Chapter 2
Goodman's Nominalism

Abstract Goodman's and Quine's "Steps toward a Constructive Nominalism" make the following bold statement in its first paragraph: "But we cannot use variables that call for abstract objects as values." Goodman's nominalism also does not allow him to countenance the null set, mental entities, intensional objects, or classes, as classes violate the rule that entities differ only if their content differs, and once any hierarchical ontological distinctions are made there is no way of preventing the profligate growth into the realm of the non-entity, and the nominalist has now (however reluctantly) become a Platonist. Goodman is arguing that avoidance of the language of classes can be successful if one provides a satisfactory translation into a language of particulars. In many places Goodman reiterates two main points regarding his nominalism: (1) that it allows anything to be an individual and (2) that it strictly forbids classes. He constructs a phenomenalist axiomatic system, which has as its ontological primitives the individuals called "qualia" – the presented particular quality specifying color, place, and time.

2.1 Abstract Entities

Goodman's major references to abstract entities are in *The Structure of Appearance* (originally published in 1951); in the article entitled "A World of Individuals" (published originally in 1956 in the book entitled *The Problem of Universals* and later reprinted in Goodman's book, *Problems and Projects,* in 1972); and in the paper written by Goodman and Quine, entitled "Steps toward a Constructive Nominalism" (published in 1947). The latter has the following bold statement in its first paragraph: "But we cannot use variables that call for abstract objects as values."[1] While they recognize that such a repudiation of abstract objects would include "the unlimited universe of numbers, functions, and other classes claimed as values of the variable of classical mathematics" their reason for the move is because of the "paradoxes that result" when one does assume such variables. These paradoxes, of course, would

[1] Nelson Goodman and Willard Van Orman Quine, "Steps toward a Constructive Nominalism", *Journal of Symbolic Logic* 12 (1947): 105.

D. Shottenkirk, *Nominalism and Its Aftermath,* Synthese Library 343,
DOI 10.1007/978-1-4020-9931-1_2,

include the fundamental difficulty of referring to entities whose existence has not been established.

While discarding much that is fundamental to mathematics might seem problematic, the authors argue that, for example, infinity cannot be an essential part of mathematics since there is no general principle supported by physicists that "there are more than finitely many physical objects in all space-time."[2] Since we are finite creatures and the physical world is composed of finite objects, there is no reason that our mathematics cannot explain the world in terms that are consistent with the existents of that world, and the issue of explaining instances such as the ancestral relation (which involves recursion into infinity) can be seen as only a problem requiring a translation into a logical notation that does not use variables other than individuals. In other words, it is an issue of clarity. And Goodman and Quine, in a footnote to their article, note that their nominalism is just that – an insistence on clarity: "It might be supposed that the nominalist must regard as unclear any predicate of individuals for which there is no explanation that does not involve commitment to abstract entities."[3]

This often, then, becomes a matter of mere translation. In one of the first examples provided by Goodman and Quine, i.e., the statement "Class A is included in Class B", can be rephrased as "Everything that is in an A is a B."[4] While this problem is fairly easily solved, it is more problematic to solve the ancestral (infinity) problem, e.g., "b" is an ancestor of "c". Frege's method of defining the ancestral relation, accepted by Whitehead and Russell, seems to be unsatisfactory since it will also "involve a class-variable even more essentially", and would run thus: "b is distinct from c; and, for every class x, if c is a member of x and all parents of members of x are members of x then b is a member of x."[5] In notation, Frege's logical notation of this would be:

$$b \neq c \bullet (x)\{c \in x \bullet (y)(z)(z \in x \bullet \text{Parent } yz \bullet\supset\bullet y \in x) \bullet\supset\bullet b \in x\}.$$[6]

Goodman's and Quine's way of resolving this is to replace "class" by "individual" and "member" by "part", and to "stipulate that b be a parent and c have a parent. This added stipulation ensures that b and c be single whole organisms, rather than fragments or sums of organisms."[7] In their notation:

$$b \neq c \bullet (\exists u)\ \text{Parent}\ bu \bullet (\exists w)\ \text{Parent}\ wc \bullet$$
$$(x)\{\text{Part}\ cx \bullet (y)(z)(\text{Part}zx \bullet \text{Parent}\ yz \bullet\supset\ \text{Part}\ yx) \bullet\supset\ \text{Part}\ bx\}.$$[8]

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[2] Ibid., 106.

[3] Ibid., footnote 107.

[4] Ibid., 107.

[5] Ibid., 108.

[6] Ibid.

[7] Ibid., 109.

[8] Ibid.

But the problem of translating sentences that assume infinity or other abstract entities as variables is not yet solved, for as they note later in the article,

> But our syntax language must itself be purely nominalistic; it must make no use of terms or devices which involve commitment to abstract entities. It might seem that this program could be carried out without any difficulty once we have specified that we are dealing with concrete marks; but actually classical syntax has depended so heavily upon platonistic devices in constructing its definitions that the nominalist is faced with the necessity of finding new means of definition at almost every step.[8]

In other words, it is not always easily possible to substitute every class of individuals with a scattered individual and to re-construe "member" as "part". A simple statement such as "there are more cats than dogs" would require a very long enumeration of the instances, and though they note in discussing this and other similar examples that "we shall try to develop a syntax language that will treat mathematical expressions as concrete objects – as actual strings of physical marks",[9] it seems obvious that a "more than" relation is clearly not one of the most platonistic of entities. Again, the more difficult challenge is in something like an ancestral relation. In an attempt to devise a general system for translation of abstract concepts into nominalist concepts, the authors devise a syntax language composed of nine predicates, which along with variables, quantifiers, and truth-functional notations, can then give us the following two modes of description: (1) a "character", i.e., any concrete object that is one of the variables, and 2) an "inscription", i.e., an object composed of characters. (We will see these two definitions again in Part III.) Together with two rules of inference, the syntax language is intended to translate sentences so that all variables are bound, but the following problem arises with substitution cases:

> We have to find a way within nominalist syntax of defining 'Subst wxyz,' *meaning that the formula w is like the formula z except for having free variables like x wherever z contains free variables like y.* Our method of definition depends upon the fact that the condition in the foregoing italics is equivalent to the following one: *What remains when all free variables like y are omitted from the formula z is like what remains when some free variables like x are omitted from the formula w.*[10] *(italics theirs)*

A variable is said to be free in a wff (well-formed formula) if it is not preceded by a quantifier, and the resulting open sentence is neither true nor false. Free variables cannot be substituted for bound variables, for a bounded formula is where every occurrence of a variable is bounded by either an upper and/or lower limit. Ridding the system, (at least at one level) of unbounded or free variables is, of course, to open the possibility of having only existential quantification, as unbounded variables are not tied to concrete instances and can be infinitely quantified over. The authors, in their concluding remarks, assess it thus:

> In our earlier sections we studied the problem of translating into nominalistic language certain nonsyntactical sentences which had appeared to be explicable only in Platonist

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[8] Ibid., 111.

[9] Ibid.

[10] Ibid., 118.

