THE IDEA

Dedicated to my daughter. Dedicated to those who dare to imagine, who dare to be different.

The story so far...

A prominent science-journalist was found unconscious on the pavement of a side-street not far from a restaurant at which he had earlier been dining alone. He suffered injuries to his face and a fatal blow to the back of his head determined by the Coroner to have resulted from falling and striking his head on the pavement. While at the restaurant, frequented by journalists, the deceased had been confronted by a disgruntled X who had attended the restaurant on the opportune chance of meeting the deceased to discuss the latter's refusal to publish an article, written by X, critical of a recent finding allegedly establishing the existence of gravity waves. The discussion soon turned antagonistic and X unleashed, described by eye-witness accounts, a frenzied tirade of abuse. X was ushered to the exit by staff and several patrons and, evidenced by CCTV footage captured by a camera located out-of-range of the restaurant, left the precinct only to return at a time commensurate with the deceased's departure. The footage also captured X's final-departure from the precinct.

Due to his refusal to co-operate with police officers investigating the case, eye-witness accounts, an examination of correspondence, and other circumstantial evidence, including an objectionable peer-assessment as a crank theorist, the court ordered a preliminary assessment of X's capacity.

Y, a thirty-year old, criminal-psychologist, brash and ambitious, considers his appointment to perform the assessment of X, a sixty-year old unemployed charity-volunteer, as an imposition. At first disgruntled, Y attempts to assert his authority, finds himself challenged, then intrigued. Y, though only a neurobiological science graduate, is intelligent and sufficiently informed to understand the thrust of X's unfolding presentation of the pertinent theoretical-concepts. Y is, however, increasingly convinced that X is withholding something: information or intent.

Legend:

Parentheses (Notes Only)

Square Brackets [Character(s)]

Characters:

X: Indicted

Y: Inquisitor

THE BEGINNING

(Y arrives late, omits to introduce himself, to explain or apologise. Separated by a glazed partition, X is anxious and agitated, though controlled.)

[Y]

This conversation is being recorded, and you have the right to decline to answer any question asked of you. (Pauses, examines the documentation, looks to X) the purpose of this interview is to determine your capacity. (Pauses, examines the documentation, continues) an assessment that will determine the final nature of any charge and, if required, the nature of any prosecution pertaining to the allegation. (Looks to X) do you have any questions relevant to matters of procedure?

[X]

No.

[Y]

(Examines the documentation) formal qualifications (pauses, to turn the page) in philosophy and science? Curious, apart from several years as a systems analyst, your employment history is, (looks to X) well, rather unsettled?

[X]

Philosophy, physics and applied mathematics. A dissident theorist, the intended research career was over before it began. Ideas that challenge, that confront, render all (pauses) unsettled.

[Y]

The truth? Do you consider that your interest in what you perceive to be the truth is an obsession?

[X]

The truth? Is life but a cruel joke that conceals the truth from the fool? The fool. Yes. (Disheartened) only a fool would challenge Orthodoxy; (pauses, resentful) to endure the miserable consequences. (Pauses, recomposed) the truth? (Dismissive) analytic truth? That which is true by virtue of the meaning ascribed to arbitrary symbols: 2 + 2 = 4. Tautology? (Pauses, reflective) no. The burden of proof: in the absence of an objective assessment of other matters, matters of consequence, there is only uncertainty; ubiquitous uncertainty. (Pauses, pensive) and faith. Faith in one's (pauses, looks to Y) capacity. (Reflective, looks away) the sentient being teases the line between faith and arrogance. A blind faith in their intellectual competence. The blind faith in one's conviction. (Recomposed, looks to Y) faith in the uniformity of Nature. (Pauses) pitiless Nature: relentless, without intent, (assertive) without purpose.

[Y]

The despair. Life without purpose? Life without meaning. Yet, life would appear replete with intent and meaning? Simply an appearance?

[X]

Intent requires consciousness, indeed, complexity. (Reflective) the function of a purpose-designed and finely-crafted analogue watch is not within the independent components of the mechanism but within the complexity of that mechanism: the synergy. (Pauses) by analogy, it may be asserted, that the genesis of cognitive capacity is within the complexity of the sentient organism. (Assertive) life simply is. But the machinations of life? If you desire a rationalisation, then the purpose of life is to satisfy one's desire. It is the enterprise of desire that gives meaning to life.

[Y]

Desire, selfish desire. The desire to impose one's will? The desire to harm? To harm the victim?

[X]

The victim? (Terse) the notion of victim is suggestive of innocence.

[Y]

The deceased, a transgressor?

[X]

The deceased had an obligation as, indeed, you have an obligation. (Pauses, looks to Y) if frankness offends then be assured it's not a matter of disrespect. (Pauses, assertive) a transgressor? As a journalist the deceased had an obligation to the community to inform, free of prejudice or favour. You have an obligation to the court to be impartial, (reflective) and compassionate. (As though to himself) I have an obligation to the idea. (Recomposed) and I have the right to be heard. (Pauses) the measure of my capacity, as you portray it, and the veracity of my complaint are weighed in the credibility of the theory. So, it's not a matter of indulgence, of the satisfaction of puerile desire, it's a matter of obligation (pauses, to reflect) and urgency. (Pauses, looks to Y, reflects) an obsession for the truth? No, my obsession is reason. (Pauses, resigned) pitiless reason. (Recomposed) my concern is not with the matter of what one perceives to be the truth—I don't tell people what to think—my concern is to the matter of how one reasons.

[Y]

Reason or reconciliation? How does one reconcile the demands of selfish desire with the demands of a civil society?

[X]

Compassion. (Pauses, assertive) compassion and the rational recognition of the sustained benefit that is afforded through co-operation. Co-operation necessitates obligation, (pauses) and the acceptance of difference. (Pensive) compassion. (Recomposed) sometimes it's not the truth that matters.

[Y]

Compassion. A little white-lie?

[X]

Or a big white-lie.

[Y]

A big white-lie?

[X]

(Pauses, looks to Y) If Revelation defied reason, if reason denied God, would you tell the world? (Pauses, looks away) a mother grieves at the loss of her infant daughter, her innocent, vulnerable daughter, yet endures (terse) this miserable existence, (recomposed) comforted in the belief that at journey's end she will (pauses) once again be with her child, (pauses) in the company of God. If you stumbled upon the elusive truth that denied the existence of God, would you tell the world? (Reflective) a big white-lie. (Pauses, reflective) compassion. (Assertive) so, sometimes it's not the truth that matters.

[Y]

To deny, indeed, to conceal the truth, as one perceives it, is to lie. But, to deny the evidence?

[X]

I don't deny the evidence, I deny the interpretation. It is possible for the same body of evidence to be consistent with more than one (emphasises) plausible interpretation. It is a matter of the assumptions, problematic or otherwise, and a matter of how one reasons. (Pauses, pensive) pitiless reason? Reason is my obsession. If only, if only it would relinquish its hold. To change; but it's who I am.

[Y]

Change, to change who one is? To reform. To change what one has done? To regret?

[X]

(Dismissive) worthless regret.

[Y]

Of that you are certain?

[X]

(Indignant) you mock me? (Pauses, recomposed) what of consequence is certain? (Pauses) change? Ubiquitous change, ever-present change. Change, evident from the mere contemplation of its possibility. An existential fact? (Assertive) relentless deterministic change. No chance occurrence. (Sombre, reflective) no chance? (Recomposed, amused) No chance to change, no chance to change the leopard's spots. Yet?

[Y]

Deterministic change? Effect not without cause?

[X]

Can there be something that is nothing? Can something come from nothing? What would be the impetus for change? (Assertive) cause and effect: relentless change, relentless deterministic change.

[Y]

An infinity of antecedent causes?

[X]

If the world had no beginning then prior to any given moment an eternity would have passed. But an eternity cannot pass to this present moment. However, the present moment clearly exists. Therefore, the world had a beginning. Saadia's paradox. But how can something come from nothing? An infinity of change, of antecedent causes? All that I can say with conviction is the obvious: it is an existential fact that we are in the present moment, the present moment clearly exists. (Contemplative) the past is but present recollection, the future but present anticipation, and the present, the present simply is: the present is absolute. (Pensive, reflective) but how can something come from nothing?

[Y]

Determinism? If one is not free to act, free to choose, then surely one cannot be held accountable for one's action?

