Non-Propositional Regulation

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Abstract

When thinking about how human behaviour is regulated, one generally imagines a regulation consisting of norms linguistically expressed in sentences: that is, "sentential deontic regulation". However, this notion of regulation is reductive because there are (non-deontic and) non-sentential forms of regulation. In this article, we do not restrict our investigation to (non-deontic and) non-sentential forms of regulation; we examine whether there are forms of (non-deontic) regulation that are even not propositional. In this regard, we advance the hypothesis that there are indeed cases of "non-propositional regulation": that is, regulation that does not need propositions and propositional contents.

I. Introduction: from *non-sentential* regulation to *non-propositional* regulation

When thinking about how human behaviour is regulated, one generally imagines a regulation consisting of norms linguistically expressed in sentences, and therefore a "sentential (deontic) regulation". This is deontic regulation enacted through speech acts performed with the utterance (written or oral) of entire and complete sentences. Civil codes, criminal codes and traffic codes are everyday examples of sentential deontic regulation.

However, this image of regulation is very reductive and does not capture the extent of the phenomenon. Indeed, there are:

(i) *non-deontic* forms of regulation (*adeontic* forms of regulation): that is, forms of regulation implemented without the use of norms or deontic concepts such as obligation, prohibition, permission, authorisation and

commitment, and which we may call "regulation without rules/norms" or "rule-free regulation";

(ii) and *non-sentential* forms of regulation: that is, forms of regulation that do not require the utterance of sentences, and which we may call "regulation without sentences" or "sentence-free regulation".[1]

In what follows, we focus on the latter issue (we have examined the former in previous studies[2]). There are indubitably cases of non-linguistic regulation (i.e., regulation without words, word-free regulation) and, *a fortiori*, non-sentential regulation (sentence-free regulation). In other words, there are numerous cases of regulation which do not involve speech acts.

An example of non-linguistic regulation is regulation enacted through drawings and images (i.e., not regulation as a speech act, but regulation as an act of drawing or depicting): what we may call *graphic regulation*.[3] Furthermore, regulation can also be performed with silent gestures, colours, sounds, etc.: for example, the stop gesture of a policeman, the red colour of a traffic light, the whistle of a referee during a football or basketball game, a trumpet blast (which orders a battalion of soldiers to arrange themselves in a certain formation).

In this article, however, we do not limit ourselves to investigating only the forms of regulation that are *not sentential* (i.e., non-sentential regulation, sentence-free regulation); more specifically, we examine whether there are forms of regulation that are also *not propositional*. In this regard, we advance the hypothesis that there are indeed cases of "non-propositional regulation". We shift the attention from the *syntactic/phenomenological aspect* of regulation (for example: the sentence, in the case of linguistic regulation; the drawing, in the case of graphic regulation; the three-dimensional shape, in the case of regulation through deontic artifacts[4]) to the *semantic aspect* – propositional or non-propositional – of regulation.[5]

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1. See, for example, Morris (1960).
2. See Lorini and Moroni (2020b, 2021).
3. On graphic (i.e., drawn) regulation, see Moroni and Lorini (2017, 2020) and Lorini and Moroni (2020a).
4. On deontic artifacts, see Lorini *et al.* (2021).
5. Propositional regulation is not necessarily sentential regulation; it can also be "graphic". An example of graphic propositional regulation is the "no overtaking" road sign. This signal expresses a propositional content, a content that has a predicative structure; the act of overtaking is prohibited (on a certain stretch of road). From a syntactic point of view, this traffic signal (for example, according to the Italian traffic code) consists of two different signs/elements. The first element shows two cars side by side, a red one on the left and a black one on the right. The second element is a red circle containing the two cars. The image of the two cars symbolizes the act of overtaking; the red circle represents the prohibition.

It is generally assumed that there cannot be regulation without "propositional instruments".[6] But is this true? In other words, is all regulation necessarily propositional? This is the question that we seek to answer in this article.

The idea of "propositional regulation" is not an *overt category* of the theory of regulation.[7] Nonetheless, this *covert category* identifies a form of regulation that has been extensively studied. Indeed, it is the form of regulation *par excellence,* and at first glance it would seem self-contradictory to speak of "non-propositional regulation". Therefore, not only has the idea of "non-propositional regulation" not been studied, it has not even been conceptualized.[8]

We propose to call "non-propositional regulation" any regulation that is independent of propositions and propositional contents.[9] In this regard, a clarification is necessary. We must not confuse the question of the possible propositional nature (i.e., of propositionality) of the *intentionality* of the regulator – and of those to whom the regulation is addressed – with the question of the propositional nature (i.e., of propositionality) of the regulatory *instrument*, of the form of regulation. This article investigates the second question only.