> terms. In §5–10 we have been concerned with giving such a translation for syntax. This syntax enables us to describe and deal with many formulas (of the object language) for which we have no direct nominalistic translation. For example, the formula which is the full explanation in our object language of '(n)(n + n = 2n)' will contain variables calling for abstract entities as values; and if it cannot be translated into nominalistic language, it will in one sense be meaningless for us. But, taking that formula as a string of marks, we can determine whether it is indeed a proper formula of our object language, and what consequence-relationships it has to other formulas. We can thus handle much of classical logic and mathematics without in any further sense understanding, or granting the truth of, the formulas we are dealing with.
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> The gains which seem to have accrued to natural science from the use of mathematical formulas do not imply that those formulas are true statements. No one, not even the hardiest pragmatist, is likely to regard the beads of an abacus as true; and our position is that the formulas of platonistic mathematics are, like the beads of an abacus, convenient computational aids which need involve no question of truth. What is meaningful and true in the case of platonistic mathematics as in the case of the abacus is not the apparatus itself, but only the description of it: the rules by which it is constructed and run. These rules we do understand, in the strict sense that we can express them in purely nominalistic language. The idea that classical mathematics can be regarded as mere apparatus is not a novel one among nominalistically minded thinkers; but it can be maintained only if one can produce, as we have attempted to above, a syntax which is itself free from platonistic commitments.
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> At the same time, every advance we can make in finding direct translations for familiar strings of marks will increase the range of the meaningful language at our command.[11]

The question ought to be asked whether or not his reasons for prohibiting abstract entities in his jointly authored "Steps toward a Constructive Nominalism" are consistent with his other writings or whether his other writings, while rejecting classes, do not reject abstract entities. For example, in "A World of Individuals", he discusses the oft-debated sentence from "Steps Toward a Constructive Nominalism" e.g., "But we cannot use variables that call for abstract objects as values. . ." and states that if he were to write it now, "My own change [as opposed to Quine's stated change of wording] would be not from the categorical to the hypothetical, but from the vaguely general to the more specific. I do not look upon abstractness as either a necessary or a sufficient test of incomprehensibility; and indeed the line between what is ordinarily called "abstract" and what is ordinarily called "concrete" seems to me vague and capricious. Nominalism for me consists specifically in the refusal to recognize classes."[12] Shortly after in the same text, Goodman says, "Nominalism as I conceive it (and I am not here speaking for Quine) does not involve excluding abstract entities, spirits, intimations of immortality, or anything of the sort; but requires only that whatever is admitted as an entity at all be construed as an individual."[13] In *The Structure of Appearance* he says much the same thing, "The nominalistic philosopher like myself will not willingly use apparatus that peoples his world with a host of ethereal, platonic, pseudo entities. As a result, he will so

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[11] Ibid., 122.

[12] Nelson Goodman, "A World of Individuals" *Problems and Projects* (The Bobbs-Merrill Company, Inc., 1972), 156.

[13] Ibid., 157.

far as he can, avoid all use of the calculus of classes, and every other reference to nonindividuals, in constructing a system."[14]

It is not pertinent to decide this point regarding whether or not his nominalism necessarily precluded abstract entities, or whether his objections to abstract entities were extraneous to the demands of his nominalist system, but suffice it to say that, while *The Structure of Appearance* was published in 1951 (three years after the article written with Quine), the book itself had essentially been written long before, as it was an extension of his dissertation granted in 1941. So it could not be concluded that the article written jointly with Quine preceded his *The Structure of Appearance* and thus represents an earlier opinion.

In addition, while it is true that *The Structure of Appearance* has, at least in part, a phenomenalist foundation, it is not vague or abstract. Goodman's qualia are very concrete countable entities, and not one confused with vaguely defined sense-data or sensory experience in a way that could lead one to posit abstract entities as necessarily a part of the ontology. As he explains it in *The Structure of Appearance*:

> An object, or the totality of its presentations, is an event with a relatively long temporal dimension; and parts of it that differ spatially or temporally from one another may differ in other respects as well. ... Roughly, then, to say that a thing looks green is to make a statement concerning a presented quality, a color quality of some presentation of the thing, while to say that a thing is green is to make a more complex statement concerning the color qualities exhibited by various presentations of the thing. Obviously, the color names are thus used in two different ways in ordinary language: in the one case for presented characters, which I shall hereafter call qualia; in the other, for properties of things.[15]

The "presented character" – or qualia – is an entity, however phenomenal, that is an individual and can be, at least in theory, located as an entity discrete from other entities. This distinctness of qualia confirms what Goodman himself has characterized as a position of "super-extensionalism", and it is to that which we now turn.

2.2 Extensionalism

Though a simple statement such as "there are more cats than dogs" would require a very long enumeration of the instances in order to adhere to the syntax set forth in "Steps toward A Constructive Nominalism", it should be obvious that this kind of enumeration is extensionalist in form. We are actually listing each of the dogs and each of the cats. This is consistent with Goodman's form of extensionalism, which only counts as entities those singular individuals at the lowest level, where any identity of content means an identity of entities.

The traditional form of extensionalism discriminates identity in a slightly different way. He explains traditional extensionalism in "A World of Individuals" as follows. If there are four constituents {a,b,c,d} of a system and there are two classes

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[14] Nelson Goodman, *The Structure of Appearance* 3rd ed. (Reidel, 1977), 26.

[15] Ibid., 95.

{K,L} made up of those four entities such that K has the two pairs {a,c} and {b,d} and L has the two pairs {a,b} and {c,d}, systems K and L would have the same content and both would be said to exist. Traditional extensionalism allows this. But this has the consequence, which Goodman was frequently repeating, of increasing the world's entities by two more classes: an increase owed not to the existence of genuinely new entities. Goodman would argue, on the other hand, that there are not the eight entities consisting of the four atoms and the four classes of pairs of them; there are just four entities i.e., the four atomic units. Period. Individuals are such only if they are discrete from other entities; thus, any identity of content means an identity of entities, and the two classes K and L have the same content. This, then, explains his self-proclaimed epithet of "super-extensionalist".

It is perhaps helpful to contrast extensionalism with its opposite, for therein one can find many of the reasons for Goodman's positions not only in regard to extensionalism but also in regard to abstract entities, classes, and properties. Extensionalism is in contradistinction to intentionality, which refers to the having of thoughts, beliefs, desires, or other intentional attitudes. Many of the theorists propounding such a position argue, as did Brentano, for the "inexistence" of the object of those mental attitudes: "Every mental phenomenon is characterized by what the scholastics of the Middle Ages called the intentional (and also mental) inexistence of an object, and what we would call, although not in entirely unambiguous terms, the reference to a content, a direction upon an object (by which we are not to understand a reality. . .), or an immanent objectivity."[16]

The intentionalist will obviously assert mental contents and abstract objects as entities, and anyone, such as Goodman, who values a sparse and tidy ordering of the ontological universe will abhor such profligate populating strategies. Intentional objects are impossible to precisely describe or clearly delineate. They are impossible to quantify and do not, even in theory, subscribe to ostensive definitions. A nominalist clearly will not want intentional objects or contexts. As he explains the connection:

> This discloses the relationship between nominalism and extensionalism, which springs from a common aversion to the unwonted multiplication of entities. Extensionalism precludes the composition of more than one entity out of exactly the same entities by membership; nominalism goes further, precluding the composition of more than one entity out of the same entities by any chains of membership. For the extensionalist, two entities are identical if they break down into the same members; for the nominalist, two entities are identical if they break down in any way into the same entities. The extensionalist's restriction upon the generation of entities is a special case of the nominalist's more thoroughgoing restriction.[17]

This also explains why, in the article jointly authored with Henry S. Leonard and entitled "The Calculus of Individuals and Its Uses", they analogize their constructional system with Lesniewski's at least partially because that logician also avoided

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[16] Franz Clemens Brentano, *Psychologie vom Empirischen Standpunkt*. 3 v. (F. Meiner, 1874), vol. I, book II, chapter I.

[17] Nelson Goodman, "A World of Individuals" *Problems and Projects* (The Bobbs-Merrill Company, Inc., 1972), 159.

the null set. As they state, "Lesniewski's purpose, quite different from ours, was to establish a general theory of manifolds that would not be subject to Russell's paradox; but since he excludes the notion of a null class, his formal system is virtually the same as that which we interpret as a calculus of individuals."[18]

In addition, in analogizing their system to the Boolean algebra of classes, they note that the one difference is in their exclusion of the null set:

> It differs from the Boolean analogue in ways consequent upon the refusal to postulate a null element, although the primitive relation of 'discreteness' may be correlated with the Boolean function 'x . y = 0'. . .when in the Boolean proposition every expression of the form 'x/y = 0' is replaced by an expression of the form 'x is discrete from y', no reference to the null element remains and every product and negation is either deducibly unequal to the null element or else is conditionally affirmed to be unequal to it.[19]

A null set is at odds with both Goodmanian nominalism and extensionalism as it is literally "a nothing". In contradistinction, an entity is a thing; thus, to posit something as vaporous as a nothing-set is anathema to the concrete demands of extensionalism.

