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Minima Visibilia*, Single-Colored Patches, Points: Logical Analysis and its Visual Instances in Wittgenstein's Early *Notebooks

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One of the conundrums of Wittgenstein's so-called 'Notebooks 1914–1916' (Wittgenstein 1984) concerns the role of the visual instances of logical analysis.¹ As a matter of fact and in contrast to the *Tractatus* (Wittgenstein 1961), in discussing in that work the requirement that the logical analysis of meaningful sentences be complete, Wittgenstein often takes as examples ordinary statements about the colored parts of the subject's visual image (*Gesichtsbild*).² In view of this, it might be thought that the requirement is not laid down in the *Notebooks* on logical grounds, but somehow on psychological or psychophysical ones. In this paper I argue this is not so and that the requirement is exemplified rather than justified by the analysis of statements about the products of the subject's visual imagination. I also argue that, on Wittgenstein's syntactic notion of a complete logical analysis, our

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unanalyzed statements embody *as they are* the requirement that their sense be fully determinate; which is just what is meant by the idea that the analysis must be complete.

The paper is framed as follows. In Sect. 2.1, I review the various models of analysis of visual sensations alluded to by Wittgenstein in the *Notebooks* on tackling the issue of the analysis of spatial complexes and show that, appearances notwithstanding, he does not endorse any of them. In Sect. 2.2, I take up the issue of the (presumed) infinite complexity of spatial complexes and show that, on Wittgenstein's new explanatory notion of a complete analysis, the hypothesis is perfectly compatible with the requirement that the sense of the analyzed statement be determinate—which, again, is just another way to put the idea of completeness. It remains to explain, however, the motivations for the shift in Wittgenstein's conception. This is done in Sect. 2.3 by emphasizing the influence of Russell's theory of definite descriptions on Wittgenstein's own program of analysis of statements involving terms for complexes and also by showing that the new explanatory notion can be exemplified by the analysis of any statement about an infinitely complex portion of the subject's visual image.

2.1 Spatial Complexes

Spatial and *temporal* complexes (1984: 49)

Wittgenstein devotes a fair amount of remarks in the *Notebooks* to the issues of the analysis of spatial complexes and the nature of spatial complexity. By 'spatial complexes', one is to understand in that work just as much any material body occupying a region of physical space as any visual mental image (*Gesichtsbild*) divisible into uniformly colored parts (surfaces). So, what really matters there is less the epistemological divide between their respective 'spaces'—the fact that the so-called 'visual space' is immediately given, while the other, commonly termed 'physical space', is inferred or constructed on the basis of the former—than their both being divisible portions or occupants of some spatial medium, as is plain from the following entry:

Does the visual image of a *minimum visibile* actually appear to us as indivisible? What has extension is divisible. Are there parts in our visual image that have no extension? E.g., the images of the fixed stars? (1984: 51)

The assumption here is that it only makes sense to ask whether the subject's visual image of a *minimum visibile* contains extensionless parts and, moreover, whether this (alleged) indivisibility is experienced by the subject if one thinks of the visual image as a kind of mental array located in some mental spatial medium.³

As far as the analysis of *mental* spatial complexes is concerned, three historically well-established models, at least, are alluded to and somehow sketchily discussed by Wittgenstein in the *Notebooks*: Fechner's psychophysical, the introspective, and the physicalistic model.⁴ My aim in this section is to show, reviewing each model in turn, that Wittgenstein ends up not endorsing any of them; not even, *pace* Lampert, the physicalistic model.

Fechner's (1860) psychophysical model analyzes visual sensations into basic units of measurement coined 'just noticeable differences' (hereafter, JNDs). JNDs are the minimum reportable differences in sensations brought about by a minimum change in physical stimulus intensity. The choice of JNDs as the *termini* of analysis is key to the claim that it is possible to measure the intensity of sensations and is motivated by the insight, shared by Fechner with Weber, that there is a systematic, quantifiable, and mathematically statable relationship between the minimum difference in intensity of sensations the mind is able to detect above a certain point—defined as zero—and the minimum amount a physical stimulus has to change (in intensity) to bring about that awareness.⁵ Fechner's model is sometimes referred to as the *threshold model*, for his analysis of sensations into JNDs is committed to the view that there is an absolute intensive threshold defined as the lowest intensity at which a stimulus (or stimulus difference) can be detected and below which no detectable sensation occurs. Assuming that sensation is null at the absolute threshold—also called, after Herbart, *the limen*—and that all JNDs are equal regardless of where on the scale of physical intensity they fall, a given sensation can thus be said to be some number of JNDs above

the limen, or above or below another sensation. This is, in a nutshell, Fechner's contribution to the analysis of (notably, visual) sensations.