[X]

Determinism, virtue, praise, and dignity? Is one praised for choosing to be virtuous, or for being virtuous? (Sombre, mumbles) dignity. (Recomposed, and as though to ignore the question, looks away) change. (Y takes note of this apparent distraction.) From the moment of conception until the moment of one's demise, change is ubiquitous and without release. (Now addresses Y) clearly, I am not the same person now that I was yesterday; indeed, I am not the same person now that I was

twenty-years ago, (pauses, reflective) twenty-years ago. (Assertive) of course, the notion of 'same' is not without qualification. Yet despite all of the changes that I have experienced—some fleeting, some lasting, some subtle, some palpable, some gradual, and some abrupt and disconcerting—throughout, I have held steadfast to the pervasive perception of an enduring personal identity; an identity that would appear to transcend the mere collection of attributes or characteristics that could be summoned to describe my being. An existential connectedness of physical and psychological profiles connected across time: an existential narrative. (Distracted, reflective) time, an abstraction of change.

[Y]

(Interrupts) and the relevance?

[X]

(Terse) identity. Identity is critical to the determination of agency. External or internal agency. (Pauses, recomposed) determinism? One cannot choose the kernel of their being, a genetic endowment—a benevolent blessing, a benign legacy, or an insidious remnant conditioned by external-agency. At the moment of conception, that endowment, that narrative, is one's identity. (Reflective) who I was, now merely an element of who I am. (Pauses) from that moment, one is exposed to one's environment of competing demands. (Pauses) the individual is conditioned by the interaction and, reciprocally, transforms that environment of experience. The parameters of that experience may be set down by external agency, importantly however, what an individual takes from experience, what that individual appropriates, is both a measure of who they are, their identity at that moment, and a measure of who they become. (Pauses, reflective) appropriated experience, an agent of choice.

[Y]

Appropriated. Stimulus, response determined by identity. Action and reaction conditioned by one's existential narrative. One individual perceives satire, and laughs. Another perceives insult, yet remains composed. Another, (pauses, assertive) unleashes a frenzied assault. Who we are conditions (pauses) who we become?

[X]

(Pauses, reflective, then redirects) appropriated experience is intrinsic to identity: one's existential narrative. (Emphasises, earnestly) a denial of appropriated experience is a denial of identity: who one is. (Pauses) and identity is intrinsic to the consideration of, indeed, renders meaning to, the matter of self-causation, to the matter of the freedom to act. In that context, determinism and the freedom to act are not, of necessity, mutually exclusive.

[Y]

In that context, one is responsible for one's actions? Indeed, for one's actions of malice?

[X]

Indeed, I am responsible for my actions. (Smirks) but the remedy for transgression must be mitigated by compassion and understanding. (Earnest) importantly, how we regard and manage transgression is ultimately a measure of our own humanity.

[Y]

And the matter of dignity?

[X]

(Looks away, mumbles) no dignity.

[Y]

(Pauses, examines the documentation, looks to X) do you have a disregard for authority?

[X]

No. I have a disregard for stupidity. (Pauses, pensive) though we all make mistakes. (Terse) I have a disregard for the raison d'être that sanctions that authority and confers status to its officials (pauses, pensive) and gatekeepers.

[Y]

Gatekeepers? The deceased? (X, looks downward, doesn't answer. Y continues) raison d'être, consensus?

[X]

Consensus opinion? Mob rule? Consensus opinion, the received wisdom? Copernicus and Galileo—dissident theorists, the latter most certainly vilified by authority, the authority vested in the Church, the authority of Orthodoxy—criticised what they regarded as nonsense, the received wisdom, the consensus opinion that placed a stationary flat-earth at the centre of the known universe: the Orthodox interpretation of the evidence. In contrast, the Copernican interpretation of the evidence, the same body of evidence, positioned the sun at the centre of that cosmos. Theoretical dispositions both contextually consistent with the evidence. To state the obvious, it is a matter of historical record that the Copernican theory eventually overcame the inertia of Orthodoxy's resistance to change. (Pauses, pensive) why don't we learn the lesson of history? (Looks to Y) Thomas Kuhn noted that "philosophers of science have repeatedly demonstrated that more than one theoretical construction can always be placed upon a given collection of data". Why are we not mindful of the

philosophical limitations that stalk reason? (Pauses, reflective as though to himself) I don't deny the evidence, I deny the interpretation.

[Y]

How is it possible that so many theorists could be so wrong?

[X]

The quality of an argument is not determined by the number of its advocates. Or how long a theory has held favour.

[Y]

So many distinguished theorists?

[X]

And the quality of an argument is not determined by the advocate's tenuous status: an anointment by the brotherhood that secures the status quo, a machination, at worst, to suppress dissent. (Pauses, pensive.) The genius of Einstein. (Feigns condescension) you have objection with the work of Einstein? Einstein was a genius! Who the hell are you? (Pauses, resigned) well, who the hell was Einstein before he was anointed genius? (Resentful) an anointment to distract the unworthy benefactors, to secure a favoured disposition and the rewards of status, insidious, pernicious, to suppress dissent.

[Y]

The King is dead, long live the King.

[X]

(Indignant, recomposes) Genius is a word that should be struck from the lexicon. Alive or dead, I know of no-one worthy of the anointment. An impeccable capacity: of perception, of knowledge, of reason, of (pauses, in contemplation) of the imagination. A clever idea, perhaps; perhaps too clever. All I ask is that the theory be (pauses, amused, looks to Y) submitted to trial. An independent, informed, dispassionate evaluation. And if, as a consequence, it became evident that the theory could not be further reconciled with evidence then so be it; (pensive) at last, I could move on.

[Y]

A machination: a conspiracy? To suppress dissent?

[X]

(Resigned) no. (Recomposed) and nor is the culprit naked deception, the culprit is arrogance. And the progenitor of that arrogance is mindset. Mindset and arrogance, a malaise to which we are all

predisposed. (Pauses) susceptible, vulnerable. In part, an arrogance that equates technological progress with a progress in intellectual and moral capacity. (Pensively) we are no less ridiculous than our forebears. (Pauses, recomposed, looks to Y) do you accept that it is possible for one theorist to make a mistake? (Y doesn't offer a response, so X continues) if you accept that one theorist can make a mistake, why not two, three, or more? If those individuals share a common belief then surely it is possible, individually or collectively, to make the same mistake? And given that theorists teach what theorists were taught (pauses) then you have a rational explanation. (Pensively) so many theorists.

[Y]

A rational explanation? (Pauses, reflective) how would you characterise rational behaviour?

[X]

(Indignantly dismissive) to act upon one's desire. Immediate gratification or sustained benefit? It is a matter of that which one values. (Redirects) Consensus opinion? And the scientific method? Well any fool can repeat the same foolish steps over, and over again, and obtain the same foolish result each time. To restate: it's a matter of problematic assumptions and the limitations of inductive reason. The limitations of experiment. (Pauses, assertively) Goliath was killed by an assumption.

[Y]

So, anything goes? Means to an end?

[X]

Anything goes? (Pauses, reflects) to Paul Feyerabend "all methodologies have their limitations and the only 'rule' that survives is 'anything goes'". (Pauses) anything goes? No. Theory should elucidate not shroud esoteric disposition in mysticism. And theory should render an explanation not simply proffer a description. Mathematics teases at the limits, the limitation, of description. (Assertive) Though there are many within the brotherhood who would assert otherwise, the burden of physics is explanation.

[Y]

Mathematics, the limitation of description?

[X]

Mathematics is a thing of beauty and great utility; like fire it is a wonderful servant, (pauses, with emphasis) but to the unwary, it can be an insidious master. (Pauses) mathematics is a formal language. Formal or natural language, English, German, or Chinese, it is a descriptive tool. However, the limitation of mathematics is that it can provide only a quantitative description not a qualitative

explanation. Nevertheless, the utility of mathematics and the unlimited abundance of independent expressions assures that both a thesis and its antitheses can be modelled, that is, represented as a formulaic description. Therefore, with respect to theory choice, an appeal to mathematics is impotent.

[Y]

Yet it would appear that the laws of Nature are mathematical?

[X]

(Reflective) expression, from poetry to prose, from fact to fantasy, from revelation to the concealment of bald-faced lies. (Assertive) the laws? Mathematical approximations. Is Nature an approximation of Nature? Yet with time and application, perhaps refinement. Mathematics, though it lacks the enriched vocabulary of a natural language, models uniformity. It is Nature, indeed, the uniformity of Nature that is wondrous not the description in mathematical terms (emphasis) or words. Do we marvel at the nature of a language or the capacity for language? Do we marvel at the expression or that which is expressed? Numerology, mysticism, the worship of numbers; numbers and equations. (Cynicism) Maxwell's marvellous equations? Or Maxwell's silver hammer? Bang, bang, bang! Square-peg round-hole.

