



Appearance-Profile Fixation and Twin-Earth Arguments against High-Levelism

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Abstract

High-levelism about perceptual experience holds that experience presents not only low-level features such as colour and shape, but also high-level properties such as natural and artefact kinds. Twin-Earth-style arguments are widely taken to threaten this liberal view: they are supposed to show that Twin-Earth cases involve only low- or mid-level ‘looks’, rather than differences in kind-representing phenomenology. A familiar high-levelist reply weakens the link between phenomenal character and phenomenal content, allowing phenomenal duplicates to differ in which high-level properties they represent. In this paper, I argue that this argument tacitly relies on a bridging principle I call Appearance-Profile Fixation (APF): sameness of a coarse, image-based appearance profile suffices for sameness of high-level phenomenology. First, I reconstruct Twin-Earth arguments so as to make APF explicit and motivate it by appeal to the gist literature in vision science. Second, drawing on a Structural-Fit Lemma for phenomenal spaces and a ‘fake pine’ case, I show that APF is hard to reconcile with robust forms of high-levelism even on a weak notion of phenomenal content. Third, using high-levelists’ own interpretations of bistable displays, Mooney faces, rapid-scene categorisation, and appearance-matched metamers, I argue that high-level phenomenology can vary while the relevant appearance profile is held fixed. The upshot is that the dialectical force of Twin-Earth arguments against high-levelism depends on a substantive, yet optional, thesis about cross-world phenomenal pairing that high-levelists have independent reason to reject.

Keywords High-level perception · Kind perception · Twin-Earth arguments · Phenomenal content · Appearance profile · Phenomenal spaces

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1 Introduction

High-levelism holds that perceptual experiences can present not only low-level properties such as colour, shape, and orientation, but also high-level properties, including kind properties (e.g., being a pine tree or a plastic replica), scene-level properties (e.g., being a built or a natural environment), facial properties (e.g., a face's expressing anger), affordance properties (e.g., being graspable), and so on.¹ On this liberal picture, perceptual phenomenology presents us with an environment that is not only coloured and shaped but also structured by kinds, affective and social properties, and affordances. A well-known family of Twin-Earth-style objections has been taken to undermine this thesis about the range of perception (cf. Brogaard, 2013; Prinz, 2013; Price, 2009; also cf. Forrest, 2020). These arguments maintain that the perceptual experiences high-levelists treat as experiences of high-level properties are better understood as experiences of complex configurations of low- or mid-level features: coarse, image-based “looks” associated with certain categories (see also Landers, 2021; Jagnow, 2015).

In response, some high-levelists, most notably Bayne (2016) and Siegel (2013), appeal to what Bayne calls a *weak* notion of phenomenal content, on which phenomenal duplicates may nevertheless differ in which high-level properties their perceptual experiences represent. Bayne deploys this strategy in defending the idea of “gist perception” against Twin-Earth objections; Siegel (2013) uses a similar move in replying to Prinz (2013). The hope is that, by weakening the link between phenomenal character and phenomenal content, high-levelists can accept the apparent phenomenal pairing across Earth and Twin Earth while maintaining that the two experiences differ in which high-level properties they represent (Bayne, 2016, p. 120; Siegel, 2013, p. 851).

The situation is fairly familiar. On one side, Twin-Earth critics argue that high-levelism must collapse into a view on which only low- or mid-level looks rather than high-level properties are presented in perceptual experience. On the other side, Bayne and Siegel reply that high-level content can “float free” of phenomenal character, thereby insulating high-levelism from Twin-Earth-style counterexamples. Recent papers have clarified certain aspects of this debate, including the interaction between Twin-Earth cases and the method of phenomenal contrast (Raleigh, 2022), the consequences of these arguments on the internalism-externalism debate (Ashby, 2020), and the status of grouping and higher-order properties (Calzavarini & Voltolini, 2022).

Much of this work, however, focuses on the existence question rather than on characterising the phenomenal character. Recently, some authors have begun to address

¹ For representatives of high-levelism, see Bayne, 2009, 2011, 2016; Block, 2014; Butterfill, 2009; Cullison, 2010; Fish, 2009, 2013; Johnston, 2004, 2006; Masrour, 2011; McDowell, 1994; Nanay, 2011; Peacocke, 1992; Searle, 1983; Siegel, 2006, 2010; Siewert, 1998; Toribio, 2018; Helton, 2016.

this quietism about the character of high-level perceptual phenomenology.² Ashby (2025), for example, formulates a “No Progress” objection to high-levelism if it cannot answer characterisation questions and develops a positive account of kind perception in terms of stereotype completion—roughly, amodal completion applied to the stereotypical features, behaviours, and affordances associated with object kinds. On his proposal, the phenomenal character of kind perception is structured by patterns of similarity, coordination, precision, and processing that govern how displayed and completed aspects of a stereotype hang together across perspectives and viewing conditions. A complementary line of work is Berger and Rosenthal’s (2025) mental-quality model, on which both low- and high-level perception are mediated by structured spaces of mental qualities, with conceptual capacities partly determining which property-families are instantiated in a given experience. Both projects are liberal-friendly, but their main target is the positive characterisation question rather than the status of Twin-Earth arguments against high-levelism. My aim here is not to establish that kinds are perceived, but to clarify what Twin-Earth objections require in order to threaten high-levelism, and to argue that high-levelists can reject the required pairing bridge on independent grounds.

