A Bang into Nowhere
Comments on the Universe Expansion Theory

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The notion of a first ever moment of Time is self-contradictory: In lacking a moment *before* it, it lacks a lower *barrier,* so there is no stopping it from—inconsistently—receding further and further into an infinitely remote past. Hence, there cannot be a beginning *of* Time. Only a beginning *in* Time. The notion of the expansion or growth of Space is incoherent. Objects growing in Space grow by taking up more of *space.* But for Space to do that, *Space* must take up more of space, and in order to do that Space must be larger than it is. Hence, there can be no expansion *of* Space. (Only one *in* space.)

Furthermore, there is no such thing as "the Universe." "The Universe" denotes no special object; in fact, it denotes no *object* of any kind. The fact that all things have a cause does not mean that "the Universe" has a cause any more than the fact that all men have a mother means that *Humanity* has a mother. Hence "the Universe" does not have a cause. "The Universe" does not have an *age.* "The universe" is a short hand, comprehensive reference to all things that exist. And things being many, they have *many* ages. Hence, there is no

> such thing as *the* age of "the universe," unless we mean an ...*average* age. "The Universe" is just an inventory word, an inventory meant to be exhaustive. And inventories have no size. (I guess.) Hence, "the universe" has no size either.
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> Universe expansion theorists mention an 'observation', documenting the fact that galaxies drift apart from one another, *without* however having moved an inch! "Only the space in-between them grows." This is the sort of empirical confirmation that a theory of the sort here criticized truly deserves.

1. The First Moment of Time

Why do all people so stubbornly resist the conception of a beginning of Time? Why does it come so natural to them, upon hearing of this or that *Creation* Theory, be it the "Big Bang" of the physicists or the "Let there be Light!" of the Scriptures, to continue pressing on with the question, "yes, fine, but what was there *before* that?" Clearly, both of the cosmologies referred to preclude the legitimacy of this question as a matter of principle; they have just explained to us that, upon the introduction of a *beginning* of Time, the question at hand cannot even be posited coherently. That so many people continue to ask it despite the warning of cosmologists of all kinds, implies that there must be something far too fundamental and ineradicable in human reasoning which renders the idea conceptually unmanageable. It is, in fact, nothing short of *self-contradictory,* as I will shortly demonstrate. But of this later. Let us commence with the 'weaker', conceptual aspect first.

Be human conception what it may, its putative fundamentals are not being shared by all, as all true fundamentals should. Here is one such exception of superiority, as all exceptions are, belonging, not too

surprisingly, to a philosopher (of physics) who in this capacity of his must know better than Austin's "plain man":

> *In the Big Bang model under consideration there were no such earlier instants before $t = 0$ and hence no instants when the big bang had not yet occurred. [...] The nonexistence of time before $t = 0$ allows that matter has always existed, although the age of the universe is finite in either case. This assertion is true because, here as elsewhere, the term "always" refers to all actual (past) instants of time. [Grünbaum, 1993, pp. 126 & 136 respectively.]*

In consequence, if All commences with the Bang, Time itself included, there will be no Time sequence extending to regions prior to the Bang and then, the Bang itself occurring at $t = 0$, there will be no availability of prior instants during which one could, so to speak, hang around and *wait* for the Bang to arrive. This obviously excludes the "not yet" argument. And so the "yes, fine, but what about *before* that?" one.

There is a lot to be desired in this passage as concerns both the scholarship and the reasoning of the author. Since this author is a philosopher he should at least display some form of acquaintance with the works of major philosophers on the issue of Time, in this case of none other than Kant, who had a thing or two to say about our capacity to think of the *absence* of Time*:*

> *Time is a necessary representation that underlies all our perceptions. We cannot, in respect of phenomena in general remove time itself, though we can quite well think of time as devoid of phenomena. Time, therefore, is given a priori. Phenomena may, one and all, vanish. But time,*

> *as the universal condition of their possibility, cannot itself be removed. [Kant, Critique, A 31, B 46.]*

If Time cannot be removed from our "inner eye," either wholly or even *partly,* there will always be a time before any time. Hence, there can never be a $t = 0$. I am far from maintaining that Grünbaum should at all costs assent to this thesis or be *eo ipso* refuted. But I do maintain that he should at least give us some indication of awareness of the argument which he rejects, before he rejects it. He gives none. This is a fault in his scholarship.

But the fault in his reasoning is more decisive. *Why* does Kant claim that Time is not the sort of thing which can be absent? Namely, that however far back in time we may regress, we will never encounter a state of affairs, where Time is no longer there? And hence never encounter a time not preceded by another time? He does because he senses, as we all do, what Grünbaum does not. Namely, that temporal components, *i.e.,* instants, are by nature and by definition *relational* entities. Which means that, in being what they are, they cannot be singled out and treated in *separation* of one another. The temporal terms "before/after," "before/now" and "now/after" in both speech and conception occur as and cannot but occur as mutually *constrained* pairs, just like the terms "husband" and "wife" do. And there cannot be the one without the other just as there cannot be a wife without a husband or vice versa. To assert that "X occurred before Y" *is* to assert that "Y occurred after X." And to assert that "X occurred now" *is* to assert that it occurred neither before nor after.