[Y]

And the predictive capacity of mathematics? A conjurer's trick?

[X]

Beware the mathemagician. (Pauses, earnest) the mathematical models of the Orthodox interpretation of the astronomical evidence, the consensus opinion that placed a stationary flat-earth at the centre of the known universe, and the Copernican interpretation of that evidence both held effective predicative capacity. Of course, the former, Orthodox theory, was subsequently falsified. (Pauses, emphasis) prediction, or extrapolation beyond the domain of observation, is to the dilettante a process fraught with danger. A danger most evident in the abrupt failure of the extrapolated temperature-dependent models of electrical resistance or superconductivity, for some (pauses) but not all materials.

[Y]

Falsified? Verified? Is it not the case that Einstein's special theory of relativity is the most verified theory in the modern physics canon?

[X]

Falsified? The Copernican theory was falsified, (pauses, amused) allegedly falsified, only to be reinstated as a consequence of the theoretical contribution of Kepler, Galileo, and Newton. (Pauses, pensive) postulates or ad hoc rationalisations? (Recomposed) verified? What do you mean by verified? (Y doesn't respond, continues to look at X, X continues) to the lay-person the notion of verified, or confirmed, is suggestive of a proven fact. But, in fact, in the absence of an objective measure of evaluation, all that can be claimed, indeed, all that is claimed by Orthodox theorists is that the theory is consistent with the evidence. And, as we have noted, more than one theory can be consistent with the evidence. Their use of the term, verified, is at best most ill-advised, and at worst, subterfuge.

[Y]

Postulate or ad hoc rationalisation? In the absence of an objective measure of evaluation, it would seem that a plausible proposition, one consistent with the evidence may yet be (pauses) ad hoc? How does one distinguish?

[X]

Indeed. (Pauses, reflective) time and the imagination. (Pauses) time. But how long must one wait? 100 or so years from the imagining to the revelation; from the death of Copernicus to the revolution, to initiate a change in Orthodox theory. How long must one wait? Orthodoxy, smug, complacent, proclaims that science is self-correcting. But how long must one wait? (Pauses, reflective) it could be argued that the criminal justice system is self-correcting. An innocent person is charged, tried, and convicted of a heinous crime. Executed or left to rot, the innocent is posthumously exonerated. Justice is done? Cold comfort. (Pauses) how long must one wait? The arrogance.

[Y]

If there is only uncertainty, how does one decide? How does one evaluate the worth of a theory?

[X]

Uncertainty? The consequence of indecision? The starvation of Buridan's ass. Does mindset and arrogance have an evolutionary benefit? It would appear that we manage with confidence, or in ignorance, the menace of uncertainty. (Redirects) an evaluative framework of simplicity, coherence, utility, and extensibility. Simplicity: a concise, intuitive, intellectually accessible conceptual-foundation capable of explicating the observed complexity within Nature. Coherence: lucid, and self consistent. Utility: of practical and theoretical import. And extensibility: a comprehensive scope consistent with observation, extendible, and predictive. All problematic notions; what appears simple to one may be appear convoluted to another. (Pauses, amused) Einstein famously remarked that a theory should be simple but not too simple. To paraphrase, to contextualise the absurdity of

that remark, would it not follow that an explanation should be clear but (smug, dismissive) not too clear? (Incredulous) the genius of Einstein? (Pensive) the arrogance. To exclude dissent is to court mediocrity. (As though to himself) they shut you down, and they shut you out.

[Y]

Yet, (dismissive) the literature is replete with controversy and interpretation.

[X]

The paradigm. If you argue cogently within the bounds of the accepted paradigm then you may expect a welcomed reward (pauses, to reflect): publication. (Raises his tone, and looks up from the floor) acceptance into the fold. But any criticism, any controversy as you loosely portray, must be within the bounds: revelation not revolution, evolution not extinction. (Pauses, amused) the criticism, the challenge should be confronting but not too confronting.

[Y]

And the paradigm?

[X]

Anomaly. A mathematical anomaly, problematic assumptions, and the bizarre. Bizarre experimental results or bizarre interpretation? A confluence of factors that initiated a frenzied rush to the absurd. (Pauses, looks to Y) the paradigm? A two-headed viper of quantum mechanical theory and the theory of special relativity.

[Y]

And the theory of general relativity? (Uncertain tone) space-time curvature?

[X]

The general theory, as the name suggests, is a generalisation of the special theory. (Smirks) space-time curvature? (Earnest) space, the distance between two material entities; the emptiness of space. Do you really believe that space curves? The emptiness, (pauses, with emphasis) curves? But, of course, the mystery is confounded by the so-called fact that as the universe expands the expansion creates, ex nihilo, from nothing, the very space into which the universe expands. As if by magic. (Pauses) and they cast me as the crank? (Reflective) problematic assumptions.

[Y]

(Impatient, terse) and what are the problematic assumptions of special relativity?

[X]

(Pauses, reflective) inertia? (Recomposed) inertia, such as the inertia of Orthodoxy, in its simplest guise may be characterised as a resistance to change. The relative existing-state of rest or state of uniform motion in a straight line, unless perturbed by an external force, that existing state remains unchanged. The impetus for change? The applied force. Yet, in certain circumstances where one would expect change there is but uniformity: constancy. The propagation-speed of radiation, light, in vacuum is considered a universal physical constant, denoted by the letter *c*, regardless of any relative motion between the source of the radiation and the body of interception. (Earnest, looks to Y) now don't be distracted by the arithmetic; what's important is that you appreciate the change to occur. (Animated) one person stands, stationary, illuminated under a street-lamp; a second person walks toward the first person, briskly, at a rate of 5 km/h. The speed of approach, the rate of convergence, is 5 km/h. If the first person then walks toward the second at a rate of 2 km/h, the speed of approach, the rate of convergence, increases from 5 km/h to 5 + 2, that is, 7 km/h. But if the first person then turns and walks away from the second person at a rate of 2 km/h the rate of convergence decreases from 7 km/h to 5 – 2, that is, 3 km/h. The rate of convergence changes from 5 to 7 to 3 km/h.

[Y]

(Smug) the first person, pursued by the second, perhaps an assailant, though fleeing would eventually be caught; perhaps to suffer serious injury.

[X]

(Indignant) unless, of course, the first person hurried away; perhaps, carelessly. (Pauses, redirects) the rate of convergence, is dependent on the relative motion—what or who is moving, in which direction, and at what rate; but not so, according to Orthodoxy, if that rate of convergence is of the order of the speed of light: *c* the propagation-speed of radiation in vacuum. Most peculiar. That is, regardless of whether the Earth moves toward the source of emitted-radiation, for example the Sun, in which case one would expect that the measured radiation speed should be greater than *c*, or whether the Earth moves away from the source of radiation, in which case one would expect that the measured radiation speed should be less than *c*, regardless, the measured propagation-speed is consistent at *c*.

[Y]

(Dismissive) an existential fact consistent with repeated, precise measurement.

[X]

Hence, Einstein's postulate: the constancy of the speed of light independent of any relative motion. An existential fact or an ad hoc rationalisation, a consequence of a problematic assumption?

[Y]

If the intent is to test my patience then you have succeeded. I am prepared to listen and I appreciate that, given my lay status, you need to develop context. But within the time constraint. So, to the point, the problematic assumption?

[X]

An important analogy. A fielding coach repeatedly throws a ball to a fielder. The fielder must retrieve the ball, and from a designated mark, turn, compose, and accurately throw the ball at a target in the shortest time possible. The coach throws the ball at varying speed up to a maximum of 50 km/h. The ball is lobbed, skipped, or thrown directly to the fielder. A speed-gun records the peak-speed of each accurate throw to the target. The fielder's accuracy peak-speed rating is a uniform 30 km/h. (Pauses, looks to Y) what I am about to describe is simple but significant; it's clear to me, but if it's not clear to you then please, don't just (pauses, leaves the request incomplete.) (Recomposed) regardless of the trajectory and speed of delivery from the coach, 5, 10 30, 45, 50 km/h the fielder uniformly delivers the ball accurately, only, at a limited peak-speed of 30 km/h. A characteristic limitation, characteristic of the fielder's limited-capacity to throw accurately. The fielder's limited capacity filters, or moderates, the delivery-speed of the coach's throw. If the fielder receives the ball at 20 km/h it is thrown to the target at 30 km/h; if the fielder receives the ball at 30 km/h it is thrown at 30 km/h; if the fielder receives the ball at 50 km/h it is thrown at 30 km/h: 30 km/h, limited and uniform. (Pauses, smirks, as though to himself) if all that one observed was the fielder's throw what could one, with confidence, conclude about the nature of the coach's delivery? (Pauses.)