In particular, we intend to clarify the idea of non-propositional regulation. To do so, we start with an investigation – and a characterization – of the concept of propositional content (Section 2). Subsequently, we illustrate the idea of non-propositional regulation by focusing on 10 cases of non-propositional regulation implemented through material *artifacts* (Section 3). We then discuss the peculiarity of non-propositional regulation in terms of the *direction of fit*, the *conditions of satisfaction* and the *possibility of sanctioning* (Section 4). We conclude by emphasizing the *a-nomic* and *non-symbolic* nature of the examples of non-propositional regulation considered (Section 5).

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6. Here we re-use the term "propositional instruments" proposed by von Wright (1984b: 147).

7. The only occurrence of the expression "propositional regulation" that we have found is in Trevarthen and Delafield-Butt (2013).

8. A partial exception is perhaps the research conducted by Biegler and Vargas (2013) on pharmaceutical advertising. They raised the question of how non-propositional content in direct-to-consumer advertising of prescription pharmaceuticals can condition consumers in their choice. By "non-propositional content" they meant, for example, imagery, music, logos, voiceover tone and sound effects. According to them, "nonpropositional content is characterized by the absence of any clear declaration on a product's attributes that might be subject to a determination of truth or falsity" (Biegler and Vargas 2012: 3). Recently, attention has been paid to the investigation of non-propositional *intentionality* and non-propositional *contents*; see Tsai (2011), French (2012), Grzankowski (2012, 2013, 2018), Camp (2018), Grzankowski and Montague (2018), Searle (2018).

9. That a regulation is "non-propositional" does not mean that it is also "non-conceptual" (that is, not implying concepts at all).

II. Regulation without propositional contents

Clearly, in order to discuss "non-propositional regulation" (understood as a regulation without propositional contents), we should first of all answer the question as to what a proposition is.

In this article, we are not interested in delving into the *ontology* of propositions and propositional contents (by, for example, questioning whether propositions are *abstract entities*,[10] or *linguistic entities*,[11] or *mind-dependent entities*[12]). We are instead interested solely in identifying a general characterization of propositions useful for our research on forms of regulation.

In this regard, we may start from the standard idea of propositions examined by Peter Hanks in his book *Propositional Content*. Hanks identified three elements that characterise the classic image of the proposition: (i) the subject–predicate form, (ii) being the meaning expressed by a sentence, (iii) being the original or primary bearer of truth conditions.[13]

We accept the first two elements as characterizing propositions, but not the third. Our idea of proposition is, in other words, broader than the standard definition of propositions as *apophantic* entities; that is, something of which truth or falsehood are predicated.[14]

The scope of a proposition, therefore, goes beyond the true and the false.[15] Note that if propositions were exclusively apophantic entities, then the idea of deontic/normative propositions (insofar as they are not susceptible to truth and falsehood) would be a *contradictio in adiecto*.[16]

Hanks writes: a "traditional role for propositions is to be the original or primary bearers of truth conditions. [. . .] Propositions are supposed to be the original or primary bearers of truth conditions in the sense that

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10. See, for example, Searle (2015).
11. See, for example, Church (1956).
12. See, for example, Frege (1918–1919).
13. See also McGrath and Frank (2018).
14. See, for example, Arnauld and Nicole (1662), Hobbes (1665), Bosanquet (1895), Russell (1918), Frege (1918–1919), Wittgenstein (1922).
15. This is, for instance, what von Wright (1957: vii) referred to when he wrote that he considered his 1951 paper, *Deontic Logic*, very unsatisfactory "because it treats norms as a kind of propositions which may be true or false". And he added: "this, I think, is a mistake". As Ross (1945: 206) had already written: "It would not occur to anybody to say that the exclamation, 'Shut the door', was true or false." As is well known, the thesis that norms are not apophantic entities is very widespread among scholars of deontic logic and philosophers of law (see e.g. Åqvist 2008). For an interesting discussion on the logical value – and the logical nature – of *propositions of value* and *imperative propositions*, see Segerstedt (1945) and Ross (1945). On the semantics of normative discourse and the semantical value of imperatives see, for example, Castañeda (1960, 1962, 1975) and Bergström (1962).
16. See von Wright (1984a); see also Lorini (2012) and Hanks (2015). Ryle (1949) called these propositions "regulative propositions".

