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PICTURES, CONTENT, AND NORMATIVITY: THE SEMANTIC OF GRAPHIC RULES[1]

abstract

In our daily lives, we can find that different kinds of representational media are employed in normative ways, to express different kinds of rules. Sometimes, this is overlooked by the primacy of discursive representations in our normative practices. However, a look into these practices often shows that they are more complex and richer, and particularly that they include more than one kind of representation. Regarding this, this paper will be focused on the capacity and limitations of different kinds of representational media to express normative contents, that is, to express the content of rules.

keywords

correction conditions, nonlinguistic representation, deontic pictures, instrumental maps

1. Introduction

We commonly create and employ different forms of representations, such as languages, diagrams, pictures, graphics, maps, and so on. These representational media are used to store and retrieve information in very different ways, which are alternatively selected according to different purposes, and different balances of cost and benefits.

Despite the differences in how they are related to the world, representational media of different kinds often coexist and interact with each other to satisfy a common goal. Also, they can be part of our cognitive, theoretical, and practical activities. So, for example, a seating chart provides information about the spatial relations of seats in a room, by representing seats in rows, and their relations to corridors and the stage. Also, representations can be used in a directive way: the seating chart zoning maps can establish the green areas of a neighborhood; we can use a tube map to plan our journey, and also to *tell* someone the instructions to go from one place to another; we can use a seating chart to locate our seat in a theatre; architects use 3-D models as instructions for building a house, and scientific discourse can be seen as instructions for making models (Harre, 2002).[1] Similarly, researchers from different fields explain the interaction between our perceptions and beliefs in terms of relations between iconic and sentential representations (Heck, 2007).

On the one hand, these examples show that there are promiscuous interactions between representations of different formats, such as relations from sentences to pictures, from maps to sentences and practical activities, from graphics to actions, from models to things in the world, and so on. On the other hand, they illustrate that both, pictorial as well as sentential forms of representation, can be employed in several ways, i. e., in an informative or descriptive way – by representing the world as it is – as well as in a directive or normative way, by fixing the conditions that the world has to attain. Moreover, many times, representations might play a descriptive and a normative role simultaneously (Millikan, 1995).

In this paper, I do not want to evaluate whether pictures play normative functions. In contrast, I assume that in our daily lives there are plenty of interesting examples of pictures that can be employed in normative ways to express different kinds of rules (Moroni and Lorini, 2016).

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1 Harre emphasizes the normative role of theories: "Theoretical discourse is not, in the first instance, an attempt (hazardous and underdetermined) to describe aspects of the natural world that we cannot perceive, such as the dance of the molecules or the interior of black holes and so on, but as instructions for making models of them. The kinetic theory of gases, thus read, appears as a set of instructions for making a progressive sequence of models of gases such that the behavior of samples of gas is simulated by the behavior of the model." (Harre, 2002, p. 48)

Sometimes, this is something overlooked due to a philosophical bias that favors the primacy of discursive representations in our normative practices (Brandom, 2000). However, a look into these practices shows that they are often more complex and richer and that they include more than one kind of representation. As Moroni and Lorini (2016) have shown, there are examples of drawing that express deontic, constitutive, and technical rules.

By saying that different kinds of representational media have the capacity for expressing rules, I do not want to say that a representation is intrinsically normative or intrinsically descriptive. On the contrary, whether a representation expresses a rule depends on its function in a specific context. In this respect, the same representation can be used both normatively and descriptively. Similarly, when saying that a representation has normative content, I mean that the representation is used normatively to express the content of a rule. So, by normative content of representation I will refer to the content of a rule expressed by the representation. As I see it, there should be pragmatic reasons to say whether a representation has a normative function, which relies upon its use in certain contexts, upon being under the effect of current practices and conventions, and so on. However, whereas the role of a representation may depend on Pragmatics, that is, on its function in particular contexts, how a representation expresses a content deeply depends on its representational structure.