But that is not all. In addition to analyzing sensations into basic units with respect to their intensity or intensive properties, Fechner provides a model for analyzing their *extensive* properties, that is, the properties they have of filling in a region of space in some mental medium, along the same lines. In that respect too, it makes sense, on Fechner's analysis, to speak of an absolute *extensive* threshold above which differences in spatial extension of sensations are just noticeable. The JNDs that serve as basic units for the measurement of detectable spatial increases are named, after Berkeley and Hume, by psychologists like James (1890: e.g. 164) and Külpe (1893) *minima sensibilia*—*minima visibilia*, with respect to the visual modality.⁶ This is presumably what Wittgenstein alludes to in the above-quoted entry from the *Notebooks*. And it is worth noticing that that which Wittgenstein considers as an example of *minimum visibile*, namely the visual image of a (fixed) star, is an example, on Fechner's model of analysis, of a noticeable difference in extensive magnitude just above the extensive threshold. The extension referred to in the example is the brought-about-by-stimulus minimum one a fixed star on a dark background must have for it to be detectable at certain distance (Lampert 2000: 42).

Fechner's model of analysis has an obvious merit. It provides a scientific (psychophysical) basis for the otherwise highly speculative claim that the visual field—in the terminology of the *Notebooks*, the subject's visual image—is ultimately composed of sensible parts that are the smallest extended parts ever detectable by the eye.⁷ On Fechner's model, this is no way mysterious since the notion of a limit of the process of analysis is cashed out in terms of an absolute extensive threshold below which no difference or increase in spatial extension is detectable. One need not even assume here that the subject is able to experience the (alleged) indivisibility of her visual image; which is surely an advantage from Wittgenstein's standpoint.

That Wittgenstein ends up not endorsing Fechner's model, for he does not think it unproblematic to consider the *minima visibilia* as the *termini* of the process of analysis, is plain from the following entry:

But what is a uniformly coloured part of my visual image (*Gesichtsbild*) composed of? Of *minima visibilia*? How should the place of one such be determined? (1984: 45. Modified translation)

Another entry from a late 1920s manuscript, where Fechner's parsing technique of the visual field into sharp little squares through the application of a grid network is clearly alluded to, confirms that Wittgenstein considers the analysis into *minima visibilia* as—to say the least—deeply problematic. Here is it:

One might think that the visual space is composed of *minima visibilia*; for instance, of sharp little squares seen as indivisible patches. But then, obviously, the choice of those parts is arbitrary. I could not say *e.g.* how the grid network must be laid onto a particular image for it suffices to move the network a few inches to completely change the location of the *minima visibilia* while the image keeps on looking just the same. (MS 105, p. 7. My translation)

Once reconstructed, the argument against Fechner's model runs, roughly, as follows:

- Premise 1.* For a type of analysis to serve as a model for the decomposition of the extensive properties of visual sensations into their simplest parts, it should not be arbitrary; that is, it should not be possible to pick out at will the location of the parts they are ultimately composed of.
- Premise 2.* Fechner's analysis is arbitrary, for the pinpointing of the *minima visibilia* is not constrained in any way, in particular by where the stimulus (or stimulus difference) that bring them about is located in the field. (In other words, Fechner's *minima visibilia* have no absolute location in the visual field).
- Conclusion.* Fechner's analysis cannot serve as a model for the decomposition of visual spatial complexes into their simplest (extended) parts.

P_1 is contentious—while P_2 just states a factual truth and C necessarily follows from P_1 and P_2 provided the premises are true. For why on

earth, one might be tempted to ask, the non-arbitrariness of the analysis (in the above-explained sense) should be deemed a necessary condition? Why is absolute—instead of relative—location required here? The answer seems to be that in the absence of an absolute location, there is no guarantee that, for each statement about a uniformly colored part of the subject's visual image, there be just *one* possible way of analyzing it into statements about its constituent and their relations. The uniqueness of analysis seems to be required, on Wittgenstein's view, by the determinacy of the statement's sense. Being complete is not enough.⁸

Does the introspective model fare any better on that score? This is also doubtful. To see this, a brief outline of the model is needed.

The introspective model parses complex sensory data into simple, qualitatively distinguishable sensory contents by way of an inward focusing—introspection may be defined on the whole as a reflexive process of selective attention focused on the contents of the subject's experience. Two features, in particular, single it out: (i) it relies upon a distinctive criterion of analyzability and simplicity in sharp contrast to the spatial criterion of divisibility relied upon in physics when it comes to analyzing (spatially or temporally) extended bodies (Külpe 1893: 20). On the introspective analysis, if a sensory datum appears as comprising some kind of qualitative contrast, then it is deemed complex, therefore analyzable. And if no further qualitative contrast shows up when the focus is on the contrasting parts, then the parts arrived at through the inward process of selective attention are deemed *simple*. By no means analyzability entails, on this model, divisibility. Neither does simplicity entail indivisibility;

(ii) Even assuming like Külpe (*ibid.*) that spatial extension *is* among the attributes of (visual) sensations and, accordingly, that single-colored patches (rather than contrasting colors) are the ultimate constituents of the subject's visual image, the introspective model does not undertake its analysis, for it focuses on the quality rather than on the extension of (visual) sensations. (Lampert 2000: 53).

