a technical activity (such as pollution or rubbish [1]).

The definition also agrees with the idea of the dual nature of artifacts (Kroes and Meijers 2002). Unlike inanimate natural objects, they have both a physical and a functional nature. The first refers to the fact that an artifact

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is a physical object with specific properties and, as such, is governed by natural laws. The second points to the fact that an artifact is a means to an end in the context of human action and, for that reason, one can affirm that its function from a social creation—meaning that an artifact is not independent of the agent's intentions. This way, among other intentional aspects (Cf. Vaesen 2011), artifacts are intended to perform a function.

The examination of their predicable functions permits to show the connection between technical objects and normativity. Some of the latent potentialities of an artifact have a privileged status; there are many functions or capacities related to its normal performance, but only one of them can be called the *proper* function [2]. We come here to a distinction between system and proper functions. System functions are based on dispositions of objects in relation to their actual systems. A chair can also function as a ladder, helping a person to reach an object from a high place. How an artifact acquired a new disposition is here irrelevant (Preston 1998); it is enough to note that it actually *has* that disposition. By contrast, a proper function refers to certain dispositions that the object had in the past and that contributed to the persistence of those capacities in the present. Thus, it involves a purpose that was initially postulated at the design stage and reinforced during its institutionalized practice [3]. In brief, for the purposes of explaining a system function it is necessary to refer to the structural properties that the artifact had at a certain time and to its corresponding causal powers. Instead, to justify a proper function, it is necessary to consider the actual object as a result of a selective history where intentional agents (the designers) took a central role.

This leads us to the notion of normativity. As Scheele (2006) argues, the distinction between function and capacity becomes clear when an artifact loses its function. If the thwarted function is a system function, then nothing may alter the objects status, except physical change: it will keep holding its proper function. On the contrary, if the thwarted function is the *proper* one, one usually says that the artifact *malfunctions*, which involves some kind of evaluative judgment. When a car is unable to move, it malfunctions, since its proper function is to bring people and things from one place to another; it has temporarily lost that capacity. The crucial difference here is that proper functions have a normative character, whereas system functions have not. This means that the former imply normative judgments. If one can say what an object *should* do, then one can determine precisely whether or not it is performing its task properly at a given time. In other words, in the context of artifactual ontology, the difference between system function and proper function is a necessary condition for a meaningful notion of malfunction.

Finally, the normativity of proper functions becomes manifest in the very terms used for artifactual kinds: "corkscrew," "lighter," "screwdriver," "book-

mark," and the like. These expressions make it clear that the *in-order-to* is constitutive of the object, that there is a certain task that the object should perform, for example, to mark the page of a book. In contrast, the expressions used for natural kinds lack this instrumental, clearly normative description [4].

The consideration of normativity from an ontological point of view implies a richer perspective, since ontology now would include not only what comes into a contemplative and non-reflexive sight, but also what constitutes a virtual horizon of expectations, of norms that may be realized or not. Not only do we perceive what lies before our eyes, but we are also aware whether or not something fulfills the norms we project; both processes happen in an equally direct and immediate way. There are not two successive processes but a single one: we cannot understand a microscope without certain previous expectations about its function and *use plan* (Houkes 2008; Houkes y Vermaas 2010). A microscope *is* a normative object; it is used for something and it fulfills its function rightly or wrongly. Indeed, what comes into sight in front of us has less "presence" than this virtual net of expectations. In other words, a world with intentional agents leads necessarily to a normative world. If we link intentionality to agent expectation, then every intentional conduct will generate expectations that may or may not be frustrated, and this linking will generate normativity. We cannot understand the world where we live unless we assume normativity.

Our starting point is the *factum* of normativity, which constitutes the internal grammar of the technical action. An ontological theory of artifacts must take into account and explain this factum. This *desideratum* cannot be adequately accomplished by the non-reflexive ontological perspectives, which refuse to consider that intentional agents, and the normative phenomena they originate, have any relevance in relation to the constitution and individuation of objects in general and artifacts in particular (so long as these views consider the existence of artifacts). Our claim is that only a *reflexive* ontology can adequately explain these facts.

What does it mean that an ontology has a reflexive nature? What features should an artifactual ontology have, in order to consider the intentional relationship between agents and objects? What is to say for and against it? It is necessary first to give a preliminary account of the view we endorse, which in fact has already become a shared program. In different ways and from different perspectives, Baker (2007), Thomasson (2007), Millikan (2000) and Elder (2007) have put forward a program oriented toward viewing artifacts as part of reality. Their contribution can be seen as an "ontological rehabilitation," since they have abandoned the traditional Aristotelian view of artifacts as deficient objects.