they have their truth conditions in an explanatorily basic way. Now, I think that propositions have truth conditions. (Or, at least, I think that one kind of proposition has truth conditions, the assertive kind. [. . .]) But I reject the idea that propositions are the *primary* bearers of truth conditions".[17]

The expression "propositional content" has been employed by John Searle in regard to speech acts.[18] In his theory of speech acts, Searle distinguished the *illocutionary act* from its *propositional content*. In his book *Speech Acts*, for instance, he states that speech acts performed through the utterance of the following four sentences are different illocutionary acts – with different illocutionary force – but have the same propositional content in common:

(1) Sam smokes habitually.
(2) Does Sam smoke habitually?
(3) Sam, smoke habitually!
(4) Would that Sam smoked habitually.[19]

As Searle points out, speech acts generally have propositional content, although not all linguistic communication is necessarily propositional.[20] The propositional contents from the syntactic point of view have a grammatical correlative in that they can be formulated in a "that-clause".[21]

As Angela Mendelovici writes, "propositional contents are contents with a propositional nature".[22] However, not every informational content is necessarily a propositional content. For example, the experience of pain in a knee has informative content without having propositional

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content. As Hanks notes: "pains are not fundamentally bearers of propositional content".[23]

When we talk about propositional content, we generally refer to multiple types of conditions of satisfaction, and not exclusively to truth conditions. The definition of propositional content is therefore independent of the apophantic criterion.

The direction of fit of a propositional content varies according to the type of proposition. It can be in two ways: (i) *word-to-world*, or, better, *meaning-to-world* (as in the case of apophantic propositions) and (ii) *world-to-word*, or, better, *world-to-meaning* (as in the case of deontic propositions).

III. *Propositional* regulation vs. *non-propositional* regulation

We suggest that it is possible to distinguish between two types of regulation:

(i) a "propositional regulation", a regulation *through propositions*, a regulation *through propositional contents*,
(ii) a "non-propositional regulation", a regulation *without propositions*, a regulation *without propositional contents*.

There are numerous examples of non-propositional regulation in the field of "rule-free regulation": that is, regulation without norms (i.e., adeontic regulation). The purpose of this kind of regulation is to influence the behaviour of individuals without recourse to rules/norms and without directly altering the "normative environment".[24]

Ten examples

Ten cases of non-propositional regulation introduced through material objects are now considered. We refer to material objects that do not have any writing on their surface.[25] Furthermore, these are regulatory

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23. Hanks (2015: 211). Duncan (2020) distinguishes between "propositional knowledge" and "non-propositional knowledge". Clearly, there is knowledge that we obtain through, for instance, *enteroception* that has no propositional content. For example, the perception of the spatial dispositions of our arms and legs, which we have even when we close our eyes, is invaluable for our survival, but it has no propositional content.
24. On regulation without rules or rule-free regulation, see Lorini and Moroni (2020b, 2021).
25. In Millikan's (2017, In press) lexicon, these regulative artifacts are neither *representations* nor *signs*. By "representations" Millikan (In press) means "conventional signs that articulate complete states of affairs". Instead, "meaningful parts of conventional representations and items that are conventionally used as parts of representations are just 'signs'".

artefacts that do not need the presence of any preliminary text referring to them in order to perform their regulatory function (think of the opposite case of road signs which presuppose, for their existence and knowledge about them, the traffic code with its rules). These are cases of regulation that, in addition to not requiring statements, do not even need a linguistic framework. Here, there is no need for language and therefore not even for a specific *langue* (to use Ferdinand de Saussure's term).

These 10 cases of non-propositional regulation are all cases of regulation through *adeontic artifacts*.

A first example is represented by speed bumps to slow traffic. They do not signal a precise speed limit; what they do is "hamper" the transit of a vehicle, "persuading" the driver to slow down. (Observe how speed bumps may perform their function even in the absence of speed limit signs.)

A second example is the introduction of suitably placed objects (e.g., pillars) at exits from places where there are usually large outflows of people, such as stadiums. In a counterintuitive way, it has been demonstrated that these devices may facilitate and speed up the flow of people away from a building.[26]

A third (albeit ethically criticisable) example is represented by anti-homeless spikes; that is, metal studs implanted in the ground outside private properties in order to discourage people from lingering or sleeping there.[27]

A fourth example is a "sleep-prevention bench": that is, a bench with metal dividers or an uneven surface that is unusable for any purpose other than sitting (see, e.g., the Camden benches).[28] (This is, like the third one, an example of "hostile architecture".)