Particularly, this paper is focused on the capacity of different kinds of representational media to express normative contents, that is, to express the content of rules, assuming that they do. I will focus particularly on some examples of pictures, maps, and diagrams, which are used in normative ways. I will analyze how they are structured, to evaluate their semantic properties to express normative contents. This issue must be distinguished from the problem of the normativity of meaning, i. e., the problem of semantic or linguistic norms (Kripke, 1981). Also, it must be distinguished from the problem of the determination of the content of norms – individually or communally – as well as from the metaphysical question about the ontology of norms – whether they belong to a third realm or they are barely social entities.

I am interested, instead, in the representation of norms; particularly, in the capacity of representational means of different kinds to express normative contents. Of course, not every rule is explicitly represented. Most of them are implicit in social practices. But some of them are crystallized in legal documents, advertisements, street signs and signals, brochures, user manuals, apps, and so on, employing heterogeneous but interactive representational media. In between, I am interested in the sort of normative content that can be transmitted by non-linguistic representational formats. So, with independence of what rules are, and how they are determined, I will explore the limitations and possibilities of non-linguistic representations to express different kinds of normative contents.

Thus, in the following section, I will present some general considerations regarding the phenomenon of normativity. Then, I will introduce Moroni and Lorini's distinction between descriptive and normative graphic representations. In the third section, I will articulate this distinction with the view that representational media can be distinguished according to different sorts of isomorphism between the representational media and what it represents, which in turn determine their satisfaction conditions. However, the satisfaction conditions, thus understood, not always reflect the normative structure of graphical rules. I will go through this hypothesis by exploring different examples of graphic rules, particularly, deontic pictures, Form-based codes, travel maps, and seating charts, to provide an analysis of different ways in which the satisfaction conditions of the content of such representational formats relate to the correction conditions of the rule expressed by those representations.

2.
Representational media and normative content

The phenomena of normativity is certainly complex. Rules determine what is correct or incorrect. Also, they have a more or less defined scope of application. What falls under this scope is what is relevant to the rule (Giromini, 2019). Also, rules have a projective dimension: they determine what is correct or incorrect within a relevant extension that includes considered as well as unconsidered cases (Peregrin, 2016; Satne, 2005). So, for instance,

(1) "Children have the right to education"

runs for every child regardless of gender, race, ethnicity, nationality, religion, disability, parentage, sexual orientation or other status. So, the scope of the rule includes persons under the age of 18, regardless of other aspects. Other rules have more unstable scopes, such as the following inscription at the entrance of a playground:

(2) "Only adults with children",

In this case, adults riding on the bike path do not fall under the scope of the rule. The rule is directed to adults entering the playground.[2] But rules are not purely extensional; on the contrary, they are supposed to govern some specific aspects of the relevant extension. Within the domain of what is relevant to the rule, it must be considered what is correct or incorrect. So, excluding your child from school is forbidden regarding (1), and getting into the playground with your child is allowed regarding (2).

Here, I will assume that pictures, maps, and diagrams can also be used in normative ways.[3] According to Moroni and Lorini (2016), pictures, diagrams, and maps can be employed as deontic artifacts, to regulate further behaviors in terms of forbidden, permitted, and obligatory. Also, they can be used as instructions that determines what to do to achieve a particular goal, that is, as expressing technical rules. Finally, some of them can be used to express constitutive rules, creating new entities, such as maps that define countries and their edges.

Moroni and Lorini (2016) suggest to distinguish descriptive from normative use of graphic representations according to the direction of fit:

> In the case of descriptive drawings, the direction of fit goes from the drawings to the world. It is a drawing-to-world direction of fit: the drawings must "correspond" to the world. A geographical map that does not correctly reproduce the geographical

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2   This case endorses a particular relation between the sign and the place where it is located. See Lorini and Loddo (2017) for the indexical character of signs like these.

