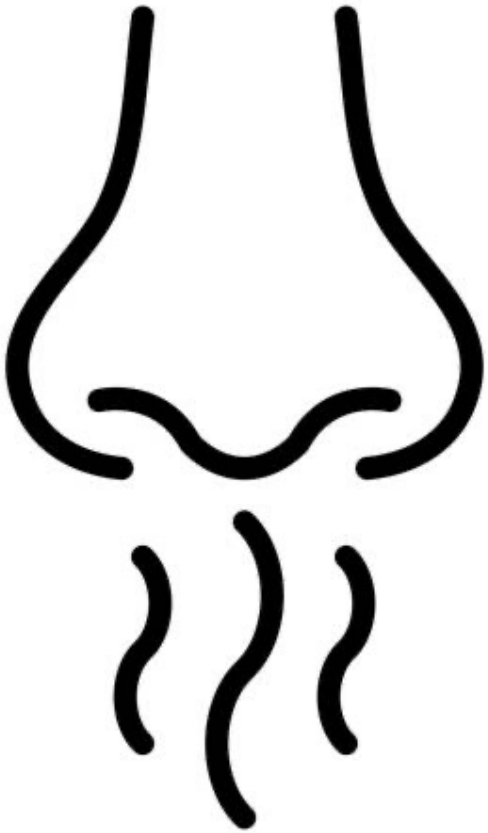


OLFACTION AND SPATIAL INFORMATION

Clare Batty

CEU Summer Universitys 2025

THE PLAN

Guiding question: Is synchronic olfactory experience spatial?

Aims:

1. Set out Aasen's arguments—negative and positive—against the claim that synchronic olfactory experience is aspatial or only minimally spatial;
2. Clarify the main target of her argument: me;
3. Show how there is more agreement and convergence between us than it might first appear;
4. Show that the convergence demonstrates the utility of the empirically-inspired model on which each of our theorizing is drawn.

NON-SPATIAL

Many philosophers have suggested that olfactory experience is non-spatial—or minimally so:

Lycan (2000): "If we bracket the external source of the smell and waive our contingent knowledge of that source, smell has no directional or other spatial aspect."

Matthen (2005): "[smells] have, at best, a primitive—that is, an undifferentiating —feature-location structure—every smell of which I am aware is simply here."

Batty (2010): "If we bracket information gained from movement and any other sensory modality, and consider olfactory experience at-a-time, then we see that any locatedness of these properties—other than simply 'here'— goes as well….The spatial presentation of olfactory experience at-a-time remains wholly undifferentiated."

NON-SPATIAL

Richardson (2013): "We don't smell odours at a distance, and there seems little reason to think that we smell them to be in directions—as being left, or right, or straight ahead, say…. In not presenting its objects as at distances and directions from the subject, olfactory experience does not present its objects as 'literally external to' the body in the way that vision does.

Young (2016): "Although olfactory perception can, across time (i.e., diachronically), be aided by moving around, it does not at a particular time (i.e., synchronically) present us with a spatiotemporally-bound entity—unlike in the case of visual experience."

NON-SPATIAL

Wilson & Stevenson (2006):

"[O]dors, unlike visual stimuli, do not intrinsically contain a spatial component, though they may vary in intensity over space as they diffuse from their source."

Young, Keller, & Rosenthal (2016):

"Olfactory experience can, across time (diachronically), have spatial structure, although it can be debated if this structure is represented in perception or [is cognitive. At any particular time (synchronically), olfactory experience has no spatial structure."

SYNCHRONIC VS. DIACHRONIC

Although many acknowledge that diachronic olfactory experience is spatial in nature, these claims all consider synchronic olfactory experience.

There are several (related) reasons for this:

1. a comparison with vision;
2. a focus on the hardest case for olfaction;
3. all the better for a robust representational account of olfactory experience.

Recently been argued by Aasen (2018) that there can be a "variety of spatial aspects of both synchronic and diachronic olfactory experiences, including spatial distance and direction."

