Modes, Disturbances, and Spatio-Temporal Location[1]

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Version February 2024

It is a standard assumption in contemporary metaphysics that concrete objects come with a location in space and time. A spatio-temporal location in fact is generally taken to be one of th defining feature of concrete objects besides their ability to enter causal relations. This applies not only to material objects and events, but also other sorts of concrete entities. Entities that are generally classified as concrete (with respect to the two criteria just mentioned) include entities that are ontologically dependent on material objects that are part of our ordinary otology and are also well-reflected in natural language, namely modes (or particularized properties), such as the roundness of the apple, the softness of the pillow, Socrates' wisdom, and entities that have been called 'disturbances' (e.g. holes, folds, faults, and scratches) (Karmo 1977). Adoping the approach of descriptive metaphysics, I will show that ontologically dependent entities such as modes and disturbances fail to have a spatial location, more precisely, a bearer-independent spatial location. I will explore, but reject a potential explanation of the lack of a bearer-independent spatial location through a form of abstraction of a quasi-Fregean sort, that is, on which ontologically dependent entities would come with only those properties for which they are specified by way of their introduction.

A subsidiary point this paper makes is that in their lack of a n independent spatial location, modes need to be sharply distinguished from tropes as a category of foundationalist metaphysics central for the project of a one-category ontology in the sense of Williams (1957). Tropes within that project come essentially with a spatio-temporal location, permitting individuals to be construed as bundled of co-located tropes.

1. Spatio-temporal location and individuation

When discussing the individuation of entities, it is important to clarify the philosophical methodology that is adopted. In particular, a sharp distinction needs to be made between descriptive metaphysics, which is interested in the ontology reflected in our ordinary judgments and specifically in natural language, and foundational metaphysics, which is interested in what there ultimately is. My interest is in descriptive metaphysics, and thus I take our intuitions, especially those reflected in linguistic judgments seriously for discussing the topic of spatio-temporal location.

In contemporary metaphysics, having a spatio-temporal location is generally taken to be an important part of individuation, usually taken to be one the features distinguishing concrete from abstract objects. With exceptions such as souls and the mental states and events that make them up, all concrete entities are taken to have a spatio-temporal location.

Some differentiations, though, need to be made. Both events and objects have a spatio-temporal location, but they relate to time and space differently. Using Fine's notions, events are *extended* in time and in space, objects *exist* at a time and are extended in space, a distinction reflected strikingly in the applicability of space- and time relative *exist* and *take place* in English:

(1) a. The tree still exists.

    b. ??? The party still exists.

 (2) a. The party took place in the garden.

    b. ??? The tree exists in the garden.

A traditional way of accounting for that distinction is endurantism. Endurantism is generally cast in terms of a notion of complete presence, making use of what counts, intuitively, as the parts of an entity. Events cannot be completely present throughout a time because events come with temporal parts (though they may also have spatial parts). By contrast, material objects can be (more or less) completely present throughout a time because they do not come with temporal parts, but only spatial parts.[2] This is reflected in the understanding on part-related expressions such as *part of*:' part of the party' can be a temporal or perhaps spatial

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[22] Perdurantism about the persistence of material objects is also common in contemporary metaphysics. Perdurantism does not distinguish material objects from events with respect to how they persist in time, and thus attributes temporal parts (temporal stages) to material objects, which is not reflected in the way part-related expressions apply to material objects in natural language.

part, 'part of the tree' can only be a spatial part. Enduring material objects are in space and time, but have only a spatial part structure. Temporal stages of material objects do not intuitively count as parts of enduring objects.

There is another notable type of object that relates to time and space in a peculiar way, showing an apparent lack of both a temporal and spatial part structure despite being in space and time. These are what I call 'attitudinal objects', entities such as claims, beliefs, thoughts, requests, desires, decisions, and intentions (Moltmann 2013a, 2014, 2017). Attitudinal objects are mind-dependent objects and are concrete in that that they may enter causal relations (in particular content-based causation), they can be can be objects of perception, and they generally have a limited lifespan. Unlike events, states and actions, however, attitudinal objects do not temporal part structure and they do not have spatial parts. Instead, they have part structure strictly based on the notion of partial content. Part of a claim, belief, thought, desire, request, or intention can only be a partial content, not a temporal part of an action, event, or state. The reason why attitudinal objects fail to have a temporal part structure appears to be, simply, that they are endurants: they are completely present throughout the time during which they exist, which means that their entire content is present at any time at which they are valid (or exist).[3] There are thus concrete entities that lack a temporal and spatial part structure, but this is because they are mental or physical endurants that fail to have a material realization.[4]

