History, Humanity and Evolution

Essays for John C. Greene

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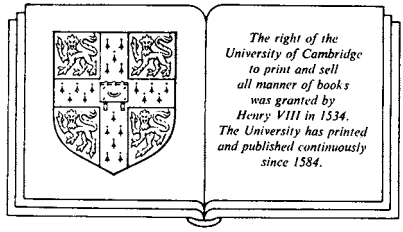

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INTRODUCTORY CONVERSATION

JM: On the occasion of your seventieth birthday, John, I thought it would be fitting to honour your contribution to the history of evolutionary ideas by assembling a collection of essays written by your younger friends and colleagues under the title *History, Humanity and Evolution*. This title was chosen with some care. Its terms not only mark out the general locus of your own interests over many years; they also indicate an order of cognitive priority that appears in your own work and reappears in the essays contained in this volume: *history* first, then *humanity* as its offspring, and finally *evolution* as the discovery and artefact of human genius working under particular historical conditions. In this introductory conversation I would like to discuss your contribution to our understanding of evolutionary ideas in the context of your own personal and professional history. I want to focus both on the historicity of evolutionary ideas and on the humanity that has evolved – and, according to some interpreters, is evolving still. In the course of our conversation I'm sure your own particular humanity as an interpreter of evolution will emerge, and this should prove instructive to those of us who take up the historical task where you leave it after a lifetime's work. Perhaps I may begin with a quotation. You once commended Benjamin Silliman, the nineteenth-century Christian geologist, for his 'resolute effort to see human life and the place of science in it steadily, and to see it whole'. Would you accept this as a statement of your own intentions in writing about the history of evolutionary thought?

JG: Yes, I would. I feel strongly that in our own time science has lost its historical bearings. As I see it, the history of Western civilization has three main intellectual components. The first is the classical component, from Greece and Rome; the second is the Judaeo-Christian component; the third is what we call modern science, dating from about 1500. Modern science is the offspring of the first

two: in the sixteenth and seventeenth centuries, by some kind of alchemy we do not entirely understand, the fusing of the classical and the Judaeo-Christian components produced it. But then the child began to react very powerfully on both its parents. What I like about the eighteenth century, on which I have spent a considerable amount of time, is that the three components subsisted in a marvellous balance. Take somebody like Thomas Jefferson: he was reared as a Christian, and his deism was shot through with Judaeo-Christian ideas; he read Homer and Epictetus in the original with great pleasure and he was enthusiastic about modern science. Not only in Jefferson, but in many people of the period, one sees this sort of balance. In the nineteenth century the balance began to break down. Science, with its technical applications, began to undermine both the Judaeo-Christian tradition and the classical humanistic tradition. In the twentieth century things have been completely torn apart. Whirl is king, having deposed both Zeus and Jehovah. But while science, with its technical applications, has shown a great power to influence and undermine the other two components, it has shown no power whatever to provide an alternative basis for values or a satisfactory replacement for traditional views of the nature and destiny of man. It seems to me that the problem of our time is to reconstitute the cosmos in such a way as to leave a reasonable place for modern science *without* sacrificing traditional values and meanings.

JM: To what extent do you think this reconstitution would involve a recovery of the particular 'balance' that you commend the eighteenth century for?

JG: I'm not sure we can predict what form it might take. I have been much influenced by Whitehead's attempt to construct a general picture of reality that would accommodate both natural science and aesthetic and moral sentiments. On the other hand, I don't think Whitehead ever took full account of those aspects of human nature that St Paul talks about – the good which I would I do not, and the evil which I would not, that I do. For the same reason, I have always viewed the eighteenth century with ambivalence. Jefferson, I think, was overly optimistic about human nature, not sufficiently realizing that if knowledge is power, as he believed, and, if power corrupts, as Lord Acton would later say, then knowledge can corrupt too, unless it is developed in an adequate moral and metaphysical framework. Of course I share many of Jefferson's values – freedom of speech, freedom of thought – and I think that the Enlightenment was in many ways a great movement for the liberation of people from institutional restraints. But at the same time I believe there is a wisdom in both the classical and the Judaeo-Christian traditions which has now been

largely lost. In the quest to command nature we have forgotten how to command ourselves.

