SLAC-PUB-5161
December 1989
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The Inevitable Universe- Parker-Rhodes' Peculiar Mixture of Ontology and Physics*

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THE SECOND PARKER-RHODES MEMORIAL LECTURE

Submitted to Proceedings of the 11th *Annual International Meeting of the*
ALTERNATIVE NATURAL PHILOSOPHY ASSOCIATION
Dept. of History and Philosophy of Science, Cambridge University
Cambridge, England, September 14–17, 1989

⋆ Work supported by the Department of Energy, contract DE–AC03–76SF00515.

The unnamable is the eternally real.
Naming is the origin
of all particular things.

Tao Te Ching

When asked to give a lecture on Parker-Rhodes' physics, I was somewhat nonplused. I almost replied "What physics?"—a point of view that Frederick expresses himself more than once in the book he was working on when he died.

But that would be unjust. Whatever his view, *I* assert that the discovery of the ***Combinatorial Hierarchy*** is one of the most important "discoveries"--or whatever you want to call it-in physics made in this century. His calculation of the proton-electron mass ratio is also a fantastic result that we are still trying to come to grips with. And his insight into early cosmology-what he called a "cold big bang" — which appeared in an early version of the ***Theory of Indistinguishables***,[1] also had merit. His early universe is a lot closer to my own views now than I realized when I first encountered it. We will mention other insights as I go along.

But his views are so different from those of anyone I know or knew, that I have decided to let him speak for himself by reading passages from his manuscript ***The Inevitable Universe***[2], or *TIU*, which was still unpublished at the time of his death, and add a few comments on them.

"PREFACE

"This book sets out the claim that one can infer, in strict logic, by a basically simple step-by-step argument, that whatever exists must exhibit a number of peculiarities, almost all of which are included in what is currently (or at least recently) believed by physicists about our world, both on the largest and on the smallest scale. Very little in the way of supplementary hypothesis is required, but the form and language of the argument is unusual, though fully rigorous at least up to the final interpretations. The unconventional features of the reasoning make the claim to rigour hard to assess-though I believe it well-founded-and they certainly explain, in part, why the thesis has not been set out before now.

"But, quite apart from the strangeness, opposition must be expected to arise from our culture's deep distaste for the notion of a successful ***a priori*** theory of this kind. The religious, averse to clarity, find it a blasphemous thought that mortal man might fathom the 'designs of the Creator'; over the fence, the scientists are

equally reluctant to back hubris; and people at large find this idea, that mankind, willing to spend vast sums on threats of universal destruction, might also possess so majestic an insight into the nature of things too paradoxical to be thinkable.

"So where am I? I offer no majestic insights, certainly not 'the Truth'-though my work is nothing, if it is not a step towards the truth. And there's the rub-for, as Feyerabend has argued (F1), if ever we do reach consensus that some theory is uniquely 'true', we shall be into a new age of dogmatism. But won't there always be opposition, which if the theory isn't really true will prevail? and if it is true, why worry? Whether we would then be in for a dark night of dogma, or a blessed age of enlightenment, will no doubt be debated when the time comes. Meanwhile, the matter is hardly urgent; even the first step is yet to come.

"And it is a step across a void. Better men that me have 'stood on the shoulders of giants' (as Newton put it) to view the world, or found tools ready made by others; but I have had to stand on my own feet, and make my own (P). I have no refuge in a copious reference list, only some points of a corroborative nature can (honestly) be referenced. Nevertheless I have received welcome help and encouragement, mostly from colleagues in the Alternative Natural Philosophy Association, in conversation with Dr. Ted Bastin, Professor H. P. Noyes, Professor Clive Kilmister, Professor G. Schaefer, my son Adam Parker-Rhodes, and others. I may yet be condemned -to the isolation of the would-be revolutionary; but I shall not live to see it."

.....

"LOGIC

"This book is addressed to a long neglected topic, namely the search for a coherent ***a priori*** theory to account for the fundamental nature of the physical world, and all that can be built on this foundation. The first author who seriously contemplated this task may have been Immanuel Kant-but he in the end concluded that it would be a logical impossibility, and I know of no less faint-hearted successor who returned to it. Success would imply that, in certain respects, the world we live in could not have been other than as we find it; I see nothing illogical

in that. The human imagination has never been confined by mere fact, but our knowledge has always craved for an objective basis, a reliable givenness behind the manifold appearances out of which we have had to construct it."