2. Modes and disturbances and spatio-temporal location

We can now come to the cases of ontologically dependent concrete objects that fail to come with a spatial location. First, there are ontologically dependent entities of the sort of holes, folds, flaws and scratches. Entities of this sort are based on regular or irregular gestalt conditions in material objects, and are generally called *disturbances* (Karmo 1977, Simons 1987, Casati/Varzi 1994). In our ordinary ontology and in particular in the ontology reflected in natural language, disturbances are generally treated as countable entities that come into

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[3] In Moltmann (2019b) I tried to account for that as a matter of attributive limitation, similar to the lack of a spatial location of disturbances and modes (to be discussed in what follows). This is a mistake, I now think.

[4] There are also content bearers that come with a material realization, in which case there will be two part structures: a material (or spatial) part structure and a content-based part structure. Books are a case in point. 'Part of the book' can stand for a material part of the material realization or else a partial content.

existence and go out of existence at particular points in time: a hole, fold, flaw, or scratch may still exist or no longer exist, and that there may be several of them.

Disturbances are ontologically dependent objects par excellence. They exist only if the object in which they are located, their bearer, exists. Also, for their identity, they require the identity of the object in which they are located. They are thus ontologically dependent in the sense of existence dependence and identity dependence (Fine 1994). Linguistically, the ontological dependence of disturbances is reflected in the applicability of the *have*-construction:

(3) a. The bag has a hole,

    b. The cloth has a fold,

    c. The paper has a flaw.

    d. The surface has a scratch.

The *have*-construction is also a natural way of conveying the existence of disturbances (besides *exist*).

Disturbances have a location relative to the object on which they depend, requiring a suitable spatial preposition. Thus, a hole is *in* the bag, a fold *in* the cloth, a flaw or a scratch *on* the surface. But disturbances do not have an object-independent (absolute) location. Thus, the inference from (4a) and (4b) to (4c) is invalid – in fact (4c) is hardly acceptable semantically:

(4) a. The bag has a hole.

    b. The bag is on the table.

    c. ??? The hole is on the table.

In fact, the hole is nowhere but in the bag; it lacks a location that is independent of the bag.[5] Similarly, the inferences from (5a) and (5b) to (5c) is invalid:

(5) a. The cloth has a fold.

    b. The cloth is on the table.

    c. ??? The fold is on the table.

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[5] See Varzi (1995) for observations about the non-monotonicity of *is in* for holes.

The fold is nowhere, but 'in' the cloth. Also the inference from (6a) and (6b) to (6c) is invalid:

(6) a. The screen has a scratch.

    b. The screen is on the floor

    c. ??? The scratch is on the floor.

The scratch is just nowhere but (in a particular place) on the screen. Disturbances do not inherit their location from the object on which they depend: they just do not have an object-independent location.[6]

    Related to the observation that disturbances cannot have a bearer-independent location is the observation that disturbances cannot move, even when their bearer does so. Thus the inferences from (7a) and (7b) to (7c) and from (8a) and (8b) to (8c) are invalid, with the c-examples being hardly acceptable in the first place:

(7) a. The flag has a hole.

    b. The flag moves in the wind.

    c. ?? The hole moves in the wind.

(8) a. The surface has a scratch.

    b. The surface moves,

    c. ?? The scratch moves.

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[6] There are also constraints on the use of spatial location when it comes to immediate or mediate containment (as a referee has pointed out). Thus, the conclusion in the following inference sounds a bit deviant.

(i) The coin is in the purse.
   The purse is the box.
   The coin is in the box.

Other prepositions may impose a condition of direct context, such as on, which is responsible for the unacceptability of the conclusion of the following inference:

(ii) The coin is in the purse.
   The purse is on the table.
   The coin is on the table.

The present cases are different as they involve ontological dependence, not spatial containment.

A scratch can be said to 'move' only when it is not clear that what surface it belongs to. Apparent movement in that case has to do with a shift in epistemic perspective.

Here is another inference that is invalid:

(9) a. The bag has a hole.

b. Mary moved the bag.

c. ?? Mary moved the hole.