This restriction on the null set in turn is a restriction on reference and exemplification, for to claim that a symbol is referring to a non-existent entity is as suspect as referring to a null class, for neither has any extension. As he states in his 1984 book entitled *Of Mind and Other Matters*, "Exemplification is never fictive – the features or labels exemplified cannot be null or vacuous – for an exemplified feature is present in, and an exemplified label denotes, at least the sample itself."[20]

It is impossible to exemplify something that does not exist. For to understand is to understand the relation between the exemplifying symbol – whether verbal or nonverbal – and that to which the symbol refers. In other words, we understand the world by understanding the reference relationship between words and the objects for which they stand. In order for an object to be in a referencing relation with a word, the object must be real. One cannot refer to something that does not exist, just as one cannot point to an imaginary creature. This has posed a problem for various philosophers, but Goodman's solution is consistent with the rest of his philosophy. If one is given a fictional or pictorial account of an object that has never existed, Goodman posits the unbroken predicate: "the-unicorn-picture". In this unbroken one-place predicate the fictive object "unicorn" becomes the real object the "unicorn-picture" and is thus a satisfactory subject for a referential relation. (More will be said about this later in the Part III.)

Clearly, this one-place predicate involves a rejection of fictive objects but it also involves a rejection of meaning accounts of knowledge acquisition. Goodman's epistemology (and his aesthetics) is based on a referential and semantic account. This is an account that rejects the intentional object, since the intentional object is

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[18] Nelson Goodman, "The Calculus of Individuals and Its Uses", *Journal of Symbolic Logic* 5 (1940): 46.

[19] Ibid.

[20] Nelson Goodman, *Of Mind and Other Matters* (Harvard University Press, 1984), 60.

not subject to extensional referencing. Seen historically, semantics developed as a movement in philosophy primarily in the 1930s and 1940s, and was part of a more general attempt to give non-intensionalist accounts of reality, as a concomitant move away from the perceived vagueness of metaphysics. As Roger Scruton has characterized this: "The semantics approach takes its inspiration from Frege, and in fact seems to move away from the theory of meaning to what Quine has called the theory or reference: that is, its main tendency is to replace questions about meaning with questions about truth".[21]

This followed the parallel historical separation of meaning from reference, and was an attempt by Goodman and others to give truth conditions that would not be undermined by the existence of intensional contexts for which we possess no rules of replacement. Meaning was unquantifiable and could give no intersubjective verification; and since it is intersubjective verification that gives science its claim to factual truth, it was thought that philosophy ought to extract no less from its discipline. Since meaning, with its intentional contexts, could claim no such validity, it was clear that meaning could be abandoned. But language, on the other hand, is bound by logic; language is bound by truth and it was therefore toward semantics that many philosophers turned. The commitment thus was to reference not meaning, making reference a narrower claim of extentionalism.

Since truth is given by accurate referencing relations, the identity of the object which is referred to is important to clearly delineate. This not only means, as has been shown, forbidding the null set, fictive entities, intentional objects, and meaning contexts, but it also means that any identity of content between two or more entities means an identity of entities. In other words, only a distinction in content gives a distinction in entities. It is now pertinent to move onto a discussion of Goodman's definition of individuals, which is one of the central features of his ontology.

2.3 Individuals

Since common properties are, as repeatable and independent entities, the foundation for Platonism, any use of variables that have common properties as values commits one to agreeing that those common properties exist; therefore Goodman wants to avoid such variables. But while any variety of nominalism would give him that, what it can't give him is a guarantee that the values of all variables will be of the lowest ontological kind, and that through no logical operations would any of the ontological kinds in the system be anything other than individuals. Goodman needs this as he maintains that since we understand the world through symbols, the philosopher – in determining which symbols to use – must strictly adhere to using symbols in such a way that does not make ontological commitments to non-existent entities. The only way to do this is to treat all entities as individuals that are distinct in their content but not distinct in their ontological hierarchy, for once any hierarchical ontological

[21] Roger Scruton, *Art in Imagination* (St. Augustine's Press, 1998), 58.

distinctions are made there is no way of preventing the profligate growth into the realm of the non-entity, and the nominalist has now (however reluctantly) become a Platonist. (This would be Goodman's criticism of Quine.) It is, as it were, the nominalist's slippery slope argument. But Goodman's position is clear in this respect, as he demonstrates in the following passages from "A World of Individuals":

> The nominalism I have described demands only that all entities admitted, no matter what they are, be treated as individuals. Just what this means, I shall explain in the following sections; but for the moment we may suppose that to treat entities as individuals for a system is to take them as values of the variables of lowest type in the system.[22]
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> Let us suppose, for example, that a nominalist and a Platonist start with the same minimal, atomic elements for their systems; merely for comparative purposes take the number of these atoms as 5. The nominalist admits also all wholes or individual sums comprised of these, and so has universe of $2^5 - 1$, or 31, entities. He cannot concoct anymore; for whatever individuals among the 31 are added together, the result is another individual among those 31. Our platonist, we may suppose, admits no sums of atoms but admits all classes of them. This, not counting the null and unit classes, gives him also 31 entities. But he further admits all classes of classes of atoms; and by this single step he welcomes into his universe $2^{31} - 1$, or over two billion, additional entities. And he has no thought of stopping there. He also admits all classes of classes of classes of atoms, and so on ad infinitum, climbing up through an explosively expanding universe towards a prodigiously teeming Platonic Heaven.[23]

Goodman avoids this and defines nominalism, in "A World of Individuals", in the following way: "Nominalism for me consists specifically in the refusal to recognize classes." This of course encompasses the run-of-the-mill definition of nominalism that refutes the Platonist who believes that there are two kinds of entities e.g., individuals and universals, as the nominalist takes it to be true that there is only one kind e.g., an individual. But Goodman differs with other nominalists in how he defines "individual". What he wants to avoid is having multiple entities whose content is not distinct; that is, he wants to avoid saying that two different entities can be made up of the same content. For instance, in the case of a class and its members, which would both be composed of the same entities, there is clearly a distinction of entities without a distinction in content. This is forbidden by Goodman for the purposes of parsimony but it is also for the purposes of clarity, as an ontology that has multiple entities of identical content is contradictory – entities should not be identified as distinct when in fact they are not. In the oft repeated example from *The Structure of Appearance:*

> If no two distinct *entities whatever* have the same content, then a class (e.g., that of the counties of Utah) is different neither from the single individual (the whole state of Utah) that exactly contains its members nor from any other class (e.g., that of acres of Utah) whose members exactly exhaust this same whole. The platonist may distinguish these entities by venturing into a new dimension of Pure Form, but the nominalist recognizes no distinction of entities without a distinction of content.[24] (italics theirs)

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[22] Nelson Goodman, "A World of Individuals" *Problems and Projects* (The Bobbs-Merrill Company, Inc., 1972), 157.

[23] Ibid., 158–9.

[24] Nelson Goodman, *The Structure of Appearance* 3rd ed. (Reidel, 1977), 26.