This model of analysis has pros. Because it uses a distinctive criterion of analyzability and simplicity in sharp contrast to the criterion relied upon in physics, it can be coherently claimed, on the one hand, that a single-colored patch in the subject's visual image is simple and, on

the other hand, that it is composed of a finite number of sensible parts. Russell, who at some point relied upon the introspective model, pinpointed a fallacy in the argument from the infinite divisibility of bodies in physical space to the complexity of single-colored patches:

There seems no reason to assume that, say, a uniform patch of colour occupying a small visual area must be complex; it is quite possible that the infinite divisibility of physical space results from a logical construction out of data which are not infinitely divisible.' (1992: 122)

An obvious flaw is that, in addition to disregarding the analysis of the extensive property of visual sensations, the model provides no scientific basis for the claim that the subject's visual image is ultimately composed of a finite number of simple sensible parts. As long as it is not assumed that qualitatively distinguishable sensations are comparable with each other not only qualitatively—via resemblance relations, but also quantitatively—qua measurable magnitudes, psychology can hardly be considered a natural, let alone an exact science. Another flaw is that, compared to the psychophysical, the introspective analysis falls short of the accuracy required to serve as a model for the logical analysis of ordinary statements about the subject's visual image. This is implicit in the above-quoted entry from the late 1920s manuscript.

What are the prospects of the physicalistic model?

To begin with, it should be reminded that its hallmark is to analyze visual sensations into *points*. This is not to be conflated, however, with the analysis of visual sensations into material atoms and their spatial relations.⁹ The latter can be suspected to rest on the fallacy pinpointed by Russell (1992) in the argument from the infinite divisibility of physical space and time. Still, in contrast to the introspective model, the physicalistic model does not take the simplicity of the ultimate constituents of the subject's visual image to be a matter of qualitative (color) uniformity. Its distinctive feature is to start from the definition of spatial complexes in Euclidean geometry to infer that the single-colored parts of the subject's visual image are ultimately composed of a (presumably) infinite number of points. A circle, for instance, is defined in Euclidean geometry as the set of points equidistant in a plane from

a point designated as its center. Under this definition, a circular blue patch is typically analyzed into a set of points that instantiate the equidistant relation. These are, in a nutshell, the main distinctive features of the physicalistic model of analysis of sensations.

Lampert (2000) argues that Wittgenstein's examples of simple objects in the *Notebooks* presuppose a physicalistic analysis in just that sense—namely, in the sense of Carnap's (1931) thesis of the translatability of all our ordinary statements into the sentences of a language describing the physical world. In support of his interpretation, he provides *inter alia* the following textual evidence:

As examples of the simple I always think of points of the visual image (just as parts of the visual image always come before my mind as typical composite objects). (1984: 45)¹⁰

A strong point in favor of the physicalistic model is that it is meant to be, just like the psychophysical and in contrast to the introspective model, an analysis of the *extensive* (as opposed to intensive) properties of visual sensations. Another strong point in its favor is that it is more likely to be used as a model for the logical analysis of ordinary statements about the subject's visual image, for the definitions it starts from—to infer that single-colored patches are composed of an infinite number of points—have the required *accuracy*. Last but not least, it provides an *a priori* answer to the questions identified by Wittgenstein as fundamental in philosophy—that is, questions of the form: is *x* a simple object?—without having to resort to some dubious subjective evidence.

In spite of its merits and of the importance given to the analysis of the statements of physics in the *Tractatus*, it is doubtful, however, that Wittgenstein has ever endorsed it or, for that matter, any other psychological model of analysis since his aim in the *Notebooks* is from the outset to question the intelligibility of the questions often presented by himself as fundamental in philosophy, notably the question as to whether the points in the subject's visual image are simple objects: 'It keeps on looking as if the question: "Are there simple things?" made sense. And surely this question must be nonsense!' (Wittgenstein 1984: 45)

In the entry quoted by Lampert in support of his interpretation, it is worth noticing that the author does not ask positively *how* those questions can be settled, but what kind of criterion of simplicity one would end up appealing to if the meaningfulness of such questions were ever granted. It is the (purported) function of the criterion that is at stake here and, more generally, the need for such criteria rather than their epistemic reliability or the nature of the things that meet them.

2.2 Complete Analysis, Infinite Complexity, and Determinacy of Sense: The New Explanatory Syntactic Notion

Among the options reviewed by Wittgenstein in the *Notebooks* concerning the analysis of spatial complexes is that of an analysis *ad infinitum*. An analysis *ad infinitum* is one that never ends or goes on indefinitely because one never gets on carrying it out at indivisible parts. Once acquaintance—whose function is precisely to signal that the process has reached its limit—is discarded, the option imposes itself, so it seems, as the only one worth considering.