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"METAPHYSICS

"My use of this term may well be thought a misnomer, since I by no means renounce interest in the empirical verification of any result that might follow from my 'metaphysical' arguments. But it is certainly not physics, in that neither observations nor experiment enter into what I shall do. If an adjective will solve anything, perhaps I might call it 'mathematical metaphysics'."

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"Ontogeny

"One may classify phenomena by origin, according to their dependence on four factors: creation, accident, necessity, contrivance. The last is, as far as we are concerned, the exclusive province of human beings which, being obviously non-fundamental, makes 'contrivance' necessarily dependent on the other terms. Whether either pure accident or pure necessity can account for anything is however a live issue.

"A phenomenon, even the existence of some object, is 'necessary' if it can be proved without relying on questionable assumptions that its non-existence is impossible. Thus rigorously defined, the category is normally understood to be an empty one. Nothing can exist because of mere reasoning. I propose to counter this opinion by numerous examples of 'necessary' existents; it is, for me, rather the case that accident and necessity are the only possible ontogenies to which truly fundamental phenomena can be assigned.

"Moreover, of these two, 'accidents' can only happen to things which already exist, so that necessity must be given precedence over accident. There is now no real opposition to the notion of accidental, that is to say, uncaused events-their nonexistence would entail the prior existence of infinite information-but what,

some might ask, of 'creation'?

"It is, of course, one of the canons of scientific method that divine intervention should not be admitted; but, precisely because it is 'canonical' it carries no weight with those who would reject it. In the present context, before I have justified my claim to establish necessary existence, creation must be kept, in the back of the mind at least, as the only remaining possibility. I am thus led to expect a picture of things in which necessarily existing particles rush about at random, impelled by presumably necessary laws, giving rise to all the basic phenomena of physics and chemistry, and where occasion offers of biology and, occasionally and after a very prolonged period of evolution, intelligence. Ultimately, necessity and chance must account for--or at least provide for-everything that ever happens anywhere. If not, the universe in incomprehensible."

.....

Thus Fredrick's view of the material part of the universe is remarkably similar to that of Epicurus and Lucretius. Later in the book he refers to particles that "swerve" as "clinons", after he has made an argument for their existence. Those which do nor swerve, he calls "aclinons". Relevant passages are:

"Swerve

"...it furnishes an observable basis for the spacetime metric, the need of which I have just argued."...

"Some particles do not swerve, except for a weak relativistic coupling to gravity; these I call 'aclinons'." . . .

"...inertia must be ***directly proportional*** to gravitational mass..."

.....

These quotations are out of logical order, but seem appropriate in this summary to mention here. I now return to the main argument. Frederick develops his ontological point of view to a level where he feels he can make three basic claims, namely:

A: Something exists

B: Something whose definition incorporates no information exists

c: Given A alone, B is indubitably true.

Unfortunately his book still exists only as various partial manuscripts which some of the ANPA members received shortly before his death, and has yet to find a publisher. Fortunately, however, he developed a preliminary description of the the theory in an essay entitled "Agnosia" which I persuaded him to let me append to one of my papers[3] in a document that, together with the other appendices, is the closest ***we*** have to a ***Proceedings of*** *ANPA* 7. I mentioned it to him again after it had appeared, and after rereading it he remarked "It holds up pretty well, doesn't it?" or words to that effect. So I have his authority for urging you to reread it.