The cluster of expressions cited, when suitably paired, have identical truth values, even if they employ mutually exclusive terminology in transmitting their message just as "Mary is the wife of John" has an identical truth value with "John is the husband of Mary,"

even if "husband" and "wife" are mutually exclusive terms for any individual to be jointly ascribed to. In a word, due to the relational properties binding its components in inseparable mutual constraint, Time is *succession.* To say that something happened *now,* is simply to say that it didn't happen *before,* hence "now," *any* "now," the "now" of $t = 0$ included, is assertively *vacuous,* if it cannot be made to mean "(therefore) not before."

Asserting that something happened *now,* rather than at any other time, presupposes the knowledge of a *difference,* the difference between something happening now and something *not* happening now, but just before. And it is upon the knowledge of this difference alone, that "now" asserts what it asserts. Were a "now" to be *severed* from this contrastive semantic function it possesses, *i.e.,* that of *excluding* that something actually happened at an earlier time, "now" would cease to be a "now" in the first place. In short, a "now" that by definition cannot relate contrastively to any "before," is a "now" which *turns against its self*. Due to this fact, the "now" of the $t = 0$, not succeeding any "before," is also a "now" that turns against itself. On the basis of this remark, I will now proceed to derive the contradiction inherent in this putative $t = 0$, a t relating to no "before."

The instants of (real) Time, namely, the instants of the time-series that we securely possess intuitive access to are one and all successive. What is it then for all such, actual temporal instants to be successive? It is, simply, to always have a kin neighbour on both ends, a neighbour before and a neighbour after. Take, therefore, any such instant of normal time, say a t', such that it has both the other two neighbours at its ends, *i.e.*, a t' such that, $t_1<t'<t_2$. This, in essence, is what a temporal location (or determination) is all about. Any determinate moment of time is determinate, because it is always "later than..." and "earlier than..." some other, boundary moment.

This means that, for our token triad, given that $t'<t_2$, t' cannot be taken as later than t_2 without contradicting the premises of the argument. In other words, in t_2 we have an *upper limit,* to how late t' occurs in the time-series. And, analogously, given also that $t_1<t'$, t' likewise cannot be taken as *earlier* than t_1 without contradicting the premises of the argument. In other words, in t_1 we have a *lower limit,* to how soon t' occurs in the time-series. Accordingly, t' is *fixed* (an important word, this) in the time-series, because (a), it has an upper limit, t_2, later than which it cannot occur in his series, and (b), because t' has a lower limit, t_1, earlier than which it cannot occur in the series. By then taking the upper and lower limits as close to t' as we wish (time is continuous), we can achieve, in principle, arbitrarily accurate *fixations* of t'. (Remember; an important word!)

Yet, what about $t = 0$? $t = 0$ does have an immediate neighbour *ahead* of it, *e.g.,* t_2, since there are instants later than $t = 0$. So it clearly has an upper limit, to how late it is to occur in the series. But $t = 0$ has no immediate neighbour *behind* it, *i.e.,* no *lower limit* to how *early* it is to occur in the series. In consequence, in total absence of such a lower limit, if I were to tentatively *move* $t = 0$, say, 15 minutes backwards, I would no longer be contradicted by the premises of the argument, nor would Grünbaum have any reason to object to this, provided I remain within his initial specifications, that $t = 0$ is the *first* moment of Time. After all, I have only done what he fully permits me! It is he who has ordained $t = 0$ as the first moment of Time, therefore he who has explicitly stated that $t = 0$ is preceded by no other temporal neighbour. And therefore, by the very same token, by *no lower barrier*. All I did, was to apply his instructions to the letter and simply transpose $t = 0$ at an earlier time, 15 m. to be exact. But I have not denied that, even so, $t = 0$ is *still* the first moment of Time. I have only said that it has occurred a little earlier than his own calculations. Our difference is one of quantity. Not one of quality.

Grünbaum only said that there *was* such an instant. He did not say *when* it was.

But $t = 0$ is *still* the first instant, *i.e.,* an instant of time still without a preceding temporal neighbour, in other words still an instant with no *lower* limit. So, in absence of such a limit—remember, it is always the *first* instant—I move $t = 0$ *another* 15 minutes in the past, since there is no preceding neighbour or no lower limit to obstruct me. *Who can stop me* in the absence of such a limit? In doing what I do I am in perfect consistency with the premises of the argument, Grünbaum's argument, to be exact, which clearly specifies that $t = 0$ is preceded by no other temporal neighbour, hence by no lower limit. So why be thrifty with it? Why not push $t = 0$ further and further in the past, days, years, centuries, millennia or billions of years? Once again, who is to stop me? A lower limit would, but a lower limit would only be an earlier *time,* before which $t = 0$ could not have then occurred. And if Grünbaum has explicitly denied something, it is the presence of just such a time.

In its absence I can continue displacing the $t = 0$ deadline as far back in the past as I care to imagine—provided I always add in so doing, "*this* is the first moment of Time." The difference is that, as this procedure advances on with no conceivable barrier to keep it in its *place,* the first moment of Time will *cease* being one such, no matter what I or anybody else will be saying. The idea of a $t = 0$, of a time with no preceding neighbour, hence the idea of a time deprived of a lower barrier capable of *resisting* its unending recession to the indefinitely remote past, is a self-contradictory one because, first moment or not, it keeps slipping away through our fingers like the bottomless pit that it is. Such a time will never *stay at a place,* because this is how it is originally defined. The idea of a first ever moment of Time is a self-contradictory one.