A fifth example is represented by the well-known case of the fake fly painted on urinals. As Richard Thaler and Cass R. Sunstein remark, in the men's rooms at Schiphol Airport, "the authorities have etched the image of a black housefly into each urinal. It seems that men often do not pay much attention to where they aim, which can create a bit of a mess, but if they see a target, attention and therefore accuracy are much increased. According to the man who came up with the idea, it works wonders. 'It improves the aim,' says Aad Kieboom. 'If a man sees a fly, he aims at it.' Kieboom, an economist, directed Schiphol's building expansion. He reported that etchings reduced 'spillage' by 80 percent".[29]

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26. See Jiang *et al.* (2014), Jia *et al.* (2017), Zhao *et al.* (2017).
27. See Petty (2016).
28. See Rosenberger (2014).
29. Thaler and Sunstein (2021: 4–5).

A sixth example is provided by the special walkways used in railway stations which assist travellers in pulling their roller suitcases, thus separating the various flows.

A seventh example is represented by the moving walkways installed in the corridors of certain airports.[30] These moving walkways encourage persons to exploit the opportunity to move more quickly, preventing them from blocking corridors (especially in groups).

An eighth example is the so-called *StandardToilet*.[31] This was conceived to be uncomfortable to discourage use for a protracted period in, for instance, train stations. The *StandardToilet* has a slanting downwards angle of 13°, which makes it uncomfortable to sit on (thus preventing its use for more than a few minutes).

A ninth example is a chicane intended to act as a traffic-calming measure to decrease vehicle speed. Chicanes reduce traffic accidents.[32]

A tenth example is represented by the fences placed at the edge of a sidewalk near the road in order to discourage pedestrians from crossing there and convey them towards the zebra crossing.

Non-symbolic regulative artifacts

These 10 examples of non-propositional regulation concern artifacts that not only do not have propositional contents in themselves, but do not even seem to have a "symbolic/semiotic nature": they are not – and do not necessarily operate as – "semantic phenomena" in Searle's sense.[33] They are artifacts that can effectively perform their regulatory function even without the capacity that Searle calls *symbolism*: that is, "the biological capacity to make something symbolize – or mean, or express – something beyond itself". It is thanks to this capacity that, for example, "certain sorts of sounds or marks *count as* words or sentences, and certain sorts of utterances *count as* speech acts".[34]

Because these are artifacts that do not exploit the symbolic capacity of their recipients for their effectiveness, they can also operate outside the semiotic world: that is, the *semiosphere*.[35] They do not require a preexisting semiotic code and a semiotic interpretative activity on the part of the recipient, as is the case of linguistic and graphic regulation.

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30. Lockton *et al.* (2010).
31. See https://www.standardtoilet.net/ (accessed December 2021).
32. See Zhang *et al.* (2020).
33. Searle (2020: 53) distinguishes the "sentential mode of representation" from the more general "semiotic mode of representation"; he argues that "sentences are more powerful modes of representation than signs and symbols".
34. Searle (1995: 228).
35. On the notion of "semiosphere", see Lotman (1984).

(Regarding regulation through drawings, consider, for example, the case of road signs.)

A final remark

To recall the *principle of expressibility* (introduced by Searle: "Whatever can be meant can be said"[36]), we may formulate a similar *principle of propositionalizability*: "Whatever can be experienced can be *propositionally* expressed".[37] However, the fact that an informational content can be expressed propositionally does not mean that it is originally (in itself) propositional.

In the case of the material artifacts considered here, and through which non-propositional regulation is implemented, it is certainly possible to describe them with propositions – for example, it is possible to describe the nature and function of a speed bump with sentences – but this does not mean either that they have a semantic nature (i.e., that they are semantic phenomena) or that they have a propositional content.

IV. Discussion

Three distinctive features of non-propositional regulation

What are the distinctive features of non-propositional regulation *as non-propositional*?

In the case of regulation without propositional content, there is no:

(i) *direction of fit*,[38]
(ii) *conditions of satisfaction*,[39]
(iii) *possibility of a sanction*.