JM: I'd like to pursue the theme of fragmentation a bit further. In 1959, your first and best known book was published, *The Death of Adam*. Then in 1961 came your lectures, *Darwin and the Modern World View*, and exactly twenty years later a collection of your essays appeared as *Science, Ideology, and World View*. These titles reflect your concern with the wider intellectual context of evolutionary ideas; the latest one names three things – science, ideology and world view – which, in the postscript to the book, you say will be forever intertwined and interacting. Now how would you distinguish among science, ideology and world view in the history of evolutionary thought if these three are so closely related?

JG: Well, I admit 'ideology' is the odd term here. In my writings you will not find a great deal connecting the history of evolutionary ideas with ideology. There are some hints, but on the whole the connections are not well developed.

JM: The term 'world view' occurs in the titles of both your latter books on evolution, 'ideology' appears only in the latest. I wonder whether this has anything to do with the state of political debate in the 1980s. Perhaps it would not have been acceptable to use the word 'ideology' in the title of a book published in 1961. Wasn't 'the end of ideology' being proclaimed in America then?

JG: I don't think that would be a correct historical explanation of the difference in the titles. My dominant interest has always been in the interaction of science and world view. The appearance of 'ideology' in the title of my collection of essays, two of which had been published in the 1950s, probably reflects my reading of people like yourself. But I have always been aware of the ideological aspect of evolutionary ideas, and I am perhaps a little more attuned to it now than I was earlier.

JM: What do you mean by 'ideology'?

JG: To me ideology means primarily ideas that justify programmes of social action. Marxism is an ideology; Freudianism, broadly speaking, is an ideology too. There was an ideology of the American Revolution. Many writers describe as ideology what I would call 'world view', and this may be because world view is a less familiar, and possibly more difficult concept. By world view I mean explicit or implicit presuppositions of thought in a period. A world view is not necessarily any particular individual's outlook. It is a certain interrelated set of presuppositions that dominates the thought of the age, such as the static view of nature in the eighteenth century. And there are competing world views too: a subdominant view inherited from

the past – the decline from original perfection – as well as an incipient view – the idea of nature as a law-bound system of matter in motion. Among these a kind of tension exists. As a student of the history of ideas, my problem is to find out what brings about transitions from the dominance of one world view to the dominance of another.

JM: But just consider the advocates of the static view of nature in the eighteenth century. Weren't the 'world view' utterances of Boyle lecturers and physico-theologians also ideological statements – statements about social order? Natural theology was so ideological that Basil Willey could call it 'Cosmic Toryism'.

JG: The trouble with that view is that Cosmic Toryism is not found just among the Tories. Whigs were natural theologians too – Tom Paine is full of it.

JM: That may be so, but my point is that eighteenth-century people, whoever they were, expressed a static world view in terms that bore the distinguishing marks of what you understand as ideology. It is pretty generally admitted now that classical natural theology, which presupposed the fixity of created kinds, was pursued in such a way as to uphold a providentially ordered and relatively static social world, and was therefore ideological. What I am questioning is how far the distinction between ideology and world view can be sustained.

JG: I would not regard static physico-theology as part of a programme to defend or attack some social movement. Certainly, it could be *used* in that way. When as a graduate student I first developed my notion of the dominant view of nature in the eighteenth century, I also had a parallel conception, the dominant view of society, in which the family, the State, and so on, were regarded as given, either by God or by nature, and relatively unchanging. In other words, I have always distinguished between presuppositions of social thought and presuppositions about nature.

JM: We agree that there can be these two sorts of presuppositions, about human relationships on the one hand, and about the non-human natural world on the other. What seems to be at issue is whether there may be some inner historical connection between the two, and if so, whether this connection has to be made explicitly within a period such as the eighteenth century for the historian to be justified in recognizing it and referring to a world view as ideological. Perhaps you would concede that ideology can be either explicit *or* as implicit as the assumptions you refer to as constituting a world view. If so, there would be no need to limit ideology to the conscious advocacy of social programmes, would there?

JG: I don't think I would object to that. Speaking historically and biographically, though, I have always understood ideology as being quite explicit. I would have to consider whether the more ideology, in your sense, becomes implicit, the more I would want to call it world view.