In this paper, I argue for three main claims. First, Twin-Earth arguments tacitly rely on a bridging principle about phenomenal pairing, which I call *Appearance-Profile Fixation* (APF), that has not been explicitly formulated or defended in the literature. Second, using a Structural-Fit Lemma about phenomenal spaces together with a ‘fake pine’ case, I argue that high-levelism is in serious tension with APF even on a weak notion of phenomenal content. Third, I show that, given how high-levelists themselves describe a range of standard empirical paradigms (e.g., bistable displays, Mooney faces, rapid-scene categorisation, metamerism), they have independent reason to withhold endorsement of APF. Section 2 introduces APF. Section 3 develops the structural argument, and Sect. 4 appeals to empirical paradigms to put pressure on APF.

The project is related to, but distinct from, several recent critiques of Twin-Earth style reasoning. Almäng (2021) develops a framework on which the analogue character of visual spatial content constrains the extent to which Twin-Earth thought experiments can succeed, arguing that the geometrical structure of phenomenal space places tight limits on how far spatial contents can be ‘twin-earthed’. Rather than focusing on low-level spatial contents, I apply a similar structural-fit idea to high-level kind and gist phenomenology. Raleigh (2022) examines how Twin-Earth cases bear on phenomenal contrast arguments and on the link between phenomenology and content. Sacchi (2024) focuses on the interaction between the high-levelism debate and the content externalism vs. internalism debate and argues through an alternative

² For brevity, I use ‘high-level phenomenology’ to mean ‘high-level perceptual phenomenology’. In much of the high-levelism debate, the claim that perception represents high-level features is understood as the claim that such features can contribute to perceptual phenomenology (for explicit formulations, see, e.g., Siegel, 2010; Masrour, 2011; Nanay, 2012; Prinz, 2013; Siegel, 2013; Helton, 2016). The question here is whether high-level properties can figure in perceptual phenomenology itself, rather than merely affecting post-perceptual judgement or reporting. The phenomenal differences (whether between low-level and high-level aspects of experience or between the Earthling’s and the Twin-Earthling’s experiences) should therefore be understood in a perceptual sense.

reading of the phenomenal reflection claim, that a liberal should combine externalist content with internalist phenomenal character. My strategy is orthogonal. I focus on the phenomenal pairing premise and the role of Appearance-Profile Fixation as a bridge from coarse appearance profiles to high-level phenomenology. This matters not just for the fate of high-levelism but also for how we should understand the dialectical role of Twin-Earth cases in debates about the admissible contents and methods of phenomenology-based arguments.

2 Twin-Earth Arguments and Appearance-Profile Fixation

Tim Bayne (2016) argues that, in addition to other high-level properties, we can perceive gist properties such as being a built or a natural environment, or being a hot or a cold environment. In the same work, he also aims to rebut Twin-Earth-style arguments against high-levelism. His central case is a Twin Earth in which built environments look the way natural environments look in the actual world and vice versa. If a subject were transported to the Twin Earth, scenes that are in fact natural would share, at a glance, the coarse look she currently associates with built environments, and scenes that are in fact built would share the coarse look she currently associates with natural environments. Bayne's presentation of the objection invites the judgment that, for subjects matched in relevant perceptual competence, the Earthling viewing a natural environment and the Twin-Earthling viewing a built environment are phenomenal duplicates, at least with respect to gist-level visual phenomenology. The intended commonality is not intuitively the high-level property of being a built environment, but rather some low- or mid-level "spatial appearance" distinctive of earthly built environments (Bayne, 2016, p. 114; cf. Brogaard, 2013; Prinz, 2013; Price, 2009). Bayne further suggests that, in such cases, "these high-level properties seem to be screened off by the low-level spatial properties associated with distinct forms of gist" (Bayne, 2016, p. 114).

A canonical Twin-Earth argument against high-levelism can be formulated as follows:

- (P1) Phenomenal pairing. For subjects matched in relevant perceptual competence, the Earthling viewing a natural environment and the Twin-Earthling viewing a built environment are phenomenal duplicates with respect to gist-level visual phenomenology.
- (P2) From character to content. If two perceptual experiences are phenomenally the same, they represent the same properties ("strong identification" of phenomenal character with phenomenal content).
- (P3) No error. Neither subject is misperceiving.
- (C1) Therefore, perceptual experience does not present high-level kind properties in such cases. Rather, the experiences are of a specific constellation of low-level features common to built environments on Twin-Earth and natural environments on Earth.

The Twin-Earth set-up already holds fixed a low-level, image-based similarity, namely a coarse look at a glance. It is compatible with differences in subjects' beliefs and judgments about what they are seeing (and, if one accepts cognitive phenomenology, with differences at that level as well). The live question concerns perceptual phenomenology at the high-level or gist-level band: whether sameness of coarse look is sufficient for sameness in that band. Accordingly, (P1) should be read as a restricted duplication claim about gist-level visual phenomenology for competence-matched subjects, not as a claim of total psychological or total phenomenal duplication. The Twin-Earth argument presupposes neither internalism nor externalism about phenomenal character or mental content. It relies only on a certain level of phenomenal, not physical, duplication, and the relevant duplication is restricted to the visual phenomenology at issue (cf. Bayne, 2016, p. 120).