We follow the first two authors in their philosophical goals. Their programs layout can be summed up in the following two theses. According to the first, the relationship between agents (that is, their concepts, intentions, desires, etc.) and objects becomes relevant for the constitution of artifacts as real entities. As Baker states, "one prominent feature of the everyday world is that it is populated by things—such as pianos, pacemakers, and paychecks—whose existence depends on the existence of persons with propositional attitudes." She assumes the existence of "intention-dependent objects" (2007: 11). Thomasson holds the same view in relation to artifacts: "...the metaphysical natures of artifactual kinds are *constituted by* the concepts and intentions of makers" (Thomasson, 2007: 53).

The second thesis, dependent on the first one, affirms that artifacts are real objects. Thomasson thinks that the identification of mind-dependence with Idealism assumes incorrectly that the only criteria of Realism are the ones suitable for the natural kinds and their characteristic mind-independence. This implies "borrowing an idea suitable for Realism about natural objects and kinds, and assuming it must apply wholesale" (2007: 72). Far from taking this idea for granted, she argues that we must explain what the relevant criteria for the existence of mind-dependent objects are. In the same realist trend, Baker asserts that "...the everyday world—that part of reality that includes us, our language, and the things that we interact with—is no less ontologically significant than the microphysical parts of reality" (2007: 19). Thus, Thomasson and Baker agree on demanding different criteria of Realism for the artifactual kinds.

We believe that the reflexive program of these authors is the best explanation of the normative facts concerning artifacts. They have developed an important amount of theory, including central and collateral discussions. Our purpose is to develop an internal critique of this view by expanding certain implicit assumptions and stressing the reflexive aspects of the theoretical framework.

Our distance from these authors is twofold. Firstly, we aim at reconstructing their position with an emphasis on reflexivity, which has not been sufficiently developed. Reflexivity is indeed taken into account by them. For instance, Thomasson claims, clearly following Hilpinen, that "the methodology of many social sciences, unlike natural sciences, must involve an empathetic understanding of the intentional states of others and their ways of understanding and carving up the world they live in" (2007: 63). However, we believe that reflexivity is neither considered the basic fact nor taken in its full implications (as we shall see in the next section). Although these authors stress their commitment to Realism, they do not pay its reflexive nature the attention it deserves. The hermeneutic idea that to understand artifacts *is*, at least in part, to understand concepts, intentions, etc., has not been stressed and developed enough. Secondly,

we support this "reflexive ontology" with new arguments concerning the reflexive and realistic character of this program.

For this purpose, we need to make a distinction between non-reflexive and reflexive ontologies, one that will that function as a conceptual ground where the objections and further discussions are to be placed. A preliminary account of these ontologies is necessary. A non-reflexive ontology considers that real entities do not depend on agents having concepts, intentions, and so on. Furthermore, an inventory or classification of real entities should not consider the relation between persons and objects as relevant. The result of this *intentio recta* is either the reduction of artifacts to natural objects or the elimination of artifactual kinds as real ones. The ontological model is exclusively based on the notion of natural kinds and the criteria suitable for them. A reflexive ontology, by contrast, considers the relation between objects and agents (intentional and conceptual) as ontologically relevant. Therefore, cultural objects such as artifacts cannot be understood as natural objects; the identity criteria of the latter are not applicable to the former. This kind of ontology is *reflexive* because it considers that classifying what exists in the cultural world necessarily amounts to classifying a human view of the things involved.

Although this paper is programmatic and as such is mainly concerned with the outlines of an ontological project, there is a possible practical contribution in our arguments, related both to everyday language and to scientific praxis. Along the same lines of the reflexive model we explore, we question the explicit or implicit requirement that everyday language should be deprived of its illusory reflexive components; for instance, those expressions that allude to a relation between objects and persons. Talking about "chairwise" objects instead of chairs (van Inwagen 1990) is not and should not be taken as an ideal (neither a realizable nor an unrealizable one) for our everyday language and praxis. In the scientific sphere, the latter requirement adopts the forms of "Reductionism" or "Eliminationism," two theories that represent an ideal of a pure scientific language and a pure scientific praxis deprived of such reflexive components. This way, justifying everyday language is equivalent to criticizing the normative ideals implied in the projectionist, reductionist, and eliminationist theories.

II. TOWARDS A *REFLEXIVE* REALISM

The discussion on reflexivity should begin with a characterization of the non-reflexive model. This model leaves no room for the intentional creations, since it deprives of reality those objects belonging to the artifact kinds. Van Inwagen (1990) and Wiggins (2001) are representatives of this view, among other relevant figures in this field [5]. (cf. table 1.)