[Y]

(Impatient) the parallel? The point to the analogy?

[X]

The parallel? Orthodox theory, blinkered, failed to recognise a characteristic limitation of radiation-particle transmission. The origin of the limitation: particle absorption–emission. Any medium capable of transmitting light, for example, a molecule in the Earth's atmosphere or, importantly, a molecule within a component of a radiation-detection instrument, which determines what one observes, by a process of radiation absorption and subsequent radiation emission, that medium will filter, or moderate, the transmission speed. A characteristic limitation of the process of light transmission. (Pauses, looks to Y, and without response, continues) consistent with Orthodox theory, an electron, a typical absorber–emitter, can absorb an incident radiation-particle, a photon, and in the process become energised. If the energised electron is rendered unstable it will de-energise, restabilise, by emitting a photon; but not necessarily the same photon as that absorbed. The energy

exchange, between the electron and the emitted photon, is both characteristic and limited; the emission speed is uniform because the process of energy exchange is characteristic of electron de-energisation—all electrons behave similarly—and the emission speed is limited because of the inherent, (emphasis) mechanical, limitations associated with the exchange. (Pauses, looks to Y, and without response, continues) so, regardless of the relative speed of traversal through the vacuum of space, less than, equal to, or greater than *c*, compare the coach's throw, the first interaction of a radiation photon with an electron bound to an atmospheric molecule, an absorption, any subsequent emission of a second photon, compare the fielder's throw, will, by nature, be limited but uniform in relative speed. But only the emission speed is limited and uniform; (pauses) not, necessarily, the relative radiation-propagation-speed immediately prior to absorption. (Pauses) if all that one observed was the fielder's throw what would one conclude? If all that one observed was the moderated emission-speed what would one conclude? Einstein's postulate, an ad hoc rationalisation?

[Y]

Aren't you merely substituting one postulate for another? Indeed, in the process, burdening theory with speculation and complexity?

[X]

To remove the cover of an analogue watch (pauses) is to be confronted with complexity: a complex mechanism. But inspection (pauses) is to discover simplicity and, importantly, explanation. So much can be explained, not merely described, shrouded in mysticism, by examination of the mechanism, indeed, by examination of the structure.

[Y]

Simplicity; acknowledging the broader context of supporting evidence, perhaps too simple? And the mechanism, obscure to a blinkered Orthodoxy?

[X]

(Sincere) thank you, thank you for listening. (Pauses, reflective) the mechanism, or the idea? (Pauses, recomposed) in Orthodox theory, the electron, indeed, many other subatomic particles are considered to be elementary or fundamental, that is, indivisible, not constituted of parts. But why? (Pauses) early in the nineteenth century, English chemist John Dalton articulated his atomic theory; a theory that contextualised the importance of composition and configuration. The chemical and physical properties of a material substance are determined by the element, or elements, that constitute that material—the composition—and by the structural character of that composition—the configuration. What something is made of, and how that something is put together. (Pauses) the

element carbon, in its simplest material manifestations of diamond and graphite, represents an exemplar of the importance of composition and configuration.

[Y]

Diamond is extremely hard and lustrous. Graphite, black. A lubricant? The same, yet different?

[X]

Each manifestation has the same composition: carbon atoms. Yet each exhibits distinct physical and chemical properties. Indeed, diamond is an extremely hard material with a high-melting point; in contrast, graphite is a grey-black, soft and slippery solid that unlike diamond also conducts electricity. The key to the difference: configuration. In diamond, each carbon atom is bonded in a tetrahedron in three-dimensional crystal structures. In graphite, the carbon atoms crystallize into hexagonal plates that form comparatively weak-bonded layers that render graphite's lubricating property. Configuration. (Pauses) composition or configuration, a change to either or both effects a change in material properties. (Earnest) the theory that I advocate, theoretical disposition or heuristic fiction, develops Dalton's atomism beyond the domain of the atomic, beyond the arbitrary limits imposed by Orthodox theory. (Reflective) in search of simplicity; in search of explanation. (Recomposed) the key to a more profound understanding resides in the recognition that electrons, and many other subatomic particles, are indeed, composite structures. (Reflective) like a finely-crafted analogue watch (pauses).

[Y]

But where does it end, this process of reduction?

[X]

It ends in an explanation. But the question is: where does it begin?

[Y]

So begin.

[X]

The theory, Composite Particle Theory. (Pauses) CPT. By postulate, a fundamental particle is an arbitrarily-small electric-charge, indivisible—figuratively, a positive or a negative point of charge—the genesis of the fundamental electric-field, the fundamental electric-force of Nature. Conserved, impenetrable, (pauses) eternal. The positive and the negative—the yin and yang of the material world—in the material world opposites attract. In random interaction, fundamental particles form clusters of diverse composition and configuration. Stable clusters interact with other clusters, and other fundamental particles to form more complex composite-structures that, in turn, as composite

elements, form the building blocks of yet more complex composite-structures: composites of composites. Importantly, the composite elements are uniformly and discretely distributed throughout. Voids exist within and across the spherical layers: nested spherical layers. At any point within the structure there exists an alternation of charge from positive to negative to positive; an alternation necessary to bind the structure together: similar charges repel; dissimilar charges attract one another. As the structure burgeons the binding strength between outer and inner layers diminishes, which renders the upper layers of the structure susceptible to distortion, and in the presence of external perturbations, extraneous electric-force fields, restricts the further growth of the composite. (Pauses, looks to Y) where does it end? Only the most viable structures persist as subatomic particles: photons, electrons, positrons, protons, and so on; all composite structures.

[Y]

And the immediate relevance? The problematic assumptions?

[X]

Structural distortion. The problematic-assumption? The assumption, by Orthodoxy, that subatomic-particle interaction proceeds as though subatomic particles are perfectly rigid. Imagine that you are holding a thin-walled hollow rubber-ball in the palm of your hand, gently secured, with your thumb opposing your fingers. Any depression, or distortion, in the wall adjacent to the thumb will be in proportion to the extent of the applied force. An increase in the applied force, an increase in energy exchange, will proportionately increase the extent of distortion. Now imagine that you throw the ball into the air and strike the ball with a bat. Of interest is the energy exchange, principally, the potential, or stored, energy imparted to the structure, the distortion, and the kinetic energy imparted, the motion. A gentle strike of the ball with the bat results in negligible distortion and a modest peak-velocity. A harder strike, an increase in impact-energy, results in increased distortion within the walls of the ball, and in increased peak-velocity; simplistically, the ball, though more distorted, travels faster and further. But it is simply not the case that the harder that the ball is struck the faster and further it travels; there are, of course, mechanical limitations. In particular, the energy imparted to the structure may be so excessive that the ball becomes damaged or is destroyed. Or indeed, with an increase in the strike force, the amount of energy consumed in the distortion may increase disproportionately, that is, more and more energy may be consumed in the distortion thereby limiting the residual-energy apportioned to accelerate the ball; the ball's speed flat-lines.

[Y]

(More curious than impatient) the point to the analogy?

[X]

An energised electron de-energises, by a transfer of energy, through photon emission. The interaction energy, the applied force, both distorts the structure of the photon—a composite particle—and accelerates the photon to a high inertial-velocity. A division of energy: the potential energy of structural distortion and the kinetic energy of motion. Importantly, with an increase in interaction energy, the extent of energy proportioned to motivate the photon to higher and higher peak velocity is limited by the disproportionate increase in the extent of energy consumed in the structural distortion. Consequently, the peak velocity of emission flat-lines at *c*. Consistent with the evidence. (Pauses, looks to Y as though seeking questions, and with no response, continues) the emission speed is limited, (pauses) the fielder's throw, (continues) not the speed of light *per se*, the photon-speed prior to absorption, which may be less than, equal to, or greater than *c*. And the uniformity of emission speed? A characteristic limitation of the absorption–emission process. An energised atmospheric-electron will attenuate a proportion of the absorbed energy within its structure—for example, a warming of the atmosphere. Like the disturbance generated by a pebble thrown into a pond, the residual energy generated by the photon-absorption propagates through the medium, the composite structure of the electron, to converge at a point, a point of emission: a mechanical process. Limited by the extent of energy attenuated within the distorted structure of the electron; limited by the mechanical capacity of that electron to pass-on the residual energy to a secondary photon within the electron's structure; and limited by the extent of distortion initiated within the composite structure of the emitted photon. And the uniformity? Because electrons behave as electrons, and photons behave as photons; it's that simple. (Amused) a characteristic matter of matter, or antimatter, for that matter. (Recomposed) typical, limited, and uniform. An explanation; the context, composition and configuration.