3   Here, I am using Moroni and Lorini's typology for normative drawings in virtue of expressing different kinds of rules. According to this typology, there are three fundamental types of normative drawings: *(i) deontic (or regulative or directive) drawings*, *(ii) constitutive drawings, and (iii) technical drawings* (Moroni & Lorini, 2016, p. 8). Deontic drawings are those drawings that express deontic rules, that is, "those graphic rules that 'regulate antecedently or independently existing forms of behavior'. Those rules signal to people what they can or cannot, must or must not, do in certain places (Searle, 1969: 33)". Traffic signs illustrate this kind of rule. Constitutive drawings "are those drawings that express constitutive rules, i.e. rules that, ..., in one or another sense 'give rise' to, or 'create', new things, mainly, new social (legal, cultural ...) things" (Żełaniec, 2013). Constitutive graphic rules do not produce an event by exerting "pressure" on an individual's behavior (i.e. there is no recipient who either must or can conform to the instruction); instead, they alone produce the desired effect, which is their purpose and *content*: such signs are ends in themselves at the moment when they are created (Carcaterra, 1974)." *Technical drawings express graphic rules* which "are those graphic rules that prescribe behaviors so that the aims of the agent can be achieved". Thus, technical drawings "prescribe a behavior not in itself but as the condition for achievement of a possible end" (p. 9).

area which it represents (i.e. the elements of that area which it represents) must be incorrect.
In the case of normative drawings, instead, the direction of fit is the reverse: it is a world-to drawing direction of fit. It is the world that must "correspond" to the drawings, as in the case of a land-use plan.

Thus, in the case of descriptive representations, the direction of fit goes from the representation to the world: in this case, the representation must correspond to the world. When the representation is normative, the direction of fit goes in the opposite direction, from the world to the representation. So, in this case, the world has to be accommodated to the representation. In the next section, I will push some of these ideas further, to explore the capacity of representational media of different kinds to express normative contents.

Despite the varieties of representational media and their pervasive presence in our daily practices, theorists often tend to emphasize or smooth their differences from linguistic systems. In the first group, the full range of pictures, maps and diagrams are conceived under the model of iconic or pictorial representation. While, on the second group, complex representations – such as diagrams and maps – are conceived as a kind of linguistic representation. In both cases, the assumption is the existence of a sharp dichotomy between iconic and sentential systems (Fodor 2007, 2008), which overlooks the spectrum of representational media and their impact on our practices. Hereafter, in contrast, I will assume a gradualist perspective which states that pictorial and sentential media can be distinguished according to differences of degrees.

3. The content of graphical rules

Particularly, I will motivate the view that representational systems can be distinguished according to different sorts of isomorphism. Based on this view, I will analyze the capacity of different kinds of representational media to express normative content. In other words, I will analyze how pictures, maps, and diagrams can play a normative role in the context of some social practices. To do that, I will be focused on their representational structure, and their capacity to express correction conditions according to different kinds of rules.
According to this view, representational systems obey isomorphic relations. This perspective can be traced back to Wittgenstein's picture theory. According to this theory, the logic structure of language reflects the structure of the world, and particularly, the predicative structure of language mirrors the metaphysical relations between properties and instances (Wittgenstein, 1921). But language is on the top of abstract isomorphic relations, other representational formats exhibit isomorphic relations with different degrees of abstraction (Camp, 2007; Shea, 2014). In the following section, it will appear that the more abstract the isomorphism between the representational medium and the world, the larger is the space for arbitrary symbols and conventions.
Whereas language is on the top, pictures are at the bottom of the isomorphic representations. According to Camp (2007, p. 156), pictures exploit a direct isomorphism: each discernible part of an image – points, lines, and regions – replicates the visual appearance of the corresponding point or region represented. Fodor (2008) has argued that since each part of a picture has the same syntactic and semantic function than any other, pictures lack logical form. This means that they cannot be analyzed in terms of logical structure. However, we can take the characterization of the isomorphism provided above to sketch the satisfaction conditions for pictures: a picture is accurate in case of variance in color, light, and shapes, mirrors variance in color, light, and shapes of the represented scene.
Thus, if we distinguish descriptive from normative pictures according to the direction of fit, as suggested by Moroni and Lorini (2016), we can change the direction of fit of the satisfaction

conditions of pictures sketched above, and propose a world-to-drawing direction to determine what counts as correct or incorrect. Then, we could say that a scene is correct according to a rule, R, in case of variance in color, light, and shapes, mirrors variance in color, light, and shapes of the picture. However, I want to argue that whereas a world-to-drawing direction of fit can be considered as a necessary condition for normative pictures, the correction conditions of the normative content do not match with the satisfaction conditions of the representational content, at least as they have been stated above.[4] To do that, in what follows, I will analyze some examples of normative pictures.

