

Fiction Stranger than Truth

**In the Metaphysical Labyrinth of
Relativity**

N. Rudakov

THE AUTHOR
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AUTHOR'S NOTE

Quotations from the works of other writers are set in italics. The name of the writer is either mentioned in the text or added in brackets after the quoted matter. Bibliographical details are not shown because most quoted passages, except those of Einstein, although relevant to the discussion are nevertheless not indispensable for the primary purpose of this work—the critical analysis of Einstein's argumentation. To discern the real or potential meaning of words and to follow the principal lines of reasoning is an exacting exercise requiring considerable concentration of thought on the part of the reader. The provision of notes and other textual embellishments which are not absolutely necessary would only diminish the possibility of successfully accomplishing this task. Quotations of Einstein are a different matter. But the bulk of them comes from a few pages of his papers *On the Electrodynamics of Moving Bodies* and *Does the Inertia of a Body Depend on Its Energy-Content?* based on the English translations in *The Principle of Relativity* published by Methuen (London) in 1923 and by Dover (New York) in 1952. These two papers should be read in conjunction with this work.

1 Establishment

In the last sixty years physics has been enslaved by theoreticians who have succeeded in abolishing physical reality and replacing it with an empty and barren mathematical formalism. The new physicist no longer studies nature and describes what he has observed in physically meaningful terms. He sits at the desk, manipulates abstract symbols and figures, and communicates what the universe is like and how it ought to behave in the form of equations which are comprehensible only to a small and exclusive group of theoreticians like himself.

The principal device which brought about the mathematical captivity of physics is Einstein's first theory of relativity. It is usually referred to as the restricted or special theory, or as special relativity. This theory will be critically examined in the following pages, particularly in regard to its metaphysical implications. The term relativity, or relativity theory, in this work will mean primarily special relativity, although in some cases, where the distinction is not essential, it may also cover Einstein's second relativity theory, known as general relativity.

Special relativity originated in a 30-page paper published by Einstein in 1905 under the title *The Electrodynamics of Moving Bodies*. It is difficult to understand why this paper, which contains only a rough outline of ideas subsequently declared to express the substance of the special theory, should be considered as one of the highest achievements of science and a cornerstone of modern physics. And yet this is what the physics books and the establishment historians and philosophers tell us, and what the Einstein biographers never fail to emphasise.

In the words of one of the principal biographers, the 1905 paper *was in many ways one of the most remarkable scientific papers that had ever been written*. Among other things, it *provided such an accurate blueprint for the way in which the physical world was built that within a generation men could no more ignore relativity in the teaching of physics than they could ignore grammar in the teaching of language* (Clark).

The historical and psychological reasons why relativity became the "grammar of physics" have still to be uncovered. They are outside the scope of this work. However, some consideration must be given to motives and driving forces operating in the scientific community in regard to the acceptance and promotion of theories. Why is relativity widely accepted? Does this mean that relativity is true? An attempt must be made to provide answers to such questions.

Theoretical physics occupies a fundamental position in physical science, and physical science occupies a similar position among the natural sciences. A theory which receives the seal of approval by physicists will be incorporated in the general body of knowledge and considered certain and trustworthy by other branches of science and the community at large. Special relativity has achieved the status of an unassailable truth in the eyes of the world because it has been accepted by the theoreticians in physics, and these are the people who form the nucleus of the establishment and who make the decisions affecting the life of the physics community. Observational and experimental work still matters in physics, but it is much harder for the practical physicist to gain recognition if his work is not in accord with prevailing theories. On the other hand, purely theoretical propositions, such as relativity, have no difficulty in gaining acceptance and becoming an intrinsic part of the body of scientific knowledge without any observational and experimental evidence.

Does majority acceptance of a theory by a group of scientists constitute incontestable evidence of its validity? The answer to this question, of course, cannot be an unqualified yes. Consensus among scientists is quite frequently an indicator that the work is proceeding in the right direction, but it is not an ultimate criterion of truth. History knows examples when common acceptance of specific scientific views was followed by a considerable modification or rejection of them. Majority support among members of the profession must certainly not be disregarded or disbelieved without good reason, but one should also not assume that it guarantees complete freedom from error. And non-acceptance of a theory which appears to be widely favoured is not necessarily a sign of irrational eccentricity or foolishness.

Various specific reasons may be put forward to explain the unprecedented support enjoyed by the relativity theory, but ultimately they can be reduced to three: (a) vested interest, (b) ideological appeal, and (c) assumed empirical confirmation.