Goodman gives his clearest explication of his notion of individuals in "Calculus of Individuals and its Uses" (published in 1940 but an elaboration of a paper read before the Association for Symbolic Logic and the American Philosophical Association in December of 1936), "A World of Individuals" (published originally in 1956 and reissued in *Problems and Projects* in 1972), *The Structure of Appearance* (first published in 1951, with a second printing in 1966 and a third printing in 1977), and "The Way the World Is" (1960). In the latter Goodman responds to his critics, who have had more than a decade to reflect on his unusual nominalism, and he defends his definition of nominalism by appealing to the analogous distinction between the ordinary usage of the term "class" and the logical usage of the term, wherein the ordinary usage assumes that things in the class are alike – for instance, children in a classroom – whereas the logical use allows anything to be in the class – like "Plato and this sheet of paper and the Taj Mahal". In other words, the logician uses "class" (or "set") to apply to members chosen not on the basis of any common property, and while this is obviously at odds with the "layman's prelogical usage" it is the precise and rational way to organize the data. Analogously, Goodman's use of the term "individual" does not correspond to the "layman's prelogical usage"; a menial category Goodman seems to implicitly extend to the (non-Goodmanian) ontologist's usage and as he states, "The contention that a genuine whole or individual cannot consist of widely scattered and very unlike parts misses the point as completely as would the contention that a genuine class cannot consist of widely scattered and very unlike members."[25]

Goodman recognizes that his use diverges from the ordinary, but that, as in so much else in his philosophy, is hardly a deterrent. Thus, a broken plate (to use one of Goodman's favorite examples) is still an individual plate though it be spatially dispersed. His very detailed discussion of this matter is to be found in "The Calculus of Individuals and Its Uses", and in that he explains the consequences of structuring a symbolic system with its primitives as individuals or with its primitives as both individuals and classes, for in neither case is it true that "class" and "individual" are a priori metaphysical distinctions that we are forced to recognize. We construct our systems and we choose our primitives based upon (1) the ability of the constructional system to represent the discourse, and (2) the metaphysical and ontological commitments attendant upon such language. In regard to the latter, a system that conceives a particular segment as an individual does not necessitate a definite scheme of subdivision or hierarchy, whereas to conceive a segment as a class "imposes a definite scheme of subdivision – into subclasses and members." This a priori systematization, in addition to committing one to a dubious ontology, has additional logical problems such as those confronted in Carnap's *Aufbau,* seen in his inability to define a "quality-class", and also seen in the "met with" problem e.g., that three or more people meet together. In that problem Goodman argues that a

[25] Nelson Goodman, "A World of Individuals" *Problems and Projects* (The Bobbs-Merrill Company, Inc., 1972), 155–6.

traditional logistic is unable to represent the ordinary meaning of the proposition, for the ordinary logistic is unable to distinguish between all of them meeting together or pairs of them meeting separately. Goodman gives other examples of the problem, the first exemplified in the question "What is the relation of the class of windows to the class of buildings?" The problem that a class analysis gives us is that no member of either class is a member of the other, and yet they clearly have a relationship to one another even though the logic cannot represent that. This is, again, a failure of the constructional system to represent the discourse.

Part of his solution is to express this relation as a part/whole relation between individuals instead of accepting the restriction imposed by the ordinary logic, which defines individuals only in terms of identity and diversity, and gives only a class/members construction. But in order to explain this it is necessary to fully explicate Goodman's position as it is developed in "The Calculus of Individuals and Its Uses", and in order to do so I will first introduce his terminology.

1) discreteness
   a) defined as: individuals which have no part in common
   b) two discrete entities "have not only to be spatially discrete, but also temporally discrete, discrete in color, etc."
   c) symbolized as: $a \mid b$

2) part/whole
   a) defined as: one thing is part of another if whatever is discrete from the latter is also discrete from the former
   b) parts and common parts need not be spatial parts
   c) the part-whole relation is transitive, reflexive, and non-symmetrical
   d) symbolized as: $x < y =_{\mathrm{Df}} \bullet\ z \mid y \supset_z z \mid x$

3) proper part
   a) defined as: Parts less than the whole are said to be proper parts
   b) unlike part/whole, proper part is asymmetrical, irreflexive, and transitive
   c) symbolized as: $x << y =_{\mathrm{Df}} x < y \bullet x \neq y$

4) overlapping
   a) defined as: two things overlap if they have a part in common
   b) the notion of overlapping is equivalent to the denial of the primitive discreteness
   c) symbolized as: $x \ \mathrm{O}\ y =_{\mathrm{Df}} (\exists z) \bullet z < x \bullet z < y$

5) fusion
   a) defined as: individuals can be summed into a class relation, when each individual is discrete from every other individual
   b) symbolized as: $x\ \ \mathrm{Fu}\ \alpha =_{\mathrm{Df}}\ z \mid x \bullet \equiv_z \bullet\ y \in \alpha \supset_y z \mid y$

6) nucleus

   a) defined as: one individual is a common part of every member of the class, and no class has more than one nucleus
   b) symbolized as: $x \text{ Nu } \alpha =_{\text{Df}} z < x \bullet \equiv_z \bullet y \in \alpha \supset_y z < y$
   c) both fusion and nucleus are "heterogeneous, relating concepts of one type with those of the next higher type. They correspond to the sums and products of classes defined in *Principia Mathematica* (40.01 & 40.02)". But even though *PC* is applicable to classes, these two notions are applicable only to individuals.

7) negation: defined in the usual terms.
8) the universal element: defined in the usual terms.[26]

Of these primitives, the dyadic relation of discreteness is perhaps the most fundamental as from this comes the part/whole relation and – as more entities are considered – the fusion function, with both part/whole and fusion analogous to class-inclusion. Since the part-whole relation is more stipulative than a class relation that could (to the layman or to the lax ontologist) rely on common properties, what is conceived as a class in Goodman's system (or more properly, a "whole") and what is conceived as an individual depends solely upon the discourse in which the terms appear. Many distinct classes may have the same fusion: i.e., tables, table-tops, table legs. They share no members, yet they isolate the same part of the total universe. They differ only in "the manner of subdivision that they prescribe for that part". Hence discreteness is relative to the discourse.

Goodman argues that there are several advantages to his system as it is articulated in the "Calculus".[27] First of all, the calculus of the lowest type solves the "met with" problem. If it is stated that 3 or more people meet, it can be shown in Goodman's logic either that they all meet together or that every pair met. The relation, in other words, can be dyadic, triadic, etc. This "mutigrade" relation is one having at least two different degrees, whereas a unigrade relation is one of any one degree.

Goodman argues that it is in this example where the problem can ensue, for customary logic cannot treat multigrade relations, since multigrade relations presuppose that an exhaustive classification of specific relations can be devised in terms of each of the definite degrees. Assuming this presupposition, there are two ways multigrade relations can be introduced into the system by the constructionalist: they can be treated either: (1) as a series of relations, with the successive members having successively higher degrees, or (2) construed as predicates taking classes of various magnitudes for their arguments. But whether one chooses (1) or (2) in introducing multigrade relations, neither the given degree in the series of relations nor the predicates can – by the use of the common logical devices – be reduced to

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[26] Henry S. Leonard and Nelson Goodman "The Calculus of Individuals and Its Uses", *The Journal of Symbolic Logic* 5 (1940): 47–8.

[27] Cf. below Chapter 2.5 where I discuss these issues as Goodman presents them in *The Structure of Appearance*.

its lower degrees. This is a problem, for the constructionalist must now reject as primitives any predicate (a) taking anything other than individuals as arguments, (b) any whole hierarchy of relations, and (c) any uppermost member of the hierarchy when the identification of the uppermost member of the hierarchy would require that the development of the formal system be postponed until that "investigation of contingent matters of fact" i.e., what the uppermost limit is. (Remember the demands for a bounded variable.)

So now the constructionalist is confronted with two unsatisfactory choices:

1. To use the standard logic of relations, which are developed in terms of a classification of relations according to degree, and are thus inapplicable to multigrade relations that are admitted without interpretation.
2. If multigrade relations are admitted with either interpretation given above (as a series of relations, or construed as predicates), then those multigrade relations cannot be reduced to acceptable primitives. In other words, they seem very much like entities of a higher order than individuals.

The calculus of individuals can help in that it can simplify the primitives needed, it can display the connection between the different degrees of the (a) relation or (b) predicate, and it can now fully express the distinction in meaning between saying that 3 men met together or that 2 met severally.