TABLE 1. ARTIFACTUAL ONTOLOGIES IN THE CONTEMPORARY DEBATE [6]

ARTIFACTUAL ONTOLOGIES	Reflexive	Non-reflexive
Realist	Artifacts are real objects in a full sense: Baker, Thomasson	Artifacts have non-reflexive real properties: Elder, Millikan, Denkel
Anti-realist	Artifacts are conceptual projections: Sellars	Artifacts are not real objects: Van Inwagen, Wiggins, D. Lewis

A brief characterization of non-reflexive anti-Realism will help us delimit the boundaries of the non-reflexive model and will also be a starting point for the discussion on Realism in the next section. Van Inwagen argues that our reference to artifacts is not grounded on real entities. The problem of collocation in relation to artifacts—that is, the alleged impossibility of an artifact and another object to occupy the same spatiotemporal location—leads him to deny ontological status to artifacts. To illustrate his view, he imagines the building of a fort with sand in the desert, which should make it manifest that through the mere reshaping of pre-existing material we are not bringing any new entity into existence. In building such an object, we have only "rearranged the furniture of earth without adding to it" (1990: 124). Artifactual kinds share for him this logic of rearrangement, according to which artisans merely "rearrange objects in space and cause bonding relations to begin to hold or to cease to hold." For him, there are strictly speaking no artifacts (considered as real entities) and correspondingly there are no true philosophical questions about them (1990: 127-128). The language about artifacts should be reduced to language about "simples" (elementary particles, living organisms, and abstract objects). If we still want to refer to these entities, we should use expressions such as "chairwise" or "housewise" (simples arranged like a chair, a house etc.).

Following a similar non-reflexive orientation, Wiggins (2001) examines the possible application on the technical field of the criteria used to identify natural kinds. Adopting an Aristotelian view, he enumerates the conditions for distinguishing between natural and artifactual kinds (2001: 88-92). One of these is having a "principle of activity," by which he means "law-like norms of starting to exist, existing, and ceasing to exist by reference to which questions of the identity and persistence (...) can be arbitrated" (Wiggins 2001: 83). Since there are no such common laws governing the behavior of artifactual kinds, one cannot say that they are

real kinds. Furthermore, the notion that their identity is determined conventionally implies that artifacts are not mind-independent, which is another central condition for being a real kind.

This brief sketch should make it clear that although Wiggins and van Inwagen put forward different views, both share the traditional Aristotelian notion that denies artifacts ontological status as real substances, and their view should be included in the field of "anti-Realism" (Soavi 2009). We believe that their main deficit lies in their non-reflexive approach. This approach can be generalized in a non-reflexive model, whose central theoretical perspective can be described as follows: it is *justified, possible* and even *necessary* to take distance from reality in order to build up either distinction criteria for ontological kinds or just an inventory of the objects in the world.

It is *justified* because every object submitted to theoretical contemplation consists in a set of particles—often called "simples"— such as the ones described by the natural sciences; consequently, the task of describing the relationship between particles and persons is at least irrelevant. At the same time, this distance is *possible*, since the theoretician is able to avoid the consideration of his own situation in the task of making the most suitable description of his objects (although he may actually concede that this distance has in fact no existence, for every individual and every culture projects a concept of reality on the objects around). Finally, this distance is *necessary* because the theoretician making the description or the inventory should not taint them with his subjective traits. The intentional stance toward objects has no "ontological effect" at all, according to this model; thus, the distance taken turns, in a natural way, into the philosophical views of Reductionism or Eliminativism. As we have seen, in its most extreme versions this non-reflexive ontology claims that actually there are no genuine philosophical problems about artifacts, since artifacts do not belong in our ontology (van Inwagen 1990).

In opposition to the non-reflexive ontologies, we think it possible to conceive another kind of realist ontology, which would admit at least some intentional creations as part of its network. The reflexive ontology that we put forward starts with the fact—pointed out by Davidson among others—that we are not able to distance ourselves from our own conceptual scheme in order to describe reality as it is; that is, it considers from the onset the ontological relevance of the relationship between objects and persons, or, more specifically, between entities and the agents that produce, construe or understand them [7].

We mention Davidson's thesis (in a simplified version) only to relate it to the realm of artifacts. We do not pretend to approach the complex issue whether natural kinds can be properly dealt with a non-reflexive ontology; rather, our aim is to deal with issues concerning artifactual kinds.

However, for the authors included in the model of a reflexive ontology, there is a wide agreement on the idea that the natural world is dealt with properly within the natural sciences in a non-reflexive way; they believe that the natural sciences are able to depict the reality of natural kinds such as it is. It is not clear if this point of view comes either from a philosophical conviction or from a concession to naïve Realism, Scientism, or the metaphysics implied in the theories of direct reference. This concession would have the purpose not only of simplifying the discussion, but of making more plausible the idea that, in a different or more restricted field—that of technical inventions—things could be different [8].