ARGUMENTS FROM DISCRIMINATION

Aasen's negative argument targets what she calls 'arguments from discrimination':

Full Cover & Miss-a-Spot:

> "I spray lavender air freshener in an attempt to mask the smell of cigarette smoke. But I do not succeed in completely masking the smell. As a result, I can still smell the smoke smell as well as the air freshener smell. Although I can distinguish two different olfactory properties, my experience does not report at which points of the "olfactory field" these properties are instantiated….I would not be able to tell the difference between a case in which I cover the whole room with air freshener but in which I can still smell the smoke smell [Full Cover], and a case in which I miss a spot [Miss-a-Spot]." (Batty 2010)

Another way to state this is that synchronic olfactory experience is unable to solve the Many Properties Problem.

AASEN'S NEGATIVE ARGUMENT

Aasen's charge: Arguments from discrimination fail to rule out other possibilities of a richer form of spatial representation in olfactory experience.

"[Batty's] observation need not prompt the conclusion that one experiences nothing more than property instantiation at an 'undifferentiated' location, without experiencing the properties as being located before one. For why think that in order to experience something as located before one in the room, one must be able to tell whether it is located at every location in the room?" (6)

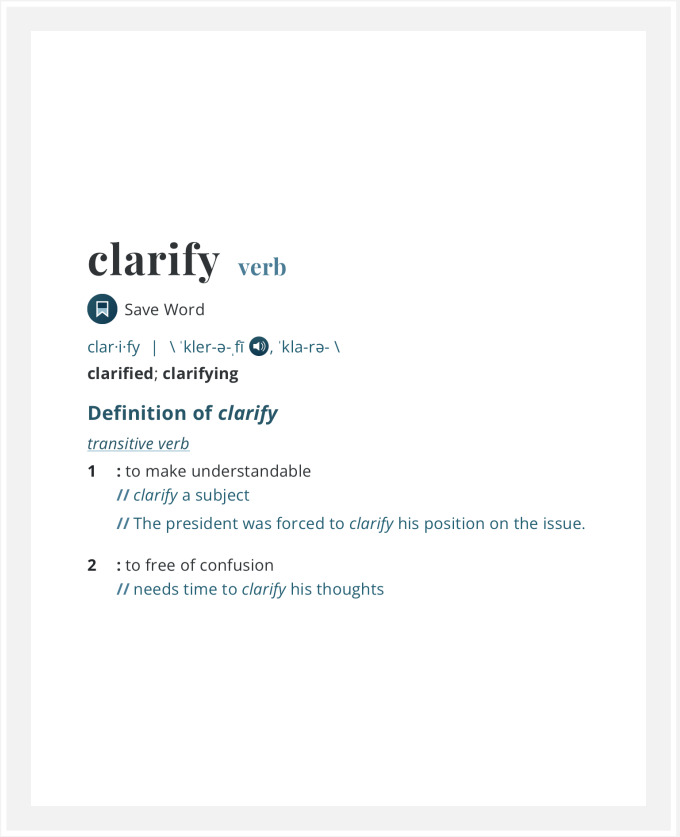
Agreed. But…

CLARIFICATIONS

An invitation for Batty misinterpretation:

"the conclusion that one experiences nothing more than property instantiation at an 'undifferentiated' location, without experiencing the properties as being located before one."