[Y]

The scope? The additional supporting-evidence? (Pauses, observes X's change in demeanour) my enquiry amuses you?

[X]

No. To be listened to is an infrequent but pleasant experience.

[Y]

Don't confuse curiosity with acceptance or opportunity with indulgence.

[X]

Energy–mass equivalence. Charge, force, energy, mass. Energy is simply the manifestation of the presence of distributed charge. An energy gradient. (Pensive) a hostile environment of interaction

forces. (Recomposed) mass, an abstraction, the measure of the potential energy within the structure of a particle. The theory of special relativity asserts, that from an observer's perspective, as a particle's propagation-speed approaches *c* its relativistic mass increases to the point that further acceleration to higher and higher velocity is rendered difficult, if not, impossible. Why? (Pauses) for reason already stated: with an increase in interaction energy, the emission-speed flat-lines with the disproportionate increase in the energy consumed in the associated structural distortion. Consistent with observation. (Pauses) that increase in structural distortion is a measure of the potential energy within the structure, that is, a measure of the consequent increase in mass of the emitted particle. Increased structural distortion, increased potential energy, increased particle mass. The scope, the scope of explanation: equivalent, if not more profound.

[Y]

And the slowing of time?

[X]

Time dilation. A time-warp. (Amused) let's do the time-warp again. It's just a jump to the left, and then a step to the right.

[Y]

You're trying my patience.

[X]

(Pensive) I know how it feels. (Recomposed) muons are extremely unstable negatively-charged subatomic-particles that, in simple terms, disintegrate in approximately 2.2 microseconds. Produced by the absorption of cosmic radiation high in the Earth's atmosphere, a 2.2 microsecond time-to-disintegration should preclude a muon from ever reaching the Earth's surface, yet, in contradiction, the experimental evidence indicates that sufficient number do, in fact, reach the surface. Orthodoxy's explanation: time dilation. In simple terms, if the particle is at rest, stationary, then the time-to-disintegration is measured at the nominal 2.2 microseconds; but if the particle is in motion then, as though to accommodate an intent to reach the surface, the time-to-disintegration is prolonged. How mysterious? (Pauses) indeed, particle accelerator experiments conducted on muons, where the muons were accelerated to a peak-speed close to c, yielded results consistent with theory. The measured time-to-disintegration? (Pauses) much greater than the nominal 2.2 microseconds. Of particular relevance is the fact that these results were in good agreement with the quantitative values predicted by the theory of special relativity. Qualitatively these results were interpreted as evidence supporting the proposition that at higher and higher peak-speed, closer and closer to the speed of light, time is dilated.

[Y]

A clock in motion marks the passage of time as though time were resisting change.

[X]

Indeed. But what is the impetus for change? (Pauses) the critical factor is acceleration. Acceleration implies applied force. And an applied force, if sufficient, will initiate a structural distortion within the muon. The structural distortion presents an obstruction to the normal rate of disintegration: a transient stability. Once the muon has reached its peak-speed—that is, the particle is no longer subjected to an accelerative force—the structural distortion subsides to the point of restoration. The structurally-restored muon then becomes typically-unstable and disintegrates. The increase in time-to-disintegration is, therefore, due to the period of transient stability—not time-dilation, not the slowing of time.

[Y]

And the correlation, the agreement, between the mathematical predictions of special relativity and the experimental results obtained?

[X]

The increase in time-to-disintegration is also proportional to the peak-speed but only because both the peak-speed and the extent of distortion induced stability are proportional to the same causal factor, namely, the magnitude, and duration, of the applied force. Once again imagine that you hold a thin-walled hollow rubber-ball in the palm of your hand, secured with your thumb opposing your fingers. If you depress the adjacent side of the ball with your thumb, then the extent of the depression will be in proportion to the magnitude of the applied force. Furthermore, with the release of your thumb, that is, with the withdrawal of the applied force, the time taken for the deformed ball to return to its original shape will be dependent upon the elastic characteristics of the ball and the extent of depression caused by that applied force. An increase in force, an increase in depression, an increase in time to restoration. Indeed, if the applied force is sufficient, the consequent depression may result in the deformed side remaining cupped inside the other half of the casing. In either case, the extent of distortion, or analogously, the period of stability is determined by the extent of the applied force. The mathematics of special relativity is informed by a theoretical disposition. (Dismissive) a disposition shadowed by a mathematical anomaly that exposed that disposition to further misrepresentation. (Recomposed) a disposition that inappropriately characterises time-dilation as though it were a causal-factor. It is not speed-induced warping of time but, rather, the transient stability associated with the force-induced warping or distortion of particle structure that is salient to muon time-to-disintegration rates. (Pauses, to

reflect) CPT, the theory that I advocate, provides a different interpretation to that of Orthodoxy, one that is also consistent with the evidence. Indeed, arguably, an intuitive interpretation.

[Y]

(Curious) but the clock in motion?

[X]

A clock in motion that marks the passage of time as though time were resisting change. Synchronised, caesium-beam (with emphasis) atomic-clocks. One in-flight, a second, a ground-based reference. The time elapsed on the in-flight clock was compared to the elapsed time recorded on the ground-based stationary-clock. The discrepancy, measured in nanoseconds, purportedly, was in good agreement with the prediction of special relativity. (Pauses) a nanosecond: a billionth of a second. The claimed precision: billionths of a second. Can you believe that? They do. (In diminishing volume) a fraction, of a fraction, of a fraction, of a fraction (normal volume) of a blink of the eye. A precision founded on a theoretical fiction? And a confidence in the process of calibration and measurement that confronts credibility. Nevertheless, if we allow their indulgence, the in-flight phases of acceleration and deceleration remain problematic. It was asserted by Orthodoxy that in obtaining the comparative measurements, factors, such as, periods of acceleration and deceleration, directional anomalies, and gravitational variations, were taken into consideration and adequately evaluated. But the sleight of the mathemagician's hand cannot eliminate the cause of any discrepancy. The impetus for change: the directional-phases of acceleration and deceleration induced by an applied force; not the high inertial velocity, the applied force. Einstein's postulate: an ad hoc rationalisation. The genius of Einstein: nonsense.

[Y]

And the viper's other head? Quantum mechanical theory?

[X]

Wave–particle duality. In quantum mechanical theory, the concept of wave–particle duality states that, in context, a quantised entity, for example a photon, assumes either the character of a particle or the character of a wave. Complementarity. (Pauses, amused, then recomposed) furthermore, in Orthodox theory, an electromagnetic wave is characterised by complementary electric and magnetic field oscillations. But since the photon of Orthodox theory is without charge, what is the source of the fields and why are the fields in oscillation? Oscillations in perpetual motion, do the oscillations radiate energy? If not, why not? Magic oscillations? (Pauses) in contrast, the disturbance generated by a pebble thrown into a pond propagates through the medium, the water, until the energy transferred, from the pebble to the water, is attenuated, that is, dispersed and absorbed. A

mechanical wave. A tangible process of particle-to-particle interaction. An exchange of energy in a mechanical process that, importantly, requires a medium; and the disturbance within that medium is characterised by the relative local-displacement of adjacent water particles as each oscillates in a sequence of action and reaction as the energy of the disturbance passes through the medium. (Pauses) however, in addition to the posited field-oscillations, Orthodox theory further postulates that the electromagnetic wave does not require such a medium in which to propagate. How curious. A postulate; an existential fact or an ad hoc rationalisation?

[Y]

An ether? A ethereal medium that permeates matter and space. A medium in which an electromagnetic wave could propagate. Is that your assertion?

[X]

No. The received wisdom once asserted the ubiquity of the luminiferous ether, as you posit an ethereal medium, but as a consequence of the experimental endeavour of Michelson and Morley the notion of the ether was abandoned while the notion of the electromagnetic wave was reconciled by postulate: (reflective) an electromagnetic wave does not require a medium in which to propagate. (Recomposed) how convenient. But so much of Orthodox theory is dependent on the veracity of the wave hypothesis.