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36. Searle (1969: 19).
37. "*To propositionise*" is a neologism that seems to have been coined by the English neurologist John Hughlings Jackson. According to Jackson (1878: 311): "To speak is not simply to utter words, it is to propositionise" (see Sacks 1989).
38. On the idea of the *direction of fit*, see Austin (1953), Anscombe (1957), Searle (1979 and 1984), Platts (1979), Searle and Vanderveken (1985), Humberstone (1992), Zangwill (1998) and Kissine (2007). In applying this idea to *speech acts*, Searle (1979: 3) noted: "Some illocutions have as part of their illocutionary point to get the words (more strictly, their propositional content) to match the world, others to get the world to match the words. Assertions are in the former category, promises and requests are in the latter". On the direction of fit in the case of non-linguistic norms (e.g. graphic norms), see Moroni and Lorini (2017: 330).
39. Nor do we have the predicability itself of a specific type of satisfaction: there is no specific predicate of satisfaction such as truth, effectiveness, validity, obedience.

Firstly, it makes no sense to speak in terms of "direction of fit" in relation to non-propositional regulation. In this case, there is no type of propositional content – linguistically or pictorially expressed – that can be related to the world. A sleep-prevention bench, for instance, has no propositional content which may be related to the world; nor – *a fortiori* – does it have a direction of fit which links it to the world. In short, it makes no sense to ask whether a particular behaviour fits with a *regulative adeontic artifact* like a sleep-prevention bench.[40] In this case, therefore, one of the two essential elements for the direction of fit is lacking (i.e., content, which in the case of speech acts is a "propositional content", according to Searle[41]).

Secondly, in the absence of propositional content and a direction of fit (and more precisely, of a direction of fit of the *world-to-artifact* type), it does not seem to make sense to talk about conditions of satisfaction, and more generally of satisfaction, in the case of non-propositional regulation. As Searle writes, "the notion of conditions of satisfaction applies quite generally to both speech acts and intentional states in cases where there is a direction of fit"; and he adds: "We say, for example, that a statement is true or false, that an order is obeyed or disobeyed, that a promise is kept or broken".[42]

Consider a speed bump. It is possible to breach a graphic traffic norm that prescribes a speed not exceeding 50 km/h on a specific stretch of road. In this case, there is an underlying propositional content and also a *world-to-drawing* direction of fit. But the breach of a speed bump is not possible, just as it is not possible to "satisfy" a speed bump, either.[43] Again consider a sleep-prevention bench; it makes no sense to ask whether someone has "breached" it. There may be behaviour that does not conform to the ideal that the regulator had in mind when he/she introduced the regulatory artifact (for example, the speed bump or the

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40. A droll exception here could be Cinderella's shoe. As Searle (1983: 8) notes: "If Cinderella goes into a shoe store to buy a new pair of shoes, she takes her foot size as given and seeks shoes to fit (shoe-to-foot direction of fit). But when the prince seeks the owner of the shoe, he takes the shoe as given and seeks a foot to fit the shoe (foot-to-shoe direction of fit)".
41. See Searle (1969: 29–33).
42. Searle (1983: 10).
43. In discussing what he calls *techno-regulatory mechanisms*, Gavaghan (2017: 125) notes: "A great many other aspects of our lives are regulated in this way – not by rules and instructions that we are called upon to obey, but by structures and devices that render non-compliance practically or literally impossible". This observation is of considerable interest in itself: Gavaghan speaks of devices, which, unlike rules, cannot be breached. However, he commits a category mistake when he uses the category of "compliance" to describe the effectiveness of artifacts which are in themselves "adeontic". The category mistake implies the use of a "deontic" vocabulary to describe a phenomenon which is in itself "adeontic".

sleep-prevention bench), but this behaviour does not constitute a breach of the artifact. Indeed, to speak of "breach of a speed bump" or "breach of a sleep-prevention bench", would be to use a grammatically incorrect expression.[44] The previous expressions would violate the "grammar" of "speed bump" and "bench". It seems even more strange to speak of a breach of pillars placed at the exit of a stadium to increase the speed of the exit flow.

Thirdly, if it is not possible to breach a non-propositional regulation (in other words, neither *compliance* to an adeontic regulatory artifact, nor *non-compliance* with such artifact is possible), then a sanction is not possible *a fortiori*.