Anyway, the reflexive relationship that we have mentioned has clear ontological implications in the case of artifacts. The answer to the question "what is a knife?" asked in an everyday context will necessarily include the notion that it is "an object *used for*..." Any answer not including the specification of the intended function (for example, an answer that merely describes the form or the structure of knives, or their cultural meaning) will be insufficient to the average speaker. The clause "it is used for" leads to intentional agents and intentions in general, no matter which way the latter are interpreted—whether individually or socially, linguistically articulated or not. In short, if someone does not understand the relevant intentional context, then he will not be able to answer properly an ontological question as the one just asked. The need to understand relevant aspects of the human dimension as a requisite to identify real entities reveals a hermeneutic feature of everyday ontology.

It is also possible to think other examples. A handbrake (of a car) is an intention-dependent object, an object comprising a set of properties determined by the design of intentional agents. This object is also ontologically determined by its different uses, by the different functional attributions that it supports, and by the multiple social meanings it refers to. In a post-apocalyptic world with no intentional beings, or in a culture radically different from ours, a handbrake would lose these intentional properties up to the point that it would be a mistake to use the same name for it as before; it would not be the same object.

Our consideration on the intentional objects as respectable entities (from an ontological point of view) suggests that we are dealing not only with the insertion of new entities into the ontology, but also with the inclusion of a *new relationship*, one between entities and persons (in their various roles as agents, producers, interpreters, and so on). This new relationship supplies the framework for the "insertion" of new entities, and it is the main reason why we call it a "reflexive" ontology.

Its reflexive nature has two levels, both sharing the assumption that in order to identify ordinary objects—and, more specifically, artifacts—one must be able to understand the human world. A closer examination of the

theoretical stance here involved shows that this assumption can take either an adequate or an inadequate form (represented by the first and the second reflexive levels, respectively).

In the first level, the theoretician introduces reflexivity in the sphere of action that he analyzes, distancing himself from his object of study. He depicts what takes place in the human sphere of action, yet limits himself to a depiction of certain conditions for understanding artifacts taken as a "human need": the need to admit normative properties as if they were part of the reality involved in the dealings with the world. As the theoretician remains outside the reflexive stance, this level is not complete. The stance is concerned only with the relationship between agents and objects inside the depicted human sphere. The fundamental assumption here comes from the traditional sense of "theory" as a distanced, as it were "from nowhere," contemplation of the objects under study. The result of such a stance is twofold: (1) this level may be criticized from the perspective of a realist position in the traditional sense, and (2) the position of the theoretician can be shown to be contradictory (which helps answering the critique of point (1).

A brief explanation of these points must be given. (1) A realist, non-reflexive, objection may argue that the ontologist is not forced to share the view of the agents involved in the depicted field of action. What the agents in this field consider as real artifactual kinds can be judged by the theoretician as mere conceptual "projections" of those who are taking part in the sphere. He might assume that the intentional relation is relevant *for them* to understand artifacts, but he might at the same time deny that this relation is ontologically relevant in an absolute sense, since it is not relevant at least for himself.

(2) Is it possible to assume this stance? We do not believe so. In order to understand the relation between agents and artifacts, his primary object of study, the theoretician must be able to identify both poles of the relationship, which includes the identification of artifacts. In order to perform this latter task, he also must be able to understand the intentions and concepts that are relevant to define the corresponding artifactual kinds. This means that he must be able to understand the relevant concepts and intentions, as it were, from the inside: to share the same view of the agents depicted, as if he were one of these agents himself. Without that same view, he would not be able to tell artifacts from natural objects. These requirements amount to a full-fledged reflexive stance or, to put it in our terms, to a second reflexive level. An absolute distance between theory and its object is here impossible. This level includes not only the relation between agents and artifacts, but also the relation between the theoretician that aims at understanding this relation and the concepts involved.

Further, some central objective properties of artifacts are apprehended only through praxis by means of conceptions of the form "this object could be used for." This stance requires that the agent imagine for what purpose the object could be used and in what ways he can have an active interaction with it, that is, the ways he could manipulate it concretely. To understand an artifact such as a hammer, one must be able to represent the set of relationships in which one could be actively involved. This does not imply that the theoretician has an epistemic privilege over users or makers of artifacts; his aim is to reconstruct knowledge about objects that accompanies everyday praxis. A reflexive ontology does not pretend to impose a view on the everyday notion of artifacts; it only attempts to show how certain objects are understood, and which theoretical directions are not adequate.