[Y]

(Reflective) the refraction of a light-wave into a spectrum of colour.

[X]

In Orthodox theory, light radiation is refracted, bent from its line of incidence, bent away from its original path, as a consequence of a sequence of absorption and emission processes that also effects a change in velocity as the radiation passes from one medium to another, for example, from air to glass. The contrast, of course, between Orthodox wave-theory and Composite Particle Theory is that the refractive process absorbs, and then subsequently emits, a particle not an electromagnetic wave; indeed, a composite particle, a radiation particle, a photon. Refraction occurs at the boundary. An incident radiation-photon, a weakly-interactive charged composite-particle, is absorbed by an atomic electron. Opposites attract. The absorption initiates a disturbance that propagates through the structure of the composite electron. Below and across the surface.

[Y]

A pebble thrown into a pond would initiate a disturbance below and across the surface of the water.

[X]

Indeed. Importantly, due to the spherical structure of the electron, the surface and sub-surface disturbances, mechanical waves that propagate through the structure of the electron, converge to a region on the opposite-side of that structure. To simplify the description, consider the sub-surface disturbance as a line-of-force parallel to the line of incidence prior to absorption. And the surface disturbance as a line-of-force tangent to the surface, the spherical surface. The tangential force strikes across the line of incidence. The resultant path of any photon emitted from the electron as a consequence of the convergence of surface and sub-surface forces would be bent away from the original path: refracted from the line of incidence.

[Y]

A billiard ball struck simultaneously at two points; its trajectory is determined by both lines-of-force, its path in-line with neither. And the spectrum of colour?

[X]

The absorption of ultra-violet radiation can be damaging to biological tissue. The characteristic that distinguishes harmful from harmless radiation is the potential energy stored with the structure of a radiation photon; the potential energy that can be transferred by absorption. Harmful radiation possesses more potential energy. White light consists of radiation photons of varying potential energy that, on refraction, manifests as a spectrum of colour. For example, in simple terms, refracted photons that appear red have less potential energy stored within their structure compared to refracted photons that appear blue. Blue photons are refracted, bent away from the line of incidence, more than are the red photons. By analogy, as a larger pebble thrown into the pond makes a bigger splash across the surface, the more energy abundant blue photons initiate a disproportionate increase in the disturbance that propagates across the electron surface: an increase in the tangential force that strikes, to greater extent, across the line of incidence. Consequently, the refracted photons are dispersed in proportion to the potential energy possessed. The spectrum of the rainbow.

[Y]

A billiard ball will roll in a straight line across a table unless deviated by a cross strike from another ball. The tangential force acts as though a cross strike. The greater the cross strike the greater the deviation. The greater the refraction.

[X]

A simple mechanical process of force analysis. Once sufficiently energised, an atomic electron within the refractive medium will eject a photon at a uniform emission-speed, refracted, and with respect to visible light-radiation, without any filtration or depletion of potential energy: for example, a blue

photon absorbed, a blue photon emitted. In Composite Particle Theory, diffraction is also characterised as a refractive process. A process of absorption and refracted emission.

[Y]

Diffraction patterns. If light falls on a small aperture, rather than a sharp image of the aperture being projected onto a screen or surface, for example, a wall, an alternating pattern of bright and dark lines is observed to form.

[X]

(Pauses, pleasantly surprised) patterns. (Recomposed) patterns that indicate order. In Composite Particle Theory, that order is indicative of the inherent order within the diffraction medium, that is, the order within the molecular structure of the material that forms the aperture. (Pauses) Orthodox theory asserts that the patterns are due to wave interference. In the nineteenth century, Thomas Young performed an experiment where light passed through two narrow closely-spaced parallel-slits formed in an opaque plate. The light that emerged formed a pattern, a series of bright and dark parallel lines, or bands, on a screen. Young noted the similarity of the pattern to that pattern formed in a water tank when the surface of the water is disturbed simultaneously at two adjacent points. He concluded that the light-intensity pattern was also due to wave interference: constructive or destructive wave-interference. In simple terms, the bright bands indicate constructive interference: an increase in intensity as waves from adjacent slits converge in phase. And the dark bands indicate destructive interference: a decrease in intensity as waves from adjacent slits converge out of phase. (Pauses, reflective) correctly aligned as though to comply with a mathematical prescription. (Amused) as a matter of interest, in Orthodox theory, the resultant wave would, of course, strike the screen as a particle: (reflective) wave–particle duality, complementarity. (Recomposed) however, regardless, what is important, (pauses, amused, recomposed) what is important is the experimental outcome, the evidence, detailed in the report of the low-intensity double-slit experiment performed by Taylor in 1909. In essence, on average, one photon, and only one photon passed through a diffraction slit at any given time, yet, in time, a diffraction pattern was formed on a photographic plate. Most peculiar. How is it possible that a diffraction pattern could be formed by a process of wave interference if only one, single, photon is present? Surely this outcome must be regarded as a falsification of wave-particle duality, or, at least, a falsification of the principle of wave-interference diffraction? The response of Orthodoxy, another postulate, another ad hoc rationalisation? (Takes hold of his crotch) it interferes with itself. Oh, please. It interferes with itself. The photon wave-packet interferes with itself. (Anger) and they cast me as the crank. No! (Recomposed) the result is exactly what one would expect from a particle absorption-emission process of refraction. One

particle in, one particle absorbed, one particle emitted, one particle out, refracted, with each single emission, in time, forming the diffraction pattern. (Dismissive) it interferes with itself.

[Y]

You suggested that the order within the diffraction pattern is indicative of the order within the molecular structure of the material that forms the aperture. But if an electron orbits the nucleus of the molecule like a planet orbits the sun, if its position within the structure changes in time, then would not the refracted photons simply be scattered randomly?

[X]

(Pleasantly surprised) an excellent question. (Recomposed) an important divergence in theory. The experimental work of Rutherford, in 1911, initiated the development of the planetary model of the atom with protons, positively-charged particles, concentrated within a central location, the nucleus, around which, at greater dimensions of separation compared to the size of the nucleus, electrons moved in orbits like planets around the sun. An orbital motion that, it was assumed, would prevent the electrons from being drawn inextricably into the nucleus, to coalesce in a manner that would contradict the evidence of distinct regions of separation. However, Rutherford's model was problematic. First, the concentration of mutually-repulsive positive charge within the nucleus would render the atomic-structure, unstable. (Pauses) unviable. Second, like atomic-fingerprints, atomic elements, hydrogen, lithium, carbon, for example, emit thermal-radiation patterns characteristic of each element. And, third, an electron in orbital motion would radiate energy and spiral inevitably into the nucleus; a death spiral, the atomic structure, posited by Rutherford, would collapse. (Pauses, amused) the first problem was resolved by the introduction into Orthodox theory of a new force. (Laughs) Orthodox theorists invented the strong-nuclear force. (Pauses, recomposed) another postulate. The strong-nuclear force, it is asserted, is the strongest of all of the fundamental forces, yet its field of influence extends only to the boundary-limits of the nucleus. At distances of separation beyond the nucleus the primary electric-field would dominate and the protons would mutually repel. However, convergent protons with sufficient kinetic energy to overcome the repulsive electric-field would converge to a point of capture, capture by the strong-nuclear force: an existential fact, or another ad hoc rationalisation?

[Y]

(Curious, not impatient) what specifically are you challenging?

[X]

Importantly, I don't deny the experimental evidence, I deny the interpretation. In particular, the assertion that the strong-nuclear force is a fundamental force, and that electrons are in motion

around the nucleus. If I may continue with the representation, or as some would suggest, the misrepresentation of the Orthodox model of the atom. Quantum mechanical theorists, who adopted Rutherford's conjecture, posit the notion of an orbital: a three-dimensional region of space defined by a mathematical formulation described as a probability distribution. Imagine an aeroplane in a holding pattern, circulating, waiting for permission to land. The plane expends energy, radiates heat, generates noise, and expels pollutants. Now imagine that the plane is placed into a holding pattern so that no energy is expended, no heat radiated, no noise generated, and no pollutants are expelled. A magic flight path, a magic orbit. Niels Bohr, who introduced the notion of complementarity, of wave–particle duality in the absence of cause and effect, in response to the objections presented asserted that elements exhibited characteristic stationary states, atomic-fingerprints, in which electrons orbit without radiating energy; stationary in the sense that the energy is fixed. (Amused) indeed, it would appear that the problematic objections were fixed, fixed by a bizarre postulate. (Recomposed) the electron of quantum mechanical theory: a magic wave–particle, in a magic orbit, probably somewhere in a probability distribution. (Pauses, looks to Y) do you believe it? Probably somewhere in a probability distribution. No! A well-determined location: of placement, and distance of separation from the nucleus. In effect, stationary, literally.