3.1. Deontic pictures

Interesting examples of normative pictures can be found in old (and not so old!) magazines, which were used to inculcate housewives' manners and their role in a house. Nowadays, these drawings give us an idea of the ideal of women at that time, but then they were used to impose that ideal on women and regulate their behavior. So, we might say that they function as a sort of deontic artifact. Let us see the following picture (figure 1).

Figure 1: from *The Good Wives' Guide* (1953).

Among other things, the image suggests that a good wife belongs to her house and that she is responsible for housekeeping, and happily and submissively accept that duty. Let us assume that something like that is the normative content of the image. Now, do analyzes in terms of the satisfaction conditions formulated above help? In other words, do analyzes in terms of variations of color, light, and shape, provide the correction conditions for the rule that the picture is supposed to express? Let us consider another example.

3.2. Legal graphics

According to Moroni and Lorini (2016), visual representations are also employed in normative ways in legal documents. Particularly, they have focused on graphics that are part of Form-based codes (FBC), from New Urbanism trends in development, that constitute instances of normative drawings (see Figure 3). FBCs are tools for planers and developers, designed to regulate zoning, street design, sidewalk and other people-scaled public spaces (Madden & Russell, 2014). In FBCs, "prevalently visual codes are employed to regulate the *form* of the built environment" (Moroni & Lorini, 2016, p. 6).

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4 The notion of normative content of a representation, as it is understood here, is an abbreviation to refer to the content exploited with normative purpose, the content of a rule, such as the form that buildings must have regarding sidewalks, the journey traced in a map, etc. By the notion of representational content I mean the content of the representation, which may or may not be employed in a normative way, such as the content of a graph of a FBC, or the content of a map.

The New Urbanist idea is that in this case, people can see and more easily understand urban rules. "Form-based codes are graphic and designed to be easy to use and understand" (Purdy, 2006: 4). In other words, "Form-based zoning codes rely on images, diagrams, and matrixes to make the requirements and physical vision understandable to the general public, government officials, developers, and the professionals who work with them" (Geller, 2010: 81). Moreover, "Use of easy-to-comprehend diagrams and graphics reduce the amount of paperwork in a form-based zoning ordinance... The clarity that form-based codes afford alleviates the burden imposed on a developer during the administrative approval process" (Barry, 2008: 317). (Taken from Moroni and Lorini, 2016)

According to Moroni and Lorini (2016, p. 6), in FBCs, there is a closer "plastic proximity" between the graphic rule and the reality that should correspond to it.[5] Precisely, that plastic proximity can explain why visual representation are so effective: i) they can make it easier to comprehend the normative content of ordinances or social practices; ii) they can represent in simultaneous different aspects of a scene: spatial disposition, physical appearance, functional properties and relative size of objects, and so on. In the particular case of FBCs, they are supposed to be compressible for landowners, developers, neighbors, planning and zoning administrators, public officials, and the general public, and all of those parts affected by the development of a place. Also, they integrate different goals and perspectives: the public and private realm, such as street parking, street trees, travel lane, pedestrian areas, and how they interrelate with buildings (Madden & Russell, 2014).

However, that "proximity to reality" of pictures can be problematic to express the normative content of rules. For instance, in figure 3, it is difficult to know what it is intended to be regulated by the picture: the kind of people that can use the sidewalk, or the way that the street can be used; the dispositions of the trees or their type, the way cars can be parked, the height of the buildings, or their color, or all of that. In other words, it is difficult to understand what specific aspect of the reality it is intended to govern. Nevertheless, there is a sense in which it is intended that the picture expresses all of that: that the sidewalk can be used as pedestrian transportation, which coexists in a friendly way with private buildings and the lane, that the parking area is located in a way that does not affect circulation, the presence of urban trees, and so on. At the same time, the proximity of the picture with reality also helps to reduce the scope of the normative content. Since just a few sets of situations can fulfill the satisfaction conditions of the overall representation, the scope of the rule may be extremely local (I think that something similar can be said about maps)[6].

On the other hand, it is dubious that the satisfaction conditions (and the direction of fit) of the overall content of the picture can determine the correction conditions of the rule expressed; that is, of the normative content of the picture. Whereas the satisfaction conditions of the overall picture depend on the visual appearance of a scene, the correction conditions of its normative content may be related to space, land, buildings, people, behaviors, practices, and functions of entities of different kinds.