In the case of non-propositional regulation, an agent/agency that verifies its breach and decides and inflicts the sanction is therefore not required – indeed, it cannot exist. However, this does not mean that non-propositional regulation is ineffective. Indeed, in some cases, such as chicanes or pillars at the exit of stadiums, non-propositional regulation may be more effective than sentential/propositional regulation.[45] Moreover, this is an important peculiarity of this form of regulation with regard to the structural aspect and the costs of regulation; it is a form of regulation that is totally independent of monitoring and sanctioning bodies.

One main warning

To conclude the section, we stress an aspect that raises particular legal and ethical issues. Non-propositional regulation is a form of regulation that, unlike regulation employing linguistic or graphical norms, usually occurs in a "hidden" fashion (resulting from its structural characteristics). This makes it a powerful yet, at the same time, risky form of intervention because it is not immediately recognisable and identifiable. In this case it is difficult to identify the *stigma* of regulation, in particular.

In this regard, it is important to make clear that this article has not sought to support this form of regulation in a generalised and indiscriminate way; its purpose has been merely to acknowledge – and raise the issue of – this particular regulatory phenomenon (while reconstructing its fundamental features).

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44. On Wittgenstein's sense of the term "grammar", see in particular Wittgenstein (1953).
45. Zhang *et al.* (2020: 194) observe that "chicanes can significantly reduce the vehicle speed and traffic accident rate".

V. Final remarks

In this article, our investigation started from the question: "is it possible to regulate behaviours without propositions/propositional contents?" We gave a positive answer to this question, also through identification of a wide variety of cases.

This positive response introduces a new category for a theory and a typology of regulation: the idea of *non-propositional regulation* or, put differently, a *proposition-free regulation*.[46]

The examples of non-propositional regulation that we have considered in this article are all cases of adeontic regulation (i.e., regulation without rules). Moreover, they are cases of regulation implemented through material objects that do not have a symbolic nature (§ 3.2.).[47]

These two characteristics – *a-deonticity* and *non-symbolicity* – are fundamental because this particular kind of regulatory artifact can operate outside both the *nomosphere* and the *semiosphere*. This means that the recipients do not need either a *nomic capacity* (i.e., the capacity to act in accordance with rules or, in other terms, the capacity to have one's behaviours guided by norms) or a *symbolic capacity* (the capacity to make something symbolize – or mean – something beyond itself).

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References

Anscombe G. E. M. (1957). *Intention*. Cambridge, MA: Harvard University Press.

Åqvist L. (2008). "Some Logico-Semantical Themes in Karl Olivecrona's Philosophy of Law: A Non-Exegetical Approach." *Theoria* 74: 271–294.

46. More generally we could say that this is a kind of "*asemantic* regulation" (assuming that "*semantic* regulation" is regulation that has a semantic content: Searle 2020).
47. The cases examined all concern human regulation; but this type of regulation is also widely used to discipline the behaviour of non-human animals: consider, for example, the silhouettes of birds of prey sprayed on glass barriers to prevent other birds from approaching and colliding with them, or the scarecrows placed on farmland to ward off birds.

Arnauld A. and P. Nicole (1662). *La Logique ou l'art de penser*. Paris: Charles Savreux.

Austin J. L. (1953). "How to Talk: Some Simple Ways." *Proceedings of the Aristotelian Society* 53(1): 227–246.

Bergström L. (1962). "Comments on Castañeda's semantics of prescriptive discourse." *Theoria* 28: 70–72.

Biegler P. and P. Vargas (2013). "Ban the Sunset? Nonpropositional Content and Regulation of Pharmaceutical Advertising." *The American Journal of Bioethics* 13(5): 3–13.

Black M. (1962). "Explanations of Meaning." In *Models and Metaphors: Studies in Language and Philosophy*. Ithaca New York: Cornell University Press, pp. 17–24.

Bosanquet B. (1895). *The Essentials of Logic: Being Ten Lectures on Judgment and Inference*. London: MacMillan.

Camp E. (2018). "Why Maps are Not Propositional." In A. Grzankowski and M. Montague (eds.), *Non-Propositional Intentionality*. New York, NY: Oxford University Press, pp. 19–45.

Castañeda H. N. (1960). "Outline of a theory on the general logical structure of the language of action." *Theoria* 26: 151–182.

Castañeda H. N. (1962). "The semantics of prescriptive discourse. (A Reply to Lars Bergström.)." *Theoria* 28: 72–78.

Castañeda H. N. (1975). *Thinking and Doing. The Philosophical Foundations of Institutions*. Dordrecht: Kluwer.