JM: Let's move on to that other key word from your titles – 'science'. If it is possible for a world view to be ideological, or an ideology to serve as a world view, is it possible also for an ideology to be scientific, or for science to become an ideology?

JG: To me science has always seemed distinct from both ideology and world view. Science attempts to describe or to discover relationships among phenomena in a value-free way, whereas ideology is connected with social action and so involves values of all sorts. Of course science is a form of action, but it is a form of action that stresses observation. The scientist as observer sets aside questions of religion and social values in order to understand nature as it is. At the same time, though, simply by being educated and practising as a scientist, the same individual is heavily conditioned by the prevailing world view: by conceptions of what science is, what nature is – ideas one takes in like mother's milk.

JM: The scientist as passive observer of phenomena is precisely what scientists have been taught about in textbooks, isn't it? It's part of the modern scientific world view. But when we reflect on how scientists are trained, and how their actual working practices are affected by basic presuppositions about the world, then we see science for what it is and are able, perhaps, to transcend its metaphysical constraints. It seems to me that in the early part of *Science, Ideology, and World View* you allow as much: you state that while 'general conceptions of nature, God, knowledge, man, society, and history' shape – or 'dictate', to use your word – every aspect of science, if the scientist has 'insight and intellectual integrity', then his or her findings may alter the general conceptions that shaped the scientific enterprise, rather than simply reinforce them. Now how does this 'insight and intellectual integrity' come in to preserve science from the taint of world view? Perhaps you can given an example from the history of evolutionary thought to illustrate what you mean.

JD: I don't know that I would say 'taint' – let's call it 'influence'. Also, I want to be clear that, as I say in the preface to *The Death of Adam*, there is no such being as a 'pure scientist'. But I do believe the best scientists are driven by intellectual curiosity, a desire to understand and explain how things work. And the 'insight' I referred to is of the kind that led Darwin and Wallace to the theory of natural selection. I know that natural selection has acquired a broad penum-

bra of sociological connotations, but, nevertheless, at the core of the theory is a genuine insight into a problem that Aristotle stated long ago: namely, how do you account for the general fact of adaptation in nature? The atomists had talked about concourses of atoms, but Aristotle did not believe adaptation could be explained in that way. Intellectually it was not satisfying. He required an explanation in terms of immanent purposiveness. Darwin and Wallace, however, hit on the idea of natural selection.

JM: Later, in the same context, where you mention a scientist's 'insight and intellectual integrity', you note the 'curious fact' that nearly all the proponents of natural selection in one form or another in the first half of the nineteenth century were British. It is 'strange that nature should divulge one of her profoundest secrets only to inhabitants of Great Britain', you say. The fact is explicable only by 'assuming' that political economy and the competitive ethos in the first industrial nation 'predisposed' British naturalists to think of competitive struggle in theorizing about living things. Do you mean by this that the capitalist economy of the eighteenth and nineteenth centuries was required for people to have a genuinely true insight about adaptation in nature?

JG: It's hard to say what would have happened if things had happened differently. A similar question is whether the Judaeo-Christian tradition was an essential ingredient in the rise of the mechanical world view and the science of mechanics. All that can be said empirically is that there was a predisposition in British thought in the nineteenth century, but the fact that someone was predisposed to see the world in a certain way does not detract in the least from the genuineness of his insight into nature. To me, the more curious fact is that Darwin chose to express his insight through the metaphor 'natural selection', which is a highly anthropomorphic idea. In reality, there is no selection of any kind; selection necessarily implies an intelligent choice. So why did Darwin use this metaphor? He said that he wanted to mark the analogy to the methods of plant and animal breeders, but I think his evolutionary deism must also be considered. Natural selection to Darwin was a set of processes ordained by God to bring about adaptation and improvement. And soon the metaphor took on a life of its own.

JM: Wasn't it very difficult for Darwin *not* to look at living things as purposefully contrived – naturally selected in the anthropomorphic sense? Why shouldn't his 'integrity' have consisted in his choice of the metaphor to describe what he perceived?

JG: No, I would regard that as extra-scientific. The intellectual integrity appears when, having got hold of natural selection – after all, Patrick Matthew came up with the idea a few years earlier –

Darwin exercised the imagination and the firmness of purpose to think it out, to test it, to explore all its ramifications, even though he realized the tremendous consequences for the whole structure of Western thought. And the curious thing about a genuine scientific insight like this is that, not only for the discoverer but for his successors, all kinds of new interpretations can grow up around it. If natural selection did not have some actual connection with nature, rather than just social reality, then it would not have led to further scientific developments.