The argument in ***Agnosia,*** which he works over again in *TIU*, can be summarized as follows. He first makes what he calls in *TIU* his FIAT LUX assertion:

Something Exists

He then makes his second postulate:

This statement conveys NO INFORMATION

He claims that by considering the intersection between LOGIC and INFORMATION THEORY he can get out of the situation ***within*** logic that it is impossible to derive anything but tautologies from a postulate system. Thus his basic claim is that by considering two areas of thought together, he can arrive at a non-biological starting point for his theory. I repeat

THIS IS THE BASIC CLAIM

He then gives us a somewhat extended discussion of information theory, which I am not really competent to analyse, but ends up with the conclusion that it takes three bits to get the system started and that:

1 Bit is absorbed in FIAT LUX (Statement A)

1 Bit is absorbed in stating B

1 Bit left to start generating the cosmos

More bits ⇒ CREATOR

"The extra bits pertain to the Creator rather than to the Cosmos, and will not be looked at ever again in this work."

.....

"Defining the Inchoative

"The statement B of p. 13 is a recipe for a definition, requiring nothing but that it should incorporate no information. We may ask, for example, whether the definiend is divisible into parts, or an indivisible whole. If either is asserted so as to deny the other, information is imparted; therefore these apparent contradictions must somehow be reconciled. We can do this first at the purely verbal level, and then assign a meaning to what we have said which will realize this 'reconciliation'. If the outcome does not lead, as one might expect, straight into a contradiction, we can proceed to construct a general theory; if not, nothing will come of it.

"I therefore say that my definiend may be divided into parts, but only such as are each indistinguishable from the undivided whole; I have then to define 'indistinguishable' so as to save the prescription of 'no information' embodied in statement B. It is obvious that if each part is really indistinguishable from the whole, it too must be divisible again into as many parts as before-and so on forever. Likewise the whole must be one member of a set of indistinguishable parts of a superior whole; and so on again forever. It is clearly going to be a curious object we have to deal with.

"Next, we ask how many parts make one whole? If we state a number, any finite number, we impart information; an unspecified infinity does not do so (but an ***unspecified finite*** number contains information, by excluding both 1 and ∞). Thus, the statement B instructs me to define 'the Inchoative' as an infinite self-contained collection of indistinguishables."

.....

Then he concludes that fragments of the inchoative exist, which is all he seems to need to develop his theory of indistinguishables. It was this passage in particular that led me to use a passage from the ***Tao Te Ching*** as the start of this paper. I have no idea whether or not Fredrick would have approved of making this connection.

"Identical, indistinguishable, distinct, are three parity-relations and cardinant, bipar, and indistinct are their three negatives, making six in all; I call the mathematics devised to embody them 'triparitous', in contradistinction to the conventional 'biparitous' maths which know only 'equal' and 'unequal'. Triparitous mathematics is called for whenever indistinguishables (called 'twins' when referring to their symbolic representations) are liable to occur. In particular, nearly all fragments of the Inchoative require this treatment. Because of their unimaginability, they exist only mathematically, having the ontology of conceivables. It is however possible in principle that some (perhaps all) of them might also have biparitous models or representations, which, under the right conditions, might promote them to imaginables. The question then is, what ***are*** the right conditions?"

As in *ToI*, Fredrick states these rules to be:

R: If ***D*** is a triparitous domain, it is said to be 'rational' if and only if there is a set ***M*** such that

R1: In M, every

R1.1: element is expressed as a formula of a triparitous mathematic, using only symbols defined in ***D,*** and every

R1.2: pair of elements which are images of elements cardinant (i.e. non-identical) in ***D*** are distinct in ***M,*** and every

R1.3: relator

R1.3.1: governs a relation having the same value over corresponding arguments whether in ***D*** or ***M,*** and

R1.3.2: is an equivalence over all elements of ***M*** which image twin elements of ***D,*** whereas

R2: in the domain ***D,*** every

R2.1: element is represented by one but only one element of ***M,*** and every

R2.2: parity-relation in ***D*** is determinable from the images of the corresponding arguments in ***M,*** and every

k2.3: functor is represented by a functor defined in ***M*** in terms of functors already defined over ***D.***

"At this point it is perhaps expedient to draw attention to the fact that I have now stated and defined ***two*** hypotheses, which I call the hypotheses of 'Agnosia' and of 'Rationality' hereinafter, namely:

Agnosia: something exists

Rationality: any domain, whose mathematical existence follow from the above, and is rational by the rules ***R,*** depicts an empirically observable feature, or perhaps more than one, of the real world.