2. The Growth of Space

The idea of a first ever moment of Time, namely the idea of a beginning not *in* Time but *of* Time, has been shown to be an implicitly self-contradictory one. This alone suffices to rule out the logical possibility of Big Bang Cosmology, impossible without such an (impossible) beginning of Time. However, in view of what is to now follow, namely, the contention that Space *grows,* the previous will appear almost elegant in comparison. Because here the contradictions and the incoherence are almost beyond belief, coming as they do by what is by all referred to as but another *scientific* theory. In the capacity to be subsequently discussed, the Big Bang idea now features under the name with which it is more officially referred to, *viz*., the name of the Universe Expansion Theory. This is how such a theory goes in a double passage:

> *[Such expansion] is very different from the kind of expansion one would get, if the universe originated in an explosion into pre-existing, empty space. This is because the Big Bang is an explosion of space and time, not an explosion in space and time. A recent paper by Harrison explains: "From a purist point of view one cannot help but deplore [!] the expression 'big bang', loaded with inappropriate connotations, conjuring up a false picture of a universe expanding in space. In modern cosmology, the universe does not expand in space. It consists of expanding space." [van Flandern, 1994, pp. 27-28. The passage quoted, Harrison, 1993, pp.28-31.]*

What, then, is an explosion *of* Space as opposed to one merely *in* space? It is, in short, that Space *itself* has exploded into being,

whereas an explosion *in* space, as the former of the two authors* informs us, can only occur into a pre-existing space and, therefore, has to *presuppose* space. What we are dealing with, therefore, is not the 'deplorable'(?) idea of Matter exploding in Space, which, though surely grand, is nonetheless an *episode* in the history of the World; we are dealing with the explosion of the World *as such,* which is what makes modern cosmology a Cosmology, and not just the narrative of an episode of an otherwise antedating world history.

Harrison, the second author, finds the other alternative deplorable. It is interesting to see why he thinks that this is not so with his own option. Let, therefore, be an explosion not *in* space but *of* Space. Since there is, as we are told, no Space just yet for the explosion *to* occur, the explosion must obviously occur *in no space*. Then, in passing, I would say that it would have to be a rather small Bang. Not a big one. In addition, since there is no space, where the explosion can occur, the explosion cannot obviously have occurred *at* a place. And therefore cannot have occurred at all, as far as spaces, places and occurrences go. Yet Harrison finds the *other* option deplorable.

Furthermore, if the explosion was not *in* time but *of* Time, the explosion must have obviously occurred in *no time*. And then, in passing, I would remark that it would have to be a rather brief Bang. Not a big one. And, besides, since there is yet(?) no time, the explosion cannot have occurred *at* a time, either. And therefore cannot have occurred at all, as far as times, moments and occurrences go. In short, without some space *to* explode in, one cannot explode at all, and without some time to explode *at,* one cannot explode at all either (however much some *would* like to explode, considering). On

* I think I should mention that the former author, van Flandern, does not himself subscribe to the idea he describes.

the whole, I am not at all convinced so far that Harrison's choice is the least deplorable of the two.

Still, however odd this might seem, an explosion which must needs occur in no space and appear at no time is hardly the last of its weird peculiarities. Many more are to follow. "Expand," or "grow," as we ordinarily use these words, means to take up more of space than I previously did. If in the place of the expanding or growing object we now put Space itself, since it too can expand and grow, what we obtain is that *Space* will take up more of space than it previously did. And this is not at all the same thing.

When a balloon takes up more of space, than it previously did, it takes up more of something *other* than itself. But if Space has to take up more of space, than it previously did, then Space must take up more of *itself,* than it previously did. However, since at this point in time Space has only grown as much as it has, and not more, there *is* no space to be taken by Space just yet, unless of course we allow that Space is already larger than it is, and so can take up *more* of whatever needs to be taken, *viz.*, space(!), if it is to at all grow. Harrison, in his zeal to avoid the other, 'deplorable' option, does think that Space is, in fact, larger than it is. The two of us have a difference of opinion here.

The growing (or expansion) of the balloon *presupposes* space. But the growing of *Space* cannot similarly presuppose space because, presumably, Space itself is being created *by* such growing (or expansion) and is presently just as large as it has grown, and not more. The balloon *can* grow, because there is always more of space available for it to expand into and occupy. And, therefore, grow. But the expanding (or growing) Space of the Big Bang, which is at any time just as big as it is and not more—unless, of course, it *is,* at all times, bigger than it is!—is deprived of the necessary, available space to similarly expand into and occupy. And, therefore, grow. By the

very standards of the Big Bang hypothesis itself, *viz.*, the standards of what it is to *grow*, Space cannot grow.

The Fallacies

Thus far I have shown that the Universe Expansion Theory, alias referred to as the "Big Bang," is nothing but a scenery of absurdities, contradictions and overall incoherence. Yet having shown *that* this is so, is not also having shown *why* it is so. Showing the latter will, I hope, render a service to theoretical physics in a way that showing only the former will not. For in being shown *why,* it can at the same time be taught how to avoid it.

The absurdities thus far exposed and those which are yet to come don't really come about at random, just so much as if they were unconnected to one another. On the contrary, they manifest a certain regularity, in fact almost a pattern. In Hamlet's case Polonius saw "a method in the madness." Interestingly, there is a method in the Big Bang madness no less, the difference being that in Hamlet's case the method was superior to the madness, while in the Big Bang case it is the converse.