There is, however, a third option, in addition to a finite and an endless analysis, that is worth being considered and is actually considered by Wittgenstein in the same work: that of an *infinite* analysis. Although the distinction is not explicit, it is implicitly present there for Wittgenstein does not take an endless analysis (i.e. *ad infinitum*) to be the same thing as an analysis that comes to an end with an infinite number of elements (i.e. infinite). The analysis of (visual) spatial complexes into points exemplifies the latter concept since the points, while infinite in number, make up the limit of the process of analysis: being extensionless, they cannot be further analyzed. Two notebook entries clearly show not only that the hypothesis of an infinite analysis and, thereby, of an infinite complexity of spatial complexes was seriously considered by Wittgenstein, but also that it is at the very core of the issue of a full analysis of meaningful sentences and of the determinacy of their sense. Here they are:

1. Let us assume that every spatial object consists of infinitely many points, then it is clear that I cannot mention all these by name when I speak of that object. Here then would be a case in which I cannot arrive at a complete analysis in the old sense at all; and perhaps just this is the usual case. But this is surely clear: the propositions, which are the only ones that humanity uses, will have a sense just as they are and do not wait upon a future analysis in order to acquire a sense (Wittgenstein 1984: 62).
2. But suppose that a simple name denotes an infinitely complex object. For example, perhaps we assert of a patch in our visual image (*von einem Fleck unseres Gesichtsbilds*) that it is to the right of a line, and we assume that every patch in our visual image is infinitely complex. Then, if we say that a point in that patch is to the right of the line, this proposition follows from the previous one, and if there are infinitely many points in the patch, *then infinitely many propositions of different content follow LOGICALLY from that first one*. And this of itself shews that the proposition itself was as a matter of fact infinitely complex. That is, not the propositional sign by itself, but it *together with its syntactical application*. (...) A proposition can, however, quite well treat of infinitely many points without being infinitely complex in a particular sense (Wittgenstein 1984: 64–65. Modified translation).

To be sure, the hypothesis of an infinite complexity is not incompatible with that of a finite analysis since the points, being extensionless, cannot be broken down into further parts; which is another way to put the idea that the analysis has an end. It raises a problem, however, as soon as one reflects on the meaning of the requirement that the analysis of statements involving names for spatial complexes be *complete*.

If ‘complete’ means being in a position to enumerate all the elements of the complex denoted by the name, the analysis of spatial complexes cannot be ‘complete’ in this sense since we never are acquainted with the points they are composed of. All we can get is a descriptive knowledge of them as the outcome of the process of analysis.¹¹ And even assuming we are able to intuit the points of a colored surface, we would never get to *know* them since they are infinite in number. So, it is one of

two things: either one takes oneself to be in a position to know by intuition all the points, therefore assuming a non-human epistemic capacity to intuit at the same time an infinite number of them, or one denies one can ever be acquainted with them, therefore precluding an analysis of statements involving names for spatial complexes from being complete. On the one hand, what we get is an endless process (of analysis) relying upon a non-human epistemic capacity to intuit all the points; on the other hand, a finite process the last stage of which is hard to pinpoint by means of an epistemic criterion. The latter situation is not uncommon, as Wittgenstein himself points out. Most of the time one has no immediate or direct knowledge of the parts of the spatial complexes denoted by singular terms in natural language. So, should the meaningfulness of our statements about spatial complexes turn on the possibility of a complete analysis in the latter, compositional sense, not only would they have no clear and assignable sense, but the very idea of an infinite analysis would run counter to it. This is, in a nutshell, the nub of the problem in (i) and (ii). On the other hand, it is fairly clear that Wittgenstein does not consider the impossibility to arrive at a direct and exhaustive knowledge of the elements and the structure of spatial complexes as a knockdown argument against the possibility of a complete analysis of meaningful sentences, let alone against the determinacy and, accordingly, *finiteness* of their sense. How are we to understand that?

A distinction owed to Beaney (2002, 2007, 2016) may be of some help here.¹² Among the multiple senses of the word ‘analysis’ that pervade the history of philosophy and of science, Beaney singles out two that are particularly relevant here: compositional (resolutive) and transformative (interpretive, explicatory). The former, which gained momentum with the classical rationalists and the British empiricists to reach its peak with Kant, is a kind of working back to fundamentals whose aim is to identify the elements and structure into which the *analysandum* resolves, while the latter simply aims to translate the *analysandum* into a particular theoretical framework within which the former may, yet need not occur. Both senses are usually intertwined in the actual practices of analysis while one may prevail over the others. But the point of the distinction, as Beaney (2002: 70) points out, is that with it the possibility ‘opens up of accepting

logical or paraphrastic (i.e. transformative) analysis while rejecting metaphysical or reductive (i.e. decompositional) analysis'. In other words, whereas the translation of natural language statements into a logical framework within which their actual logical (as opposed to their seeming linguistic) form becomes conspicuous help sort out philosophical misunderstandings, it need not carry with it any metaphysical commitment concerning the structure and the ultimate constituents of reality.