JM: Is this what you mean by a 'genuine scientific insight': that it is no longer in touch with ideology or world view, but transcends the conditions of its origin?

JG: I think what you say is true of Darwin. The developing core of the theory of natural selection has been applied in many fields and tested in various ways by scientists. Like Newton's laws of motion, the theory has been modified. Newton's laws do not apply to the extreme macroscopic or the extreme microscopic worlds, and Darwin's theory has had to be modified to take account of discoveries in genetics. Nevertheless, Darwin, like Newton, got hold of something that is true about nature.

JM: And this truth no longer entails a world view or has ideological implications?

JG: Newtonian mechanics doesn't any longer. In Newton's day, a lot was built around it, but the modern physicist . . .

JM: That's rather odd to hear from someone who has always pointed up the Newtonian view of nature as a law-bound system of matter in motion – a metaphysical world view if ever there was one. Yet Newton's particular metaphysics – his ideas of absolute space and time, for example – have not been found adequate.

JG: Right. The dominant world view has changed enormously since Newton. But force equals mass times acceleration. That's as true today as it was in the eighteenth century.

JM: Depending on what one means by mass.

JG: Yes. And, as I said, at the extreme macroscopic level and the extreme microscopic level Newton's laws of motion have to be modified. But in the ordinary world they hold. They are not absolute truths, only part of the developing body of science.

JM: Let me ask you another question about the history of evolutionary thought. How far are you willing to press your assumption that predisposing social and intellectual conditions made possible the discovery of scientific truths? You've made that assumption in the case of natural selection. Do you think it is generally helpful to make?

JG: I would understand the rise of the mechanical world view in

terms of a fusing of the atomic idea, the Judaeo-Christian tradition, and Pythagorean-Platonic concepts. It was this world view, with or without a Creator-God, that informed numerous attempts to explain the natural development of life. In the nineteenth century, German *Naturphilosophie*, with contrasting antecedents, also had an important bearing on the pursuit of natural history.

JM: Would you be prepared to look as readily for the predisposing social and intellectual conditions under which the neo-Darwinian synthesis of the twentieth century emerged?

JG: There I have difficulties. Darwin and the others who conceived the theory of natural selection in the first place were all British; they shared in the British intellectual tradition, the British competitive ethos, and so on. But those who formulated the modern synthesis were not only Britons such as Julian Huxley and J.B.S. Haldane, but Theodosius Dobzhansky from Russia, George Gaylord Simpson and G. Ledyard Stebbins in the United States, and Bernhard Rensch in Germany. I don't know of any common social or intellectual tradition in which all these men can be embedded.

JM: But the point is, you wouldn't look on the search for common predisposing social and intellectual conditions as an illegitimate enterprise?

JG: No, on the contrary, I think it would be as challenging a task as explaining why only the British came up with natural selection a century earlier. I am struck, for instance, that French thought in the 1830s and 1840s was obsessed with the problem of social order. Solving this problem was Auguste Comte's *raison d'être*. Now it seems inconceivable to me that anyone obsessed in that way should hit on the idea of natural selection. Maybe it's possible, but the French did not do so as a matter of fact. And it seems equally far-fetched to me that German *Naturphilosophie*, with its doctrine that the whole of reality is a manifestation of Idea with a capital 'I', should have yielded a theory similar to Darwin's.

JM: Anyone who has perused your works must realize that you have argued for the embeddedness of evolutionary ideas in wider cultural, or at least intellectual, contexts for a very long time – certainly since the publication in 1957 of what was in many respects your keynote essay, 'Objectives and Methods in Intellectual History'. Were you at first conscious of maintaining unfashionable views on the subject, particularly in the face of claims by a resurgent neo-Darwinism to a detached scientific status?