The hole cannot move, except perhaps within the object that has it (if it lack solidity).

Whereas disturbances can have bearer-dependent location, modes fail to have a location entirely. As with disturbances, the ontological dependence of modes on their bearer is reflected in the *have*-construction, though with more restrictions, depending on the kind of mode:[7]

(10) a. Socrates has wisdom

b. The painting has an unusual quality

c. ? The apple has redness.

d. ?? The pillow has softness.

Modes display the same sort of behavior as disturbances with respect to a spatial location. Our linguistically reflected intuitions make it clear that modes do not share their location with their bearer. Thus, the inference from (11a) and (11b) to (11c) is invalid, in fact (11c) is hardly acceptable;

(11) a. Socrates has wisdom

b. Socrates is in Athens.

c. ??? Socrates' wisdom is in Athens.

Likewise, the following inferences are invalid:

(12) a. The painting has an unusual quality.

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[7] As with disturbances, the have-construction ca be used to convey existence. Note that the predicate *exist* does not apply well to modes. (?? *John's happiness still exists*, in contrast to *John's happiness still obtains*.)

    b. The painting is on the wall.

    c. ??? The unusual quality is on the wall.

(13) a. The stone has an enormous weight.

    b. The stone is on the table

    c. ?? The enormous weight of the stone is on the table.

Note that weight of the stone is a 'quantitative mode'.

   Modes thus do not come with a spatial location, at least not a bearer-independent one. In general in fact, modes cannot even be attributed a bearer-dependent location. Despite locutions that Aristotle may have used, Socrates' wisdom is not 'in' Socrates. Rather Socrates just 'has' that wisdom. The weight of the stone is not 'in' or 'on' the stone. Rather the stone just 'has' the weight. The beauty of the vase is not on the table, if the vase is. But it also could not be in 'in' or 'at' its shape or surface. Of course specific 'surface modes' like shininess , glow, and dullness may be attributable both to an object (the spoon's shininess) as well as its surface (the shininess of the surface of the (wooden) spoon).

   A related observation is that the bearer of a mode may have a spatial part structure, yet modes will generally not share that part structure.[8] The parts of tropes can only be features constitutive of the (complex) trope or perhaps a temporal part. For example, part of John's happiness can be features of John constitutive of his happiness or else a perhaps a period of his happiness. Part of the softness of the pillow may be a quality of the pillow contributing to its softness, but it can hardly be a spatial part of the pillow. This is different for events. Events may have several part structures in different dimensions at once, say a temporal part structures, a participant-related part structure, and a spatial part structure (Moltmann 1997, Chapt. 6). Part of the battle, for example, can be a temporal part of the event or a spatial part or a subevent constitutive of the battle at the time and place of the battle. Tropes are thus mereologically restricted in a way events are not.

3. The distinction between modes and tropes

Within the Aristotelian tradition, modes (or 'accidents') are ontologically dependent objects par excellence. A mode exists only if its bearer exists and a mode is identical to another mode

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[8] See also Moltmann (2009, 2013a) for that point.

only if their bearers are identical, or so the standard view. Modes in that sense fail to have a spatial location; they can only be 'had' by the object they ontologically depend on.

The notion of a mode needs to be distinguished from the notion of a trope introduced by Williams (1957), though the term 'mode' and 'trope' are often used interchangeable.[9] Unlike for modes, a spatio-temporal location is an essential feature of tropes.

The notion of a trope plays a central role in recent one-category reductionist ontological approach initiated by Williams (1953). On that view, tropes are considered entities more fundamental than individuals and properties coming with two fundamental relations: similarity and co-location. On such a view, tropes would not be ontologically dependent, but rather individuals and properties would be constituted by tropes. It is part of that notion that tropes come with two fundamental relations: co-location (sharing a spatio-temporal location) and similarity. This permits construing individuals as bundles of co-located tropes and properties as classes of exactly similar tropes. Tropes in that sense are part of a foundationalist project, which aims to reduce entities to tropes and the relations of similarity and co-location. Tropes in fact are generally taken to be instances of natural properties. (Abundant properties cannot be identified with classes of exactly similar tropes.) Tropes thus are not necessarily part of our ordinary ontology, and there need not be any terms for them in natural language. In fact, there don't seem to be any terms in natural language for tropes in that sense.