Thus, it would be – at least – desirable that normative pictures not merely demarcate the extension of the norm – that is, the possible cases that might be considered under the rule – but also the specifics *aspects* from that extension that are ruled by the rule (for instance, the

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5   Along this line, Camp (2015, p. 305) states that pictorial systems require fewer translations from perceptual inputs, and thus are easier to acquire and integrate to cognition.

6   See Lorini & Loddo's (2017) distinction between spatial sphere of validity (territory) and the spatial sphere of reference (entities) of norms.

Figure 2: an example of an FBC graph, taken from Lorini and Moroni (manuscript).

use of space, things that can be done there, the behaviors allowed and forbidden, and so on). So, when the isomorphism is so direct, it might turn difficult to separate what is relevant for the rule – in terms of extension or aspects – that the picture is supposed to express. Firstly, whereas the isomorphism is visual, rules are about persons, spatial arrangements, behaviors, and so on. In other words, even though pictures obey a visual isomorphism, their normative content cannot be specified in terms of visual features.[7] So, in the case of pictorial rules, it is indispensable to adopt another level of abstraction and generalization to understand what the correction conditions of the rule are. Secondly, since pictures integrate lots of information, background or contextual information is required to discriminate what aspect of the reality it is intended to govern. Compare, for instance, figure 2 with figure 3: Although both figures have – in broad terms – the same objective, whereas figure 2 obeys a visual isomorphism, figure 3, instead, exploits a metric isomorphism that represents with more accuracy and precision what the code legislates, that is, regulating building form and function of a place.
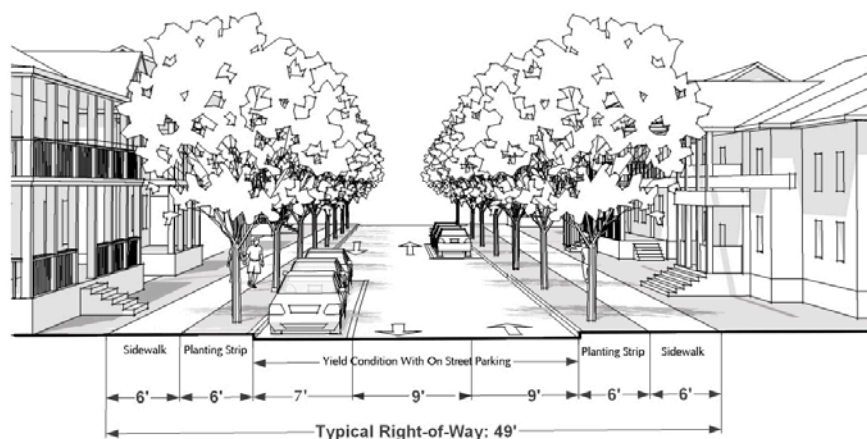

Figure 3: schematic cross-section of a mixed-use street from the Sarasota county, Florida FBC.[8]

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7   It might be argued that the satisfaction conditions of pictures do not match with the visual isomorphism either; for instance, the satisfaction conditions for the Gioconda cannot be understood in terms of the variations in light and color. However, I will leave aside this question here.
8   Downloaded from http://plannersweb.com/2014/12/fbc3/.