The key to the solution for the latter problem is the summation of individuals, which is turn, becomes an individual in its own right. The symbol "xSy+z" means that x has a relation to the sum of y and z. In this, the sum of y and z is an individual, so that S takes as relata not merely atomic elements, but the sums of these elements. This same process can be seen in the "met with" problem. For example, if Smith met with Jones and Brown together, then it means that Smith met with an entity that is the sum of the two. "The sum will not be a person, of course, but is a definable though discontinuous whole." (Much like the broken plate.) In this, a + b is of the same logical type as a or as b, and the fusion of a class is of the same logical type as the members.

All of this is accomplished by using the primitive of discreteness; there is no need to adopt the predicate of classes. To reiterate a point made at the beginning of this section: we construct our systems and we choose our primitives based upon (1) the ability of the constructional system to represent the discourse, and (2) the metaphysical and ontological commitments attendant upon such language. Goodman can now argue that they have solved the "met with" problem – an instance of (1) and he can argue that the logical concept of the individual is now divorced from the metaphysical and practical "prejudices" of the individual – an instance of (2). Classes can be replaced by wholes, and all the concepts of logic are available as neutral tools. And the disputes between the realist and the nominalist are seen to be matters of "interpretative convenience rather than metaphysical necessity."

From this explication of "The Calculus of Individuals" it should be clear how Goodman takes anything to be an individual. For him, entities differ not in whether they are formed by several (former) individuals or whether they are, so to speak, insoluble, but they differ only insofar as their content differs. Discreteness is the

only measurement, and that is not an a priori determination but determined by the constructionalist for the purposes of that particular system. This is exactly what we saw in "Steps toward a Constructive Nominalism" when the translation of Frege's ancestral relation into the Goodman/Quine logical syntax resulted in a definition of "individual" that, as they state, "may be spatio-temporally scattered, or discontinuous. It presupposes that continuity is not necessary for concreteness."[28] A thing can be scattered and still be a singular individual; a broken plate might be of many pieces but it is still a singular plate, or Jones and Brown may merge. As he states in "A World of Individuals", the constructionalism decides what entities we are willing to recognize, what terms are denoting, and what terms are syncategorematic. Nominalism does not decide those things and, while nominalism is not enough to make a system acceptable, Platonism is enough to make it unacceptable.

Goodman answers his critics in "A World of Individuals" in a series of question/answer scenarios. In answer to those who claim that the "nominalism described is not really nominalism in the traditional sense", he states the following: "Doubtless a good many different theses are equally legitimate descendants of earlier nominalism. I claim no more than that the principle I have set forth is one reasonable formulation of the traditional injunction against undue multiplication of entities."[29] Later in the same article, he defends his position against the objection that nominalism is not a sufficient guarantee for soundness: "Nominalism is a necessary rather than a sufficient condition for an acceptable philosophic system. To build well we must also exercise the most scrupulous care in choosing our raw materials. . ..Nominalism does not protect us from starting with ridiculous atoms. It does protect us from manufacturing gimcracks out of sound atoms by the popular devices of platonism."[30] He also addresses the criticisms against his very distinct nominalism that posits wholes as a substitute for classes, because it is "forcing the imagination" to accept as single units something that is scattered or a heterogeneous conglomeration. Clearly, the critics claim, this goes against common sense. Of course Goodman is often wont to go against common sense and is never apologetic for it. To quote J.S. Mill: "unnatural merely means unaccustomed". It is not, in other words, twisting the ontological identity of "individual" beyond the bounds of reason; it is merely introducing something to which readers might not be accustomed. "A class for Boole need not have social cohesion; and an individual for me need not have personal integration."[31] Boole is using his definition of "class" as a theoretical definition, which exists within a system of thought and with relation to other definitions. In perhaps a similar move, Goodman is providing a stipulative definition of "individual" that will then be integrated into larger theoretical definitions. The fact

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[28] Nelson Goodman and W.V. Quine, "Steps toward a Constructive Nominalism", *Journal of Symbolic Logic* 12 (1947): 109.

[29] Nelson Goodman, "A World of Individuals" *Problems and Projects* (The Bobbs-Merrill Company, Inc., 1972), 163.

[30] Ibid., 165.

[31] Ibid., 156.

that it does not at all function synonymously with all other philosophers' notions of "individual" does of course not derail Goodman. We ought, he suggests, be less constrained by our presystematic usage of terminology and instead use symbols precisely within a constructed system. As he states,

> The terminology of a system is irrelevant to the classification of the system as nominalistic or platonistic by the criterion I have explained. So long as a system admits no two distinct entities having exactly the same atoms, it is nominalistic no matter whether its generating relation is called 'E' or '<<' or just 'R', and no matter whether the values of its variable are called 'classes' or 'individuals' or just 'entities'.[32]

The only thing that matters is whether two entities have the same content. His system, which stipulates wholes as sums of individuals, keeps those wholes on the same ontological plane as the atoms: e.g., as individuals. Thus, anything can be an individual.

2.4 Classes

In many places Goodman reiterates two main points regarding his nominalism: (1) that it allows anything to be an individual and (2) that it strictly forbids classes. The latter is necessary, for as we have seen, classes violate the rule that entities differ only if their content differs, and if one were to allow identity without distinction of content then one would no longer have an ontology composed only of individuals. We have also seen that consistent with that position he constructs an axiomatic system – a shell available for interpretation – composed only of individuals; an axiomatic system that does rule out classes as an original primitive but, Goodman argues, would be available for the Platonist even though the constructionalism itself is conceived in its simplest and therefore nominalist form.

But the consequences of arguing that anything can be construed as an individual would seem to include the possibility that even classes could be construed as individuals. Goodman confronts this in "A World of Individuals", where he writes: "If the nominalist is free to construe anything he pleases as an individual, can't he even construe a class as an individual?"[33] His initial answer to that question is: "Whatever can be construed as a class can indeed be construed as an individual, and yet a class cannot be construed as an individual."[34]

What this means is somewhat difficult to explicate. He tries to explain it in parable form by telling a story about a game where a man can put any card he wants on his left and on his right, but of course, by definition, if the card presently on the right is moved to the left than it becomes a left-hand card. He gives us the moral of the story by saying, "And whether the Great Dipper is an individual or a class of stars depends upon the system we are using. We can construe anything as an individual

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[32] Ibid., 166.

[33] Ibid., 157.

[34] Ibid.

(and aside from nominalist scruples we can construe anything as a class): but we can no more construe a class as an individual than we can get a left-hand card on the right-hand side."[35]

What he plausibly seems to be saying is the following. The phrase "Whatever can be construed as a class can indeed by construed as an individual" means that – at a presystematic level – before the constructional system has had its definitions determined and its primitives and syncategorematic terms assigned, any of those entities that might be construed as a class (say, in a platonic system) can, in this particular nominalistic system, be assigned as an individual. The phrase, "yet a class cannot be construed as an individual" refers to those things in an extant platonic system that are already designated as a class. Clearly once something has been designated a class in a Platonic system, it is senseless to rename it an individual. He is making two points: (1) that the difference between individuals and classes (universals) is not a mere difference in terminology – when he says that anything can be an individual he is not merely claiming to stipulatively rename entities and (2) the difference between whether something is an individual or a class is dependent upon the chosen system; the identity of an entity is not a priori.

Has he completely answered his question? Goodman is clear that a nominalist can't construe anything as a class. Presumably, this takes "class" in all of the three ways he succinctly lists in the beginning of "A World of Individuals": in the *Layman's prelogical* sense as representing a group of things that all share a common property; in the *mathematical sense* that designates a constructed grouping where similarity is not required; and in the *platonic sense* that explicitly claims the ontological common property for a group of individuals. So what do we do with classes, thought of as any or all of those definitions?