I take it that this is precisely the case here. A shift seems to have occurred in Wittgenstein's thinking as to the meaning of the phrase 'complete analysis', as borne out by (i) and (ii).¹³ In (i) Wittgenstein speaks of 'a complete analysis in the old sense' and it is fairly clear that it is in the decompositional one on which the meaning of simple signs (the names) are the building stones of the meaning of complex sentences that one cannot get at a complete analysis of meaningful sentences (or propositions). In (ii), though, Wittgenstein points towards another concept of analysis tied to another way of requiring that the sense of any meaningful sentence be determinate. On this new explanatory notion, an analysis is complete when all the logical consequences of the unanalyzed meaningful sentence in which a name for the complex occurs are settled beforehand—i.e. before one ever proceeds to their investigation, the meaning of the name being determined by its syntactic rules of use within a variety of propositional contexts:

One might demand determinacy in this way too: if a proposition is to make sense then the syntactical employment of each of its parts must be settled in advance. – It is, e.g., not possible only subsequently to come upon the fact that a proposition follows from it. But, e.g. what propositions follow from a proposition must be completely settled before that proposition can have a sense! (1984: 64. Modified translation)

As far as statements about an infinitely complex part of our visual image (e.g. a colored patch composed of infinitely many points) are concerned, this means, for one thing, that the infinite complexity of the unanalyzed statement shows itself in that follows from it an infinite number of statements (propositions) logically entailed by it; for another, that the infinite complexity of the denoted complex does not affect, appearances

notwithstanding, the determinacy of its sense since the latter turns exclusively on the mastering of the rules of the sign within sentential contexts. What makes the sense of the meaningful sentence determinate by settling in advance not only all the contexts in which a symbol (here, a name for a visual complex) may occur, but also all the logical consequences of the unanalyzed statement are the rules of syntax mastered by any competent user of language. This turning point in Wittgenstein's view of a complete analysis, from a (representationalist) compositional to a(n) (inferentialist) syntactic one, is ultimately what turns the hypothesis of an infinite complexity of the spatial object compatible with the requirement of a finite complexity of the sense of the statement in which its name occurs.

Still, the compatibility can be construed in two ways: either one takes it that it is the choice of a definite model of analysis that lies behind the conceptual shift, or that the compatibility is the *outcome* of a shift in Wittgenstein's view about what a complete analysis must be like regardless of any example of simples or complexes.

I shall argue in favor of the latter by showing, firstly, that Wittgenstein drew his inspiration from the transformative (explicatory) dimension of Russell's program of analysis of denoting phrases (Russell 1905) while adapting some of Russell's ideas to the analysis of complexes; secondly, that it is nevertheless essential for Wittgenstein that the new explanatory notion of a full analysis of meaningful sentences be exemplifiable by any ordinary statement about an infinitely complex part of the subject's visual image to the extent that the syntactic rules that determine the statement's sense are those mastered by the competent user of language. In that respect there is no substantial difference between analyzed and unanalyzed languages.¹⁴

2.3 Definite Descriptions, Terms for Complexes, and Statements About Spatial Complexes

Wittgenstein made no secret of his debt to Russell for the view of logical analysis outlined in the *Notebooks* and the *Tractatus*. In a 1937 manuscript, he writes:

Formerly, I myself spoke of a ‘complete analysis’, and I used to believe that philosophy had to give a definitive parsing of propositions so as to set out clearly all their connections and remove all possibilities of misunderstanding. I spoke as if there was a calculus in which such a parsing would be possible. I vaguely had in mind something like the definition Russell had given for the definite article, and used to think that in a similar way one could also define the concept say of a sphere with the help of visual images (*Gesichtsbilder*), and thus exhibit once for all the connections between the concepts and lay bare the source of all misunderstandings, etc.¹⁵

My purpose here is not to work out a systematic comparative study of Russell’s theory of definite descriptions and Wittgenstein’s view of the analysis of complexes. I simply want to point to resemblances between the two programs with a view to understanding the aforementioned shift in Wittgenstein’s notion of analysis.

In the quoted passage, Wittgenstein points out somehow evasively, yet clearly enough that he had in mind ‘something like Russell’s definition of the definite article’ on analyzing meaningful sentences (‘propositions’); that is to say, Russell’s analysis of definite descriptions. And he adds that, in analogy with Russell’s theory of definite descriptions, he deemed not only possible, but necessary to define a notion such as that of a sphere in terms of visual images in order to make clear the connections between the two concepts.

As is well known, a key feature of Russell’s theory of definite descriptions is to treat phrases like ‘the present king of France’ or ‘the author of *Waverley*’ as syncategorematic terms (incomplete symbols). In contrast to a categorematic term, a syncategorematic term is a term that has no meaning in isolation. If it does have one, it is only through its connection with other terms in wider grammatical or syntactic constructions. Semantically speaking, this means that, although they aren’t real syntactic units, definite descriptions nevertheless make a systematic (descriptive) contribution to the truth-conditions of the statements in which they occur. Hence Russell’s idea to translate the statements containing definite descriptions into a symbolic language or logical calculus that perspicuously show how this type of symbol makes its contribution to the truth-conditions of the statements, thereby removing all

ambiguity tied to their seemingly *referring* to individuals—where they actually express descriptive conditions to be satisfied by the denotation. This corresponds to the transformational or explicatory dimension of Russell's program.¹⁶