1. "one experiences *nothing more than property instantiation* at an 'undifferentiated' location";
2. one experiences olfactory properties "*without experiencing* the properties as being *located before one*."



clarify verb

Save Word

clar·i·fy | \ ˈkler-ə-ˌfī, ˈkla-rə- \
clarified; **clarifying**

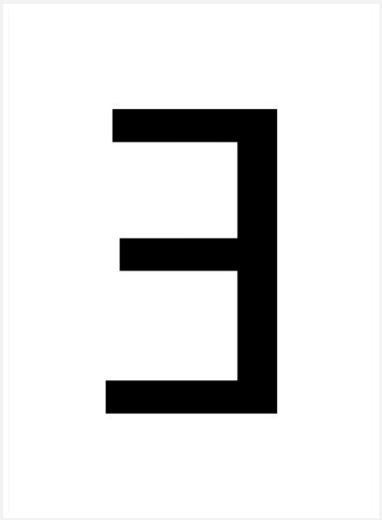
Definition of *clarify*

transitive verb

1 : to make understandable
// *clarify* a subject
// The president was forced to *clarify* his position on the issue.

2 : to free of confusion
// needs time to *clarify* his thoughts

THE ABSTRACT VIEW: TAKE ONE



We can diagnose worries about a lack of structure (or apparent object) as the observation that olfactory experience fails to achieve object individuation.

Rather than thinking of olfactory experience as having the form:

- *o* at L is F (G, and so on),

we think of it as having the form:

- something or other *here* is F (G, and so on).

THE OBJECT RECOGNITION MODEL

Wilson and Stevenson (2006, 2007)

Experiential prominence: the ability to smell the coffee, e.g., in an extremely complex olfactory environment.

Over time, the olfactory system builds up a store of *templates* in the olfactory cortex of patterns of receptor input. They allow the system to recognize these patterns against variable arrays of receptor input.

Olfactory experience is "largely synthetic"; it presents a "wholistic, unitary percept".

These percepts are represented *odor objects* (e.g., coffee, freshly baked bread, camembert cheese, old book).

All of this is achieved *aspatially*.

THE ABSTRACT VIEW: TAKE TWO

Olfactory perception involves:

- the recognition of complex patterns of receptor activity amounting to the extraction of information regarding a kind of object (namely, a kind of odor);

At the level of experience:

- the accompanying (largely) synthetic representation is a representation of a kind property (e.g., 'coffee', 'freshly baked bread', 'camembert cheese', 'old book');
- the representation of that type of property—a *kind* property—implicates objects directly;
- this amounts to an achievement of object recognition without object individuation.

WORLD-DIRECTED

2. one experiences olfactory properties "*without experiencing the properties as being located before one*"

This suggests that, on my view, olfactory experience fails to be world-directed.

"Integral to smelling is breathing; without literally taking in some of your environment, you cannot hope to smell anything" (Batty 2010).

On the abstract view, then, one does experience properties as external to one.

AASEN'S POSITIVE ARGUMENT

"One [can indeed experience] smells as being at a distance or direction, without it being part of the experience that they are at any particular location or any particular direction".

Her evidence? Both phenomenological and empirical.

EXTENSION

Example 1

"Suppose one sits in one's office and detects a faint smell of fire…[T]here can be two different spatial aspects of this experience".

"On the one hand, the phenomenology of this experience may be that one experiences something *as being extended over a large area*. It can be experienced thus because the smell is faint. The smell is recognisable as a weaker version of a stronger smell. Insofar as one on past occasions have experienced strong smells, or perhaps specifically strong smells of fire, to become faint as they spread out over large areas, it is at least possible (and perhaps also most likely) that one experiences the faint version as a spread-out version of the stronger smell."

DISTANCE

Example 1 *(cont'd)*

"On the other hand, one may focus on the faintness of the smell as an indicator of the presence of something else *at a distance from one*. By detecting a faint smell here, where one is situated, one may experience something else as being at a distance. Again, I think one may have this experience because the smell is faint and recognisable as a faint version of a stronger smell. It can therefore be taken as an indicator of the stronger version of the smell or of the source."

DISTANCE

Example II

"Suppose one is walking down a road and experiences the faint smell of a spicy dinner. Also here I think the phenomenology of the experience can be that one experiences something at a spatial distance, for the same reasons as in example I. But in addition, one may one experience something as *coming from a distance*…. [T]he quality of the faint smell of a spicy dinner has a peculiar quality; one may perhaps describe it as subtler or more many-faceted than the smell of the dinner up close. Thus, one is not just experiencing the same quality more clearly when entering the kitchen; rather, the quality is different."