Church A. (1956). "Propositions and Sentences." In I. M. Bocheński, A. Church and N. Goodman (eds.), *The Problem of Universals. A Symposium*. Notre Dame, Indiana: University of Notre Dame Press, pp. 3–11.

Duncan M. (2020). "Knowledge of things." *Synthese* 197: 3559–3592.

Frege G. (1918–19). "Der Gedanke. Eine logische Untersuchung". *Beiträge zur Philosophie des deutschen Idealismus* 1: 58–77.

French C. (2012). "Does Propositional Seeing Entail Propositional Knowledge?" *Theoria* 78: 115–127.

Gavaghan C. (2017). "Lex Machina: Techno-regulatory mechanisms and 'rules by design'." *Otago Law Review* 15(1): 123–145.

Grzankowski A. (2012). "Not All Attitudes are Propositional." *European Journal of Philosophy* 23: 374–391.

Grzankowski A. (2013). "Non-Propositional Attitudes." *Philosophy Compass* 8(12): 1123–1137.

Grzankowski A. (2018). "Non-propositional Contents and How to Find Them." *Journal of Consciousness Studies* 25(3–4): 233–241.

A. Grzankowski and M. Montague (eds.), (2018). *Non-Propositional Intentionality*. New York, NY: Oxford University Press.

Hanks P. (2015). *Propositional Content*. New York, NY: Oxford University Press.

Hobbes T. (1665). *Elementorum philosophiae sectio prima: De corpore*. London: Andrea Crook.

Humberstone I. L. (1992). "Direction of Fit." *Mind* 101(401): 59–83.

Jackson H. J. (1878). "On affectations of speech from disease of the brain." *Brain* 3(1): 304–330.

Jia X., H. Yue, X. Tian and H. Yin (2017). "Simulation of Pedestrian Flow with Evading and Surpassing Behavior in a Walking Passageway." *Simulation* 93(12): 1013–1035.

Jiang L., J. Li, C. Shen, S. Yang and Z. Han (2014). "Obstacle Optimization for Panic Flow. Reducing the Tangential Momentum Increases the Escape Speed." *PLoS One* 9(12): 1–15.

Kissine M. (2007). "Direction of fit." *Logique et Analyse* 198(50): 113–128.

Lockton D., D. Harrison and N. A. Stanton (2010). *Design with Intent: 101 Patterns for Influencing Behaviour through Design*. Windsor: Equifine.

Lorini G. (2012). *Il valore logico delle norme*. Bari: Adriatica D. A.

Lorini G. and S. Moroni (2020a). "How to Make Norms with Drawings: An Investigation of Normativity Beyond the Realm of Words." *Semiotica* 233: 55–76.

Lorini G. and S. Moroni (2020b). "Ruling Without Rules: Not Only Nudges. Regulation Beyond Normativity." *Global Jurist* 20(3): 1–11. https://doi.org/10.1515/gj-2019-0051

Lorini G. and S. Moroni (2021). "Rule-free regulation: Exploring regulation 'without rules' and apart from 'deontic categories'." *Journal for the Theory of Social Behaviour*. Online ahead of print. https://doi.org/10.1111/jtsb.12291

Lorini G., S. Moroni and O. G. Loddo (2021). "Deontic artifacts. Investigating the normativity of objects." *Philosophical Explorations* 24(2): 185–203. https://doi.org/10.1080/13869795.2021.1908584

Lotman J. M. (1984). "O semiosfere." *Trudy Po Znanokvym Sistemam* 17: 11–24.

McGrath M. and D. Frank (2018). "Propositions". *Stanford Encyclopedia of Philosophy*. https://plato.stanford.edu/entries/propositions/

Mendelovici A. (2018). "Propositionalism without propositions, objectualism without objects." In A. Grzankowski and M. Montague (eds.), *Non-Propositional Intentionality*. New York, NY: Oxford University Press, pp. 214–233.

Millikan R. (2017). *Beyond Concepts. Unicepts, Language, and Natural Information*. New York, NY: Oxford University Press.

Millikan R. "Self-signs and Intensional Contexts." *Mind & Language*. In press.

Moroni S. and G. Lorini (2017). "Graphic Rules in Planning: A Critical Exploration of Normative Drawings Starting from Zoning Maps and Form–Based Codes." *Planning Theory* 16(3): 318–338.

Moroni S. and G. Lorini (2020). "Multiple functions of drawings." *Journal of Urban Design* 26(3): 374–394. https://doi.org/10.1080/13574809.2020.1801341

Morris H. (1960). "Imperatives and orders." *Theoria* 26: 183–209.