There are significant differences between Russell's and Wittgenstein's own program. The most obvious is that Russell's aims to do away with definite descriptions, that is, expressions of the form *the ϕ* , whereas Wittgenstein's is aimed at terms for complexes. In the *Notebooks*, Wittgenstein sketches a sweeping schema of analysis that seems to apply to any statement predicating something of a complex and serve as a means to do away with the names (conventionally) associated with it. Here it is:

$$\phi a.\phi b.aRb = \text{Def } \phi(aRb) (1984 : 4)$$

On Wittgenstein's view, every statement predicating a property ϕ of a complex can be analyzed into a product of elementary propositions about its constituents and one that describes the complex completely—here ' aRb '.¹⁷

There seems to be at least two features shared by the two programs of logical analysis. For one thing, Wittgenstein considers just like Russell that the names for complexes that occur in statements about the very complexes aren't real syntactic units—they are, just like definite descriptions, syncategorematic terms. For another, he shares Russell's view that being no real syntactic units they must vanish in the process of translating statements in which they occur into a fully analyzed language (calculus) featuring elementary propositions, sentential connectives, and a full description of the complex itself. And just like in Russell (Whitehead and Russell 1997: 67) one can do away with definite descriptions by means of definitions of *use* dealing with the wider propositional contexts in the symbolic expression of which they occur; in Wittgenstein the names for complexes can and must be gotten rid of by means of definitions that deal with the propositional contexts in (the symbolic expression of) which they occur and their actual usage within those contexts. Plainly, Wittgenstein's definition of functions of complexes *is* a contextual definition *à la Russell*. This explains that he may have had

‘something like Russell’s definition of the definite article’ in mind at the time he still deemed both possible and necessary to carry out a logical analysis of the statements of natural language to remove the conceptual misunderstandings brought about by the language surface structure.

The parallelism goes even further. In *Principia*, right after introducing the notion of a definition of use for definite descriptions, Russell and Whitehead point out that ‘in seeking to define the uses of this symbol (i.e. the logical symbol for the definite description), it is important to observe the *import* of propositions in which they occur.’ (Ibid.) In other words, on analyzing the definite description, one must pay attention, in their opinion, to that which is *implied* by the proposition in the symbolic expression of which the definite description occurs. As is well known, a statement containing a definite description of the form *the F is G* implies for Russell three statements: (i) there is at least one F (ii) nothing else is F (iii) he/she/it is G. More formally: $(\exists x) (Fx \wedge (\forall y) (Fy \rightarrow x = y) \wedge Gx)$. Note that these conditions are definite-description specific and not applicable as such to the analyses of names for complexes.

However, one may consider, as Wittgenstein does, that what holds of definite descriptions (in the context of statements) also holds *mutatis mutandis* of names for complexes, namely that their analysis must be carried out by paying attention to what is implied by the unanalyzed statements in which they occur. Kremer (1997: 98) rightly points out in that respect the influence of Russell on Wittgenstein as if Russell’s theory had served implicitly if not as a model, at least as a source of inspiration for Wittgenstein’s own program of analysis of terms for complexes:

In the NB [*Notebooks*] analysis, the statement “ $\phi(a\text{-}R\text{-}b)$ ” about the complex $a\text{-}R\text{-}b$ resolves into the statement “ $\phi a \cdot \phi b$ ” about its constituents a and b and the statement “ aRb ”, which describes the complex. Again, as *TLP* 3.24 puts it: “A proposition about a complex stands in an internal relation to a proposition about a constituent of the complex”. Here the proposition “ $\phi(a\text{-}R\text{-}b)$ ” stands in an internal relation to the propositions “ ϕa ”, “ ϕb ”, and “ aRb ” about the constituents of $a\text{-}R\text{-}b$: it is the conjunction of these propositions and so *implies* each of them. This is what one would expect from a logical analysis of complexes – recall that Russell

arrived at his contextual analysis of descriptions by considering what was *implied* by a proposition containing a description. A contextual analysis of complexes entails that the meaning of a name for a complex is a matter of logical relations between propositions involving that name and propositions about the constituents of the complex. This is what Wittgenstein means when he says that “syntactical use” determines the meaning of a name, “a form and a content”. The “syntactical rules” for a name determine its “syntactical use” by determining what *follows* from propositions involving the name.