A different route of resistance to the anti-high-levelist argument would be to challenge the no-error or no systematic misperception premise (P3), rather than the restricted phenomenal-pairing claim in (P1). On that strategy, the central issue is no longer whether sameness of AP underwrites the relevant phenomenal pairing, but whether the subjects in the Twin-Earth case should instead be understood as involving perceptual error. That line of reply is not specific to Twin-Earth arguments against high-levelism, but is familiar from broader Twin-Earth debates about perceptual content (see, e.g., Burge, 1986; Davies, 1991). My concern in the present paper, however, is narrower: I focus on whether sameness of AP is sufficient to motivate the restricted phenomenal-pairing claim in (P1).

Accordingly, Bayne and Siegel reject (P2) and endorse what Bayne calls a weak notion of phenomenal content—a response Siegel (2013, p. 851) also deploys against Prinz (2013) (see also Bayne, 2016, p. 120, fn. 6). On this view, high-level features represented in perceptual phenomenology do not metaphysically supervene on phenomenal character. As Bayne puts it, if my phenomenal twin and I can differ in the high-level properties we perceive, then those properties are not metaphysically supervenient on phenomenal character (Bayne, 2016, p. 120).

So far in the Twin-Earth argument, nothing especially controversial has been made explicit beyond the striking scenario. But the crucial work is being done, silently, in (P1). A defender of the Twin-Earth argument can, of course, simply stipulate the relevant phenomenal pairing. But if (P1) is introduced in that way, it loses much of its force against the high-levelist, since it no longer serves as a theory-neutral starting point and instead builds in a controversial cross-world pairing claim. The pairing in (P1) does not follow from the stipulation alone.

The scenario fixes a swap of low-level looks, not a rule for cross-world phenomenal pairing. The principle or intuition that leads one to accept (P1) had better not be as strong as the claim that low-level phenomenology fixes high-level phenomenology. Such a claim can readily be rebutted. Consider a pine expert before and after she learns to recognise pine trees perceptually: even if the low-level phenomenology is the same, the high-level phenomenology plausibly differs across the two experiences. Or consider an entomologist and a pine expert looking at a forest: the former may perceive, say, a *Lucanus cervus* (the European stag beetle), whereas the latter perceives a pine tree in the very same region of the scene. Hence, even with the same low-level phenomenology, their high-level phenomenology can differ.

Conversely, the intuition behind (P1) cannot be as weak as the claim that if two subjects share the same internal computational states, they share the high-level phenomenology. Such a weak claim does not support (P1), because the Earthling and the Twin-Earthling in the example are, *ex hypothesi*, embedded in very different physical and computational environments. So we need a thesis that is neither too strong (thereby undermining (P1) with familiar expertise and contrast cases) nor too weak (thereby leaving the Twin-Earth argument unsupported).

Bayne explicitly frames the cross-world invariant in the scenario in terms of the coarse look distinctive of different scene types and motivates this invariant by appeal to the gist literature in vision science (Bayne, 2016, pp. 109–113). In that literature, the ‘spatial envelope’ provides an image-based, glance-level descriptor of a scene’s look: a low-dimensional summary pooling global layout cues (openness, expansion, roughness), dominant orientation and rectilinearity structure, the spatial-frequency amplitude envelope, and coarse texture statistics. These are the features extractable rapidly and without object parsing (Oliva & Torralba, 2001, pp. 145–148; Torralba & Oliva, 2003, pp. 391–394; Oliva, 2005, pp. 251–256). Thus, ‘appearance profile’ (AP) is any such low-dimensional, image-based, glance-level signature of how a scene looks.

Read in this way, the spatial-envelope program supplies a worked-out, measurable instance of the type of invariance at issue in Twin-Earth arguments: an image-based look-signature that is available at a glance, and can drive correct classification. Once this appearance-based invariant is in view, one natural way to regiment the relevant rationale is via the following bridge principle:

Appearance-Profile Fixation (APF). If two experiences match in their appearance profile (coarse, image-based pattern of low-level features), they are duplicates with respect to their gist-level visual phenomenology (the relevant ‘high-level’ band in Bayne’s set-up).

APF is a sufficiency thesis: sameness of AP is taken to be enough for sameness of gist-level visual phenomenology, whether or not it is also necessary. I also do not claim that any Twin-Earth critic explicitly endorses APF. Rather, I introduce APF as a transparent regimentation of one influential appearance-based motivation for (P1). The point of formulating APF is not to sideline the direct denial of (P1), but to make explicit the kind of sufficiency bridge that would be needed to motivate (P1) in a non-question-begging way, and hence to provide a principled target for the high-levelist’s rejection. On that motivation, if the Earthling and the Twin-Earthling share AP by stipulation, then APF would entail the competence-matched, gist-level version of (P1). Absent any such bridge principle, whether APF or a competitor, (P1) is either a bare stipulation or at least in need of further motivation, since nothing in the scenario by itself mandates that pairing. In Bayne’s set-up, neither gist facts nor conceptual classifications nor the identity of internal computational states is held fixed across worlds. The first two are permuted, and the last is unstipulated (Bayne, 2016). What plausibly remains as a cross-world invariant capable of rationalising the intended pairing is the coarse way the scene looks, as captured by AP. So (P1) is not merely

a stipulative pairing; it purports to track a real phenomenological commonality, and APF is one way of articulating that commonality in theoretical form.