Many are the advantages of our reflexive stance. First, from this viewpoint it makes sense to conceive intention-dependent objects, something that is not possible in the non-reflexive models, within whose framework only natural kinds can be thought of. Second, it permits the understanding of normative facts and normative concepts in general, whereas a non-reflexive view makes this understanding difficult. Third, this ontology has a practical nature. The Aristotelian project of contemplating the objects of the world from a distance is inadequate, because contemplation is also a way of acting or engaging in the world, and since we are surrounded by objects that are what they are just because we do what we do with them, then the very existence of these objects depends on our faculties to create and act.

This implies recognizing the relevance of the practical human dimension, something that Heidegger conceives as the dimension of the *Dasein's* care (*die Sorge*), that is, the domain of a primary and non-derivative relationship with the things that are "ready at hand" (*das Zuhandensein*) (Heidegger 2006: § 15-16). For him, the "in order to" (*Wozu*) in a meaningful context is precisely, and in the first place, that which gives sense and ontological concreteness to the entities in the world. The role of the practical agent—the *Dasein*—in an intentional description has thus a central place, since it does not refer to an isolated subject that contemplates the world but to a subject involved in some praxis and primarily related to a set of technical objects or tools at hand.

The philosophy of *Sein und Zeit* articulates the hermeneutical and reflexive nature of the view we are supporting with great insight and from the onset, since it makes manifest that the relation between agents and artifacts has ontological relevance. The notion of *Dasein* makes it clear, even more than the reflexive views of Baker or Thomasson, that the individual is part of a net of practical relations. There is no isolated individual,

with no practical interests, lying outside this practical net where artifacts play a central role—as the modern worldview pretended.

Mirroring this Heideggerian insight, Baker claims that we know "about ordinary things firsthand: we encounter them, we manufacture them, and we interact with them. Our knowledge of collections of simple or fundamental particles is much more meager, and much more distant, than is our knowledge of ordinary things" (Baker 2007: 9). In other words, in everyday life the *Dasein* is engaged in activities that take place in a world understood as a horizon of intelligibility and object individuation. Here the double meaning of the reference (*Verweisung*) in the field of tools—to use the Heideggerian terminology—becomes clear: one sense refers to the means/end relationship, whereas the other refers to the tool/tool relationship in the background of an "equipmental whole" (*Zeugganzheit*) (Tugendhat 2001). In this latter sense, the pen refers to the paper and the paper to the desk; this set of things makes up a whole, which as a system pre-exists any use of its constituents. This way, each artifact is related to others, each one is included in a context of intentional objects—one could say that each one of them presupposes its context in a practical way. Consequently, the Heideggerian notion of *Zeugganzheit* helps to characterize a richer conception of reality, a conception that—as we have pointed out—presupposes human praxis.

In the same spirit, the introduction of the ordinary viewpoint in the elaboration of a concept of reality that includes artifacts has a similar purpose. It seeks to overcome the schizoid picture of the individual emerging from non-reflexive ontologies, that is, a picture of the individual as having an authentic relationship with natural objects (whose nature is independent of intention) rather than a merely illusory interaction with the intentional and cultural creations.

III. TOWARDS A REFLEXIVE *REALISM*

In the preceding section, we have discussed the reflexive nature of an ontology in which artifacts and the ordinary world of objects can be properly described. In this section we shall defend the thesis that this framework is a *realist* one, in a sense that will be delineated in the course of the discussion (the main positions to be discussed are represented in table 1).

Our opening claim now is that, in order to build up an ontology of everyday objects, one needs something broader than a restricted definition of reality such as "real is everything that does not depend on the human opinions, conceptions and/or intentions." The latter notion, which is unquestionably assumed by the non-reflexive ontologies, is a consequence of the principle that our language and our thought can only have

an informative/descriptive role with respect to reality, never a *constitutive* one [9]. As we have seen, Wiggins and van Inwagen represent two paradigmatic ways of understanding "real" in these terms. A closer look at their non-reflexive ontologies yields, however, an important difference between Reductionism and Eliminativism (Soavi 2009). Reductivists, like Devitt and Wiggins, accept that objects such as hammers and chairs are real physical objects. "Being a hammer" or "being a chair" are properties equivalent to "having been born in 2007," that is, they are real properties that are accidental with respect to the nature of the objects having these properties. Eliminativists such as van Inwagen and Merricks, by contrast, radicalize the non-reflexive stance by way of rejecting the very existence of those material objects identified as chairs and hammers. The only things they include in the ontology are particles, particles properties and the relations among them.