First of all, the theory has now acquired the nature of a basic creed, fully understood, or assumed to be understood, by a relatively small number of theoreticians, but fully accepted by academic physicists in general and uniting them in what is called the relativistic establishment. The intellectual self-esteem and self-preservation of this group depend on the continuing existence of the theory and its further "development" which means its utilisation as a fertile and inexhaustible breeding-ground for mathematical fiction.

A significant majority of the top academic positions in physics in the world are occupied by committed relativists. They tend to form a brotherhood or a caste of high priests with a vested interest in the status quo for personal and financial reasons. In the set-up created by this brotherhood relativity is accorded a much greater role than other parts of physics, a role which it does not deserve.

The doyen of the relativists in England, McCrea, says that *special relativity is not a department of physics but a basis for nearly all physics*.

The editorial board of *Nature*, a leading and popular scientific journal, declares that *the special theory of relativity has been enormously successful in the past half-century, and in spirit as well as in detail has come to pervade the whole of modern physics*. This theme, that relativity pervades all physics, that it is the most fundamental aspect of all physics, etc., is played with all possible variations and in all sorts of media, from university research papers and textbooks down to nursery rhymes. You can hear it in mass circulation journals and in popular reference works, such as the *New Encyclopaedia Britannica* (1974) which tells its readers that *relativistic notions of space and time are inextricably woven into any contemporary interpretation of physical phenomena ranging from the atom to the universe as a whole*.

The high priests have taught the mysteries of relativity to their disciples for years, they have pursued endless mathematical games under the name of “research”, published thousands of books and papers on the subject, and supervised numerous doctoral dissertations of aspiring candidates. The possibility of these academics turning against themselves and admitting that they have been engaged all this time in the dissemination of fiction, without any practical significance in physics, is very remote indeed. Such admission would be a disaster of enormous proportions for the establishment. It can hardly be expected to happen without a prolonged conflict and without a profound change in the distribution of pro- and anti-relativity forces.

Abstract relativistic terminology and mathematical techniques are now serving an intra-group recognition function, like a secret fraternal handshake. Candidates who want to join the fraternity must be properly apprenticed and initiated by mastering the terminology and the techniques and accepting the creed. Comparatively minor and non-essential aspects of relativity may be criticised, but no doubt is permitted to be expressed about the creed as a whole and the authority of its professors. Criticism of fundamentals and of those in authority damages the standing of the profession and is a severe breach of the code of ethics of the brotherhood. In this way the relativistic establishment has secured for itself an impregnable superiority.

A second reason why relativity enjoys such unwavering support is its ideological attractiveness for the average “uncommitted” member of the scientific community. In reality the average scientist is committed to materialism, as opposed to idealism or theism. The theory modifies the fundamentals of physics in a materialistic way. It removes absolute space and time and other concepts creating difficulties for the materialist. It does away with many irritating properties, such as infinity and direction of time, by declaring them non-existent. The typical contemporary intellectual is more often than not an atheist or agnostic, and as such he feels much more at home with the notion of relativity, and what it stands for in philosophy as well as in physics, than with concepts which have a theistic flavour. It is, therefore, not surprising to find that scientists, philosophers and other intellectuals whose personal beliefs are in harmony with materialistic and atheistic views are in the forefront of those who have promoted relativity in

the past and who are its most outspoken supporters to-day while those who are in the opposite ideological camp are practically absent in the relativistic establishment.

The emergence of Einstein and special relativity from obscurity in the eight years between the publication of the electrodynamics paper in 1905 and Einstein's nomination to the Prussian Academy of Sciences in 1913 was principally due to the assistance or personal involvement of six famous academics: von Laue, Minkowski, Lorentz, Mach, Poincaré and Planck. Only Planck's personal philosophy was distinctly non-materialistic in character. The other five subscribed to materialistic beliefs.

The ideological affinity is also evident among philosophers who were early supporters of relativity. None of them can be identified as belonging to an idealistic or theistic school. Some, like Russell, who has written a popular exposition of relativity, have been specifically anti-theistic and anti-Christian, while others, like Cassirer and Reichenbach, are clearly on the materialistic side of the fence. Cassirer's Kantianism does not affect his position in the ideological spectrum. One well-known philosopher, Bergson, has expressed dissatisfaction with the prevailing materialism in science and has also dealt with relativity. But Bergson cannot be considered as a supporter of Einstein. He has criticised the relativistic treatment of time and can with some justification be counted as one of the first opponents of the theory.