A natural objection here is that AP has been drawn too narrowly, since it leaves out Gestalt grouping, figure-ground organisation, border ownership, proto-object parsing, and related structuring features. As Voltolini (2023) notes in connection with grouping and other higher-level properties, higher-level differences can arise even when lower-level features are held fixed. That is exactly why the Bayne-style Twin-Earth set-up should be read as fixing only a glance-level spatial look, not the full range of organisational outcomes. Still, the structure of Bayne's case also limits what can plausibly be held fixed across worlds. The point is not that the Earthling and the Twin-Earthling share every aspect of visual organisation. Bayne's own gloss is that what survives the built versus natural swap is a coarse look "at a glance": a low- or mid-level spatial appearance characteristic of earthly scene types, one that can screen off kind-level properties. That is why he appeals to the gist and spatial-envelope tradition in vision science. The spatial envelope is meant to capture a scene's glance-level look in terms of global layout cues, orientation structure, amplitude-spectrum information, and coarse texture statistics, and to do so in a way that is rapidly available and does not require object parsing. So this is not an idiosyncratic choice on my part. It is the most natural candidate for the kind of image-based common factor that a Bayne-style swap could plausibly hold fixed while varying which scenes are in fact built and which are natural.

Seen in that light, broadening AP to include organisational factors of this kind does not automatically make (P1) more charitable. It changes what the Twin-Earth stipulation would need to secure. Once AP is expanded to include figure-ground assignment, border ownership, proto-object structure, or task-dependent grouping, there is no longer any clear reason to expect those features to remain matched across a built versus natural swap. And if, as Calzavarini and Voltolini (2022) argue, higher-order properties are hierarchically structured, then adding some degree-1 organisation to AP will not secure matching at degree-2; it simply shifts the matching burden upward. These are exactly the sorts of features one would expect to diverge once the visual system takes up further discriminating information. So the proponent of (P1) cannot simply say that the Earthling and the Twin-Earthling share the same AP in this enriched sense. To preserve the phenomenal-duplicate verdict, they would need to add further cross-world matching stipulations that go well beyond the original "coarse look at a glance" motivation. That is not an innocent strengthening. It either makes the Twin-Earth pairing increasingly ad hoc, or it weakens the dialectical force of (P1), since the premise would then reflect a controversial cross-world pairing decision rather than a theory-neutral datum.

3 APF and High-Levelism

In this section, I first set out a Structural-Fit Lemma and then use a 'fake pine' case to bring out its implications for APF. I argue that APF is difficult to reconcile with high-levelism. Retreating to a weak notion of phenomenal content does not by itself rescue the view. That is, even if a high-levelist accepts such a weak notion, she should still

reject the pairing in (P1) that APF underwrites (Bayne, 2016, p. 120; Siegel, 2013, p. 851). Schematically: high-levelism, together with the Structural-Fit Lemma and the fake-pine set-up, entails the denial of APF.

Consider the following case. All pine trees in a subject's environment are suddenly replaced by highly realistic plastic Christmas trees indistinguishable from real pines at the level of coarse look. A subject S, a tree expert who can perceive pines, is informed of the global replacement. After some exposure, she acquires a perceptual capacity to see the replicas as fake pines or as Christmas trees, i.e., as instantiating an artefact kind, rather than as instantiating the natural kind *pine*. By stipulation, the AP is held fixed across the two episodes (same global layout, orientation statistics, spatial-frequency envelope, and coarse texture under the same viewing window), so that any micro-differences not captured by AP are bracketed. The fake pine case is a within-world manipulation of kind facts, not a Putnam-style Twin-Earth scenario about reference. It is designed to isolate the phenomenology of natural kind versus artefact kind perception under a fixed AP. The structural argument below can be seen as explaining why such a difference is to be expected if high-levelism is true. We can now formulate the tension more explicitly. The relevant claims are:

(P4) When S views a living pine before the replacement and the matching fake after the replacement, the two experiences are phenomenally the same (by APF).

(P5) If high-levelism is true, then the two experiences must differ phenomenally (to be defended below).

(C2) Therefore, APF and high-levelism are difficult to reconcile.

This argument does not depend on the strong character–content identification in (P2). Appealing to a weak notion of phenomenal content is therefore not a satisfactory reply. The only substantive premise is (P5). Its defence begins from some relatively uncontroversial benchmarks about phenomenal (or, sometimes, quality) spaces.

On the phenomenal space tradition, sensible qualities are individuated by their positions in a structured space that encodes similarity, gradation, and basic exclusion–combination constraints (e.g., Clark, 1993, ch. 2; 2000, chs. 1–3; Berger, 2021; Churchland, 2007; Byrne & Hilbert, 2003). Recent work generalises this framework beyond colour to olfaction, affect, and pain (Young et al., 2014; Coninx, 2022; Silva, 2023). In addition, what is heard is treated as an organised scene of events and sources whose co-presentation is governed by grouping principles and by the geometry of pitch and timbre (Nudds & O'Callaghan, 2009; O'Callaghan, 2024; cf. Matthen, 2010). Across these cases, the shared structural assumption is that, for a family of experiences to represent instances of a property F, the phenomenal or quality space they inhabit must mirror, at an appropriate level of abstraction, the pattern of similarity, gradation, and admissible co-attributions among F's instances (Clark, 2000; Gärdenfors, 2000, ch. 2; Churchland, 2007; cf. Almäng, 2021).

