

Three Little Dinosaurs or A Sociologist's Nightmare

Bruno Latour
in *Fundamenta Scientiae*, vol 1, pp.79-85, 1980

A fable to be read aloud on the tomb of the unknown relativist

There were once three little dinosaurs. The first was called Realsaurus, the second Scientosaurus, and the third responded to the sweet name of Popsaurus. None of them knew where he came from, and this is why a sociologist was hired to untangle the genetic skein of their incestuous relations¹. From the beginning his investigation ran into problems of method. First he tried to establish the great beasts chronology : the first dinosaur had gambolled about some 150 million years before ; the second had come into being sometime in the mid-19th century in England ; as for the third, he had apparently been in existence throughout eternity and one found traces of him in science fiction novels as often as on tours of Disneyland. Which dinosaur had given birth to the others ?

Our sociologist's first and very logical idea was to go find Realsaurus in order to question him about his birth and sexual habits. However, he quickly realized that in the

¹This work was supported by a scholarship from the National Science Foundation n° 18 676 and by a special subsidy from the Syndicat des travailleurs relativistes de la preuve n° AC-234 567.

absence of a truly effective time machine, it would be hazardous to return to the Mesozoic Era. Since the older brother did not seem to be available, our sociologist therefore decided to ask the same questions of the younger Scientosaurus.

He shut himself up in the library of the Jardin des Plantes to learn how Scientosaurus had been slowly fashioned after several dozen years of disputes among Buckland, Cuvier, Mantell, Owens, and the two businessmen-paleontologists Marsh and Cope. Scattered elements in the offices and collections that had up to then been designated by the terms "giant's arm" or "monstrous tools," or "dragon prints" were gradually attached together and metamorphosed so as to compose the rough sketch of a new dinosaur skeleton.

When our sociologist had read an enormous number of books, he was very pleased to see that he could expatiate at length about Realsaurus, and even more surprised to see that he was repeating exactly the same things in relation to Realsaurus and Scientosaurus. He saw fit to write a preliminary report to the Foundation that was supporting him in this adventure, a report in which he declared that the two dinosaurs were in fact homozygous twins.

This report, however, did not satisfy Scientosaurus. Could he be the brother of Realsaurus, born millions of years before him? Of course not, since he, Scientosaurus, was Realsaurus's son! Shaken by this contradiction between his report and the remonstrances of Scientosaurus, the sociologist went off to find the third little dinosaur, Popsaurus, in order to ask his opinion. The latter hastened to confirm the point of view of the first animal by modestly stating that he was himself the grandson of Realsaurus, and since he was also the son of Scientosaurus, the latter, quite logically, had to be the son of his grandfather. Our hero, who, being a good sociologist, remained open to all opinions, wrote a second preliminary report in which he explained that the genetic relations in this family were as follows: Realsaurus had given birth to Scientosaurus who himself had given birth to Popsaurus. And since our man had read Plato, he added a small commentary demonstrating that, since the second dinosaur was the shadow of the first, the third projected only the shadow of a shadow.

Our sociologist confusedly sensed, nevertheless, that no definitive proof would be produced as long as he could not interview Realsaurus, the supposed patriarch, directly. Before his funds dried up, he made an attempt to meet him at a conference of paleontologists which he was attending. But he did not have time to plug in his tape recorder before a shock wave ran through the audience: the researchers were standing up and throwing their bundles of slides at one another's heads. During three days of interminable discussion, the form of Scientosaurus had undergone a profound change. Before the meeting, he had been a cold-blooded lout, lazily slouching through in the swamps; by the end of the conference, he had warm blood, found himself very carefully stream-lined, and ran about like a fine fellow trying out all sorts of new foods. Great excitement had reigned in the conference hall during the whole of this mini-revolution.

Our sociologist, extremely intrigued, questioned one of the paleontologists: "What happened to cause such an uproar? Did I miss the arrival of Realsaurus? I who wanted so much to interview him!" But his informant laughed in his face: "Don't be an idiot! You know very well Realsaurus can't come to our meetings, he's much too heavy; what's more, he doesn't really exist, he's just an interpretation..." The investigator could not believe his ears: was he talking to the same scientist who, two years before, had

demonstrated to him without any possible controversy that Scientosaurus was the spit and image of his father, Realsaurus ? Shaken in his convictions, the sociologist kept a close watch on what was published in the months following the conference. Every time Scientosaurus changed, Realsaurus dogged his footsteps. If Scientosaurus stood up on his hind feet, Realsaurus also trotted around on his back legs. Did Scientosaurus come to have horns on his thumbs instead of on his nose² ? No problem, Realsaurus's horn emigrated peacefully from his nasal appendage to his toes. The father was aping the son ! This servility was too paradoxical for our sociologist. Just after the conference, our hero plunged into the writing of a third preliminary report which triumphantly revealed how Sientosaurus had become the father of Realsaurus, and he incidentally pointed out that poor Plato was confused about genetics as well as about optics : it was the real dinosaur that was the shadow of the scientific dinosaur.