We are now in a better position to understand the nature of the shift in Wittgenstein’s view of a complete logical analysis of meaningful sentences, but also what turns the new explanatory notion compatible with the hypothesis of an infinite complexity of the object denoted. Given that an internal relation of implication holds, on Wittgenstein’s view, between the proposition involving the name for a complex and those that are about the elements of the complex (ϕa , ϕb) and the complex itself ($a-R-b$); given, moreover, that the relation’s being internal is shown by the fact that the statement to the effect that the former are parts of the latter is for Wittgenstein a tautology, it does not seem to be required that one have an exhaustive intuitive knowledge of the points the complex parts are composed of as a result of a full decomposition of the symbol to be able to say something determinate on stating the sentence involving the name. The meaning of the name (for a complex) being determined *contextually*, like Russell’s symbol for definite description, by its rules of use within the propositions in the symbolic expression of which it occurs, it is enough to master the rules to know in advance not only all its possible occurrences in the corresponding propositions, but also all the propositions that follow logically from the unanalyzed statement. It does not matter in that respect whether the complex denoted by the term in the unanalyzed statement is infinitely or finitely complex since its composition makes no difference to the relation between the unanalyzed statement and the propositions that follow from it. Wittgenstein seems to have seen in this way of requiring sense-determinacy an acceptable solution to the problem of the denotation of infinite complexes.

Now it remains to explain how the new syntactic notion of a complete analysis is liable to be exemplified by the analysis of any statement about an infinitely complex part of the subject's *Gesichtsbild*. We saw that the shift had occurred in Wittgenstein's thought without his endorsing any epistemological model of analysis. It seems more reasonable to assume, on the contrary, that it is the logical analysis of complexes, strongly inspired by Russell's theory of descriptions, that served as a model for the analysis of geometrical concepts like that of a sphere. The following Notebook entry bears it out:

It seems to me perfectly possible that patches in our visual image (*Gesichtsbild*) are simple objects, in that we do not perceive any single point of a patch separately; the visual images (*Gesichtsbilder*) of stars even seem certainly to be so. What I mean is: if, e.g., I say that this watch is not in the drawer, there is absolutely no need for it to FOLLOW LOGICALLY that a wheel which is in the watch is not in the drawer, for perhaps I had not the least knowledge that the wheel was in the watch, and hence could not have meant by "this watch" the complex in which the wheel occurs. And it is certain – moreover – that I do not see all the parts of my theoretical visual image (*Gesichtsbild*). Who knows whether I see infinitely many points? (1984: 65. Modified translation)

It is one of two things: either one takes it that the points in the subject's visual image *are* the *termini* of analysis; if so, it is hard to see how Wittgenstein could avoid contradicting himself in claiming as he does here that colored parts (patches) of our visual image can be viewed as simple objects while being complex—for divisible, or one takes it that those examples of complexes and simples play no role in the search for the right formulation of the requirements of completeness and sense-determinacy, thus making it necessary to explain how objects like color patches that are in a sense complex can nevertheless satisfy the aforementioned requirements, and thereby, be viewed as simple objects.

In the entry just quoted Wittgenstein draws an analogy between a negative statement in which a term for a complex ('this watch is not in the drawer') occurs and a statement about a divisible, yet liable-to-be-considered-as-simple part of the subject's visual image—Fechner's star.

The point of the analogy is not too hard to figure out. It suggests that just as the material composition of the complex denoted by ‘*A*’ in the statement: ‘*A* is not in the drawer’ makes no difference to its sense or truth-conditions—the statement is true if and only if *A* is not in the drawer, thus turning irrelevant the fact that *A*’s parts (*e.g.* the wheels of a watch) are not in the drawer, the parts of a visual complex denoted by a term (say, ‘*S*’) in a statement like ‘*S* is on the left side of a colored line dividing our visual image into two uniformly colored parts’ makes no difference to its truth-conditions. The visual complex denoted by ‘*S*’ (say, Fechner’s star) may be ultimately analyzable into an infinite number of points. This does not preclude it from being treated at the end of the day as *simple* precisely because the semantic contribution of its parts to the truth-conditions of the statement, like in the case of the watch’s wheels, is null.

Note that Wittgenstein construes the example(s) in terms of his new inferentialist conception of a complete analysis (‘there is absolutely no need for it to FOLLOW LOGICALLY that a wheel which is in the watch is not in the drawer’). This should come as no surprise as the only perspective that seems relevant to telling whether an object is simple or complex is, on Wittgenstein’s view, that of the competent user of language. So, even though one usually has no knowledge of the parts of the (material, visual) objects denoted by the terms for complexes (‘*A*’ and ‘*S*’) and *a fortiori* of the points they are ultimately analyzable into, the mere fact that we are able *qua* competent speakers/writers to use the terms in various propositional contexts and say which propositions follow from the statements in which they occur is enough to ensure the full determinacy of the statements *as they are*. This also logically ensures the existence of simples at the ultimate level of analysis. As Wittgenstein puts it: ‘If there is a finite sense (*einen endlichen Sinn*) and a proposition expressing it completely, then there are also names for simple objects. That is the correct formulation.’¹⁸