Were I to state my own account of the fallacy underlying the absurdities and the contradictions thus far listed, and those that are yet to come, I would say that they all stem from the fallacy of *self-reference.* Concepts like those of Time and Space are meant exclusively for *hetero-reference*. Things, that is to say, material things, and therefore things *other* than Time, can have a beginning in time and therefore an age. Time cannot have an age, except contradictorily and incoherently. Things, that is to say, material things, and therefore things *other* than Space, can have boundaries in space and therefore a size. Space cannot have a size, except contradictorily and incoherently. The contradictions here derive from

applying to Space and to Time spatial and temporal predicates meant exclusively for entities *other* than Space and Time, that is to say, material objects. For example, one *can* say, "Eliza! Where the devil are my slippers?" but one cannot similarly say "Eliza! Where the devil is *Space*?" One's slippers are in Space, but Space itself is not in Space, whatever that might mean.

This is the fallacy of self-reference of things never meant to be self-referring. The best paradigm of this fallacy, and one matching only too closely the fallacies connected with the Big Bang, is the one happily toyed with and mentioned by logicians. It begins with the innocent and perfectly useful, indeed the indispensable proposition, "this proposition is false," pointed at any proposition which we know to be false. However try and turn this into *"this* proposition is false," *i.e.,* not *another* proposition, to which the previous will be applied, but the *selfsame* proposition which is being uttered, and see what follows. What follows is true chaos. If it is true that *"this* proposition is false," then it is false. But the proposition itself confesses to *saying* something false. And therefore, if saying that it is false, is *itself* false, it is false that it is false. [See von Wright, 1986, pp. 11-2]. The *sentence* "this proposition is false," when turned into the *statement,* "this proposition is false" makes a logical mess of an otherwise perfectly consistent and indispensable utterance. Ascribing spatial predicates to Space and temporal predicates to Time is a fallacy of exactly the same type. With exactly the same consequences.

I would therefore submit that the fallacy of self-reference is the ruling fallacy behind the absurdities involved in the Big Bang case. Yet a closer look at a now completely forgotten paper by E.H. Hutten, published in 1955 [Hutten, 1955, pp.58-61], added a new dimension to the case. Hutten locates the incoherencies involved in the universe expansion theory into two other fallacies, to him both traditional: (i) the fallacy of *reifying abstractions,* and (ii) the fallacy of confusing

between the properties of a *set* and the properties of the *members* of this set. [Hutten, 1955, p.59].

Both his points are most welcome, as is indeed his whole contribution, upon the fundamentals of which I will deploy some of my own comments. What might be of interest to argumentation theorists is that, upon further investigation, all three of the fallacies allotted to the contentions of contemporary cosmology, the two of his and the one of mine, in most of the cases boil down to a single, comprehensive one. As if it were a single fallacy involved under a threefold disguise. Since how *many* types of fallacies there are involved is not my actual problem, but only that fallacies they indeed are, I will not labour this point further at least not within the confines of the present argument and will alternate between them as if either three distinct types or as if a single, encompassing one, depending on the needs and direction of my argument. A few remarks, however, on how they relate to one another may be of service to how they relate to my own case.

For example, the fallacy of self-reference of spatial predicates to Space and temporal predicates to Time is *eo ipso* the fallacy of *reifying* Space and Time. When kept to their proper, *hetero*-referring function, Space and Time refer to *material* objects, which, therefore, neither of them are. In consequence, since Space and Time themselves are not Matter, but merely *conditions* for Matter to make its appearance, Space and Time are not things (*res*) but only abstract receptacles of things. To then, self-referringly apply to them predicates meant only for material things is *eo ipso* to commit both fallacies at once; the fallacy of self-reference and the fallacy of reifying an abstraction.

Not too surprisingly, it is also to commit the third fallacy as well; that of confusing between a set and its members. Space, for example, may in this connection be considered as the *set* of all things possessed

of extension. But, in being an abstract entity, such as a set, it is not *itself* possessed of extension. Hence, to ascribe extension to Space (or age to Time) is to commit all three fallacies at once: that of self-reference (extension has an extension), that of reifying an abstraction ("extension" is a *concept,* hence an extensionless abstraction), and that of confounding between a set and its members (Space is the *set* of things possessed of extension and therefore itself not so possessed). I do believe that, essentially, we are involved with a single, all encompassing fallacy, exemplified in three linked, subordinate types.

Starting with Hutten's distinction between a set and its members, to which I can hardly overemphasize my indebtedness, the following remarks are in order. The set of all false propositions is not *itself* a 'false' set. It is a very 'true' set indeed, if truth be allowed to be ascribed in this connection, because it is a set which exists. The set of all imaginary, *i.e.*, of all nonexistent things, such as the Centaur, the Unicorn, the Pegasus and the Medusa, is not *itself* an imaginary *set,* but a very real one indeed. And the set of all small things is not itself a small set at all. In fact, it is the largest set in existence, since all large things are constituted each by (possibly) non-finitely many smaller constituents. Which makes the set of all small things almost infinitely richer in members than the set of large ones. Hence Hutten is right, down to the last letter of his important remark. It is a bad confusion to ascribe to a set the distinctive properties *under which* its members have been 'collected' into forming a set, so bad that only catastrophe will follow. The universe expansion theory and all related types of cosmology are just such catastrophes. Not only because the *expansion* claim is a catastrophe, which I have previously shown it in a number of ways to be; but because, to the very same degree, the very idea of a *universe altogether* is no less of a catastrophe, to begin with. (But of this later.)