Thus, the difficulties of pictures to express the content of rules – the lack of generality and precision – are easily avoided and also can be used for some benefits. Since pictures – as well as other representational media - are not used in isolation, other external cues can be employed to gain generality and determine their normative content. In this sense, pictures are often joined with legends such as "Good House Wife's Guide", in figure 1. Those legends, on the one hand, help to determine the extension of the rule and, on the other, help to specify the normative content of the picture and its correction conditions. Similarly, graphics from FBCs, for instance, can be interpreted regarding general principles, such as "Neighborhoods should be compact, pedestrian-friendly and mixed-use", in figure 2, or legends such as "Schematic cross-section of a mixed-use street from....", in figure 3. Furthermore, the local character of some normative pictures can be useful to express rules directed toward specific regions, places, contexts, and goals from particular communities, which can be helpful to narrow down the scope of the rule. Someone might say that pictures do not have the linguistic counterparts for normative words, such as *ought* to, *must*, *should* and so on. However, there are cases in which this vocabulary is useful but unnecessary, as can be observed in the example provided below "Only adults with children". And, what is more interesting, there are normative pictures that employ different resources to highlight their normative character of a representation. For instance, in figure 4, different drawings have been introduced to represent the adequacy of the area to new urban standards.
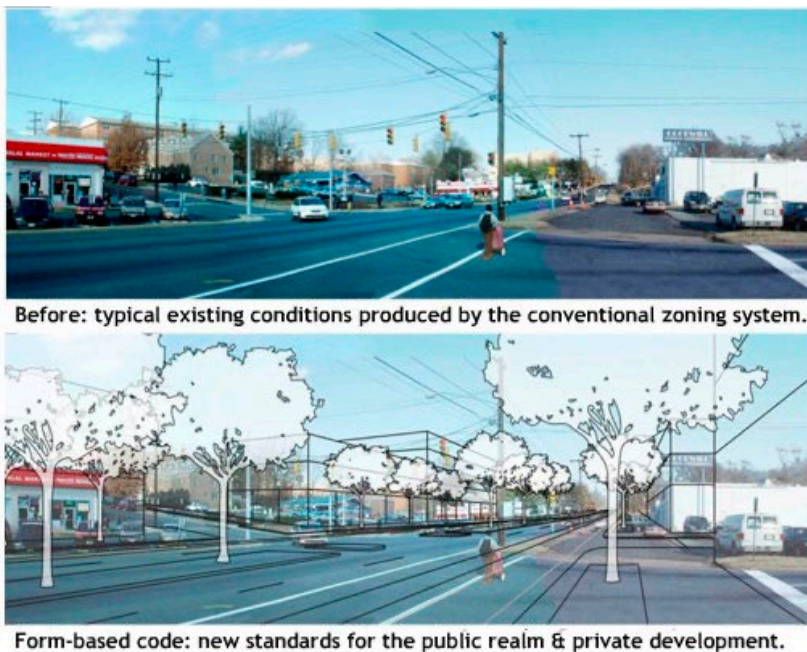

Before: typical existing conditions produced by the conventional zoning system.

Form-based code: new standards for the public realm & private development.

Figure 4: example of a FBC, extracted from PlannersWeb.

3.3. Travel maps

Some maps are a little bit like pictures and a little bit like sentences, but they can be distinguished from both. On the one hand, like pictures, maps also rely on some kind of isomorphism, but this can be very abstract and formal. This is consistent with the thesis that representational media can exploit isomorphic relations in different degrees of abstraction. So, for example, whereas pictures obey a visual isomorphism, some maps instead involve a metric structure that abstracts itself from visual features, whereas topological structures abstract from both, visual and metric features and relations.

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On the other hand, like languages, maps' systems can introduce arbitrary symbols and conventions. This alleviates the informational burden of the representations since the representation does not need to reproduce the visual appearance of an entity to represent it. Also, the introduction of symbols increases the expressive power of maps, since they can represent abstract properties. As a result, maps can represent with precision the content of the rule that they express and its correction conditions. So, whereas pictures depend on background or external information to specify their normative content, maps instead possess more internal resources to isolate their normative content. Consequently, we will see, maps are very efficient for playing a normative function.

Most maps rely on spatial isomorphism by representing the localization and distance of objects and regions in space, concerning specific purposes, such as navigation, delimitation, projection, etc. To do that, i) maps do not need to replicate the visual appearance of the objects and the regions represented, since spatial properties abstract from visual properties. ii) Maps do not need to replicate every object of the scene either. On the contrary, maps are designed according to specific purposes. Thus, they represent only entities and relations that are relevant to those purposes. For example, political maps are designed to represent the governmental boundaries of countries and states. Usually, they represent cities, but only the more important ones. Physical maps, instead, mainly represent landforms of a terrain. Usually, they represent only the highest peaks and the most important rivers, not all of them. While physical maps are mostly descriptive, political maps are often used as instruments for legal regulations (Moroni & Lorini, 2016).[9]

However, many maps combine several kinds of representational resources that go from visual or iconic elements to symbols: Google-street maps, for instance, represent both, network roads and 3D visual perspective; travel maps might include topography, the localization of cities and towns, network roads and other travel information, such as points of interests and service areas (for instance, Michelin maps, and National Geographic maps). Let us focus on travel maps.