In addition to its distorted and bizarre picture of everyday experience, Eliminativism is not able to justify our everyday practices, which involve ordinary objects. As Baker states, whereas we have synchronic and diachronic criteria of identity for the most part of everyday objects, we do not have comparable serviceable criteria to identity the collections of particles supposed to coincide with these manifest objects (Baker 2007: 6). More generally, both Eliminativism and Reductionism avoid any reference to intentionality as constitutive of certain objects, and they are both incapable of explaining the normative fact that pervades the human *Lebenswelt*, an explanation which we consider a *desideratum* of any adequate and complete ontology. They leave the agent-object relation unexplained, offering a non-reflexive ontological account suitable for the natural kinds, yet incapable of giving a plausible account for the existence of the created and artificial kinds.

A common assumption of non-reflexive ontologies such as these is that they seem to understand "mind-dependent" as "subjective," considering "subjective" as that which is optional and would depend, in the end, on human will. However, as Baker states, this characterization is not acceptable since it does not grasp the reality of created kinds (Baker 2007). Even though it is true that building a highway is optional and depends on the human will, it is also true that: (a) This task requires an amount of materials whose properties and dispositions are in fact independent of the users mind (this way, a mere piece of wood is incapable of generating electricity or capturing radio waves, facts which cannot be changed by anybody at will); (b) The very design restricts the options available to the designer (for example, the computer designer must exclude inconsistent designs such as the ones violating certain logical or mathematical rules that govern his task), and (c) Once the artifact is built up, it acquires a reality that is not

modifiable at will (one cannot change at will the essential properties of the object commonly identified as a table or a handbrake).

This shows that the intentional constitution of entities such as artifacts does not imply at all that the constituted things have a merely "subjective" nature. It is necessary to understand "real" not simply as that sphere which is there, in front of us, or from which we can distance ourselves in order to understand it properly (Baker 2007:47). The admission into the ontology of intention-dependent entities such as artifacts implies thinking on new objects, specially the countless ones of everyday life, which contribute to our practical and ordinary sense of reality. As Thomasson puts it,

> just as we do not need to maintain that all entities are belief-independent to maintain a general thesis of Realism, so we need not conceive of institutional and artifactual kinds as existing and having their natures entirely independently of all beliefs in order to treat them ontologically seriously, as more than mere phantasms or mental constructions (in the way that all kinds are, according to the idealist or constructivist) (Thomasson 2003: 605).

Following another argumentative strategy, which amounts to an indirect defense of a reflexive ontology in our sense, we will now present the absurd or undesired results (for common sense as well as for scientific praxis) of a non-reflexive ontology. An ontology of this kind—and its notion of "real"—implies among others the following assumptions:

— An ontological impoverishment, since this ontology leaves aside an intolerable amount of entities that are spontaneously considered as real, not only by our everyday praxis but also by scientific praxis (both in its more spontaneous contexts and in the more institutionalized or regulated ones).

— An impoverishment of our understanding of the human praxis, since in the context of such an ontology it is not possible to think of everyday and scientific praxis as mediated through language (understood as an inter-subjective praxis) and through the admission of intentional entities. In other words, without the admission of intention-dependent entities, a great part of human action would lose its meaning. We would even lose the identification criteria of a variety of human actions: how could one describe correctly the action of hammering without assuming that hammers (that is, objects identified by means of certain functions) are real objects?

—An impoverishment of the scientific language, which becomes at least a hindrance to scientific praxis, since a strict application of such a model would result in science losing the language that facilitates the access to theory. Natural sciences require, among other practical conditions, the use of instruments, that is, a set of technical means (for instance, in a labora-

tory, microscopes, Petrie dishes, autoclaves, and so forth). Besides the practical hindrance mentioned above, it is a debatable question—which we leave open—whether the ontological commitments implied in the very use of these instruments can or cannot be rejected once they have served their functions. In the case of human sciences, the very object of analysis—human conduct, history, and so on—is permeated by intentionality.

Finally, a central epistemological notion that strengthens the Realism of reflexive ontology is the idea of learning in the sense of Millikan, who links it to the notion of substance. Our ontological model approaches artifacts as "substances," that is, it considers them as kinds from which one can gather information at different times as a result of a real connection, since there is an *ontological* ground (Millikan 2000). The possession of a substance concept ("corkscrew," for example) makes it possible to add knowledge in each new encounter with the same substance. From Millikan's perspective, artifacts would be "real" kinds, since learning from them has a real ground. The inductive potential associated with a kind is thus no mere accident.

The basic fact that we are stressing here is that it is possible to learn from artifacts, and that this learning is about objective properties. Although the designer (in a wide sense that we need not define at this point) cannot learn from what he creates, the users can always add new data in each encounter with the same artifact or with other tokens of the same kind of artifact (Thomasson 2007). There are a variety of artifactual properties from which one can obtain knowledge: physical and chemical properties, other properties related to the artifacts meaning (if one considers artifacts as social signs, one can learn about their symbolic social status or their role in certain rituals), and the functional properties (proper or accidental) that can be actually realized. Some of these properties are independent from the users that learn about them. This strengthens our thesis that these entities are the way they are, and have the properties they have, independently of their being known or not.