The phenomenal space of colour experiences provides a familiar illustration. When one sees, say, red, the phenomenology of the experience is internally organised by opponent structure and graded dimensions. At a single spatial micro-location and time, no hue is both reddish and greenish; mixtures (e.g., reddish–orange) are possible, but mutually exclusive co-attributions are not (Hurvich & Jameson, 1957;

Gegenfurtner & Kiper, 2003; Wandell, 1995). Metamers show input non-uniqueness, not arbitrariness, in the algebra of colour experience (Wyszecki & Stiles, 1982; Brainard, 2003). This matches the phenomenal-space picture on which colours are individuated by their positions in a structured space encoding similarity, gradation, and exclusion constraints, and on which permissible and impermissible co-attributions in experience mirror colour's own combination–exclusion rules. Auditory experience exhibits an analogous structure: pitch, timbre, and loudness are organised in a structured space with exclusion and combination constraints, and a single stream cannot, in one respect, be heard as both C4 and D4 (Bregman, 1990; Krumhansl, 1990; Moore, 2012).

The upshot of these benchmarks is a minimal structural constraint. If a perceptual experience presents an auditory property, its phenomenal organisation must respect the internal algebra of auditory qualities—what groupings, gradations, and exclusions are possible within a single auditory object or stream. Conversely, for an experience to represent surface colour, its phenomenology must inhabit a space whose similarity relations and exclusion–combination rules match those of the colour domain. Nothing in audition's own phenomenal space could, as such, represent a surface's colour: pitch–timbre–loudness space is the wrong shape to encode the opponent, spatially uniform constraints of surface colour. Any putative “colour-through-sound” representation would have to proceed via a colour-like phenomenal space, not via the auditory space. This is a constraint on phenomenal spaces rather than on sensory modalities per se. These considerations motivate a condition we presuppose whenever we ascribe a property perceptually: the Structural-Fit Lemma (cf. Skrzypulec, 2021 for a structurally similar constraint on cross-modal perceptual content). I do not claim that the Lemma is substantive metaphysics; rather, it makes explicit a minimal structural constraint already implicit in standard phenomenal-space theorising.

Structural-Fit Lemma. If an experience presents a property *F* as such, its phenomenal structure must at least roughly track the family-specific organisation of *F* (for example, which co-attributions are admissible, which exclusions are forced, and which gradations are available).

This lemma is in the spirit of the phenomenal-space tradition (Clark, 2000; Churchland, 2007; Gärdenfors, 2000) and is closely related to constraints developed by Almäng (2021) for spatial content. Almäng argues that the intrinsic geometry of phenomenal space limits the ways in which spatial contents can be “twin-earthed”. I generalise the underlying structural constraint beyond spatial contents, and I apply it not to challenge Twin-Earth scenarios for space but to question the sufficiency of coarse appearance profiles (AP) as a bridge from low-level looks to high-level phenomenology. It can be understood as distilling the minimal structural commitments that any such model must respect if it is to treat a given property-family as present in experience as such, rather than as a mere re-labelling of the same low-level array. Recent structural approaches to high-level recognition phenomenology, such as Ashby's (2025) stereotype-completion account, which characterises kind perception in terms of similarity, coordination, precision, and processing structure, can be seen as extending this strategy to kind perception. The Structural-Fit Lemma can

be understood as abstracting away from these implementation details: the phenomenal space they inhabit must respect the family-specific organisation of the properties perceived. Phenomenal spaces associated with different determinables are not freely interchangeable.

Now apply the same standard to the high-level case. If perceptual experience sometimes presents natural kind properties, then holding fixed a determinate taxonomic level (e.g., species) and excluding marginal or metamorphic cases, the phenomenology of the experience must respect exclusive membership and non-gradability of natural kind properties: the very same object is not, as seen, both pine and cedar at once, and it is not more or less a pine (Kripke, 1980; Putnam, 1975). Likewise, if perceptual experience sometimes presents artefact kind properties, its phenomenology should allow within-object conjunctions and function/assembly-based grouping: the same thing can be a decoration and a gift, reflecting role/affordance organisation (e.g., Bloom, 1996; Gibson, 1979). Furthermore, if perceptual experience sometimes presents expression or affect, gradations are permitted: faces can appear more or less angry (Calder & Young, 2005). This is simply the Structural-Fit Lemma applied to high-level property families. Thus, if high-level properties are perceptually present as such, structural fit should be expected.³ If the family-specific constraints leave no trace in phenomenology, what remains is not a high-level property as such but, at best, a reorganisation of the same low-level array plus a post-perceptual label.

I do not need a full catalogue of these constraints here. The basic point is simply that, when a property-family is perceptually present as such, token experiences are subject to non-trivial organisational constraints specific to that family. These include constraints on phenomenal similarity, gradation, exclusion, and admissible co-attribution, and the phenomenal organisation of the experience has to respect them. This is a necessary compatibility claim, not a sufficiency or uniqueness claim. Phenomenal structure does not by itself have to fix which family is represented, since different families could in principle share the same abstract organisation. In such cases, further anchoring considerations would be needed to determine which family is represented. Nor does the Lemma require global structural identity across subjects. Structural fit is assessed at the relevant grain, so overlap in representing particular determinates can still be compatible with systematic differences in overall discriminatory structure, as in cases of colour deficiency.⁴

³ This step does not assume that phenomenal character fixes high-level representational content, and it is therefore compatible with views on which high-level representational content may vary independently of phenomenal character. The point is instead a constraint on perceptual presence: if a high-level difference is genuinely perceptual, it should be reflected in phenomenal organisation at the relevant grain. Compare colour experience. Even theorists who deny that phenomenal character is exhausted by representational content still allow that colour phenomenology is governed by a structured similarity profile, often modelled as a colour quality space. Acknowledging such structure is neutral on any determination thesis. It only rules out assignments of perceptual presence that would be at odds with phenomenal organisation.