Here, then, are some further of the semantic disasters which await us, if we commit the self-referring fallacy, or the fallacy of reifying abstractions, or the fallacy of confounding between a set and its members, committed all at once and in a single arguing process. The fact that all things have a certain size, in other words, the fact that they all take up some space, does not mean that *Space* can also take up some space. Yet, nonetheless, this is what Big Bang 'logic' demands of us. He who speaks of the growth of Space [cf. Harrison, earlier quoted], speaks of a Space which is bigger now, than it previously was. This is the question of how *extended* Space may be, more now than before, depending, presumably, on how much time has elapsed since it first began expanding. However, in this context (and probably in any other), space and extension are *synonyms*. Hence, the question "how extended is Space" reduces to the question "how extended is extension" and this latter to "what is the extension of extension."

Well, then; what *is* the extension of extension? Or, if you prefer, what is the weight of Weight, the length of Length, the width of Width? This is the self-referring fallacy (and Hutten's other two). It is *things,* which have extension, weight, length and width. It is not the *concepts* Extension, Weight, Length and Width that do, that is to say, not the *abstractions* (general terms) or, differently, the *sets* of all extended, weighing, lengthy and wide things that do. (Here, as elsewhere, all three fallacies merge into one.) But perhaps the self-referring fallacy is somewhat more dominant in this connection. For the reasoning of the contemporary cosmologist in this instance reproduces exactly the following sort of categorical mistake: Were I to stand on top of a mountain and announce, "from up here I can see everything," he would immediately conclude that I can see my own *seeing*. Since this too is included under the all-embracing word "everything." What is sauce for the goose is sauce for the gander, no

question about that, provided that the goose *is* a goose and the gander *is* a gander.

Treading now into far more perilous ground by merely following the direction of my own footsteps, entering territories where haughty authority reigns supreme and unquestioned, I cannot help but apply the lessons taught us by the three above noted fallacies (or the single one they essentially are) to such authorities no less, and pay the cost or else pretend I haven't 'noticed'. But since I have, I will: We are being told in no uncertain terms that Space is *curved*. The triple fallacy is with us once again. Space can be curved just as much as it can have extension. "Being curved" is a property of objects *in* Space. It cannot be the property *of* Space. However, this is only an introduction to the fallacy still ahead. If Space is curved, then Space has a *shape*. Now, what is it for something to have a shape? It is, that it occupies *some* part(s) of Space but not *other* such part(s), the parts occupied as opposed to the parts not, giving the thing its boundaries, and therefore the shape which it has. Somewhat differently, a thing has a shape, if it can be found in *some* points of Space but not in some other such points, the points where it is no longer found as opposed to those it is, giving the thing its boundaries, *i.e.,* the shape which it has.

Apply this definition to Space itself (the self-referring fallacy) and see what follows: If Space is curved, and therefore if Space has a shape, then *Space* occupies some parts of Space but not some *other* parts of Space. Or, somewhat differently, Space can be found only in *some* points of Space but not in *all* the points of Space. Pointing out to me that the Theory of General Relativity is the one responsible for attributing a curvature, and therefore, a *shape* to Space, awe inspiring though the name may be, is not the same as providing a *refutation* of my argument. Arguments will not be invalidated *just* because they happen to conflict with what Einstein—or the *Pope,* who is by definition infallible—have said. Arguments will be refuted, if they are

shown to be bad arguments and this one, I submit, is a good argument.

Be that as it may, what I will under no circumstances countenance, is the lame reply that the Theory of Relativity, as well as that of the Big Bang, operates with concepts *incommensurable*† to those of Newtonian mechanics and hence my foregoing argument, presupposing their semantic continuity, essentially comes to nothing. Since the times of Alan Sokal‡ Incommensurability has ceased to be in vogue and, thereby, the *alibi* that it formerly was. Namely, an alibi for *meaninglessness,* turned into good sense by merely switching Paradigms.§ It goes without saying that, if the meaning of a word is

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† Regarding P.K. Feyerabend's account of this notion see [Feyerabend, 1978, pp.65-70, ch. 7 *Incommensurability.]* Implicitly contesting Kuhn's authorship of the concept (one *I,* at least, would never brag for having fathered) he specifies it, *inter alia*, as "the impossibility of establishing deductive relations between *rival* theories" [p.67], which therefore cannot even be brought into direct conflict. One, important, consequence, is that the *meanings* of the theoretical terms employed by the two theories are no longer comparable. (I regret being unable to quote from or refer to Feyerabend's A*gainst Method,* for I only have the Greek edition in my possession.)

‡ Alan Sokal's pseudo-paper, "Transgressing Boundaries" [Longino, 1997, pp.119-120], published in *Social Text* only to be ridiculed by its own author immediately after, is traditionally considered as an attack against *cultural* relativism. But what this relativism essentially consists of is the contention that different cultures develop different *cognitive* concepts no less. And such that are *equal* in validity to the *different* concepts of a different culture. In other words, 'rival' but not mutually refuting. That is to say, incommensurable. Whence, in essence, Sokal's unique 'experiment' is directed mainly against Incommensurability, to say nothing of the *egalitarian* claims made by its crusaders, all in favour of the Great Democracy of Ignorance.

§ According to the Paradigm version of Incommensurability, *i.e.,* Kuhn's, "at times of revolution, the scientist's perception of his environment must be re-educated. After he has done so, the world of his research will seem *incommensurable* with the one he had inhabited before." [Kuhn, 1970, p.112.]

not observed and respected in the way it should, the nonsense resulting therefrom can be turned into 'sense', if the initial meaning is appropriately changed. In fact, this is trivial. Were I to claim that I made a unique discovery, the discovery of a forest without *trees,* not a forest whose trees were cut down nor one whose trees were burned to the ground but one without trees altogether, one could always turn this nonsense of mine into a world shattering discovery, if one only changed the meanings of "forest" and "trees." Appealing to Incommensurability is the surest and the easiest way to making sense out of nonsense, which philosophers have so far come up with.