[Y]

Opposites attract. You conjecture that a stationary negative-electron maintains, on the atomic scale, a significant distance of separation from the positive nucleus; how is that possible?

[X]

Composition and configuration. In particular, distortion, alternation, and neutrality.

[Y]

Neutrality? Three charge states: positive, negative, and neutral. An additional postulate?

[X]

No. Only two charge states, as initially postulated. Neutrality is simply a state of ambiguity. The electric force-field of a positive point-charge is, in three-dimensional space, of course, positive. The electric force-field of a negative point-charge is, in three-dimensional space, of course, similarly negative. If a positive and a negative point-of-charge coalesce to form a simple cluster, figuratively, a simple string of charge, then the resultant electric force-field, in three-dimensional space, is of course, more complex. At one end of the string the state of field is unequivocally positive, at the positive end, or unequivocally negative, at the negative end of the string. But there will be points, in three-dimensional space, points in between where the field must transition from one state to the other, from positive to negative, from negative to positive: points of field transition, points of

ambiguity, of neutrality. Composition and configuration determine the character of the field, in particular, its strength. The strength of field of a fundamental point-charge is uniform in both direction and distance from the source, the point-charge. But the strength of field of a subatomic particle, for example, a negative electron is more complex. Evidence, indeed, Coulomb's law, indicates that the field is uniform in direction; however, its strength of force, of attraction or repulsion on a second particle, for example, another electron, is dependent on the distance of separation. In close proximity, the two negative particles repel one another strongly. Further apart, the particles continue to repel one another but less strongly. Why? If, consistent with Orthodox theory, the electron is a fundamental, non-composite, particle with a surface charge that is uniform and continuous, then why? Coulomb's law, in words, or as a mathematical expression is simply a description. The surface interface, figuratively, what the two electrons would see of each other, would not change with a change in the distance of separation. The surface interface would determine the strength of interaction, and the strength of interaction, consequently, would not change, that is, for the non-composite electrons of Orthodox theory.

[Y]

Why would it matter? If the electrons are composite particles then, to use your figure of speech, what they would see of each other would not change with the distance of separation, surely? The surface interface would remain the same, regardless.

[X]

The surface interface, perhaps. However, if the surface of the electron is, in fact, neutral, ambiguous, or at least, only weakly interactive, then? (Pauses) what if the source of the electron's negative electric-force-field is, in fact, sub-surface? (Pauses, for response.)

[Y]

(Curious, and now impatient) don't start playing cat and mouse.

[X]

Imagine a thin-walled hollow rubber-ball inside of which is secreted a spherical light-source. Holes are pierced uniformly across the surface of the ball. Now it's a hypothetical analogue, with respect to an actual field, a spatial region of influence, there isn't a stream of particles, so ignore the possibility of light refraction at each aperture. Light emerges as lines of light, or light rays, perpendicular to the surface of the ball. No lines cross. Like a precision-focussed laser-beam, a light ray only illuminates a surface on which it falls directly. Place the ball in the palm of one hand with one hemisphere facing outward. In the other hand place a second ball, without a light source, with one hemisphere facing outward and toward the other ball's exposed hemisphere. Change the

distance of separation so that several light rays fall incident and several light rays near-miss the surface of the second ball. As the distance of separation is decreased, as the two balls are drawn closer, the light rays that previously missed the surface of the second ball, now fall incident upon the surface, at the periphery. The extent of light-interaction has increased. Conversely, as the distance of separation is increased, as the two balls are drawn apart, then several of the light rays that were previously incident with the surface at the periphery, now near-miss that surface. The extent of light-interaction has decreased. The extent of interaction is dependent on the distance of separation. That's the analogy; a demonstration of Coulomb's law.

[Y]

Now you stated that within the composite structure, of nested spherical layers, there exists an alternation of charge from positive to negative to positive, and so on: an alternation necessary to bind the structure together. How, then, is it possible that the electron's surface is neutral, without charge, and yet that surface remains bonded to the inner-structure of the electron? What holds the neutral surface in place?

[X]

It's ambiguous; the field that is, not the theory. And the ambiguity, which is due to structural distortion, predominates only on the outer-surface of the outer-layer of a composite particle. The inner-surface of that outer-layer is charged. An important characteristic that also delimits, that is, determines the ultimate size of the respective particle. No further layered-growth in the composite structure is possible. Size and charge characteristics that are inevitably determined by the core-structure of the composite: the foundation. Now if the formation of the outer-layers results in an increase in surface distortion, with a consequent decrease in net effective-charge, and ultimately that distortion exposes within the outer-layer constituents of both positive and negative charge then the effective field, uniformly across the surface, will become ambiguous: neutral. However, if that distortion also, in the case of the electron, uniformly exposes sub-surface negative charge then, like our hypothetical light-rays, the emergent negative electric-force-field will similarly act as though focussed-lines of field: as though looking through a tunnel, without peripheral vision, the outer-layer of the surface obscures the sub-surface charge's field-of-influence, its field-of-interaction. (Pauses, reflective) a possibility. (Recomposed) conjecture, coherent, consistent with observation: a possibility. And an explanation of that which Orthodoxy merely provides a description or simply posits as though an existential fact. In contrast, a more profound measure of understanding. (Pauses) what was the question?

[Y]

(Pauses) a stationary electron. Atomic structure.

[X]

Oh, yes. On the atomic scale, a stationary negative-electron maintains a significant distance of separation from the positive nucleus. How is that possible? First, a qualification to our hypothetical: what if the outer-surface of the electron is not neutral but, in effect, weakly-negative? That is, the greater part of the electric field strength is, as conjectured, in source sub-surface and focussed then the effective field, surface and sub-surface, would, arguably, nevertheless function in a manner consistent with Coulomb's law. (Pauses, looks to Y, then continues) consistent with observation, the proton, a positively charged particle, is larger and more massive than the electron. To conjecture, the proton is a composite particle with a positive electric-field similarly constituted, in effect, predominantly sub-surface and focussed.

[Y]

The proton's electric-field conforms to Coulomb's law?

[X]

Yes. (Pauses) the simplest chemical element, hydrogen, in atomic-form consists of one proton, the nucleus, bonded with one electron at a distance of separation that is large in extent compared to the relative size of the nucleus, in this case, a single proton. Now consider the formation of a hydrogen atom. Opposites attract. The two particles converge along a line-of-convergence. At a point of separation beyond the atomic-scale, the force of attraction conforms to Coulomb's law; the strength of the force of attraction increases as the two particles draw closer. (Pauses) recall the analogy: the light rays that near-miss the surface of the second ball, will fall incident upon the surface, at the periphery, as the two balls are drawn closer; the extent of light-interaction increases. (Pauses) bonds form between sub-surface charge-elements within each particle, the field-line source, and, respectively, with surface charge-elements on the opposite particle. The field-lines fan-out from the line-of-convergence. Therefore, the line-of-interaction formed by the interaction of a field-line and a surface charge-element on the opposite particle, in general, will not align parallel to the line-of-convergence. There is an angle of deviation between the line-of-interaction and the line-of-convergence. As the distance of separation draws closer this angle must change or the bonds must break. The angle can only change if the interacting elements, surface and sub-surface, reorientate through distortion within the particle structure. If the bonds hold, no further convergence may be possible and a level of separation will have been reached that is characteristic of the chemical-element, in this case hydrogen, which forms part of its atomic-fingerprint. If the bonds break, convergence will continue as new bonds form. The process will be repeated until a point of closest-

approach is reached. At this point, the bonds hold, but the convergence is also moderated by the excessive surface-distortion within the respective particles. This distortion exposes sub-surface charges of alternate charge in sufficient number to oppose the convergence such that an equilibrium position between convergence and repulsion is maintained: characteristic of the chemical-element. A stationary electron separated from, but bonded to the nucleus. No magic wave–particle, in a magic orbit, probably somewhere in a probability distribution. (Pauses, reflective) composition and configuration: distortion and alternation of charge.

[Y]

The hydrogen nucleus consists of one proton. The more complex nuclei: nuclei that consist of two or more protons? The strong-nuclear force?