⁴ An alien quality space might be structurally isomorphic to human colour space. The Lemma is not intended to rule this out. Its role is only to impose a necessary compatibility constraint: representing a family as such requires that phenomenal organisation not be at odds with that family's basic organisational constraints. Likewise, intersubject differences (e.g., colour deficiency) do not force the result that no determinates can be shared; the Lemma requires structural fit only at the relevant grain where overlap in representation is claimed. I would like to thank an anonymous referee of this journal for pointing this out.

With structural fit in view, the conflict between APF and high-levelism is immediate. Return to the fake-pine test. Before the replacement, S views a living pine as a natural kind and after the replacement, S views a plastic replica as an artefact. APF predicts no phenomenal difference. High-levelism, together with structural fit, yields the opposite verdict. If both episodes are genuine high-level perceptual experiences, then their phenomenal organisations must diverge in the very respects in which the families diverge. Natural kind experience forbids within-level kind conjunctions and treats membership as non-gradable;⁵ artefact-kind experience permits such conjunctions and groups by function and assembly. Read through Ashby (2025)'s lens, the fake-pine case can also be described in terms of stereotype completion.⁶ Before the replacement, S's experience of a living pine plausibly completes a network of stereotypical features, behaviours, and affordances distinctive of the natural kind: growth, seasonal change, biological organisation, characteristic patterns of ageing, and so on. After the replacement and the acquisition of the capacity to see the replicas as Christmas trees or fake pines, her experiences instead complete a different stereotype, tied to artefactual roles, production histories, and affordances (being a decoration, a prop, a disposable object). On a stereotype-completion view, that shift in which stereotype is completed is itself a difference in high-level phenomenology.⁷ On Ashby's proposal, stereotype completion is a kind of perceptual completion, explicitly modelled on amodal completion, and meant to ground the phenomenal character of kind recognition (Ashby, 2025). I appeal to stereotype completion here only on that reading, that is, only insofar as it contributes to what it is like to see the object rather than merely shaping downstream judgement or report. If, instead, the shift is taken to be purely post-perceptual, then it is no longer the sort of high-level perceptual phenomenology

⁵ One might worry that saying natural-kind experience presents kind membership as non-degree-like is too quick, especially in the case of biological kinds. My use of kind-ascription here is only illustrative: the point is to mark a case in which experience plausibly has a non-degree-like format, at least in paradigm instances. I am not trying to give a full account of the structural constraints on natural-kind experience. For present purposes, it is enough that kind-ascription looks different, in organisational terms, from paradigm graded perceptual properties. Biological kinds, especially species, may of course admit borderline cases. But that kind of vagueness does not by itself show that membership must be represented as a matter of degree. In such cases, experience may simply be indeterminate with respect to membership at the relevant grain, rather than presenting membership as more or less present. The example is meant only to mark a plausible contrast class: natural-kind and artefactual-kind experiences can impose different organisational constraints at a fixed grain. The same basic point could be made, if needed, with less vagueness-prone categories such as chemical elements.

⁶ I follow Ashby in using "stereotype" for a structured cluster of category-associated features and expectations that can be recruited by completion-like processes. I do not take a stand here on whether stereotypes are identical with concepts, parts of concepts, or subpersonal representations. My argument does not depend on this further issue. What matters is the conditional point that, on the liberal-friendly reading according to which stereotype completion contributes to perceptual organisation and thus to perceptual phenomenology, the fake-pine case puts pressure on APF. If the shift is instead wholly post-perceptual, then the case no longer supports perceivability of the artefact kind as such.

⁷ One might object that the phenomenal contrast here is due, at least in part, to associated conscious imagery. I agree that imagery can accompany recognition. However, if the present kind of case is to support (P1) in the intended way, a purely imagistic explanation would not suffice. APF is introduced to secure a phenomenal-duplicate pairing on the basis of sameness of coarse AP. If sameness of AP leaves open systematic differences in the overall phenomenal character of the episode, whether strictly perceptual or partly imagistic, then sameness of AP is not sufficient for the phenomenal-duplicate claim in (P1).

at issue here, and the fake-pine case no longer supports perceivability of the artefact kind as such.

These structural demands cannot be jointly satisfied within a single, non-ambiguous perceptual experience of one object at a time. Either there is a difference in perceptual phenomenal character, contrary to APF, or there is not. If there is not, then the later episode is not a perception of an artefact kind as such, but at most the same low-level base accompanied by a post-perceptual label. Either way, a high-levelist who takes high-level properties to be phenomenally present in perception cannot maintain APF.