When this report appeared, it was not greeted with the enthusiasm our friend expected. A sharp review in a journal of paleontology spoke of "relativism" and the stupid point of view of certain sociologists who insisted on seeing social factors where there weren't any. In cauda venenum, the article ended with a splendid description of Realsaurus "as he is known today and not as someone foolishly imagined him to be in an obscure and already distant past."

Our hero rushed to the university, demanding an explanation : "What is happening ? Are you making fun of me ? How can you talk sensibly about Realsaurus ?" He was shown that in the meantime the controversy had subsided and that general interest had turned elsewhere (on a new taxonomic argumentation concerning the filiation of birds and dinosaurs). In any case, according to his informants, no one endowed with normal mental faculties could challenge Realsaurus's new image.

"Wait, which dinosaur are you talking about ?" asked the sociologist.

"Which ? Why, the only one, the true dinosaur that lived some 150 millions years ago. He was a warm-blooded animal with..."

"But you told me three months ago that nothing was less sure..."

"Ah ! Perhaps, but now Peabody has proved it !"

"But you told me Realsaurus was just an interpretation !" our hero practically shouted, forgetting a sociologist's obligation to maintain his reserve.

"I don't recall ever saying something so stupid," retorted the paleontologist, stung to the quick.

In the months that followed, to the great stupefaction of our investigator, the scientists seemed to have quite forgotten the mini-revolution they themselves had brought about. No one spoke of interpretation anymore. Scientosaurus was once again the shadow of Realsaurus, his spit and image.

Our friend felt just as discouraged as Winston Smith altering the only copy of a particular number of *The Times* in Orwell's novel : "Day by day and almost minute by minute the past was brought up to date. (...) All history was a palimpsest, scraped clean and reinscribed exactly as often as was necessary. (...) Books, also were recalled and

²All details are taken from the following articles and books : E. Buffetaut [1978] ; E.H. Colbert [1962] ; S. J. Gould [1993], and above all Adrian Desmond's incomparable *The Hot-Blooded Dinosaurs* [1975].

rewritten again and again, and were invariably reissued without any admission that any alteration had been made." [Orwell, 1980].

"What ?" our unfortunate investigator said to himself. "Would the researchers lie as brashly as the totalitarian proponents of Newspeak ? Would the courageous zealots of scientific truth join the worst obscurantists ?"

This time, the sociologist was so troubled that he did not write any report, not even a preliminary one. Just like Winston Smith, he mumbled to himself: "The only certainty is in my own mind, and I cannot be certain any other human being shares my memory." [\$\$\$Page ref.?] More fortunate than Smith, nevertheless, he obtained an extension of his subsidy, and without saying anything about it to anyone, perfected a much more aggressive strategy for deciding upon the genetic relations among those three blasted dinosaurs.

Armed with a tape recorder, he lay in wait for the appearance of a new debate on the question, hoping to discover the clues that would show which dinosaur had preceded the other. Would Realsaurus give birth to Scientosaurus, or would the reverse turn out to be true ? He had only to wait a few months, before an eminent scholar by the name of Krulick torpedoed entire sections of the ecology of the dinosaur by projecting a slide : the prey-predator relation was thereby completely modified and the number of carnivores diminished by three-quarters in a single motion. The sociologist noticed that, this time at least, Scientosaurus gave birth, without any possible doubt, to Realsaurus ; as for the latter, he had discreetly vanished into nature, waiting for the controversy over him to die down. The sociologist dashed to the stage, rushed to the microphone, and did not rest until Krulick testified and acknowledged in writing that this aspect of Realsaurus, at least, was only "an interpretation." He had been quite right to act in such an audacious way because less than ten minutes later, the audience began to be convinced by Krulick's demonstrations. Realsaurus once again appeared to be the only reason they came to agree about him. The past was going to be able to be rewritten. Caught in the wrong, Krulick cast an unhappy look at the paper he had signed. Our sociologist went and sat down again with a machiavellian smile, waiting for his next opportunity.

After several years of this cruel exercise, our observer was able to draw up a complete chronology : on a card, he brought forward the dates at which "aspects" of Scientosaurus and Realsaurus had been refashioned. He thus confirmed his very first discovery : nothing could be said of one that could not be applied to the other. Next he tried, using little arrows, to draw up a genealogical tree showing which had given birth to which. The result roughly resembled this :

Realsaurus n° 1----->	Scientosaurus n° 1 (January 1985)
Realsaurus n° 1	Scientosaurus n° 1 (Feb 1985 - May 1986)
Realsaurus n° 2	Scientosaurus n° 2 (June 1986)
Realsaurus n° 2	Scientosaurus n° 2 (July 1986 - Apr 1988)
Realsaurus n° 3	Scientosaurus n° 3 (May - July 1988)
Realsaurus n° 3	Scientosaurus n° 3 (Aug 1988 - present)

---- > **Direction of genetic descent**

FIGURE 9.1.