That the hypothesis of Agnosia is the truth is as unlikely to be disputed as is that of Rationality to be conceded. I therefore devote, in effect, the rest of this book to an attempt (which I claim as successful) to justify the latter."

.....

As his first exemplar of a result that I trust we all agree gives some credence to his claim that there is pay dirt in the fragments of the inchoative he has succeded

in naming, he cites what we now call the ***combinatorial hierarchy***[4-6] , i.e. the four-term sequence $3, 10, 137, 2^{127} + 136$ which ***terminates*** because the last term is much greater than $(256)^2$. As he notes, this came to him before he had developed his ***Theory of Indistinguishables*** (*ToI*), so is out of logical order in terms of this book. Among other comments he remarks on this topic as follows.

"5.2 The Initial Interpretation

"This series has two peculiarities, which were noted simultaneously by Ted Bastin on first sight of the construction. First, that unlike a purely algebraically defined series, it terminates; and second, that the last two terms are 137, very close to $1/\alpha$ where α is the fine-structure constant, and $2^{127} + 136$ which at least of the right order for the corresponding constant for gravitation 1/y."

.....

Thus Fredrick's memory of his discovery is that he did ***not*** understand its physical significance at the- time of the discovery, and that it was in fact Ted Bastin who took the ball and ran with it at that point. This is also the story I heard a few years later. To my mind Fredrick's assertion that he was ***not*** looking for a specific set of numbers adds great weight to the significance of the result. I suggest that we let him have this last word on the subject.

He then goes onto develop the theory of indistinguishables, using the following rules for sorting out the semantics of statemets in triparatous mathematics:

"The Rules of Concurrence

$=$	a b : a,b are identical	$\neq$	a b : a,b are cardiant (non-identical)
$\hat{=}$	a b : a,b are twins	$\hat{+}$	a b : a,b are bipar
$\perp$	a b : a,b are distinct	$\not\vdash$	a b : a,b are indistinct

"These notations are used to characterize the relationship between two objects a,b as follows:

If a,b are two entities denoted by symbols which are
Indistinguishable and concurrent, then $= a\ b$

Indistinguishable but discurrent, then $\hat{+}$ a b

Distinct but concurrent, then (unless disproved) $\neq$ a b

Distinct and discurrent, then any relation may obtain"

.....

"I have claimed that the arguments to be deployed here carry the implication that there are certain triparitous constructions (existing in the mathematicians' sense, as 'fragments' of the Inchoative, definable-a further claim-as containing no-information in its own specification) which are distinguished by carrying biparitous isomorphs along with them, and therefore imaginable and at least potentially observable;"

[In *ToI*, I insisted that Fredrick make explicit the implied postulate that anything which is observable has to be biparitous. For him this was to "obvious" to need stating. He agreed with me, but I see that recognizing the need for this postulate has slipped away from him againin this book. - HPN]

"and that these 'rational Sorts' do in fact correspond convincingly with some of the empirical facts, theoretical assumptions, and scale-ratios which underlie present-day physical theory.

"To support such a claim is to admit an element of ***apriorism*** which will be objectionable to many on philosophical grounds. There is a hint, if not more, here, of the 'synthetic ***a priori'*** which Kant claimed, controversially, as a non-empty class of propositions. Mine are perhaps more aptly termed 'analytic empirical'-another class (if it is not the same) which many have claimed to be empty.

"So there is likely to be a widespread hope that my reasoning can be demolished. It rests however on the concept of triparitous mathematics which has never, to my knowledge, been seriously developed before now. The slightness of its overall mathematical power is, I suppose, a sufficient explanation for this neglect. Indistinguishables are strictly non-lethal. They also defeat ordinary notation. . . . But the notation I arrive at is still a ruly one, and still capable of rigour; though of course I may myself have failed to maintain it." .....

"So if you want to refute the 'inevitable universe' you can't any longer do so by ***obiter dicta-you*** must show either that my concurrence rules are irremediably wrong, or that they have been misapplied at some crucial point of the subsequent argument. In other words, you must 'beat me at my own game'."

.....