Tropes in that sense figure as the primary ontological category in a one-category foundationalist ontology.[10] By contrast, modes generally form part of a four-category descriptive ontology. They play that role in Aristotle's categories.as accidents, as well as in Aristotelian medieval metaphysics as well as modern philosophy (Spinoza, Hume) as well as contemporary philosophers such as Lowe (2006), who do not subscribe to a trope-based one-category ontology.

4. Reference to modes without reference to bearers

So far I have discussed modes when they are denotations of NPs that mention their bearers (*John's smile, Mary's strength*). Sentences with such NPs clearly display the intuition that modes then do not come with a spatio-temporal location. But natural language also

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[9] See Lowe (2006) for the distinction as well as Hakkarainen, J. / M. Keinaenen (2022, Section 3). In my own previous work (e.g., Moltmann 2013a, b), I used the term 'trope' in the sense of 'mode', as many others do.
[10] There are also two-category ontologies, based on substances and tropes (Heil 2012).

quantification over modes without mentioning their bearers. At first sight, this seems to permit the attribution of a spatial location to modes:

(14) a. There is a lot of kindness in this town.

    b. There is a lot of wisdom in this country.

This recalls Strawson's (1959, p. 202) 'feature-placing language', which would involve locating 'features' at a spatial location:

(15) There is coal / gold / water there.

However, Strawson's examples do not involve nouns for modes, but rather ordinary mass nouns (in the context of a discussion of the re-identification of particulars across locations).

  There is reason to assume that sentences like (14a, b) do not directly locate modes in space, but rather allow the association with a spatial location to be mediated, via a bearer. Thus, emotions, which certainly do not have a bearer-independent location, show the very same behavior:

(16) a. There is little happiness in this village.

    b. There is a lot of anger in France.

    c. There is tranquility everywhere in this country.

Specific modes and emotions do not permit the attribution of a spatial location without mention of a bearer, as seen in (17a, 18a). This is in contrast to statements attributing a bearer to a mode or emotion, as in (17b, 18b), which are better:

(17) a. ??? The kindness John encountered was in the garden.

    b. ? The kindness was Sue's;

(18) a. ??? That anger / the anger Sue encountered was in this room.

    b. ? That anger was Mary's.

This suggests that the coda of *there*-sentences (i.e., the constituent following the NP after *be*) does not have the function of spatially locating an entity, but restricting a domain of quantification in the sense of a domain of entities related directly or indirectly to the location

denoted by the coda. There is further support for that, coming from examples by Chomsky (2000, 2003, p. 293) in the context of his critique of referentialist semantics. Pointing out that *a fly* and *a flaw* behave both like referential NPs in (19a, b) and (20a, b), he notes that the two NPs still display differences as in the contrast between (19c) and (20c), The same contrast holds for (19d) and (20d), as noted by Schein 2022).

(19) a. There is a fly the bottle.

    b. There is believed to be a fly in the bottle.

    c. There is a fly believed to be in the bottle.

    d. A fly is believed to be in the bottle.

(20) a. There is a flaw in the argument.

    b. There is believed to be a flaw in the argument.

    c. # There is a flaw believed to be in the argument.

    d. # A flaw is believed to be in the argument.

As Chomsky puts it, (19c, d) 'have existential import in some manner beyond' (20c, d). The contrast is in fact due to the ontological difference between a fly and a flaw: the flaw ontologically depends on its bearer, the argument; a fly is ontologically independent.

In (20a, b, c, d), *in the bottle* gives the location of the fly, while being in the coda of a *there*-sentence in (19a, b) and occupying the predicative, postcopula position of *be* in (19c, d). The coda in the embedded *there*-clause in (20a, b) cannot give the location (even in an abstract sense) of the flaw, an ontologically dependent entity (since ontologically dependent entities do not have a direct location). But it can have the alternative function of specifying the bearer on which the flaw ontologically depends (the *there* in (20a) has been raised to the higher subject position). In (20b, c) *in the argument* does not occur in the coda of a *there*-sentence and therefore can only serve to give the location of the flaw, which is ontologically impossible, hence the deviance of (20c, d).

Another example from Schein (2022) involving a disturbance shows the very same contrast:

(21) a. There was a wobble in Sandy Koufax's last perfect pitch of his perfect game 9 September 1965.

    b. There was believed to have been a wobble in Sandy Koufax's last perfect pitch of his perfect game 9 September 1965

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    c. # There was a wobble believed to have been in Sandy Koufax's last perfect pitch of
       his perfect game 9 September 1965.

    d. #A wobble was believed to have been in Sandy Koufax's last perfect pitch of his
       perfect game 9 September 1965.