Two clarifications keep the focus squarely on phenomenology rather than sub-personal processing. First, the organisational contrasts just invoked are features of what it is like at a fixed grain (same object, region, and time; fixed taxonomic level), and the claim does not require any heavyweight metaphysics of kinds. Second, the discussion requires no detailed commitments about early vision; it relies only on the modest idea that, when a property-family is present as such in experience, its simplest combination–exclusion rules are mirrored in phenomenal organisation. The argument of this section has been purely structural. It shows that APF, together with a minimal structural-fit constraint on phenomenal spaces, poses a serious challenge for high-levelism.

4 Independent Reasons to Reject APF (and Thereby P1)

Very little explicit attention has been paid, as far as I can tell, to (P1) and APF in the relevant Twin-Earth debates. The bridging intuition is usually presupposed rather than defended, so the burden of argument falls on those who rely on it. Still, there are independent reasons, internal to high-levelism itself, to reject APF and therefore to reject (P1). In this section, I appeal to empirical paradigms that high-levelists themselves often describe as involving changes in high-level perceptual experience under fixed stimulation. I do not mean these cases to deliver a theory-neutral verdict on whether the relevant phenomenal variation is perceptual or post-perceptual. The empirical record does not settle that issue on its own, nor do these paradigms taken individually. My argument is conditional instead. If the high-levelist's own reading of these paradigms is granted, then high-level perceptual phenomenology can vary while AP is, by design, held fixed.

A first family of paradigms centres on reversible and bistable organisation under fixed proximal input (see Long & Toppino, 2004). In Rubin's face–vase figure, a single black-and-white contour array can be experienced, now as a vase in the centre with two black side-regions as background, now as two black faces in profile confronting each other, with the white region receding. In the Necker cube, the very same line drawing is seen, now as a cube oriented one way in depth, now as a cube oriented the other way (see Leopold & Logothetis, 1999). The hollow-mask illusion pushes the point further: a concave physical mask can, under appropriate lighting, be experienced as a convex, normally protruding face (see Hill & Bruce, 1994). In all these cases, local line layout, spatial-frequency envelope, and gross image statistics are held constant, while the experienced three-dimensional and figure–ground as-

structure alternates. Mooney faces provide a complementary case. Before a disambiguating cue, the two-tone black-and-white blobs look like amorphous patches; after the cue or after sufficient familiarisation, the very same pixel array is seen as a face, sometimes with a fairly rich sense of expression and orientation (Schwiedrzik et al., 2018). Neurophysiological, behavioural, and developmental work shows that figure assignment and border-ownership can switch along identical local edges, establishing a dissociation between local image properties and perceived organisation (Zhou et al., 2000; Qiu & von der Heydt, 2005; Peterson & Skow-Grant, 2003).⁸

High-levelists will naturally describe these transitions as changes in the experienced as-structure under a fixed AP, and nothing in what follows turns on whether that organisational phenomenology is best classified as low-level or high-level. On that reading, these paradigms speak directly against APF.

A second family of paradigms arises in the rapid-scene and summary-statistics literature, which is precisely the domain from which AP was originally extracted. In rapid-scene categorisation tasks, observers are presented with the same set of photographs under different task instructions. In one block, they are asked to classify each scene as “natural or built”; in another, using the very same images and similar exposure durations, they classify “open or enclosed”. The amplitude spectrum, orientation histogram, and coarse texture summaries of the images are unchanged across blocks. Yet phenomenologically, what is most salient, or what the observer experiences the scene as, shifts with task demands: a given coastal scene may be experienced first as natural rather than built in one context, and as open rather than enclosed in another, even though its AP, in the narrow sense relevant to Twin-Earth arguments, is held fixed (Greene and Oliva 2009a, b). From the high-levelist perspective, these are precisely the cases in which the same AP supports distinct high-level phenomenology of perceiving a scene as natural vs. built, or as open vs. enclosed, depending on task-set and contextual factors. McClelland (2021) takes similar findings, together with phenomenal contrast cases, to motivate the high-level scene contents. I rely on a weaker, conditional reading of this empirical record: even granting such a liberal interpretation, sameness of AP does not suffice for sameness of high-level phenomenology.

Appearance-matched metamer paradigms reinforce this diagnosis. Texture/summary-statistic models produce images that are matched in coarse appearance at a given scale, while scrambling local structure and object relations (Freeman & Simoncelli, 2011). In many real-world scenes, metamerisation preserves the broad look encoded by AP yet removes cues to objecthood, spatial arrangement, and function that, according to high-levelists, partly constitute high-level phenomenology. Observers can often tell real from synthetic scenes generated by texture-pooling models that match coarse image statistics (Wallis et al., 2019), and phenomenologically one image may look like a real corridor one could walk down, the other like a scrambled texture or an implausible arrangement of surfaces. Relatedly, there is a partial dissociation between rectilinearity-driven responses in the parahippocampal place area (Nasr et al., 2014) and navigational affordance/layout codes in the occipital place area and retrosplenial cortex: scenes can share rectilinear content and cardi-

⁸ For an influential use of ambiguous figures to challenge simple representationalist ties between content and phenomenology, see Macpherson (2006).

nal orientation structure, which strongly influence global statistics, while differing in perceived path structure, barrier information, and traversability (Bonner & Epstein, 2017). It is natural to say that two scenes can share an AP while differing in whether they are experienced as open and navigable or as enclosed and blocking. I am not claiming that these paradigms force a high-levelist interpretation. Once such an interpretation is granted, APF no longer looks plausible as a general sufficiency claim.