In the case of travel maps, they represent road network, including major highways, main roads, tracks and trails, city edges, diverse points of interest, and so on. Travel maps often employ symbolic elements, such as a red cross for a hospital, girl and boy figures for restrooms, dots for cities, etc. They also exploit a color code: variations in color can denote variation in the function of roads and can be used to distinguish highways from collectors and local roads. Similarly, zoning maps separate by colors areas with different functions: for instance, yellow for building areas and green for public areas.[10]

Since the isomorphic relation of maps is highly selective, the satisfaction conditions for this kind of media are more general than the conditions that run for images. "More precisely, the map is correct only if its geometric structure replicates salient relations between objects represented by the map". (Rescorla, 2009, p. 390) Since they obey an abstract isomorphism, there is considerable space for arbitrariness; hence, maps can introduce symbols and

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9   Maps not only can be employed to regulate behavior or as instruction for navigation, but also to create a new ontology. This is the case of what Lorini and Moroni (mansc.) call "constitutive maps". Some political maps, designed to show the governmental boundaries of countries and states, are constitutive in this way:

These are maps that neither describe (objects) nor prescribe (behavior), but instead constitute something. This is the case, for example, of maps drawn by legal authorities with the power to define the borders among nation-states. For instance, as Barry Smith and Achille Varzi observe, when in 1922 Sir Percy Cox (the British High Commissioner) drew lines on a map defining the boundaries of Saudi Arabia, Iraq, and Kuwait, "he thereby added new non-physical ingredients to the world." (Lorini & Moroni, manuscript)

10   Whereas the employment of different colors might be based on psychological or practical reasons (Lloyd, Rodgers, & Roberts), from a semantic point of view, they are arbitrary.

conventions to represent specific properties. Thus, on the one hand, the localization and distance of markers and regions in a map replicates the localization and distance of objects and regions in the world, upon a scalar factor. On the other hand, other physical properties of the markers – such as shape and color – might not replicate the physical properties of the things represented, but they are used in a semantically arbitrary way to express different entities. Based on the fact that they obey a metric isomorphism, we could formulate the satisfaction conditions for this kind of map in the following way: A travel map is accurate in case the distance relation between lines and markers replicates the scaled distance between pathways and particular places represented by the markers.

Travel maps are mainly used for journeying or travel planning, that is, some of their main functions are normative: for instance, if someone is in point A and wants to go to point B, they can use the road map as an instruction for navigation. Since it expresses a technical or instrumental rule (such as *if you want A, do B*), this would be a case of instrumental drawing (Moroni & Lorini, 2016).[11] Since maps are designed according to a spatial but abstract isomorphism, and according to a particular purpose, it is pretty clear what they intend to regulate when they are used normatively. Particularly, a travel map can represent a journey – which consist of path construction, "assembling a path from one or more route segments, and path selection; that is, choosing the best one of several alternative paths" (Lloyd, Rodgers, & Roberts, p. 412) – by somehow isolating the roads and intersections that should be taken to go from one point to another. In this sense, the satisfaction conditions of maps help to determine the correction conditions of the rule that the map is meant to express. Thus, not only they obey but also exploit a spatial isomorphism for normative purposes.