Goodman essentially refers to the term "class" in two different contexts. When designating primitives in the constructionalism, he refuses to recognize the term or allow it to reference an ontological entity. This much seems evident by the previous discussion regarding his nominalism. But in speaking "nonsystematically" he often uses the term. What does he mean in these contexts? As he explains in *The Structure of Appearance,*

> I shall use platonistic language freely in extrasystematic contexts so long as a nominalistic translation is available. For example, 'Some couple belonging to the relation R has the same individual as first component as some couple belonging to the relation S' is unobjectionable since it can be readily construed as 'There is an x, a y, and a z, such that R x,y and Sx,z' where 'R' and 'S' are two-place predicates of individuals. I may even make some extrasystematic use of platonistic language I cannot yet translate; but in actual systematic constructions, I shall use nominalistic language exclusively.[36]

This statement is representative of his methodology. He's claiming that platonistic language is translatable into non-platonistic language, and hence it is acceptable to use platonistic language since that use is only provisional. In other words, he is

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[35] Ibid., 158.

[36] Nelson Goodman, *The Structure of Appearance* 3rd ed. (Reidel, 1977), 32.

trying to argue that there are no classes and that all language referring to classes can be translated into non-class language, and that therefore he will freely use the term "class" as that usage could be replaced with nominalistic terminology.

Is it the case that all presystematic uses of the term "class" can be translated into acceptable nominalist terminology? Goodman does provide some examples of translations, as in the statement "there are more cats than dogs". While it would be possible to give an extensional definition (see Section 2.1) in order to translate a statement affirming a numerical comparison into nominalist language, this is true only insofar as one is willing to introduce as many primitive predicates as needed. But he argues in *The Structure of Appearance* that an easier approach is to use the one-place predicate of "has more cats than dogs as parts" – which is an individual – along with the two-place predicate "is part of", thereby giving us: "Everything of which every cat and every dog is a part has more cats than dogs as parts" or symbolically as:

$$(x)\{(y)(\mathrm{C}y \vee \mathrm{D}y \bullet\!\supset \mathrm{Pt}y, x) \supset \mathrm{H}x\}^{37}$$

But, Goodman concedes, this is also not a satisfactory answer because now we have the predicate "H", which will be needed for every two kinds of things that are numerically compared. But though this solution is not elegant or economical, our problem is now, he argues, no longer whether or not Platonist language (in this instance) can be translated into nominalist language, but whether or not it can be done economically. Clearly, that is a less insidious problem.

A different problem gives a different solution, as in the case of translating a sentence such as "Every species of dog is exhibited". In this Goodman resorts to speaking of wholes rather than classes and the dog's species is conceived as a discontinuous whole composed of dogs. He writes, "Then the sentence may be rendered: 'For every x, if x is a species of dog then some y is a dog and is part of x and is exhibited.'"[38] This, too, Goodman notes, is not completely satisfactory, for this solution is not always optional as in those cases where "several classes under consideration correspond to the same whole."[39]

Goodman is arguing that avoidance of the language of classes can be successful if one provides a satisfactory translation into a language of particulars. If one consistently avoids variables that have non-individuals as their values, then the disclaimer of commitment to entities that cannot be proven to exist will be successful. He concedes that the task is, at best, daunting: "But if we can solve the problem of framing such a syntax within the language of individuals, we can similarly solve many of our problems directly within this language, and the devious device of setting up and managing an additional and meaningless language recommends itself only where,

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[37] Ibid., 30.

[38] Ibid., 29.

[39] Ibid.

as in the case of some parts of mathematics, direct translation is so difficult as to seem hopeless."[40]

It was of course in mathematics, which was the most contentious of all cases that Goodman continued to insist classes – or even more importantly sets – could be denied while his former collaborator, W.V. Quine, ultimately accepted the designation of a "reluctant Platonist" as Quine felt forced to concede the necessity of such entities for mathematical purposes. Goodman's suggestion that the problem is solved by quantifying all terms existentially and determining the referential use of the terms within the proposition, is one he believed would give us only individuals and avoid classes, even in the case of mathematics, which, for him, did not require infinity or set theory. Hence the nominalist could always restrict the domain of reference of terms to individuals. It was set theory with its hierarchy of sets and its acceptance of an infinity that was opposed by Goodman as sets, like classes, violate the rule that entities differ only if their content differs, such that if one were to allow sets than one would be allowing identity without distinction of content thus not having an ontology composed only of individuals.

Goodman's prohibitions against classes, sets, and infinity have historically been voiced by others, such as the mathematician Karl Friedrich Gauss (1777–1855), who reportedly criticized a fellow mathematician by saying, "As to your proof, I must protest most vehemently against your use of the infinite as something consummated, as this is never permitted in mathematics. The infinite is but a figure of speech."[41] Though the history of set theory and its articulation of the infinite is beyond the scope of this book, it is worth noting that opposition to it was in some cases vociferous at the end of the nineteenth century when Cantor initially published his work that brought forth set theory as we know it, and that this debate continued into the beginning few decades of the twentieth.

When Guiseppe Peano's assistant, Cesare Burali Forti, noticed in 1897 that the ordinal number of the set of all ordinals must be an ordinal and that this leads to a contradiction, the stage was set for Russell to formulate his 1901 paradox e.g., the set of all sets that are not members of itself. This, too, is a contradiction as something cannot be member of a set if and only if it is not a member. These paradoxes were subsequently addressed by Russell in his theory of types (which restricted self-referential contradictions by establishing hierarchical divisions among types) and were also addressed by the mathematicians Ernst Zermelo and Abraham Fraenkel in their 1908 Axiom of Choice (which states that if we choose members from two nonempty sets then one set is in one-to-one correspondence with some subset of the other). Though there were mathematicians of the mid-twentieth century who thought mathematics could be based on a constructivist view of computation and algorithms it has not been the case that that position has won out in mathematics. The battle in the late nineteenth century and the first few decades of the twentieth did ultimately resolve itself, at least in terms of practice. Many different facets of

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[40] Ibid., 25.

[41] Calvin Clawson, *The Mathematical Traveler*, (Basic Books, 2003), 149.

contemporary mathematics are based on set theory, such as discrete mathematics, topology, mathematical analysis, combinatorics, and fuzzy logic; in short, contemporary early twenty-first century mathematics is completely interwoven with set theory and set theory itself is accepted by the mathematics community. This historical fact though leaves untouched Goodman's mid-twentieth century arguments against classes and against any acceptance of sets or classes, and it is that with which we are concerned.[42]

2.5 Qualia

Goodman's early writings, particularly *The Structure of Appearance*, were concerned with establishing the constructional parameters of a logical system of discourse. In such an endeavor it is not pertinent to specify all the component entities or to define their ontological status, "any more than we need to know just what business transactions are done before we set up a system of double-entry bookkeeping

[42] His stated determination to avoid classes and sets though often seems at odd with his usage of terms. Goodman recognizes the problem: "Translation is often very difficult and no one knows yet just how far it can be carried out. Accordingly, one who uses the calculus of classes is seldom in a position to show in this way he is not thereby conceding that there are classes. . ..Thus when one uses and is unable to dispense with variables taking classes as values, one cannot disclaim the ontological commitment." Cf. Nelson Goodman, *The Structure of Appearance*, 3rd ed. (Reidel, 1977), 25. Unfortunately, it is an empirical matter if it is possible to read the word "class" and not interpret it platonically, and it therefore devolves into a question of the psychology of the reader; not a satisfactory locale for settling a philosophical point. It also remains a matter of mere speculation whether or not Goodman was surreptitiously importing Platonist meaning in contexts that would have been strained on a strictly Goodmanian nominalist account. For example, does the following usage, taken from *Fact, Fiction, and Forecast*, of the term "classes" depend on a Platonist interpretation? "Our treatment of projectibility holds some promise in other directions. It may give us a way of distinguishing 'genuine' from merely 'artificial' kinds, or more genuine from less genuine kinds, and thus enable us to interpret ordinary statements affirming that certain things are or are not of the same kind, or are more akin than certain other things. For surely the entrenchment of classes is some measure of their genuineness as kinds; roughly speaking, two things are the more akin according as there is a more specific and better entrenched predicate that applies to both." Cf. Nelson Goodman, *Fact, Fiction, and Forecast,* 4th ed. (Harvard University Press, 1983), 122–3. How could this sentence be translated such that it did not appeal to the meaning embedded in the universal "classes"? Catherine Elgin argues that Goodman was consistent in his application of terms and that "classes" can be plausibly substituted with "extensions of coextensive predicates" and the sentence from *Fact, Fiction, and Forecast* need not be suspected of importing any notion of Platonic classes or set theory and that that terminology is indeed consistent with Goodman's thought. While this seems to me also to be a sound alternative that would invite no confusion, I remain somewhat baffled as to why he didn't choose that alternative in either his ontological writings (primarily *The Structure of Appearance*) or his epistemological writings (primarily *Fact, Fiction, and Forecast*) or in his aesthetics (primarily *Languages of Art*). Even more to the point, I question whether readers are able to parse any of those writings without the inadvertent importation of platonist meanings. It thus remains an open question how such sentences are, in fact, parsed by the reader and it is also an open question how the term itself was intended, by Goodman, to be read.