Most relativists declare that the theory is neutral in relation to philosophy and religion. This neutrality declaration goes back to Einstein's remark made during a conversation with Archbishop Davidson in 1921 to the effect that his theory is *purely abstract science*. If by *abstract science* is meant theoretical physics, Einstein's remark is formally not invalid. But the abstractness of relativity is not completely represented or exhausted by its mathematical apparatus. A less obvious and at the same time absolutely essential feature of the theory are the metaphysical premises and assumptions on which it rests and which pave the way for the mathematics. These metaphysical beliefs are presumably held by the creator of the theory and shared by those who support it. The very expression *abstract science* appears to imply that we are dealing primarily with abstract thought in metaphysical terms which is subsequently translated into the formalism of mathematics. The expression also appears to introduce a new type of science by associating it prominently with the conceptual element of abstractness which is not a usual or essential part of its connotation. Science is the accumulation of practically meaningful facts and their generalisation and interpretation. Abstractness is the hallmark of philosophy.

It is interesting to note that despite its professed ideological neutrality relativity has, in the arena of political philosophy, produced severe reactions on the part of two totalitarian ideologies: Hitler's National Socialism and Stalin's Communism. If it is possible for a theory, which purports to be pure science, to meet such emotional and destructive opposition, the claim of neutrality cannot be entirely valid.

Similarly, relativity cannot be considered neutral in relation to religion and ethics. Once science was the handmaiden of theology, to-day the

position is reversed. Theologians have lost the ability and the desire to analyse critically pronouncements made in the name of science which touch upon theological questions. Where science and theology meet or overlap the scientists retain the upper hand, even when they are clearly departing from scientific methods and engage in subjective speculation and authoritarianism. This is particularly evident in fringe areas of science, such as evolution, cosmogony, cosmology, and relativity. And because science is the almost undisputed master in the relations between the intellectual and religious spheres of human activity, a fundamental theory accepted by science and postulating relativity as a cardinal principle of the physical universe must exert a powerful relativising influence on the religious and ethical values of mankind. It guides them, without the necessity of explicitly saying so, away from belief in a personal supreme being and an absolute standard of ethics. It promotes a belief system which is either a form of materialistic pantheism and agnosticism (this was Einstein's religion) or a more clearly stated denial of the existence of God, and a standard of right and wrong which varies from person to person and depends in some mysterious way on the individual situation or the particular environment.

The relativising effect of the theory on religion and ethics was recognised by some church leaders already in the 1920's when relativity conquered the minds of the intellectual elite and began to exercise its influence on the masses. Cardinal O'Connell of Boston told a group of Catholics in 1929 that relativity theory *cloaked the ghastly apparition of atheism* and produced *universal doubt about God and His creation*. However, concerned Christians, lacking in numbers, influence, erudition, analytical finesse and academic authority, were no match for the solid front of the relativistic establishment.

The third and final reason why relativity theory enjoys support is because it is assumed to rest on amply demonstrated, solid and irrefutable empirical evidence, such as transverse Doppler effect, mass increase, and other physically observable phenomena. The question is, of course, whether the assumption is true. The answer to this question and other matters relating to empirical evidence will be considered in subsequent chapters of this work. Suffice it to say that observations have been made in high-velocity particle physics which require an adjustment of Newton's mechanics, but they do not constitute a confirmation of special relativity.

The relativistic establishment is at present firmly entrenched in the physics and mathematics departments of academic institutions of the western world. No sustained or effective criticism of relativity from the inside of the establishment has ever been voiced and it remains unassailable by outsiders. We observe the curious situation that applied scientists and engineers are taking no notice of relativity and continue their work without feeling the need to use or even to mention Einstein's theories. Attempts are made to introduce the teaching of relativity in high schools, but they are not succeeding. Physics teachers in high schools give lip service to relativity, but they are not eager to teach it because of its abstruseness and irrelevancy. Despite its more than 70 years of existence relativity still lacks fundamental theoretical and practical importance for non-physicists. It is not necessary

for the solution of any technical problems, with the rare exception of those where the high-velocity mass increase must be considered, and even here the whole theoretical apparatus of relativity, apart from the mass increase formula, is irrelevant. Natural scientists other than physicists, and academics in the humanities and social sciences accept the fact that relativity exists, but in practice it is ignored. It does not enter into their work, except where a specific group has aligned itself with the relativistic establishment. One such group is represented by the historians and philosophers of science who have accepted relativity uncritically and have become its chief promoters and popularisers.