3.4. Seating charts

Other maps also abstract from certain spatial relations, to achieve very specific purposes. Seating charts, for example, rely on a topologic isomorphism; by representing the distribution of objects in an abstract space, and their disposition to other objects (arrangement, up/down, left/right, front/behind, and so on). Hence, they are highly abstract representations since they ignore not only visual features of the objects represented – i. e. their shape or color – but also metric relations, such as length and distance. For instance, figure 5 provides information about the spatial relations of seats in a room in a very abstract way, by representing seats in rows, and their position and relation to corridors and the stage. To do that, it ignores other features of the scene represented (i. e. distance, shape, size, visual appearance and physical structure of seats, etc.). But it provides information that is enough and appropriate if we want to know the disposition of the seats or the capacity of the room. But seating charts can also be used in a normative way; for instance, as a blue-print for designing further theatre rooms, or if – already in the theatre – we want to know where to sit. So, we can use the chart to find our way to the seat that we paid for. Like in the case of maps, the selectiveness of the topological isomorphism gives rise to the introduction of arbitrary elements that increase the expressive power of the representation. This incorporation not only enlarges the repertoire of representational elements but also makes their representational content more precise. While the distribution of markers in the chart denotes the spatial distribution of seats in the room, dots are used to represent seats, numbers to represent rows, but colors might be freely used for representing the price of the tickets or the rank of the seat (for instance, in a graduation ceremony, pink for students, blue light for their families, etc.). So, thanks to the introduction of arbitrary symbols and stipulated conventions, these representational media can selectively represent further aspects of a scene, besides the geometrical structure.
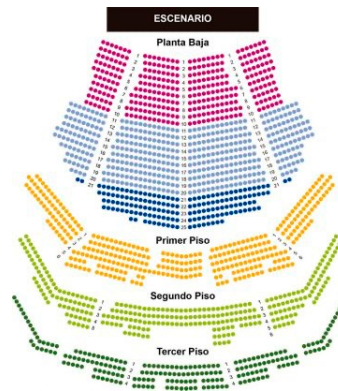
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11   See endnote 2.

Figure 5: a seating chart from a theatre room

By means of both, the selectiveness of the isomorphism and the introduction of arbitrary symbols, these kinds of representations can express in a highly precise way a normative content: such as *if you are a student, find your seat in the pink area.* In this sense, the aspects that the instrumental rule is supposed to direct are already isolated by the representation; i. e. the spatial arrangement and localization of the seats, in figure 5. In this sense, compared to normative pictures, such as FBCs, the normative content of this kind of representation – that is, its capacity for expressing a rule – does not entirely depend on background knowledge or contextual information. Although it is required to fix the meaning of the symbolic elements (such as grey regions in a map corresponds to parking areas, or pink seats are reserved for students), once this meaning is fixed, it is pretty clear what is being regulated by the representation.[12] So, there is a sense in which the satisfaction condition of the representational content matches with the correction condition of the normative content.

4. Some final words

Pictures, maps, and diagrams are used in normative ways to express rules, ordinances, and legislations of different kinds. There are also other representational media that pervade our normative practices as well: texts, organigrams, flowcharts, treemaps, and so on. In this paper, I have focused on the structure of some representational media to analyze their capacity to express rules or, as I have been saying here, normative content. In doing so, I have adopted a gradualist view according to which different kinds of representations can be distinguished in terms of isomorphic relations that present different degrees of abstraction.
I have analyzed graphic representations of three different kinds: pictures, travel maps, and seating charts. I have suggested that the more direct the isomorphism is, the easier is to comprehend the representational content. Inversely, the more abstract the isomorphism is, the greater the expressive power of the representation. So, whereas the content of pictures might be so easy to understand, they might have some difficulty to express with autonomy the content of rules. Maps and diagrams, instead, are characterized by a formal abstract

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12   These properties – precision, generality and autonomy – and their normative functions are instantiated in traffic sings (see figure 4). These kinds of sings are conventional devices, which are characterized by being comprehensible and precise. Despite the fact that they might have some analogical or pictorial ingredients, they do not exploit a direct isomorphism to play their normative function. For instance, the direction of an arrow represents the lane direction; that is, the direction that drivers must follow. However, the fact that the sign represents the lane direction, and moreover, the direction that it is pointing out – left instead of right – is something that does not rely on any isomorphic relation, but in social practices and conventions.

isomorphism, which enables the introduction of symbolic and conventional elements. As a result of both, the abstraction and the arbitrariness, these representational media can be used to express normative contents in a very precise and comprehensible way. Hence, they can be used as powerful artifacts for the expression of rules of different kinds.

The ideas sketched here are only exploratory. Moreover, many issues deserve attention: such as the particularity of linguistic representation to express normative contents, the cooperation of different kinds of media to express normative contents, the normative relations between different kinds of media, and so on. I hope that the ideas developed here help to motivate their consideration.

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