INFERENCE?

Here Aasen introduces empirical considerations: Wilson and Stevenson's object recognition model.

"Rather than taking memory and recognition to be capacities that are definitely not involved in olfaction, they take them to capacities that are fundamentally involved".

Empirical considerations like theirs "[cast] doubt on the generality of the assumption that underlies [the current challenge to her view], i.e., the assumption that drawing on past experience makes one believe something about one's olfactory experience rather than experience it".

inference noun

Save Word

in·fer·ence | \ ˈin-f(ə-)rən(t)s, -fərn(t)s \

Definition of *inference*

1 : something that is inferred

especially : a conclusion or opinion that is formed because of known facts or evidence

TAKING STOCK

- We agree that both Full Cover and Miss-a-Spot exhibit a lack of spatial determinacy;
- We agree that the lack of determinacy is not placed in the object of olfaction itself but in how we experience it.
- We also agree that this lack of determinacy does not preclude the representation of *some* spatial properties;
- We disagree on the scope of the spatial properties that olfactory experience is able to represent.

Considering our views side by side reveals a common theme running through each of them…

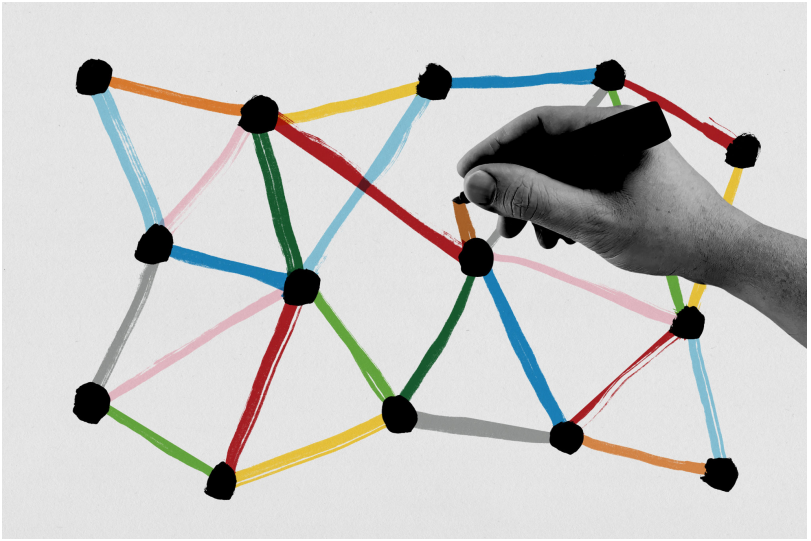
A COMMON THEME

"Recognition without individuation."

Olfactory experience achieves a kind of recognition in the absence of the fine-grained spatial achievement of object individuation.

Batty: olfactory experience achieves *object* recognition without object individuation;

Aasen: olfactory experience can achieve *spatial* recognition without spatial individuation.



EXTENSION

Example I

"Suppose one sits in one's office and detects a faint smell of fire…[T]here can be two different spatial aspects of this experience".