JG: Not at all. My views on intellectual history were developed without reference to biology. When I was a graduate student at Harvard in 1947, I did audit a course on evolution taught by Alfred

Romer. We read Ernst Mayr's *Systematics and the Origin of Species*, Simpson's *Tempo and Mode in Evolution*, and Dobzhansky's *Genetics and the Origin of Species*. So I was not unaware of the modern synthesis, although I do not recall it's being referred to as such. But when I thought about intellectual history and later wrote the 1957 essay, my ideas derived from earlier work at Harvard and from a background of general reading. The essay was basically an exposition of views that I had adopted in the course of preparing my doctoral dissertation.

JM: Nevertheless, according to your views, many of the ideas considered by your contemporaries to be purely scientific were in fact historically indebted to that *bête noire*, metaphysics. After the appearance of your 1957 essay, followed by *The Death of Adam* and *Darwin and the Modern World View*, did you ever face opposition from scientists?

JG: On the contrary – though my contacts with scientists were then few and far between. I submitted the draft chapters of *The Death of Adam* to a series of specialists to make sure I had not written scientific nonsense. Bentley Glass, the geneticist from Johns Hopkins, gave the book quite a favourable review. In 1959, I was invited to present a paper on religion and science at the Darwin centennial celebrations sponsored by the American Philosophical Society in Philadelphia. It was there that I first met Dobzhansky. We were at a reception in Philosophical Hall, before the papers were delivered. I said, 'Professor Dobzhansky, I'm going to take a few pot shots at you and Julian Huxley for some of your metaphorical language.' Dobzhansky replied, 'Pray sir, do not bracket me with Julian Huxley: he is an atheist, I am a Christian.' We talked a little further and I agreed to leave him out of the paper. Afterwards Dobzhansky came up and was very complimentary about it. Stebbins also spoke to me briefly. I had referred to 'ultimate reality' in the paper and he objected to the adjective 'ultimate'. 'There's only reality', he said. So I encountered no hostility to my views from the scientific community.

JM: Have your views on the intellectual 'impurity' of the natural sciences – you yourself use this metaphor occasionally, so I'll use it too – been modified in the past thirty years, and if so how?

JG: I'm not aware of any great change in my views, though I must say that I am more convinced than ever that evolutionary biology is deeply enmeshed in telling figures of speech. And I have also become somewhat depressed at the inveterate tendency of evolutionary biologists to draw all kinds of religious, social and moral inferences from what I would regard as the scientific basis of evolution by natural selection. Getting 'sermons from stones', as people say.

JM: But you don't believe the stones *contain* the sermons, do you? That was the upshot of our discussion of natural selection. So how can sermons be got out of them?

JG: You bring the sermons *to* the stones. You find in nature what you expect or want to find. If you are a devout Christian and believe that nature is the work of God, it is not surprising that in studying nature you find evidence of design and providence. If, like Julian Huxley, you approach nature with a totally different set of preconceptions, then you find something else.

JM: We are talking in figures, aren't we? The 'stones' are the theories from which evolutionary biologists draw their precepts. I was questioning whether you might believe, after all, that natural selection has some inherent sermonic value.

JG: I don't think the 'stones' are theories. But the basic idea of natural selection – if there is random variation and population pressure, and consequently differential survival and differential reproduction, then the character of populations will change – does seem to me almost common sense. Who can quarrel with it? I can't see any sermons in it either.

JM: In *Darwin and the Modern World View*, you say that 'ideas and ideals can be social forces in their own right, ... they can be something more than expressions of class interest or libidinal drives'. Would you still maintain this view on the grounds you did thirty years ago?

JG: Very much so. I still believe that in some sense human beings transcend nature. If ideas are only manifestations of class interest or libidinal drives, then the whole intellectual enterprise is reduced to absurdity. Freud's theory, Marx's theory, Darwin's theory – the notion that any of these could be true goes out the window. All are merely manifestations of something essentially non-ideational, and I certainly do not believe that. There is a life of the mind, and it is very real and very important.

JM: Although you still hold, don't you, that ideas may owe a great deal to the non-intellectual conditions that authorized them?

JG: How can a non-intellectual thing authorize an idea? I don't understand. Ideas are real but non-corporeal.

JM: Well, it seems to me that you have done a good job explaining why a certain idea, natural selection, occurred to particular people at a particular place and time. But if ideas are really non-corporeal, then place and time could be irrelevant to their appearance. Natural selection could have occurred to anyone, anywhere, like a bolt from the blue.