After having developed those parts of the theory of indistinguishables which are needed in the current context, Fredrick then goes on to develop his "physical interpretation" of the ***rational Sorts*** that this theory implies. His list of rational sorts is somewhat longer than in *ToI*, and is now asserted to be ***complete.*** His arguments for why and how they are identified as appearing in the world of experience are, in my view, bizare. None the less, I must admit that on looking over his catalogue of interpretations, I find that in my own development of the physics, I have often reached the same conclusions. Partly, this is because some of the interpretations came from me in the first place, although Fredrick in his usual casual fashion does not acknowledge this. But several of the identifications have only come to me recently, for reasons that are-not consciously connected with my" reading this book. Once again I have to pay tribute to Fredrick's intuitivegrasp of the physics in his scheme, and hope that others will take this list very seriously. For the notation, I refer you to *ToI*. Basically, the numbers are just the appropriate cardinals for what we would call discriminately closed subsets. After looking at the -catalog, I make a brief effort to show how I think about the various things referred to.

"Catalogue of Interpretations

[ ]	The Big Bang, the universal expansion, the void
[1]	The first (proper) event
[1]	Time
[1]	The unique gravitational charge; degenerate form
$[1,1_{I_\phi}]$	Mass and Intertia
$[1,1_{I_{n\phi}}]$	Progress of linear motion
$[1,1,^n]$ etc.	The (n+l)the event in arbitrary ordering
[2]	Orientation coordinates
[2]	The two electromagnetic charge states
[2,1]	Polar coordinates for S-space, motion on closed sum
[2,1]	Components of a meson
[2,3]	Components of a fermion
[2,1,3]	Descriptors of an aclinon
[3]	Cartesian coordinates for S-space
[3]	The three colour-charge states
[3]	Degrees of freedom of physical dimension (M,L,T)
[3,1]	Spacetime coordinates
[3,1]	Mass length time and (irrationally) charge
[3,7]	Quark descriptors
[3,1,7]	Descriptors of a clinon
[3,1,127]	Reciprocal of fine-structure constant
[3,1,7,127]	Minimum unstable aggregate of electron-positron pairs
$[3,2,127,2^{127}-1]$	Reciprocal of gravitational coupling-constant
$[3,1,7,127,2^{127}-1]$	Minimum black hole
$[\infty]$	Atopic 'space'
$[\infty,1]$	Progress through atopic space.

[1]. In my bit-string model, this is the anti-null string and does indeed represent Newtonian gravitation.

[2,1]. Interpreting this as (10) $\oplus$ (01) = (11), this is also for me the basic Yukawa vertex connecting two particles to a meson.

[2.3]. Taking this to be level 2 of the hierarchy, this is indeed two fermions, two anti-fermions and three mesons in my scheme.

[2,1,3]. Taking this to be levels 1 and 2of the hierarch taken together, I have two chiral neutrinos, two chiral photons, 5 chiral gravitons and the Newtonian "action at a distance". These are the total number of massless "particles" or "aclinons" in

Fredrick's terminology. Once the full construction has been made, these can clump to form "quantum geons", which is my version of dark matter.

With regard to chirality, Fredrick makes the following profound remark, which I thoroughly endorse:

"If a chiral figures inhabits a space described by non-quantized

mensurands, its proportions could be progressively changed by arbitrarily small steps, ending in its becoming its antichire. This would show the chirality of both figures to be accidental, rather than an intrinsic property. All intrinsically chiral properties of material objects must therefore be quantized."

[3]. Taking this to be (1100) $\oplus$ (1010) $\oplus$ (1001) = (1111), I agree with Fredrick that these three symmetric labels can represent 3 colors, 3 anticolors, black with (0000) colorless. The als are convenient lables for S-space coordinates, and if one likes could be associated with mass, length and time or any three independent physically dimensional units.

[3,1]. I also identify this with space-time, but also with three absolutely conserved quantum numbers in space-time processes. Thus for me the association with charge is structural and not "irrational".

[3,7]. I agree with fredrick that the quark descriptors come in at level 3 of the hierarchy. Where we have an advantage is that thanks to McGoveran's theorem [7] we cannot go beyond three dimensions, and hence the colored quarks and gluons have to be "confined". Thus, for us [3,7,1] are the observable massive particles formed from quarks, or in Fredrick's terminlolgy "clinons".