Ashby (2025)'s stereotype-completion model dovetails with this conditional reading of the empirical record. If kind perception involves the completion of stereotypical features, behaviours, and affordances that are only partly "on display" at a given moment, then the high-level completion profile of an experience depends on more than the coarse, image-based summary captured by an AP. Two scenes can match in spatial-envelope statistics while differing in which kind stereotypes are being completed: for example, a corridor experienced as a real, traversable passage as opposed to a cleverly painted backdrop or a surreal, physically incoherent structure. On such a view, sameness of AP at best underwrites a certain similarity in gist-level appearance; it does not by itself fix which stereotypical patterns are completed and so does not suffice for sameness of high-level phenomenology.

It is worth addressing a predictable reply. One might broaden APF to include figure/ground segmentation, border-ownership, proto-object organisation, layout and path structure, or even task-dependent grouping. On such a broad reading, AP will indeed vary across the face-vase versus vase-as-vase percept, across different scene task-sets, and across real-versus-metamer scenes. But that manoeuvre deprives the principle of dialectical bite. The reason is simply that Bayne-style Twin-Earth pairings plausibly hold fixed only a thin glance-level invariant, namely the coarse look captured by gist or spatial-envelope style description, rather than a richer set of organisational features. Once "AP" is expanded to include those further features, the original Twin-Earth stipulation no longer by itself secures the phenomenal pairing, and additional matching assumptions are needed, as explained in § 2.

The Twin-Earth pairing derives its interest precisely from holding constant a narrow, image-based base while allowing high-level kind labels to permute. The other predictable reply is to keep APF extremely narrow (pixels, edges, and spectra) so that it can be measured cleanly. That reading is scientifically attractive, but the bistability, Mooney, task-set, and metamer evidence then become straightforward counterexamples. At least, given our current understanding of these paradigms, it is hard to see a stable middle ground that both preserves the interest of APF and withstands them.

The reasonable place to land is that (P1)'s intuitive pull does reflect something correct about the perceptual common factor in many Twin-Earth-style pairings. There is a robust and behaviourally consequential level of global, image-side structure that supports gist-level phenomenology. But the best current evidence suggests that high-level phenomenology depends on AP plus organisational constraints, which are not reducible to the coarse image statistics encoded by an AP and can dissociate from it in precisely the experimental regimes that are supposed to isolate gist. From the perspective of the high-levelist, the moral is straightforward. High-level phenomenology can vary under a fixed AP, and the high-levelist is under no rational pressure to endorse APF or the phenomenal pairing in (P1). Once APF is off the table, (P1)

no longer reads as a theory-neutral datum about “what the cases are like”, but as the expression of a contentious pairing strategy.

Finally, none of this commits one to a sweeping top-down picture of perception. It is consistent with the claim that much of early vision is informationally encapsulated and that many apparent “cognitive penetrations” evaporate under methodological scrutiny (Firestone & Scholl, 2016). The point here is narrower. Even within a conservative framework, and even under brief exposures, there are principled, well-documented ways in which high-level phenomenology varies while the AP is held constant. That is enough to defeat APF as a general sufficiency thesis and, from the high-levelist’s own standpoint, to undercut the motivation for accepting the phenomenal pairing (P1) in the first place.

5 Conclusion

Twin-Earth arguments are often treated as neutral tests of the high-levelist’s liberal picture of perceptual phenomenology. I have suggested that they are not. Their central pairing premise (P1) tacitly relies on a substantive bridging principle (APF) on which sameness of a coarse, image-based appearance profile (AP) suffices for sameness of a certain band of phenomenology. Once APF is made explicit, it is far from innocent. In combination with minimal structural constraints on phenomenal spaces, it is difficult to reconcile with high-levelism. The claim is not that Twin-Earth arguments are useless, but that, once APF is brought into view, their force against high-levelism is much more limited than often assumed.

The structural argument built around the fake-pine case shows that, if perceptual experience sometimes presents natural and artefact kinds, then transitions from natural kind to artefact kind perception under a fixed AP should register as phenomenal differences. APF denies this possibility. In that sense, APF and high-levelism cannot both be maintained: even if we allow a weak notion of phenomenal content, a high-levelist who takes high-level properties to be phenomenally present has independent reason to resist the identification of phenomenal duplicates across the Earth/Twin-Earth divide that APF enforces. The incompatibility arises at the level of phenomenal structure, not from any strong identification of phenomenal character with phenomenal content.

Recent structural accounts of kind perception, such as Ashby’s stereotype-completion model fit naturally with this picture. They seek to characterise the high-level band of phenomenology in terms of patterns of similarity, coordination, precision, and processing that govern how stereotypical features, behaviours, and affordances are jointly represented. The Structural-Fit Lemma can be viewed as a minimal constraint that any such positive model must satisfy. If something in the vicinity of stereotype-completion is correct, that only strengthens the case against taking a coarse AP to fix the relevant high-level phenomenology.

From within the high-levelist’s own standpoint, standard empirical paradigms reinforce this conclusion. High-levelists naturally describe bistable displays, Mooney faces, rapid-scene categorisation, and appearance-matched metamers as exhibiting changes in high-level phenomenology under a fixed AP. On that reading, sameness of

AP does not guarantee sameness of precisely the band of phenomenology that Twin-Earth arguments purport to hold fixed. High-levelists, therefore, are under no obligation to endorse APF or to share the phenomenal pairing intuition encoded in (P1).

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Declarations

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