At this point, it must be stressed that the learning of artifactual kinds is not constrained to the same conditions as those of learning of natural kinds. Our knowledge of the latter (for example, of the kind "gold") might be completely mistaken, but this would have no effect on the independent nature of that kind. On the contrary, in the artifactual field, where the intentional creations have an "author," one must admit that some agents—the designers, or eventually the users that assume the role of re-designers (cf. Houkes 2008)—have an "epistemic privilege." In other terms, there is at least an essential asymmetry between any user of an artifact and its creator or intentional designer, in the sense that the latter is preserved from being entirely mistaken about what he has created, even if one acknowledges that the design—or the artifact concept—is the result of a

complex creative process (Vega and Lawler, forthcoming). As a consequence, the agents involved in the original design of a *successfully* created artifact *know* what they have created; one could not say the same in the case of a brand new user or somebody that simply meets an artifact without knowing its proper function [10].

It is important to differentiate our position from those views that can be labeled as "reflexive anti-Realism," which deny reality to technical objects but consider the relation between agents and objects as relevant. Sellars (1963), for instance, believes that artifacts are "manifest images," that is, they are nothing but projections made by people on different materials, which in themselves include no artifacts. As a result, this kind of anti-realist Projectivism stands in opposition to Eliminativism/Reductionism.

However, the notion of "projection" forwards a wrong way to understand artifacts, for they are neither merely physical objects nor merely human projections. It is true that our intentional stance contributes, from an ontological perspective, to the existence of intention-dependent objects: screwdrivers, flags, and churches are just the kind of objects that could not exist without the existence of beings with intentional attitudes. Concerning these artifactual kinds, Thomasson affirms, "the concepts of those who *create and sustain* the kinds (not of speakers) are *constitutive* of the natures of the kinds available for reference" (2007: 65). Even so, this avowed conscience-dependence does not mean that they are mere projections or that "magic ways" of creation are summoned. Artifacts are different from mere projections, as they transcend every given act of consciousness; also, because they are solidly established objects, spatio-temporally founded on physical objects that are external to them—the flag on a piece of cloth, the church on a set of bricks and cement (Thomasson 2005: 135).

The defense of a reflexive ontology that admits intentional entities should not be considered an "idealizing leap" that would associate the mere possession of a concept with the emergence of an authentic entity. Mere thinking does not bring new entities into existence. Likewise, it is impossible that the physical spatio-temporal properties of an object be altered by an act of thinking. The creation of new objects in the field of artifacts occurs only under certain restricted conditions: conventions, social rules, and preexistent materials (Baker 2007: 44-46). It is our practices and conventions—a social crystallization of our intentions—that make a piece of wood a table, and another piece of wood with the same physical and chemical properties a work of art, or simply firewood. A designer is not a demiurge capable of creating *ex nihilo*: he operates within a specific field of possibilities, materially as well as culturally determined; he acts within a particular tradition, in a context of local interests that partially shape the symbolic and physical structure of his artifactual creations.

This argument shows that a radical intentionalist position about artifact creation is untenable: concepts are nothing if they are not materially realized. First, one needs a physical and functional structure; then, one must be able to explain how this structure partially depends on concepts and intentions. This is not possible when the technical ideas have not been successfully realized in some concrete artifact (Vega 2007). Consequently, mere technical ideas—such as Da Vinci's inventions or the hundreds of extraordinary machines that populated the "invention books" at the beginning of the Modern Age—cannot be considered authentic artifacts (Basalla 1988). A necessary condition to claim legitimately that some artifact exists is the very existence of at least one concrete token of that artifactual kind that has, at least once, properly fulfilled its function. Concrete instantiation and effectiveness are then necessary conditions to legitimately speak of an artifactual kind, even when the kind in question consists in only one exemplar. Artifactual kinds are, precisely, usually expressed by success terms: the identification procedure of an artifact implies that at least one referent has been successfully used, at least once, for its intended function. As Franssen states, "we can hardly conceive of the existence of an artifact kind *K* if there are no objects having the physical properties that allow them to be used for *K-ing*" (2009: 939).

Our view diverges here from the one put forward by Thomasson; unlike her, we deem it necessary to stress the material constrictions in the process of technical creation. Not every conceptual creation is realized in a new artifactual kind, and the limits of conceptual imagination and creation are bound by tradition and natural laws governing matter. Although Thomasson rightly concedes ontological status to artifacts, she avoids alluding directly to such restrictions, which turns out into a somewhat abstract model of technical authorship. As Simondon (2006: 60 ff.) has emphasized, only from the distant and illusory standpoint of a demiurgic author, can one think that matter is absolutely malleable, that can be completely subjected to an arbitrary will. An intentionalist theory of technical creation must take these facts into account.