Flaws are modes (*flaw* is the 'nominalization' of *flawed*: *The argument is flawed* implies *There is a flaw in the argument*). Wobbles are paradigmatic disturbances. Chomsky's and Schein's examples are indicative of the absence of a direct location of ontologically entities like modes and disturbances, as well as the possible function of the coda of a *there*-sentence to specify the bearer(s) of the ontologically dependent entities that the *there*-sentence quantifies over.

    Chomsky and others following him took it to be clear that natural language could not commit us to 'ontological absurdities' like flaws and wobbles. However, modes and disturbances have long been recognized in metaphysics, and in fact the linguistic contrasts of *fly*-sentences and *flaw*-sentences can straightforwardly be explained in terms of quantification over ontological dependent entities and a second function of the coda of a *there*-sentences to specify the bearers of the ontologically dependent entities the sentence quantified over. The fact that the Chomskyan examples are so straightforwardly amenable to an ontological explanation means that they support referentialist semantics, rather than posing a difficulty for it.

5. Other ontological dependent entities and spatio-temporal location

Not all ontologically dependent objects show a lack of spatial location or object-independent location. Shadows, for example, are generally considered ontologically dependent on the object throwing the shadow, but they can be attributed spatial locations as well as movement without reference to the object on which they depend ontologically: a shadow may be here and there, move across the wall, and remain in the same place.

    Artifacts are generally considered ontologically dependent objects, dependent on the actions and intentions of the person creating them (in the simple case) (Irmak 2021). Artifacts clearly have object-independent locations and permit movement. Various other ontologically dependent objects are like that as well, for example groups constituted by particular individuals, and heaps constituted by particular amounts of clothing.

What are the conditions under which a concrete, ontologically dependent entity fails to have a spatial location? The general condition is that such an entity be constituted by features of an object. In the case of disturbances, the ability to have an object-dependent location in the case of disturbances has to do with the fact that disturbances generally are constituted by features that concern only part of the bearer, being constituted by features of a proper part of the bearer. By contrasts, modes are generally constituted by overall features of the bearer.

In metaphysics, a certain form of individuation has been discussed according to which certain sorts of objects do not come to bear properties directly, but derivatively, by inheritance from more fundamental entities (Fine 1999, Koslicki 2008). This particularly applies to material objects and the material that constitutes them. Entities individuated by their shape such as artifacts inherit, on that view, color, texture, and weight from the material constituting it (Fine 1982, Koslicki 2008). Fine (1982) applies property inheritance to another relevant case, qua-objects (which includes non-basic actions). A qua object such as 'John qua being a father'' is an object individuated by particularly restricted conditions of property inheritance from its base (John). John qua being father inherits only those properties from John that John has while being a father (Fine 1982) or, better, that John has in virtue of being a father (Moltmann 1997). John qua being a father thus comes out as an attributively limited object, displaying a lack of specification for all properties that are not based on John being a father. This idea does not seem helpful for disturbance and modes: modes and disturbances are not individuated through inheritance of properties from their bearer. Modes and disturbances both fail to inherit their spatio-temporal location from their bearer (even if disturbances such as scratches have a particular place on their bearer). Rather they are constituted by features of (part of) the object on which they depend. Importantly, modes and disturbances fail to have themselves those features: a roundness mode is not itself round, a fold is itself not folded, for example.

6. The abstract-concrete distinction

The distinction between abstract and concrete objects is an important, but controversial distinction in metaphysics. Different sorts of properties have been proposed as characterizing the distinction: abstract objects have been distinguished from concrete ones as being non-mental, nonphysical, being causally inefficacious, not having a spatio-temporal location, not being fully specific, and being necessarily existent (not having a temporally limited life

span).[11] Whether abstract objects need to meet the latter condition has long been a matter of controversy: abstract artifacts are abstract in the sense of not being physical, but they generally come into being at some point in time and may go out of being at some point in time as well. Having a spatial location, by contrast, is a less controversial characteristic distinguishing concrete from abstract objects.[12] The case of disturbance and modes renders that criterion problematic a well.