Petty J. (2016). "The London Spikes Controversy: Homelessness, Urban Securitisation and the Question of 'Hostile Architecture'." *International Journal for Crime, Justice and Social Democracy* 5(1): 67–81.

Platts M. (1979). *Ways of Meaning*. London: Routledge and Kegan Paul.

Rickless S. C. (2012). "Why and How to Fill an Unfilled Proposition." *Theoria* 78: 6–25.

Rosenberger R. (2014). "Multistability and the Agency of Mundane Artifacts: From Speed Bumps to Subway Benches." *Human Studies* 37 (3): 369–392.

Ross A. (1945). "On the Logical Nature of Propositions of Value." *Theoria* 11: 172–210.

Russell B. (1918). *Introduction to Mathematical Philosophy*. New York: MacMillan.

Ryle G. (1949). *The Concept of Mind*. London: Hutchinson & Co.

Sacks O. (1989). *Seeing Voices. A Journey Into the World of the Deaf*. Berkeley: University of California Press.

Searle J. R. (1969). *Speech Acts. An Essay in the Philosophy of Language*. Cambridge: Cambridge University Press.

Searle J. R. (1979). *Expression and Meaning*. Cambridge: Cambridge University Press.

Searle J. R. (1983). *Intentionality. An Essay in Philosophy of Mind*. Cambridge: Cambridge University Press.

Searle J. R. (1984). "Intentionality and Its Place in Nature." *Dialectica* 38: 87–99.

Searle J. R. (1995). *The Construction of Social Reality*. New York: Simon and Schuster.

Searle J. R. (2015). *Seeing Things as They Are. A Theory of Perception*. New York, NY: Oxford University Press.

Searle J. R. (2018). "Are there non–propositional intentional states?" In A. Grzankowski and M. Montague (eds.), *Non-Propositional Intentionality*. New York, NY: Oxford University Press, pp. 259–271.

Searle J. R. (2020). "Semiotics as a Theory of Representation." *Theory and Criticism of Social Regulation* 20(1): 49–57.

Searle J. R. and D. Vanderveken (1985). *Foundations of Illocutionary Logic*. Cambridge: Cambridge University Press.

Segerstedt T. T. (1945). "Imperative Propositions and Judgments of Value." *Theoria* 11: 1–19.

Thaler R. and C. Sunstein (2021). *Nudge: The Final Edition. Improving Decisions About Health, Wealth, and Happiness.* New York: Penguin Books.

Trevarthen C. and J. Delafield-Butt (2013). "Biology of shared experience and language development: Regulations for the intersubjective life of narratives." In M. Legerstee, D. W. Haley and M. H. Bornstein (eds.), *The Infant Mind: Origins of the Social Brain.* New York: The Guilford Press, pp. 167–199.

Tsai C.-H. (2011). "Linguistic Know-How: The Limits of Intellectualism." *Theoria* 77: 71–86.

Wittgenstein L. (1922). *Tractatus logico-philosophicus.* London: Routledge & Kegan Paul.

Wittgenstein L. (1953). *Philosophical Investigations.* Oxford: Blackwell.

von Wright G. H. (1984a). "Demystifying Propositions." In *Truth, Knowledge, and Modality. Philosophical Papers.* Volume III. Oxford: Basil Blackwell, pp. 14–25.

von Wright G. H. (1984b). "Laws of Nature." In *Truth, Knowledge, and Modality. Philosophical Papers.* Volume III. Oxford: Basil Blackwell, pp. 134–149.

von Wright G. H. (1951). "Deontic Logic." *Mind* 60: 1–15.

von Wright G. H. (1957). "Preface." In *Logical Studies.* London: Routledge and Kegan Paul, pp. vii–ix.

Zangwill N. (1998). "Direction of Fit and Normative Functionalism." *Philosophical Studies* 91(2): 173–203.

Zhang C., S. Qin, H. Yu, B. Zheng and Z. Li (2020). "A Review on Chicane Design based on Calming Theory." *Journal of Engineering Science and Technology Review* 13(4): 188–197.

Zhao Y., M. Li, X. Lu, L. Tian, Z. Yu, K. Huang, Y. Wang and T. Li (2017). "Optimal Layout Design of Obstacles for Panic Evacuation Using Differential Evolution." *Physica A: Statistical Mechanics and Its Applications* 465: 175–194.