for them."[43] Nevertheless, it is vital to establish the role that the most basic entity has in the system and to explain its function as that definition establishes the fundamental mechanism by which the system itself operates. Goodman's is a calculus of individuals, and the universe thus constituted then defines individuals as those entities that satisfy the predicate "overlaps", but the "0" is to be interpreted only as syncategorematic. The ontological primitives of the system – the individuals that satisfy the value of the variables that are then operated on by the function of "0" – he defines as "qualia": the presented particular quality specifying color, place, and time – a definition Goodman credits (in a footnote on page 95 of 1977 edition of *The Structure of Appearance*) to C.I. Lewis' *Mind and the World Order*.[44]

The argument by which he arrives at the position of positing qualia as the primitive of the system is an argument not dissimilar to Bertrand Russell's in his "Problems of Philosophy". In Chapter IV of *The Structure of Appearance*, entitled "Approach to the Problems", Goodman takes us through the discussion regarding the distinction between the real and the apparent presentations of an object. While this discussion is often a prelude to idealism, and was reiterated by Russell as the paradigm of the fallacious reasoning of the idealist, Goodman, like Russell, opts for a phenomenal solution to the age-old question of how it is that an object can remain the same while its appearances change. For the idealist, of course, it means that the real thing must be metaphysically distinct from the multiple appearances, but Goodman, by counting temporal specificity as something which is able to give distinguishing content, gives a different interpretation: "To say that the same thing is twice presented is to say that two presentations – two phenomenal events – are together embraced within a single totality of the sort we call a thing or object."[45] Since Goodman's nominalism defines individuals as differing only when their content differs, then for a (seemingly identical) quale to be presented at two different moments gives us two different qualia. The green of the grass at time T_1 is not the same entity as the green of the grass as time T_2. They are two distinct qualia.

We are, Goodman reminds us, unnecessarily confused by temporal distinctions:

> We do not make such a mistake with spatial distinctions for when we discuss the table as an entity composed of its compound parts of legs, a top, etc., we do not feel the need to hypostatize an underlying core of individuality to explain how a leg and a top, which differ so drastically, can belong to one table. Yet when we consider the table at different moments,

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[43] Nelson Goodman, *The Structure of Appearance* 3rd ed. (Reidel, 1977), 34.

[44] Goodman use of Lewis' qualia is quite at odds with the way Lewis himself uses the concept, as can be seen by the following quote from Lewis, "It is not, of course, a philosophic problem to determine how such language should properly be used. But it is worth remarking that those philosophers who suppose that the names of properties are first the names of certain given qualia and therefore of the properties of objects which, under optimum conditions, present them, have missed something significant which determine the common-sense use of language.

Qualia are universals, and they are universals such that without the recognition of them by the individual nothing presented in experience could be named or understood or known at all." Cf. Clarence Irving Lewis, *Mind and the World-Order* (Dover, 1929), 123.

[45] Nelson Goodman, *The Structure of Appearance* 3rd ed. (Reidel, 1977), 93.

> we are sometimes told that we must inquire what it is that persists through these temporally different cross sections.[46]

There is, in other words, no logical reason why we ought to reason one way with respect to differences in spatial identity while reasoning another way with respect to differences in temporal identity. The solution should be identical: distinctions give us a different content, which gives us a different entity. The fact that we might perform a summation of some of these distinct entities thereby making a new individual is a separate move in the game and should not be confused with the creation of a different ontological kind; there is no such thing a the "real" table independent of the appearances. The leg, top, and feet are summed and the new individual is the table; likewise the brown square quale at T_1 is summed with the brown square quale at T_2 forming the table as it is identified as an object composed of several phenomenal instances and enduring through time. Thus, an ordinary thing is a sum of various qualia. As Goodman states the problem: "I simply want to emphasize the point that the identity of a thing at different moments is the identity of a totality embracing different elements."[47] The distinction that Goodman makes between the sums that are ordinary things from the sums that are not is given by the function of the primitive predicate "W", read "with", and defined as:

$$\mathrm{Cm}(x) = (y)(x)(y + z < x \bullet y \lfloor z) \bullet\!\supset \mathrm{W}\, y, z)^{48}$$

Though this distinction between what constitutes a sum that is an ordinary object and a sum that is not is perhaps less than unproblematic, this difficulty does not concern us for the purposes at hand, as the relevant point is that summations are made irrespective of whether the distinctions are either temporal or spatial, thereby invalidating an idealist interpretation that posits a separate metaphysical entity of a different ontological order. The only existents in the system are qualia and their sums, both of which are ontological individuals.

The fact that qualia are clearly a phenomenal and not a physical entity is a position that must be seen as consequent to the problems experienced by Goodman and his contemporaries with the notion of direct observation. It is also an early formulation of Goodman's coherence theory of knowledge, which will be more fully developed in Part II. But I shall briefly address each of these in turn at this juncture as it assists in the understanding of both his qualia and in understanding the final subchapter of this section e.g., properties.

Likeness of presentations of qualia raise the issue of how to characterize the problem of the transitivity of identity through time. If I say that the grass at time T_1 is the same color as the grass at time T_2, am I not committing myself to construing "green" as a separate entity apart from the grass? No, says Goodman, and refers back to Lewis' treatment of the issue, which distinguishes between the quale, – e.g.,

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[46] Ibid.

[47] Ibid., 94.

[48] Ibid., 180.

the momentary and immediate presentation of qualities – and the property e.g., the complete pattern of qualia exhibited in standard conditions. The issue of Goodman's definition of property is dealt with in 2.6 of this chapter, but suffice it for present purposes that the testing of similarity between separate instances of qualia is, for Goodman, close to impossible. I can claim that the green is the same green from a moment ago, but on the basis of what do I make that claim? I cannot hold up the past experience for verification of simultaneous viewing. And there is no standard swatch of color that we harbor in our minds to which comparisons are made.

If the phenomenal unit comprises all the content of the immediate experience and thus is an epistemological reduction of the operative predicates to their most elemental form, then the phenomenal unit is as direct and immediate as is possible to conceive. This Humean version of reality gives us experienced reality in nucleic bits, but it presents the additional problem of confirmation and intersubjective agreement. I now am confronted with two problems: (1) how can I guarantee that my previous experience was identical to this experience and (2) how do I know that my phenomenal experience is like yours?

But this line of thinking presupposes that if we were to have the two instances presented simultaneously instead of in temporally distinct moments that we would be able to solve the problem. But, Goodman asks, would we?

It is here that the physicalist enters, countering that only a physically grounded theory that posits objects as the "raw" experience is available for objective verification necessary for public consensus. The physicalist argues that experimentation and data gathering is done not with phenomena but with objects and it is they that are the subject of experience. Since a phenomenalist account of reality is, by definition, subjective experience, it cannot give an adequate account of objective reality. Therefore, the physicalist maintains that only by countenancing objects as the basis for intersubjective facts can we hope to give an account of knowledge, defined as that which has a relationship to objective truth.