Relativity has been, and is, opposed and criticised. But the opposition has been largely passive, and this has given the relativists the opportunity to take roots and to establish itself. Criticism has been voiced, but unfortunately it has been too timid, too isolated and too fragmented. And there are inherent difficulties in arguing with relativists. Because of its abstractness, the lack of definition and elaboration of its terms, and the ambiguous and inconsistent use of them, relativity has endowed itself with considerable conceptual elasticity. As a consequence it is not easy to fight with, particularly on a narrow front. It is like a balloon. If you hit it, even with a fist, it bounces away—unaffected. Arguments invariably bog down because of difficulties in communication. Relativity always appears to be “misunderstood” by the critic.

Criticism has not been able to prevent the institutionalisation of relativity during the 1920's and 1930's, particularly in the Anglo-Saxon world. In Germany, where relativity was born, it never established itself fully among the academics before Hitler suppressed it in 1933. A large number of physicists and other scientists did not accept either special or general relativity, and those among them, like Lenard, who later embraced National-Socialism were in a minority. Hitler not only scattered the supporters of relativity, but also many of those who opposed it in the name of science or philosophy. An important document of the opponents, published in 1931 under the title *Hundert Autoren gegen Einstein* (Hundred Authors against Einstein), had quite a number of Jewish contributors and was banned by the National-Socialist regime.

Ever since that black day for physics in November 1919 when the Royal Society, the cream of English science, accepted without a murmur the proposition, championed by Eddington, that Newton has been superseded by Einstein the Anglo-Saxon academic scene has been the real and impregnable base of the relativistic forces. Eddington, who is said to have approached his task *through an emotional fog* and presented his views *with an amount of personification and metaphor that reduced him to the level of a revivalist preacher* (Stebbing), was the chief protagonist of the creed in England. He disseminated relativity with something akin to religious fervour. The old guard physicists wavered between mild support (J. J. Thomson) and mild reproach (Lodge, Rutherford), but soon left the scene to the new breed which in England as well as in America enthusiastically embraced relativity.

In the Soviet Union relativity was originally not considered to be

incompatible with Communist ideology, and discussion among scientists was permitted. Only a few physicists and mathematicians were interested in relativity, but among them were supporters as well as opponents of the theory. When dialectical materialism, the official philosophy of the Communist regime, was subjected to a purification and consolidation process under Stalin in the early 1930's, relativity was declared to be an expression of "reactionary subjectivism" in science and as such ideologically suspect. Any discussion of relativity was stopped, although some reference to it remained in teaching programmes and textbooks for advanced physics students. In the meantime Stalin's mind controllers worked out the adjustments required to bring relativity in line with dialectical materialism. The adjustments consisted mainly in retaining the concepts of space and time in a real or absolute sense. This was necessary in order to avoid contradictions with Lenin's philosophical views and with the fundamentals of dialectical materialism laid down by Stalin. According to the "great teachers" space and time are indispensable manifestations of physical reality and the objective forms in which the constantly changing but indestructible matter exists. With these guiding principles in mind, some Soviet theoretical physicists began cautiously to formulate modified theoretical interpretations of relativity and stimulate discussion, on the one hand encouraged because of its possible relevance for high-energy particle physics and atomic engineering, on the other hand accompanied by attacks of the propaganda machine and admonished not to indulge in the dissemination of "reactionary Einsteinianism". The most notable modification was produced by Fok. It was printed in a consolidated edition in 1955, after the death of Stalin, under the title *Theory of Space, Time and Gravitation*. If the abolition of absolute space, time and motion is considered an essential tenet of relativity, and there is little doubt that it is an essential feature, then Fok's theory is not a modification or further development of relativity, but a rival theory.

Theoretical and interpretative work on relativity has expanded in Communist countries in the post-Stalin era when physicists, mathematicians, philosophers and historians gained a greater measure of freedom to study and discuss Einstein. However, it is still evident that there is a major divergence from Einstein's theory in Eastern Europe, and it concerns the nature of space and time. A prime example of how special relativity and absolute space and time can apparently live together under one mathematical roof is the *Theory of Relativity Based on Physical Reality*, produced by Janossy, a Hungarian, in 1971. But as in the case of Fok it is doubtful whether Janossy's theory is still relativity in the Einsteinian sense.