It is also, not that that would matter much to its (unfortunate) inventors, a permanent, unblushing circle. In order that a scientific theory be licensed to change the well established meanings of certain theoretical terms and, even, change them *incommensurably*, it must be first be shown to be itself sufficiently *warranted,* to implement such a change. Which is to take for granted the very point at issue. For if the meanings *are* observed, rather than all too hastily and adventurously abandoned, the 'incommensurable' theory will just be incoherent, and surely this is the last reason in the world for considering it warranted. I myself know of only one way of making an argument. Lay bare the *known* meanings of the words involved and make manifest their consistency or inconsistency. And the alibi of Incommensurability makes this practice impossible. This *practice,* mind you, as a whole and not my own, specific argument above presented.

Since this applies to meanings, if it applies to anything, novel and revolutionary theories cannot be assessed on the basis of established concepts, for it is this establishment that conceptual revolutions have transcended. Presumably, they can only by judged by their *own* standards, thus never failing to pass the test. Whence Feyerabend's own account of Kuhnian Paradigms as "fairly *immune* to difficulties (and incomparable to one another)." [Feyerabend, 1978, p.67.]

4. The 'Universe'

Everything in this world has a beginning. Therefore, some are quick to conclude, the *World* has a beginning. This is the age-old mystery of Creation, passed on to all the other generations, the very one which universe expansion theorists pride themselves for having at last conclusively answered and put to rest.

One aspect of it, but by no means the sole there is, is that of a Cause of the Universe. Or, as is frequently referred to, "the Cause of all causes." Kant, in his discussion of the Antinomies, has laid the foundations for some pretty nasty comments against this idea, or cluster of them, especially in his First and Third, namely, that of World Infinity *versus* Finitude and that of Causality *versus* Freedom. Liberally interpreted (and, indeed, is there a better way to interpret them?) these Antinomies may support the suspicion that, not only is there no such thing as a "first cause" but, what is worse, no such thing as the *universe* either. Kant, for instance, speaks of the *"absolute totality* of a series of conditions" [B 436], the totality of moments, as concerns Time, and the totality of causes, as concerns Causality, and says in no uncertain terms that both totalities are *things in themselves.*[**] "An *absolute whole* is not itself a *perception*"[A 484, B 512, Kant's italics.]

Now this remark, taken in its spirit, is a crucial one. For not only does it purport to argue that, in being things in themselves, these totalities are *ipso facto* unknowable. But because, in addition, it shows

[**] "For a given conditioned, reason demands on the side of these conditions absolute totality and in so doing *converts* the category into a *transcendental idea."* [Kant, B 436]. Categories may be transcendental in *origin* but, for Kant, they must needs be empirical in *employment.* And their empirical employment is only that of being applied to the "conditioned" as such. Once applied to their *totality* they are "converted" into a *noumenon*, essentially.

the irreducible difference in logical status between dealing with a *member* of the series, on the one hand, and the series as a *whole,* on the other. Arguing in effect that it is a categorical error to ask of the series, what can properly be asked only of its members. And this, of course, is Hutten's remark The spirit, and in this case the letter also of Kant's epistemological drive behind the Antinomies is epitomized in the following warning to Reason; "Watch out! The totality of a series of objects is not *itself* an object." [Ibid. and passim.] Calling it a thing in itself is perhaps overstating the point, due presumably to the self-imposed restriction on Kant's part, that if something is not the one of these two, then it has to be the other. But that the totality is *unlike* any of the specific objects comprising it, be this totality a thing in itself or not, is surely a valid point.

If this is so, then the 'Universe', *i.e.,* the totality, is so unlike any of its inhabitants (if the word be excused) that it may share none, and I mean *none*, of their properties. They may all have a cause, but the 'Universe' none. They may all have an age, but the 'Universe' none. They may all be somewhere, but the 'Universe' nowhere. Finally, they may all *exist,* but the 'Universe' not exist.

Let us begin with causes. Why should the 'Universe' have a cause? This seems a most natural thing to suppose at first but the recipe goes sour before we even take the next step. What if, say, "universe" means "all the causes that there are," a not too unbecoming definition in the case considered? Then we have simply run out of causes and there'd be none left for the 'Universe', the universe being in this case nothing but *all* the causes taken together and jointly referred to. Now, why should "all the causes" have a *cause?* "Having a cause" is very much like having an *explanation*. (A causal explanation.) But then, in asking for the cause of all causes, we are no less than asking for an explanation for all explanations. How, then, am I to explain the fact that I do explain? Explanations are given

to *things*. Explanations are not given to giving explanations. Causality is a way of saying that things have a cause. It is *not* a way of saying that *Causality* has a cause. The self-referring fallacy is committed all over again.

In a nutshell, religious or scientific(?) cosmologies unanimously—for once—reason like this: If everything has a cause, the Universe must have a cause (God or the Big Bang). In having reasoned thus, they identically reason thus: If all men have a mother, then *Humanity* must have a mother! Men do have mothers; but does their *totality* have one?