JG: I don't think so. Yes, Darwin was an Englishman, but natural

history also had to be in a coherent state of readiness for his theory to be conceived. Before you can talk about the origin of species you have to know what a species is and you have to develop methods of classification. The work in natural history accomplished on the basis of a static view of nature was an essential prerequisite for the emergence of Darwin's theory. The circumstances we talked about earlier were not a sufficient cause.

JM: The coherent state of natural history in Darwin's time was institutional and concrete as well as intellectual and abstract.

JG: That's right. But when my students tell me that the French Revolution brought about tremendous changes in society and politics, hence Lamarck's theory of evolution and Erasmus Darwin's were the reflex of these changes – well, that is all very nice, but how do you go about establishing it?

JM: I'm not sure that many of the younger scholars represented in this book would want to talk about ideas being a 'reflex' of changing social conditions. But what I and others like me would want to maintain is, I think, that the conditions under which ideas appear, flourish and become dominant or recede are not purely, or even predominantly, intellectual; there are crucial social, economic and political conditions as well. Tracing the pathways from society – from the concrete power relations of human beings – to the dominant and subdominant ideas in that society may appear to be more difficult for the historian than trading in pure ideas alone, but many of us would regard it as a worthwhile enterprise. Viewing scientific ideas as embedded in social relationships, in particular economic and political contexts, seems to be more faithful to the texture of history as it was actually lived than dealing with the same ideas as free-floating entities that may or may not in some transhistorical sense be 'true'.

JG: Fine. I would agree as long as you do not neglect the ideas themselves. The notion of the internal development of scientific ideas still seems to me a very sound one. If you want to understand Newton's ideas about mathematics, the answer is not to study the social conditions in England in his time, but to examine Newton's ideas in relation to what Descartes had done, what Apollonius had done, and so on. There is an internal evolution of ideas that both influences and is influenced by other things not so internal. There is a history of thoughts. I regard the history of science as a broad enterprise that needs people approaching it from many different angles.

JM: Perhaps on this note, John, we can turn from the more rarified form of intellectual history to the personal side of your achievements. I'd like to find out what it was about your upbringing and

education that enabled you to see and defend the cultural conditioning of evolutionary ideas.

JG: Well, let's start at the beginning. I grew up in Vermillion, South Dakota. We moved there in 1919 when I was two years old. My father taught French at the state university. He was not a highly intellectual person. He was a good French teacher and a very fine man, but not theoretically inclined at all, so I had no close intellectual relationship with him. My mother was a highly educated woman, a Barnard graduate, with strong views about lots of things, but her mind did not run to the subjects I eventually became interested in. When I went off to graduate school in history at Harvard her hope was that I would do a dissertation on one of those fine old New England towns like Wethersfield. She never really had any feeling for intellectual history or philosophy. I went to high school in Vermillion – I enjoyed it very much, particularly debating and singing. And I had some good courses in English literature, memorized a good deal of poetry, wrote some editorials for the high school newspaper. Then in 1934, while still living at home, I went on to the University of South Dakota, which had about eight hundred students. There again I enjoyed debating very much, working up a case. The main intellectual stimulus, apart from debating, came from a couple of courses in philosophy – one in the history of philosophy, the other in ethics – where we read and discussed Plato's *Republic*. Also, there was a little group that met in one of the churches for weekly discussions. It included a philosophy professor and the former dean of the engineering school – a brother of Carl Akeley, the African explorer – a tremendously energetic man, full of ideas. One of his prize students was Ernest O. Lawrence, who invented the cyclotron.

JM: Did the group meet at the church you attended regularly?

JG: No, the group met in the Baptist church at that time. I went to the Congregational church, although there was nothing in my religious upbringing to predispose me strongly one way or the other. The Congregational church in Vermillion was rather liberal and not at all theological. Very little in the way of Bible study. In Sunday school we had little readers that would give us cases of John and Betty doing things and would ask us whether these were right or wrong. Moral stories for discussion. I sang in the choir. I can still sing a lot of those hymns and enjoy them. And I was always a sermon taster. I always listened to the sermon. I found that the next thing to a really good sermon to make me think was a really bad sermon, and I heard quite a few really bad sermons.

JM: What became of the discussion group?

JG: The discussion group went on all the time I was at the