7. Explaining the lack of (direct) spatial location of disturbances and modes?

With their lack of a spatial location, one may call disturbances and modes *attributively limited objects* and their peculiarity *attributive limitation*. Attributive limitation is familiar from abstract objects as entities introduced by a form of Fregean abstraction, such as numbers or directions on the Fregan account (Hale 1987, Wright 1985). This may suggest a way of explaining the lack of a spatio-temporal location as a result of abstraction as well. After all, there is a notion of an abstract state that is already an entity somewhat between abstract and concrete, and plays an important role in the semantics. The abstractionist approach I the approach on which an abstract object is introduced by a form of Fregean abstraction (Frege 1884, Hale 1987, Wright 1983). Frege proposed that numbers be introduced by the abstractionist principle below, which gives identity conditions for objects obtained by the abstraction function g from entities o and o' that stand in some equivalence relation R:

(22) For an equivalence relation R, for all o and o', $g(o) = g(o') \leftrightarrow R(o, o')$.

Frege used (22) to introduce natural numbers as entities obtained by abstraction from concepts for whose extensions there is a 1-1 mapping. What is characteristic of an abstractionist theory of an object type is that it introduces an object as an object that will have only those properties specified by the method employed for its introduction. Thus, numbers introduced by the principle in (22) do not have other properties than those that can be derived from the condition of their identity with other numbers introduced in the same way. The abstractionist account thus introduces a number as an object that is not specified as to whether it is identical to a non-number, the individual Cesar say, or has any properties of concreteness.

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[11] See Rosen (2018) and Cowling (2017) for recent overviews.

[12] There is some controversy, though, regarding the spatial location of sets of concrete objects (Rosen 2018).

Abstractionist theories have not only been proposed for abstract objects in the context of the philosophy of mathematics. Kim's (1976) account of events amount to an abstractionist theory of states (and of non-worldly facts). Kim's account, it is generally agreed, is not an account of events, but of states, more specifically of 'Kimian states' as Maienborn (2007) calls them or 'abstract states' (Moltmann 2013b, 2021), as I prefer to call them. Kim's account is given below, now formulated as a theory of states (of a rather simple sort, consisting of a property holding of an object):

(23) <u>The Kimian account of states</u>
    a. For a property P, an object o, the state s(o, P) obtains at a time t iff P holds of o at t.
    b. For properties P and P' and objects o and o', s(o, P) = s(o', P) iff P = P' and o = o'.

Kim's account is an abstractionist account, since (23) can be generalized to n-place abstraction functions applying to *n* objects that stand in respective equivalence relations to each other. Kim's account then introduces states on the basis of a two-place abstraction function applying to objects and properties and the equivalence relation of identity. On the Kimian account of states, states will have identity conditions and a temporal duration, but no other intrinsic properties.

Kimean or abstract states are not on a par ontologically with events. Events involve a particular manifestation, a spatial location and can act as relata of causal relations (Moltmann 2007, 2019a, Maienborn 2007). By contrast, states as entities introduced by abstraction as in (23) will carry only properties specified for them by the method of introduction. This means that they have a particular temporal duration and that their identity depends strictly on the property and object from which they are abstracted. But it also means that such states have no spatial location, won't stand in causal relations, won't involve a particular manifestation or particular manner, won't be perceivable etc. They may act, though, as objects of mental attitudes and relata of causal explanation (Maienborn 2007).

States in that sense play an important role in natural language semantics, as Davidsonian, implicit arguments of stative verbs such as *own, owe, know, weigh, resemble, weigh, measure*, have and *be*, or so it has been argued (Maienborn 2007). The states described by most stative verbs (including those just mentioned) accept only a very restricted set of adverbial modifiers. They resist in particular location modifiers, manner adverbials, instrumentals, and causal and perceptual predicates, representing just the sorts of properties that states introduced by

abstraction as in (23) should not be specified for.[13] If abstract states play a semantic role as implicit arguments of (most) stative verbs, this explains the resistance of stative verbs to adverbials of the relevant sorts. Abstract states also play a semantic role as referents of gerundive nominalizations of stative verbs such as *John's owning the house, Mary's owing an amount of money, John's knowing French, Bill's weighing over 100 kilo*, *Socrates' having wisdom*, *Mary's being happy* etc.

Abstract states have a feature of concreteness, though, in that they have a temporal duration, and they obtain (at a time) on the basis of what is going on in the world. Even though they do not contain the individual and the property from which they abstracted as parts, their identity and existence depends on them.