Things are hardly any better, when we turn to the claim about the *age* of the Universe. In Section 1 we have seen enough to know that ascribing an age (a beginning) to Time lead to a self-contradiction. But still, myself not having the *first* idea what exactly the term "universe" is supposed to mean in the first place, I am unable to determine whether Time itself is included under its spacious roof. So I will treat the matter separately. What, then, do we *mean,* when we utter the word "universe" in this given context? The best I can come up with, which is also Hutten's best, is "a name for everything there is." [Hutten, 1955, p.58]. Immediately after, by directly applying his contrast between "a class and its members" [*ibid*.] he then remarks that "if everything *in* the universe has an age, it does not follow that we may give an age *to* the universe." [Hutten, 1955, pp.58-9, italics in the original.]

However the further details of the case show it to be far more absurd than the committal of a categorical error. The word "universe" denotes everything that exists, and I can hardly think of it as denoting anything other than this or anything over and above this. Now contemporary cosmology, the Big Bang hypothesis to be precise, persistently asks how *old* the universe is. Then, by putting "everything that exists" in the place of "universe," we can thereby

proceed to ask: what is the age of *everything* that exists? Well, pray, what is it? The 'universe' is known to contain a near-infinity of things, all possessed with a *different* age each. What, then, is the age of near infinitely many things, all having ages *different* to one another? Is this supposed to be *one* age? Or many? But if the ages are many, how many ages does the 'universe' have? And if it is supposed to be just *one*, how can the universe, consisting of infinitely many different and separate ages, have a *single* age? Or, if consisting of infinitely different colours, a *single* colour?

Do cosmologists perhaps imply that we should draw the ... *average*? No, I don't suppose they imply that, first, because they themselves ascribe a unique age to the universe, second, because if an average(!) was drawn, the universe would turn up having (roughly) only *half* the age it has, considering we have to average over its oldest *plus* its youngest inhabitants. Cosmologists themselves choose to identify the age of the universe with the *oldest* event there ever was, *i.e.,* the Big Bang itself. But that is not really too fair, is it? First, they speak of the age of the *entire* universe, presumably, since the term "universe" must leave nothing out. And then they satisfy themselves by giving it an age equal to the age of only *one* of its occurrences, just so much as if the ages of all other things do not even concern them. Is this favouritism? Is it separatism? Is it a racial distinction of sorts? Or is it nonsense?

Cosmologists have simply turned "everything that exists," *i.e.,* (formerly) the universe, into "only *one* thing exists," *i.e.,* (hitherto) the universe. The universe has a single age because it is no longer *all* things but because it is now *one* thing. Were it not for the fact that cosmologists are just confused, one would be tempted to think that they are totalitarianists of sorts. But let us be neither. Suppose I limit the 'Universe' to the thirty people in this room before me, provided I retain the essential, binding condition that they are all that exists. I

count them up to find they are thirty. If they be 'my' universe, and I use the term to refer to them, are they now perhaps thirty *one* in the process? No, they are still thirty. Calling them "the universe" (or everything that exists) will not make them an *extra* entity, somehow standing apart and in *isolation* of the thirty, to be (somehow) added to them. Nor even a *unique* entity, fused out of them. They will still be thirty.

Now put the real number of entities inhabiting "the universe," large as it is, say the number *?,* and refer to these entities indiscriminately as "the universe." Are there now perhaps *?* + 1 entities in the process? Clearly not. They are still *?,* and not an iota more. Why then, on earth, should they have a *single* age? They still have whatever ages they had all along, namely, ages far too many and far too different to concoct a single one out of them. In short, "everything" cannot have an age. Not just because "everything" is a term far too abstract, if not far too vacuous, to have an age in the first place, as Kant and Hutten realised. But because, even were it sufficiently concrete and tangible to claim one, it would still house within it so many discrepant and irreducible ages, that would render the conception of single age ascribed to "it," either a harmless average, of interest only to economists and insurance policies or, if not, an unmanageable *chaos,* of interest only to cosmologists. In short, even if there were a universe, there would just be too many ages in it to handle. Hence, there is no such thing as *the* age of the universe.

The true predicament of contemporary cosmology is that it pronounces the word "universe" and literally drools over it. Perhaps because it thinks that it is important, perhaps because it thinks of *itself* as important, in dealing and having grasped something so truly important. But the word "universe" is not important. Nor does it denote a unique object, standing in shining glory over all other lesser

objects in need of a privileged treatment. If the word "universe" denotes anything, then it denotes an *inventory*. It is no more than a particular way of regarding all things at once, in a single, sweeping, all-inclusive survey. That is to say, a sort of an inventory, liberally deemed to be exhaustive. When, for instance, we say "this event is surely the most improbable in the universe" we only mean that, compared to all other events, quickly surveyed by our inner eye one by one or all together, this one is the least likely of all to ever occur. It is expediencies of thought such as these, which give the universe its 'cause', its 'age' and its 'existence'.

Of course, inventories do have a cause or, if only to be truer to the requirements of authentic human action, a reason *Our* reason for making the inventory. And hence, of course, a moment of their creation. Inventories do not come out of nothing; they have a definite beginning in time. (Only remember; *in* time.) The time when *we* first made them. And therefore have an age. But "the universe," being just a swift, sweeping mental inventory of all things (never complete, but we let that by), can only follow *upon* things and, as such, can only *succeed* them in time. Were this inventory to have an age, it would have to be much younger than nearly all other things, dating no earlier than when man first began to *abstract*. And, were it to have a cause, not a second older than that same date. All the rest is fallacy.