V. CONCLUDING REMARKS

Through the discussion of some central ideas in the contemporary debate on the ontology of artifacts, this paper aims at outlining the most important aspects of a reflexive and realist view as a better position from which to explain certain products of human intentional practice: artifacts. Our reconstruction and internal critique of the conceptual context put forward by authors such as Baker and Thomasson has shown certain limits and difficulties for the non-reflexive ontologies and, at the same time, the

advantages of a reflexive ontology that permits the inclusion of intention-dependent objects.

Among other points, we have developed this ontological project in the following two directions: the specification of two levels of reflection and the focus on the limitations that the material imposes on the technical creation. Far from intending to reject the project of Baker and Thomasson altogether, these arguments seek to expand their view, especially by stressing its reflexive character. We believe that normativity, which is constitutive of artifacts functions, can be adequately explained only from a reflexive standpoint, whose Realism need not—and should not—be submitted to the traditional standards of the natural kinds.

NOTES

1 Some may think that Hilpinen's definition of artifacts (followed by Thomasson) cannot be applied to *bioartifacts* such as cereals or domestic animals, that is, to organisms with delimited functions that are the product of an artificial selection process. However, this is only the case if one takes into account the particular conditions added by Hilpinen (in 1992; 1993) since they allude, to put it briefly, to a recognition moment and a detection of certain intended features in the structure of the created object. The general definition of artifact —an object that has been intentionally made or produced for a certain purpose—does not *per se* give rise to such an objection.

2 Although there are a variety of positions regarding the question of artifactual functions—such as intentionalist and reproductivist perspectives—we assume that the pluralistic approach put forward by Preston, which is not our aim to discuss in detail, can properly illuminate ontological and epistemological issues.

3 Certain works from contemporary art reinforce the ontological relevance of the notion of a technical proper function. In the famous *ready-made* "Fountain" (Duchamp, 1917), it becomes evident that when the urinal was placed in a museum, it was intentionally stripped of its usual function as determined by its design. By changing the context where the urinal was placed, Duchamp showed the relative character and the institutional genesis of the division between a work of art and a functional object. It is clear that without having certain pre-understanding concerning the "proper" uses of a urinal, this kind of esthetic experiment would have not succeeded or at least it would not have gained so much attention.

4 Naturally, this is not the case when natural scientists name different parts or organs of animals and plants; in this field it is possible to project proper functions and to distinguish them from the accidental ones.

5 Other non-reflexive positions are those of D. Lewis (1991) and Merricks (2001: 40-42), which are not described here for reasons of space.

6 The sketched classification do not pretend to be exhaustive.

7 A subcategory of non-reflexive ontology that does include artifacts within the realm of reality is presented by Elder (2007). However, his approach puts forward an identification procedure of distinctive notes, which is inspired in the typical procedure for identifying natural kinds and pays no attention to the intentional dependence of these objects. Similarly, Denkel (1995) justifies the reality of artifacts with a realist model typical of the natural kinds (see Table 1).

8 In different terms, Soavi (2009) makes it manifest that a certain amount of reflexivity belongs also to the natural kinds. She criticizes Wiggins thesis that the identity conditions of the natural kinds can be established by means of non-conventional ways exclusively. Questions like when a lake or a volcano ceases to exist, for example, cannot only be settled by scientific empirical research but also need conventional decisions. Since conventional decisions can be found both in natural and created kinds, their presence is of no help to define artifactual kind as opposed to the natural ones.

9 In an epistemological dimension that goes beyond this paper, this view was articulated by Lakoff as "Objectivism," that is, the position holding that no true fact can depend on people's beliefs, knowledge and concepts (of this fact) (Lakoff 1987: 164). As an example of this standpoint, Ernest Sosa maintains that the metaphysical realist is engaged with the idea that there exists "an

in-itself reality independent of our minds and even of our existence, and that we can talk about such reality and its constituents by virtue of correspondence relations between our language (and/or our minds), on the one hand, and things-in-themselves and their intrinsic properties (including their relations), on the other" (Sosa 1993: 609). Theodore Sider, another supporter of this standpoint, holds that what exists cannot depend on human activity at all (Sider 2002: 156-157; see also Zimmerman 2002).

10 Simondon (1969) approaches this constitutive asymmetry between the author/designer and the user showing the distance between "adult knowledge" (of the designer) and "child knowledge" (restricted to the mere recognition of the artifact's output).

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