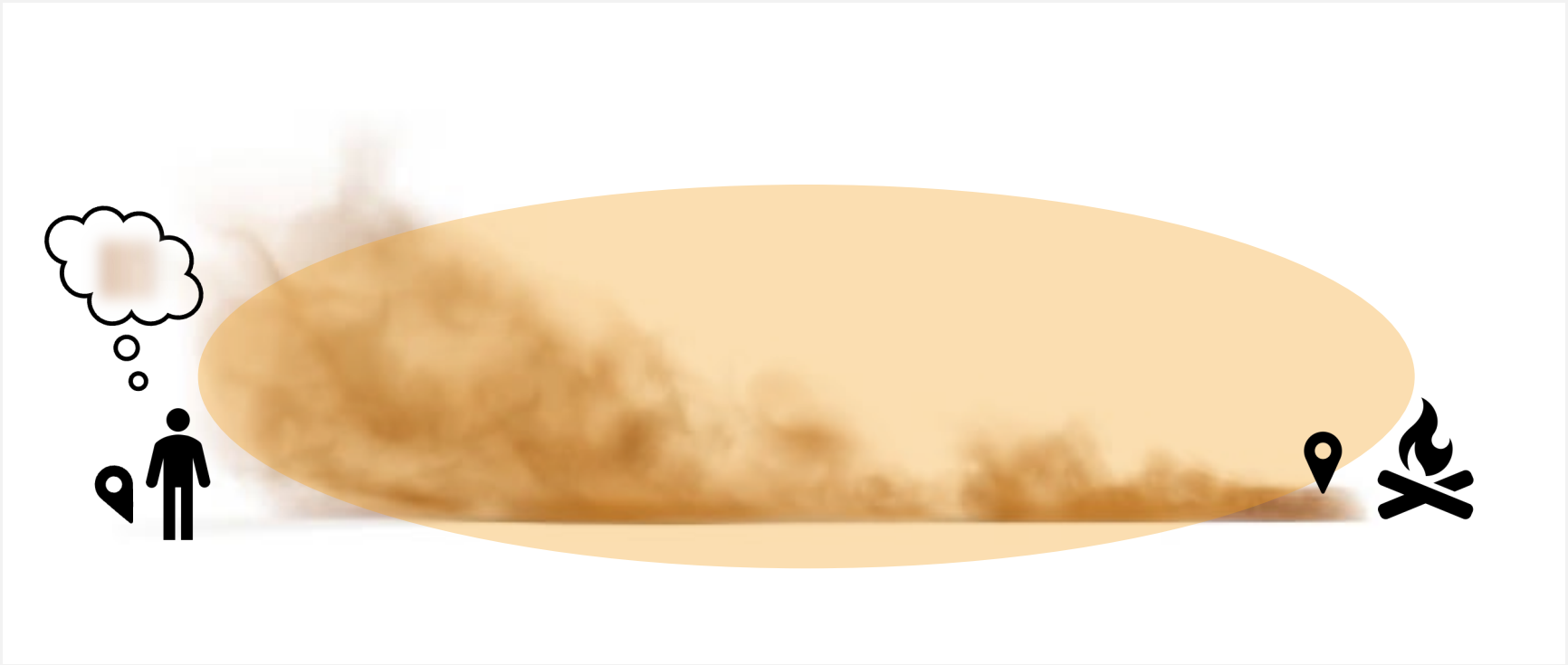
"On the one hand, the phenomenology of this experience may be that one experiences something *as being extended over a large area*. It can be experienced thus because the smell is faint. The smell is recognisable as a weaker version of a stronger smell. Insofar as one on past occasions have experienced strong smells, or perhaps specifically strong smells of fire, to become faint as they spread out over large areas, it is at least possible (and perhaps also most likely) that one experiences the faint version as a spread-out version of the stronger smell."

DISTANCE

Example 1 (*cont'd*)

"On the other hand, one may focus on the faintness of the smell as an indicator of the presence of something else *at a distance from one*. By detecting a faint smell here, where one is situated, one may experience something else as being at a distance. Again, I think one may have this experience because the smell is faint and recognisable as a faint version of a stronger smell. It can therefore be taken as an indicator of the stronger version of the smell or of the source."

CONVERGENCE



IMPACT

We arrive at an interesting and exciting synthesis of work on spatial representation and object representation for olfaction.

We now have:

- a model for understanding how objects are represented in olfactory experience as well as a range of richer spatial properties;
- a better understanding of the relationship between the representation of objects and space in olfactory experience;
- an appreciation that the concept of recognition is key.

THANK YOU!