The critic of relativity is faced with a formidable, almost hopeless, task. He is confronted with a solid phalanx of relativistic forces, overwhelmed by an imposing and almost inexhaustible array of academic titles and awards, scientific papers and books, and finally slowly crushed by the combined and absolute disregard and contempt of the establishment. Silence is the main weapon of the relativists. They feel so secure in their positions and so sure that criticism will not cause any harm to them that they invariably do not

react to criticism and do not engage in any argumentation with opponents.

Very instructive is the case of Dingle, a physicist by training who later chose to be a historian and philosopher of science. Originally he was a supporter of relativity and wrote several books in favour of the theory, e.g. *Relativity for All* (1922) and *The Special Theory of Relativity* (1940). But later doubts arose in his mind as to the validity of special relativity. He became an apostate, a heretic, in the eyes of the establishment. He pointed out contradictions in special relativity, and tried to obtain answers from relativists to questions formulated by him. After an incredible series of efforts and considerable correspondence and publicity Dingle's persistence ultimately resulted in an inconclusive exchange of statements with one of the top relativists in England, McCrea, in the pages of *Nature* in 1967. The whole story is described by Dingle in *Science at the Crossroads* which was published in 1972. His book is a graphic illustration of the solid wall of rejection and ostracism met by one who has been expelled from the brotherhood. It is a striking indictment of the establishment.

The Dingle-McCrea exchange of 1967 is probably the only case in recent years when a committed relativist has replied to criticism of the theory. Otherwise, the rule to disregard any criticism has been strictly complied with.

Critics of the theory come from a wide spectrum of backgrounds. Some are scientists or engineers who feel that certain aspects of relativity lack validity. Essen, an expert in time measurement, expressed serious doubts about the treatment of time by Einstein in a booklet entitled *The Special Theory of Relativity. A Critical Analysis* (1971). One of the remarkable features of the booklet is its publisher: Oxford University Press. Usually, well-known publishers of academic books are reluctant to produce texts which are not in harmony with relativity. A former practising scientist, Nordenson, has clearly shown in *Relativity, Time and Reality* (1969) that the abolition of the absolute time concept by special relativity is a meaningless manoeuvre. The theory suffers from a fundamental contradiction because it is, in fact, firmly based on the assumption that absolute time exists. A well-known French physicist, Brillouin, called for a *painful and complete reappraisal* of relativity in his last work, *Relativity Re-examined*, published in English by Academic Press, New York, in 1970.

The spectrum of critics includes authors who are proposing modifications of relativity or alternative theories without sufficient justification, who are using defective arguments, or who are confused or incomprehensible. But that does not mean that all critics, even those who do not reach some set standard, are necessarily cranks or fools as is suggested by adherents of relativity. Many critical publications make valuable and stimulating suggestions, and others, despite their shortcomings, have usually at least some redeeming feature. Very few of them need to be classified as rubbish.

Secure in their belief that they possess the truth, some ardent followers of relativity display a remarkable degree of prejudice in relation to those who think differently. A reviewer of *Modern Aether Science*, by Aspden, in the journal *Choice* in 1973 says that *most physics departments have a "crank case" for filing the frequently received "proofs" that Einstein's relativity*

theory is hopelessly wrong. The reviewer says that Aspden is a crackpot and that his book is not recommended for acquisition by libraries. Yet in reality Aspden is not a crackpot at all, and his book is not different from many others written by mathematicians, theoretical physicists, cosmologists, etc. who suggest hypothetical solutions of various problems without significant use of empirical evidence.

Gardner, the author of *Relativity for the Million*, examines in another book, *Fads and Fallacies in the Name of Science*, the ways in which a crank's *paranoid tendencies are likely to be exhibited*. Gardner says that a crank *has strong compulsion to focus his attacks on the greatest scientists*, and that, *with Einstein the father-symbol of authority, a crank theory of physics is likely to attack Einstein*. Similar thoughts are expressed by Arzeliers, a committed French relativist. In his *Relativité généralisée* (1961) he suggests that anti-relativists suffer from symptoms of mental abnormality. And Lyttleton is of the opinion that the truth of relativity *seems so self-evident as to be beyond need of discussion by any sane people*. This is how the establishment responds to critics. Either with mute and complete contempt, or by stigmatising them as mental cases. And one would have thought that scientists should excel in the art of dispassionate logical argumentation and be free of such manifestations of arrogance and intolerance.