As I read them, the *Notebooks* represent a stage in the development of Wittgenstein’s conception and practice of analysis where he neatly saw the difficulties faced by a view on which the decompositional aspect prevails—as it does in Russell’s own analysis of definite descriptions in 1905—over the others and so the need to recast the problems dealt

with here into another logico-philosophical framework to solve them for good.¹⁹ The analysis of statements about infinitely complex visual images is a case in point, for it is in this case that we can see—so I have argued—the shift in Wittgenstein’s conception from a decompositional to an explicatory sense that gives prominence to the knowledge any competent user of language has of their implications without having to actually know the elements and structure into which the denoted complex resolves. If *this* is what guides Wittgenstein’s new syntactic conception of analysis, as I argued, then questions arise as to its presuppositions; in particular the presupposition explicitly made by Wittgenstein that just by knowing the meaning of the terms the competent user would know without further investigation all that follows from the corresponding statement.²⁰ This is questionable for in most of the cases, ‘except perhaps in the case of stipulative definitions’ as Ongley (2005) rightly points out, we need to look to the world to tell whether the analysis of the relevant concepts is correct, especially where the concepts involved, like that of infinite spatial complexity, are of the non-logical variety. A thorough discussion of this presupposition is beyond the scope of this paper.

Notes

1. The title picked out by Wittgenstein’s literary executors is infelicitous, for the corresponding MSS 101–103 (Wittgenstein 2000) actually span the 1914–1917 period. However, I shall stick to the official title and simply refer to them as the *Notebooks*.
2. The word is more frequently used there than *visual field* (*Gesichtsfeld*) or *visual space* (*Gesichstraum*). I reckoned fourteen occurrences of it and, respectively, five and four of the latter in the corresponding MSS. The commentators overlook this fact because *Gesichtsbild* is often mistranslated as ‘visual field’ (see e.g. 64/e), thus masquerading that Wittgenstein’s favorite examples of complexes are the products of the subject’s visual imagination.
3. It is not clear, however, what view of the nature of mental images was Wittgenstein’s at the time of *Notebooks*—whether he was a pictorialist or a descriptionalist, for instance. In ‘Notes on Logic (1913)’ (Wittgenstein 1984: 100), he draws a distinction between retinal image and its mental

counterpart and compares the relation of determination of the latter by the blind spot (on the former) to the determination of reality by true negations of atomic propositions, but that's about it and certainly not enough to ascribe him a substantive view of mental imagery.

4. For a detailed and comprehensive study of the historical background of Wittgenstein's discussion focusing these models, see Lampert (2000: 21–133). In what follows, I heavily draw on it.
5. What came to be known (thanks to Fechner) as *Weber's law* in psychology states that the minimum amount of change in physical stimulation needed to cause a person to experience a JND is a function of the stimulus's initial intensity for some constant K_w (called *the Weber fraction*). Mathematically stated: $\Delta I = K_w I$. Fechner's (own) law states that for sensations to rise arithmetically, the magnitude of the physical stimulus must rise geometrically. In mathematical notation: $S = K \log I$.
6. As far as I know, Fechner does not use the phrase although the idea is present in his writings. He uses, instead, circumlocutions like 'the smallest magnitude' or 'the shortest distance recognizable by the eye'. See 1860, I, p. 267 & ff.
7. The claim is often said to be endorsed by Berkeley (e.g. 2002: sec. 80), while Hume (1896: Bk. I, Pt. II, sec. III) is pictured as endorsing the opposite claim—to the effect that *minima visibilia* are extensionless. For a different construal that stresses the influence of the former on the latter, see Raynor 1980.
8. See *Tractatus* (Wittgenstein 1961), 3.25. As I understand the requirement, the idea is already present in the *Notebooks*. See next Section.
9. For a physicalistic interpretation of Wittgenstein's logical atomism in this sense, see Griffin (1964).
10. See also Wittgenstein (1984: 3) where the question as to whether 'a point in our visual image is a *simple object*, a *thing*' is given as example of simple and fundamental questions in philosophy.
11. 1984, p. 50.
12. Thanks to an anonymous referee for reminding me of its importance for my present purposes.
13. The shift was noticed by Lampert (2000: 142).
14. Here I agree with Gandon (2002: Chap. 5).
15. MS 116: 80–1 (Wittgenstein 2000, 2004: 211) (Modified translation).
16. For a detailed study of how this dimension of Russell's program of analysis relates to the decompositional dimension embodied by the Principle of Acquaintance, see Hylton (2007).

17. See also *Tractatus* (Wittgenstein 1961), 2.0201, 3.24. This seems to be none other but the principle of compositionality that states (in its full generality) that for any expression e of some particular language L , the meaning of e in L is determined by the structure of e in L and the meanings of the constituents of e in L . If this is so, then it is misleading or at least an oversimplification to claim as I did that Wittgenstein's schema registers the influence of Russell's theory of descriptions. The principle certainly is older and more general than Russell's theory, although Wittgenstein might have got it through Russell. Thanks to an anonymous referee for bringing this to my attention.
18. 1984, p. 64. Modified translation.
19. Which framework would that be is a question whose answer is beyond the scope this paper, as it would require a careful study of both the interpretive framework chosen by Wittgenstein to deal with philosophical questions and the method used to settle them in the *Tractatus*.
20. The *a priori* character of philosophical analysis was pinpointed by Ongley (2005) as 'the major unstated presupposition of 20th c. ideas of philosophical analysis and 20th c. analytic philosophy'.

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