Ontologically dependent entities of the sort of disturbances and modes might be viewed similarly, as entities obtained in a particular way by abstraction from relevant properties of their bearer. The abstraction principles however will be different from that of abstract states in that they should not involve a particular (possibly nonspecific) property, but rather a range of fully specific features of the bearer. Disturbances would then be entities based on features of the bearer that together meet certain gestalt conditions. They would be introduced as entities having only properties strictly pertaining to those features and their relation to the bearer (in particular their location within the bearer) and nothing else. Unlike abstract states, disturbances would involve a very particular manifestation of the particular gestalt conditions in question. Disturbances would thus be viewed as introduced through a relation that may be regarded as the (exact) truthmaking relation, a relation that holds between an entity d and a representation (proposition or sentence) R just in case d is wholly relevant for the truth of R (Mulligan/Simons/Smith 1984, Fine 2017, Moltmann 2007, 2019, Guarino/Sales/Guizzardi 2016, Guarinao/ Guizzardi 2017). One might require for the truthmaking relation to obtain between d and R that d not be specified with any properties not relevant for the truth of R. This means that as exact truthmakers of the gestalt conditions, disturbances would not be specified with properties not strictly related to the manifestation of those gestalt conditions; and thus in particular they will lack an independent spatial location.

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[13] This is known as the *Stative Adverb Gap*. Some researchers have taken the Stative Adverb Gap to mean that stative verbs lack a Davidsonian event argument position, rather than having one filled in by abstract states (Katz 2003).

Modes have often been viewed as entities obtained by abstraction in a psychological sense, the act of attending to only one property of an object and abstracting from all others.[14] But tropes might also be viewed as obtained by a formal ontological operation of abstraction in a non-psychological sense, like disturbances. This would also require the notion of truthmaking, so that modes would be truthmakers of the bearer fulfilling a particular condition. Again, one may require that as such truthmakers modes will lack property specifications irrelevant to the satisfaction of the condition in question, such as a spatial location. Like disturbances, modes will be fully specific with respect to some types of property attributions, but lack other types of property attributions. That is, a mode such as Socrates' would be suited for the truthmaking of 'Socrates is wise', which is not about Socrates' location, but just one of his features. It would contrast in that respect with potential truthmakers of a different sort, such as situations in which Socrates is wise, which contain Socrates and his spatio-temporal location, which seems superfluous to the truth of the sentence.

The problem with this suggestion is that invoking truthmaking can only explain the selection of attributively limited entities like disturbance and modes; it cannot be used to introduce or individuate such entities, unlike abstraction in the Fregean sense. But truthmaking presupposes the individuation of potential truthmakers (situations, modes, events); truthmaking is not suited for individuating particular types if objects itself.

The conclusion thus is that the lack of a (direct) spatial location of disturbances and modes is to be considered a primitive ontological feature of such types of entities, rather than being explainable in terms of other notions such as that of the truthmaking relation regarding objects having particular conditions.

8. Conclusion

Disturbances and modes are entities that are clearly part of our ontology of ordinary objects, and they are well-reflected in natural language. They are entities that are ontologically dependent on other entities and, if the latter are concrete, fulfill various criteria of concreteness. Yet they do not come with a (bearer-independent) spatio-temporal location. This is a feature to be distinguished from the lack of a temporal part structure of material objects as well as the lack of a temporal and a spatial part structure of attitudinal objects of

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[14] This is reflected in the term 'abstract particular' (Campbell 1990) as an alternative term for William's (1953) term 'trope'.

both the psychological sort (beliefs, intentions) and the psycho-physical sort (claims, requests).

The paper has explored, but rejected the possibility of explaining this kind of attributive limitation of disturbances and modes in terms of abstraction, making use of a notion of truthmaking. The lack of a spatial location instead needs to be regarded as a primitive feature of ontologically dependent entities that are constituted by features of their bearers. Given the standard view on which having a spatio-temporal location is a defining feature of concreteness, the lack of a spatio-temporal location in the case of disturbances and modes constitutes a form of abstractness distinct from abstractness in the sense of representing only some of the properties of bearers (as 'abstract particulars', obtained by 'abstraction' from a fully specific object). It also adds to the controversy surrounding the traditional distinction between abstract and concrete.

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