[X]

The strongest of all fundamental forces, according to Orthodox theory. The force that binds the otherwise repulsive protons together in the nucleus of the atom. Strange, the field of influence extends only to the boundary-limits of the nucleus. Orthodox theory doesn't explain it simply posits the existence of this contra-force as an existential fact. Another ad hoc rationalisation? No, there is only one force-field the electric force-field; and the source of that field, ultimately, the fundamental point-charge.

[Y]

The electric force-field: opposites attract. Proton repels proton.

[X]

Indeed. But composite particles are susceptible to structural distortion. If convergent protons, with sufficient kinetic energy to overcome the otherwise repulsive electric-field, converge to a distance of separation at the scale of the nucleus, structural distortion of the respective surfaces will expose sub-surface charge of alternate character, that at first, renders the respective fields as ambiguous: neutral, moderating the repulsion. With further convergence, the distorted structures take the form of an array of alternating charge. The protons orientate, align, and key-in to form a strong stable-bond. In effect, they hold their form and, with sufficient energy, can be cleaved apart; once again mutually repulsive. (Pauses) one fundamental field, the electric force-field; (amused) not two fundamental fields, not three, not four, not five. (Recomposed) one fundamental field. Composition and configuration.

[Y]

The gravitational field?

[X]

In Composite Particle Theory the gravitational field is characterised, speculatively, of course, as a residual, weakly-interactive, electric force-field of attraction between, comparatively, electrically neutral matter entities. Consider the analogy: a covalent bond. An atom is electrically neutral if the atom contains protons and electrons in equal number; for example, 10 protons in the nucleus, 10 electrons bonded to that nucleus: electrically neutral. However, electrically neutral atoms, (repeats to emphasise) electrically neutral atoms, bond to each other in crystal structures by a process referred to as covalent bonding. In Orthodox theory, outer-orbital electrons are shared by a process that renders the atoms inert; (reflective) the electrons are buzzing around in an orbital like a fly buzzing around a putrid carcass. (Recomposed) in contrast, I would assert that the covalent bond forms when atoms orientate, align, and key-in. The electrons are uniformly distributed around and from the central nucleus. The attraction of the electrons to the positive nucleus is greater than the mutual force of repulsion. Importantly, the electrons of adjacent atoms, figuratively, see through the gaps to the positive nucleus of another atom and are, consequently, attracted to that nucleus. A bond formed between electrically-neutral matter entities; the field: the electric force-field. Reflect upon the analogy. The gravitational field? One fundamental field. (Pauses) speculative, notwithstanding, an interpretation consistent with the evidence. Composition and configuration: an analysis, a foundation, on which to construct a profound understanding; a more comprehensive explanation, one which does not compound complexity and confound credibility. Accessible, falsifiable. And there is more, Hertz's famous experiment, or the Higgs boson: (pauses, amused, dismissive) the God Particle.

[Y]

The God Particle?

[X]

Indeed, a term that has come to instil disquiet among many Orthodox theorists: the true believers. But in simple terms, ignoring the sensationalism, if two composite particles, two protons, for example, are smashed together in a high-impact particle-collider then surely the expected outcome would be to observe an exotica of smaller particles? And that is exactly what is observed. No mysterious transformation of energy into matter. No, the matter is already present in the form of composite elements. Composites of composites, of clusters of fundamental particles: an exotica of particles with distinct energy/mass/time-to-decay fingerprints. Indeed, one fingerprint, amongst many, that suitably matches that of the suspect; (amused) the God Particle, but of course. An exotica of particles; surely you would think that the evidence would cause pause for reflection? But

Orthodox theorists are so confident in the veracity of their theories, so confident in the infallibility of their intellectual capacity: mindset and arrogance. (Amused) Niels Bohr famously, or infamously, remarked in response to Wolfgang Pauli, another high-priest of the covenant of Orthodoxy, that "we are all agreed that your theory is crazy. The question that divides us is whether it is crazy enough to have a chance of being correct?" Perhaps my theory is not crazy enough? (Pauses, dismissive) is it crazy enough? (Angry) and they cast me as the crank. In the absence of an objective assessment how does one determine the veracity of the assertion? To express it in the vernacular: if it looks like shit, and smells like shit then don't taste it.

[Y]

Yet science is so successful in developing technology from theory?

[X]

Nobel laureate Charles Townes wrote, in a publication detailing his contribution to the development of the laser, that many distinguished physicists attempted to dissuade him from continuing, in their considered opinion, his futile research. Indeed, the quantum mechanical luminary Niels Bohr remonstrated with Townes that his research would not succeed because, in principle, the concept violated Heisenberg's uncertainty principle: an important tenet of quantum mechanical theory. It would seem that Townes' success in developing the laser was in spite of quantum mechanical theory not because of it. A point lost to ignorance or historical revisionism. Furthermore, disparate theories, disparate interpretations of the evidence can, nevertheless, predict, or point to, the same outcome or phenomenon. (Pauses, reflective) but the veracity of one's assertions? (Recomposed, asserts) the objective: a comprehensive explanation. And the touchstone: the evaluative framework of simplicity, coherence, utility, and extensibility.

[Y]

Indeed, but as you have asserted, all are problematic notions: for example, what appears simple to one may appear convoluted to another.

[X]

Nevertheless, in the context of your perception of simplicity, how would you evaluate the alternatives? Which of the alternatives would you consider more representative of a concise, intuitive, intellectually accessible conceptual-foundation; a foundation for the provision of a comprehensive explanation of the observed complexity within Nature? (Pauses) of course, the alternatives are all coherent; certainly self-consistent. (Reflective) though, surely, one must question the prevalence of mystery that shrouds Orthodox theory, for example, the mysterious transition, ever-present, of a relentless relationship between an ill-defined state of effect without cause, and an

otherwise, ordered, defined state of cause preceding effect. How can something come from nothing? And the worship of numbers? (Recomposed) and all are of utility. But only Composite Particle Theory possesses the comprehensive scope of applicability, consistent with observation. One theory, not two: the two-headed viper of Orthodoxy. (Pauses) my theory may subsequently be falsified, but its intellectual import, at worst, its utility as a heuristic fiction, warrants consideration. The effectiveness of self-review is compromised by their refusal to engage dissenting opinion; or to selectively, conveniently, restrict their engagement to discourse that is easily dismissed. They shut you down, they shut you out. United they stand; Orthodoxy controls the battlements, the armoury, and the lines of communication. Their behaviour lacks integrity. (Looks to the floor.) Integrity, it's all that I have. There is no dignity in the social and intellectual isolation (pauses, to reflect, then turns to face Y and continues) in the deprivation of exclusion. (Recomposed) but there is more to be explained. The burden of physics is explanation. And there is more, more to Composite Particle Theory; a foundation for a more profound explanation. Intuitive: what is observed in the macro-environment is applied to what is envisaged to proceed in the micro-environment. (Reflective, tired) there is more.

[Y]

(Mindful of the time) just briefly, and what are we to make of string theory?

[X]

(Dismissive) string theory, (amused) worm holes, singularities, and science fiction. (Reflective, looks away) yet theorists, orthodox or dissident, must dare to dream, to imagine.

[Y]

To imagine a different reality?

[X]

(Uncertain of the implication, turns sharply looks to Y, then recomposes) welcome to my nightmare. (Pauses, with controlled anger, resentment) he mocked me. (Reflective) I'm tired of being mocked. I'm tired. (Pauses, sombre) but the most challenging burden is to endure the mockery of those who you once called friend. (Pauses) I'm tired. (Pauses, spirited) the artist's maxim: if you can't be great, be different; if you can't be different, be obscure; (looks away, he continues with a change in inflection: amusement to resentment) if you can't be obscure then be obnoxious, petulant, ruinous, anything to draw attention to oneself. (Pauses, then turns to face Y and continues, calmly.) It's rather ironic to think that it may require art to correct science.

[Y]

(With ambiguous intent) a performance?

[X]

(Pauses, reflective) I'm tired. (X sits, looks down.)

[Y]

(Pauses) are there any questions or final comments?

[X]

No. (X looks up. Y closes his note folder, as X's expression pleads for the assessment.) And? (Y's expression reflects his refusal to comment.) Just crazy, but not too crazy, right? (Y doesn't answer, rises and turns to leave the room.) There's something else that you need to know.

[Y]

Yes?

[X]

(X waits until Y turns back to face him.) I'm also innocent.

[Y]

Then you're playing a very dangerous game.

[X]

A game of chance; and it's the only chance that I have. (As though pleading) the idea is everything.

THE END