[3,1,7,127]. T his "minimum unstable collection of electron-positron pairs" is what Fredrick has sometimes called the "Noyes-Dyson argument", but does not bother to do so here. Similarly, $[3,1,7,127,2^{127}\text{-}1]$ is my extension of the same argumnent to gravitation and does indeed define the minimum black hole.

[∞]. Here I quote Fredrick: "*Atopic Space*

"Somewhere where there is no geometry, but no lack of other terms of information. The suggestion is that the RD [∞] is well-adapted to represent such an unfamiliar 'space'. With no relevant metric, we can distinguish at most two points in any 'dimension'; but there is no pre-set limit on the number of different 'dimensions'. That describes for us a peninfinite Boolean lattice; the peninfinity we have already associated with [-co], and the Boolean lattice property merely continues analytically my interpretation of [1], [2], and [3]."

"... I propose that the principle, that at least two elementary events are required to define any kind o geometry, may be helpful in producing a more explicit self-consistency in the account."

.....

Another novelty in this book is a completely different line of argument for his proton-electron mass ratio calculation in which the two particles are coupled by an inversion about the Compton radius or CR. The model, if one can call it that, is summarized by the following table.

	In the Proton	In the Electron
Colour state	Chromatic	White
Range	Confined within CR	Confined to beyond CR
Charge sign	Positive	Negative
distribution	by Fixed Ratios	by Random Values
Occupation	within CR	beyond CR
Vacation	beyond CR	within CR

As to the calculation itself, he makes the following comments:

"1: My speculations on the ***nature of charge*** give added support to the notion that the rational fragment [2,3] is peculiarly apt for representing the symmetries involved, being the smallest item in the catalogue which will serve-possibly the

only one. This in turn fortifies the idea (much in need of fortification) of the 'inversion' relation between electron and proton."

[If I understand correctly what he refering to here, it is what I called < **l/r** > = 4/5 in our presentation of his calculation[8].]

"2: The ***distribution junction*** for the 'random' separations between vertices, whose form is perhaps mildly surprising, follows directly from the isotropy and homogeneity necessarily implied by the renunciation of 'geometry'-but compatible with many other models-and the tactic of rejecting all particular values. At least, this is compatible with the theory, and not with some others.

"3: The ***degrees of freedom,*** though they are only 3 (a sitting target for numerologists!) are surprisingly hard to justify expect by the argument from the [2,3] structure in Section 20.6; which structure they therefore reinforce somewhat."

[As already noted, our 3 degrees of freedom are a direct consequence of McGoveran's Theorem, and need no additional support.]

.....

I close this tribute to Fredrick's memory by several quotations which I found striking, and some of his concluding remarks:

"Ontology versus Epistemology

"A prevailing trend in the philosophy of science today is one that regards epistemology-how knowledge is obtained-as philosophically prior to ontology, the things we claim to know.",

.....

"For this philosophy, what I have claimed in this book to have done is impossible or absurd. ... I have always been curious to know why things are as they are, taking it for granted that they are as they seem; for how could our faculties have been granted by natural selection, if they had been systematically misrepresenting our environment? To the biologist the idea is absurd. Our natural senses

are at least approximately veracious, and they can be indefinitely improved by technological aids.

"I therefore take ontology as prior to epistemology, and I claim to have shown that a small selection of 'what is' looks remarkably like what a seemingly rigorous theory says 'must be'." . . .

.....

"Objections to Inchoatism

"Most scientists will not want to trouble themselves with any such maverick concoction as what I offer here. Only the young (and the young in heart) may be impressed. Many must die before the tide turns. The work may well be judged short on results, since so much that is high in current interest is left untouched by it. The hope (it is hardly a claim) that what is does explain might be sufficient ***basis*** on which to erect a more comprehensive and better balanced theory of physics in undeniably optimistic."

.....

"The Parting of the Ways

"It has been ably argued by Feyerabend (F1) that there ought always to be a plurality of theories and alternative views of the world for without this, as time and again in the past, men's minds will tend to think dogmatically and progress will slow down, even stop, because new thoughts have no foothold on the glacier of orthodoxy. In short, dogma is seen as the death of sciences.