But the problem relating to the notion of direct observation is far from solved. As Goodman explains the problem:

> The physicalist's charge that phenomenalistic bases are essentially inadequate for a universal language rests chiefly on the admittedly grave difficulties of defining physical things in terms of phenomena. But the physicalist has not proved the problem insoluble. . . .Nor has the physicalist constructed, or shown that he can construct, the comprehensive system he claims is possible on his basis. The physicalist is normally unwilling to accept as primitive such predicates of physics as '(is an) electron'; what distinguishes his program from that of physics itself is that he insists upon beginning with 'observation statements'. Yet if he takes as primitives only predicates that apply to perceptible individuals, and if his claim of universality is to be made good, he will have to explain in terms of these the multitudinous imperceptible particles that the physicist discusses.[49]

The physicalist is unable, in other words, to discuss the subatomic reality discussed by physicists; a severe limitation for a theory claiming the objectivity of science. If the primitives of the system are only those things that are perceptible, then the

[49] Ibid., 100–101.

imperceptible (at least to the naked eye) of quantum physics and relativity is left outside the domain of knowable reality. In other words, the so-called scientific basis of physicalism only encompasses the science that is pre-nineteenth century before the crucial years when Ernst Mach was making his discoveries that rejected the idea of an absolute frame of reference for spacetime and the years in the beginning of the twentieth century when Albert Einstein developed his general theory of relativity based on Mach's point of view. A physicalist, Goodman is essentially arguing, would have to abdicate much of contemporary physics to the domain of the phenomenalist.

Direct observation is parasitic on the language used to describe the object or situation and it is doubtful that any description of experience can represent it without conceptualization, inference, analysis, or interpretation. The "raw" data is illusive. Goodman asks, "What I saw a moment ago might be described as a moving patch of red, as a cardinal bird, or as the 37th bird in the tree this morning; and all these descriptions may be true."[50] Of course the phenomenalist describes it as a moving red patch while the physicalist describes it as a cardinal, but which of these is the "raw" data? The question remains: do we see physical objects or do we infer their existence? In conclusion, Goodman argues that neither the phenomenal nor the physical arguments have proven epistemological priority over the other, and that the choice of system then remains the choice of the theorist, whose genuine constraint is only how well-constructed is the system itself and not whether or not it is phenomenalist or physicalist.

It is now that we can address the second issue at hand, namely, how the definition of qualia is part of Goodman's early formulation of his coherence theory of knowledge. Goodman's phenomenalist account of reality has the seeming consequence that likeness of qualia presentation judgments seem to be made by fiat and thus are capricious and without foundation. To use Goodman's example, how do I know that the color of the grass presented now is identical to the color of grass presented an hour ago? This is particularly difficult to assess since the claim is not falsifiable. But if it is not falsifiable when then do we sometimes change our mind and reverse our decision about such matters? His explanation in *The Structure of Appearance* is slightly different than it is in his later writings, but the embryonic core of his coherence theory is evident:

> Any judgment that a quale of one presentation is the same as a quale of another is open to pertinent criticism that may cause it to be abandoned. If it survives because it is psychologically satisfactory and workable, and because it is compatible with the body of other accepted statements, it may be said to be well verified. Indeed, one may question whether this sort of verification can be sharply distinguished from some more direct process; for, as we shall see in a moment, the notion of 'direct' observation is far from clear.[51]

Since the notion of direct observation fails to give us raw experience without interpretation the hoped-for epistemological certainty is abandoned. Completely

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[50] Ibid., 101.

[51] Ibid., 99.

satisfactory verification is impossible since there is not even agreement on what it is that constitutes the most basic unit of experience, and also since any characterization of that experience in some way sorts, classifies, and delineates the experience – transforming the unadulterated experience into a translated format. It is impossible to isolate and describe any pure experience, and the objective fact is as illusive as the given.

Therefore, "objective" becomes "intersubjective" and that becomes amenable to revision. We call something "objective" when we have (or enough of us have) agreed that it is a fact; intersubjective agreement is the mechanism by which we establish (read: construct) objectivity. But we are often forced to change our minds. We make correlations and posit identity conditions but these can be, and often are, revised either because new information arises or because it is no longer "psychologically satisfactory". In his later writings, especially in *Fact, Fiction, and Forecast*, Goodman refers to this process as "projection of predicates" and it is there that he more clearly formulates his relativism; a topic thoroughly discussed in Part II of the book.

2.6 Properties

For Goodman, "property" is merely the typically repeated pattern of qualia exhibited by an object. As he states when discussing the usual definition of property, "A better theory has been proposed by C.I. Lewis. He holds that to ascribe a certain property to an object is in effect to describe the complete pattern of qualia (of the kind in question) exhibited under all sorts of conditions."[52] Goodman basically adopts this definition but with the additional parameter that doesn't take as tokens all the instances but only those instances that "are regarded as critical or standard." It is, in other words, not the union of the set, but only those instances that are deemed typical. Of course, this allows the definition of "property" to be tied into the epistemological notion of the projection of the predicate, but it also allows property to remain as a purely constructed phenomenon. Property is then not seen as the essentialist traits of a thing, or as an entity that is identical and repeatable in various different objects.

In wanting to avoid the definition of "property" that gives it universal status, Goodman sees property as a quality that is noticeable because it has been often associated with a particular object. For example, if the grass looks green on repeated instances, the metaphysical catalog of the event would be, where C= color, P= place, T= time: $\{C_1, P_1, T_1\}$, $\{C_1, P_1, T_2\}$, $\{C_1, P_1, T_3\}$, $\{C_1, P_1, T_4\}$, $\{C_2, P_1, T_5\}$. If we view the grass five different times over a period of two hours at the end of the day, the last viewing instance (T_5) could give us a slightly different color of the grass due to the setting of the sun; the grass might look more like dark blue-green than like viridian green. But, we would not call the grass "dark blue-green" since

[52] Ibid., 96.

that is not the typical color, i.e., it is not the color most frequently presented when the object is in the optimal conditions. We call the grass "green" because that is the color quality most often presented and we therefore say the grass has the property of being green. The relationship between qualia and property is thus a relationship of repeated patterns. As he states, "My purpose has been simply to suggest something of the relation between a property of a thing and the qualia of presentations, and to emphasize the difference between the two. It is enough to recognize that to ascribe a property to a thing is in effect to affirm that the qualia it presents under different conditions conform to some more or less fully prescribed pattern."[53]

The idealist construes the predicate "red" as designating a repeatable quality – an entity that exists independently of objects. Goodman, of course, is unable to construe repeatable qualities e.g., property, as universals but he is also unwilling to construe them as individuals. As he explains it: "To regard the color carmine as an individual is not to regard has-the-color-carmine as an individual; for even if both carmine and a particular that is carmine in color are taken as individuals, the statement that the particular has the color carmine requires use of a two-place predicate in addition to the names of the individuals."[54]

In other words, if we have two individuals defined as follows:

Individual 1 = carmine
Individual 2 = P is carmine

the latter poses two problems: (1) of determining the designata of the predicate and (2) locating the mechanism by which the entity "carmine" is related to the entity "P". In other words, the question is easily construed to be: How does the universal come to be in the particular?

The solution is that carmine is a quale, not a property. Goodman's view is that by using qualia as the individual unit of the metaphysical system one avoids the problem. The phenomenal unit is the basic sense-data with which one is presented, including the color, time, shape, etc. They are each individuals in and of themselves, and bundled together, they sum to be a new individual as found in the delineated object. Hence, he argues that it avoids the problem of accounting for how the general term "red" comes to be in the specific object. It is a relation of individuals to individuals, organized horizontally not laterally. The property is only the generally repeated pattern of the qualia, and the quale are each the individual. A property is not, though, itself a particular, and it certainly is not a universal. It is just our recognition of a generally repeated pattern of qualia.

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[53] Nelson Goodman, *The Structure of Appearance* 3rd ed. (Reidel, 1977), 96.

[54] Ibid., 105.