The Physics of Ghosts: Conclusion

Confusion can only breed further confusion and self-deception only more self-deception. So it is with the universe expansion theory. A theory burdened with so many absurdities and incoherencies as those noted here, and as severe as those noted here, can only result to 'empirical confirmations' of its claims comparable in their credibility to the absurdities and the incoherencies which have given rise to

them. And that the 'observations' or the 'empirical evidence' cited in its support are no better in epistemic quality, than the very theory which gave them birth, is the best empirical evidence in support of *my* claim, that it is truly incoherent. One need only read the following passage, to realise this:

> *This [cosmological] redshift, which again is not a Doppler shift, arises from the expansion of space-time itself. Light waves literally stretch as the universe expands between the time the light was emitted and today, when it finally reaches us. [...] Now galaxies are located at fixed positions in space. They might perform small dances about these positions in accordance with special relativity†† and local gravitational fields, but the real 'motion' is in the literal expansion of the space between them. This is not the form of motion that any human being has ever experienced, in that it does not involve travel through space. So it is not surprising that our intuition reels at its implications and seeks less radical interpretations. [Odenwald & Fienberg, 1993, pp.31-35, first and last italics in the original.]*

The sentiments with which some members of the scientific community have received the stark preposterousness of the foregoing contention are hardly any different than mine, even if it be only the sentiments of *some* of its members. Lewis Epstein retorts:

> *In cosmology lectures by Drs. Edward R. Harrison and William J. Kaufmann I have heard each say that the*

†† It seems that everything in contemporary physics has to be "in accordance with special relativity;" or with the general one, at any rate, to be on the safe side. As if it can sanctify all nonsense upon its sheer pronouncement.

> *galaxies are not moving apart. They are stationary. The space between them is expanding. I asked each of them how to do an experiment to differentiate between the two possibilities; galaxies moving apart or the space between them expanding. Neither person could answer and I suspect the question had not previously entered their minds.*
>
> *Since the idea that the galaxies are at rest in an expanding space is now quite widespread, I would like to put my request for an experiment to a wider audience. Can any theoretician, researcher, cosmology book author, astronomy teacher, student, or layman think of an experiment to differentiate between the two possibilities? [Epstein, 1987, p.970, italics mine.]*

This is a clear and sober voice but, alas, a comparison of the dates alone shows that it has not been heeded. Odenwald and Fienberg, above quoted by me, are not the ones that L. Epstein addresses himself to, those being W.J. Kaufmann and our own(!) E. Harrison, earlier encountered (p. 3 of this text). Yet, sadly, Harrison's work here quoted, "deplorability" and all, is dated *1993,* six whole years after Epstein had first warned him. If this is not incorrigibility, then I stand to be instructed on what it is. And the two other authors I have quoted just above, Odenwald and Fienberg, have presented theirs in the same year, another six years later than Epstein's warning. Counting names and warnings within the confines of my own few references, and I doubt whether I or the reader would benefit, had I included more of the same in my text, the odds are one against four, the four being the more *recent* of the lot and so, presumably, the ones that finally prevailed. And the solitary odd, the older one, in present want of fans and followers and so, presumably, the one that is abandoned.

The physics of Odenwald and Fienberg, the physics of Harrison and Kaufmann, the physics of the universe expansion theory, is the physics of *ghosts*. It is, one is tempted to suppose, the physics of desperation. The physics of nothing more left to tell the world, of no more words left to convince, of nothing left to think of, nothing left to cling to, except hot air alone. The physics that tells us to our face, and that without the sparkling wit of Zeno's paradoxes, that to move is not really to move at all, but to really *not* move—and prove me wrong if you can! It is, I'm sorry to say, a good deal of the physics of our time.

The need for ghost-physics, postulating a ghostly motion of "now you see me, now you don't" qualities, is no slip of the tongue, no error that can be remedied. It is an inescapable theoretical inevitability, made to measure the requirements of universe expansion reasoning. If the galaxies did change positions, they would have actually moved *through* space, to utter triviality. Objects moving apart from one another is possibly man's earliest of awarenesses and ordinary physics' commonest of subjects. No one has conjectured that Space grows because of it. What did grow, was the distance between the objects.

Odenwald and Fienberg, Harrison and Kaufmann, though at total want for words on how to tell the difference, still (desperately) need both; galaxies drifting apart due to the literal(!!) expansion of space between them, for if Space expands *at all,* the galaxies should after all do *something* to justify the contention—and, at the same time, galaxies staying put, to escape triviality. Plus of course attaining some agreement with the facts, assuming that expansion theorists have a need or a sensitivity for those.

They need all the former, to be at all able to affirm that Space grows and they need all the latter to be at all able to account for the fact that Space does not grow: a kind of motion that makes our intuition reel, seeking less radical interpretations—for it is no kind of

motion *through* space, so no motion whatsoever—as the sole thing left to them to appeal to. This is the physics of sheer desperation, the physics of grabbing at immaterial ghosts, to save the day. And it is those, really, the ugly ghosts flung at our face, which make our intuition reel, and not the radicalness as such. For, my oh my, are they scary! Nevertheless, life has to go on and so does the show. And so, it seems, does science:

> *"But the Emperor has nothing on!" said a little child. And one person whispered to the other what the child had said. "He has nothing on—a child says he has nothing on!"*
>
> *"But he has nothing on!" cried all the people. The Emperor writhed, for he knew it was all true. But he thought "the procession must go on now." So he held himself stiffer than ever, and the chamberlains held up the invisible train. [H.C. Andersen, The Emperor's New Clothes, Grosset & Dunlap, New York, p.204.]*

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