"This is without doubt the most weighty objection to Inchoatism, because if it is once accepted it can hardly fail to seem irrefutable, and therefore it will be held dogmatically or not at all. If once the fundamental nature of things begins to appear transparent and objectively inevitable, the impulse of a curiosity no longer insatiable, but finally (it seems) fed, will cease from the world."

.....

"The Inevitable Universe

"But how much in Inchoatism is really new? In many ways it may seem like a relapse into classical ideas. Things figure in it more basically than processes; everything is perceived in its ground state, with minimal energy; unstable particles, consequently, are not seen at all. the blinding flash of the first millisecond seems more like a self-curing disease than a promising beginning. All this is very far from current preoccupations, more of an echo of former times.

"So how about the most conspicuous feature of the theory, its statement that there is no way the Universe could have been different from how it is, except in respect of historical accidents, themselves often repeatable in view of the immense size of it. There not only is not, but could not conceivably be, any alternative to compare it with. Logically necessary things undergo ceaseless random motions subject only-but decisively-to logically necessary laws, which allow the build-up of complexity even, in a few specially flavoured environments, to the appearance of life. Even more rarely, life may persist and evolve long enough to bring forth intelligence and creative imagination. Is that so?

"One could argue that to accept the possibility of successful apriorism is to trust human competence beyond plausibility; and that limitation of the results achieved limits this trust, while any looseness in the argument underminds all. But if one demonstrates, convincingly that is, that success is possible, however surprising, the objection fails. It's an all-or-none situation, and the reader is the judge. If you like it, pass it on; if not, spot the error or swallow the dose."

.....

" ***The Great Coincidence***

"We find thus a mutual incompatibility between Inchoatism and any version of the anthropic principle. If the one is true, the other is mistaken."

.....

"An Unhelpful Suspicion

"Isn't it just a bit suspicious that the whole thing, thought up by a human mind, should explain the possibility of just such a mind?"

.....

"These however are mere speculations. In contrast, the opposition is predictable. They will say, truly enough, that it 'isn't physics'. They will say that it is impossible that any conclusions, let alone so many, should attend, legitimately, on so exiguous a premise (but absurdity does not imply falsity, else Ptolomy with his unmoving Earth would be with us yet). They will say that my Rational Sorts are such that they couldn't fail to have manifestations of one kind or another; but will they offer any viable alternatives? All this may turn out helpful propaganda for the Inchoatists; so the more intelligent opponents will say nothing and carry on. The blind eye weathers the storm."

.....

"It has, too, these twin attractions-for the atheist, that the Creator is all but exorcised from the foundations; and for the theist, that so inauspicious a start should be turned out so remarkably well for us self-styled 'intelligent beings'." . . .

The Tao is like a well:
used but never used up.
It is like the eternal void:
filled with infinite possibilities.

Tao Te Ching

REFERENCES

1. A.F.Parker-Rhodes, ***The Theory of Indistinguishables*** Reidel, Dordrecht, 1981 ***[Synthese Library 150]***, hereinafter referred to as *ToI.*

2. A.F.Parker-Rhodes, ***The Inevitable Universe,*** unpublished; hereinafter referred to as ***TIU.***

3. H.P.Noyes, "On the Construction of Relativistic Quantum Theory: a Progress Report", SLAC-PUB-4008 (June 1986), pp 74-98; available from SLAC Publications Department, P.O.Box 4349, Stanford CA 94305.

4. T.Bastin, ***Studia Philosophica Gandensia, 4, 77*** (1966).

5. For recent work, and references topast literature, see H.P.Noyes and D.O.McGoveran, ***Physics Essays*** 2, 76-100 (1989).

61 For the latest construction of the hierarchy, see C.W.Kilmister's contribution to *Proc. ANPA 11.*

7. H.P.Noyes, contribution to *Proc. ANPA 11.*

8. T.Bastin, H.P.Noyes, J.Amsonand C.W.Kilmister, ***Int. J. Theor. Phys.,*** 18, 455 (1979).