To his great surprise, he discovered that every time the question came up for discussion again (January 1985, June 1986, and May-July 1988), the arrow went from Scientosaurus to Realsaurus, but in periods of dead calm — which was most of the time — the arrow went in the opposite direction ! However, Scientosaurus never influenced or caused changes in Realsaurus. Scientosaurus and Realsaurus simply became alternately father and son, depending on the years ! "This is why I was able to write so many different reports", our cunning man said to himself. "My dear friends the scientists were much more relativistic than I in January 1985, June 1986, and May-July 1988, but in the intervals they remained incorrigible realists. What is more, those dinosaurs are veritable patchworks composed of a great number of fluctuating pieces attached to others that don't move too much. The problem is impossible to resolve if one considers the dinosaur brothers as complete and homogeneous-beings."

To sum up his report, the fluctuating and warm aspects of the dinosaurs seemed to be caused by Scientosaurus, while the stable and cold parts seemed in fact caused by Realsaurus, but in these periods of calm, it was difficult to decide, since they totally resembled one another in the two beasts, without one's even being able to discern the slight difference typical of the agitated periods. A final report was written that explained how, depending on the time of the year, the intensity of the debate, and the portion of the animal being considered, the genetic relations between Scientosaurus and Realsaurus turned out to be diametrically opposed.

However, the nightmare was not over. Krulick, the scholar who had imprudently signed his retraction, asked an epistemologist to help him extricate himself from the situation, as ridiculous as it was embarrassing, bringing him along to the next conference. But our sociologist was henceforth strong enough to resist the philosopher's attacks. He had his little diagram. Every time the epistemologist spoke of "true reality," of "the thing in itself," of "the intransitive object of knowledge," he simply asked some questions : "Which detail are you talking about ? Is it fluctuating or stable ? Warm or cold ? Hard or soft ? At what moment are you considering it ? In January 1985 or in May 1986 ? Where did you get hold of it ? In a book or at a conference, at a laboratory, during a dig, or in a [\$\$\$BD] ?"

The epistemologist brushed aside these "vulgar" questions and did not even want to consider the diagram whose "simple empirical aspect" was sufficient proof that the sociologist could not accede to questions of the "transcendental foundation" of science. The philosopher wanted to withdraw from the whole debate, which threatened to go sour fairly soon, by inventing a new dinosaur, Realrealsaurus, which he therefore claimed to be Popsaurus's supposed great-grandfather ! When Krulick asked him what could be said about this Methuselah, the philosopher answered that he was a dinosaur, that he had lived an extremely long time ago, and that he was the source of all the others. The sociologist then pointed out politely that the very word dinosaur was an invention of Owen's and dated from 1842 ; such a piece of information could clearly derive only from Scientosaurus ; as for the simple possibility that he had lived millions of years before, it had not been conceived until the 19th century in England, since before that date, creation was no more than six thousand years old.

As a consequence, none of these details could have emerged fully equipped from the patriarch whom the philosopher had in mind. By chance the bell rang, interrupting the debate. Krulick and cur hero sprang out of the room in order to rush to a new session from which they each expected a great deal, though for different reasons, leaving the philosopher alone in the little office, his arm raised, silently calling attention to an invisible and unknown point that, according to him, had to be the cause of all the dinosaurs genealogies, Realsaurus, and which in itself, because of its supreme emptiness, he called Theosaurus.

Now, what was occurring in the lecture hall was a typical example of what the sociologist had had occasion to observe. New fossil prints had been found in Wyoming and brought to the conference by Bonemarrow, who showed no less than two hundred slides. Bonemarrow insisted that the dinosaurs walked with their feet planted well under them and not at all like lizards. "The prints show it undeniably," he said. There were so many slides and he was so persuasive that his colleagues forgot the denigrations they had applied to such lucubrations until then. Before the session, one could hear remarks like: "You know, there's this guy — what's his name ? Bonemarrow — who is going around announcing that dinosaurs walked upright, but he doesn't have a single proof !" By the end of it, they were declaring with one voice that Bonemarrow had "proved" that dinosaurs did not walk like lizards.

To the great surprise of the outside observers whom our sociologist had invited as witnesses, the researchers had not finished uttering these words when the very remark they had just criticized split into two parts : the first came from the lips of Bonemarrow to become a "representation of" something, a true remark, made up only of words and belonging only to human chatter ; while the other half went and glued itself onto Realsaurus, changing his way of walking, petrifying this new image, and soon becoming an element of external nature, a thing in itself. Our hero, now surfeited by the regular reproduction of this little miracle, waited for the next metamorphosis while glancing at his watch: in fact, a minute later, external reality became the cause of Bonemarrow's interpretation and the only thing that could explain his colleagues conviction !

Despite his particularly astute protocol, the sociologist was still as alone as poor Smith in being convinced by his own argumentation about the "constructed" nature of the dinosaurs. Each time a new reasoning concerning the dinosaurs of the past convinced the paleontologists, it was immediately "naturalized" by the same conjuring trick, and the taxidermy occurred so quickly that our sociologist never had time to summon the press in order to have a picture taken.

In a fresh attempt to convince his colleagues, our hero concentrated his efforts on the opposite phenomenon. Instead of studying the construction of a fact, he chose to study the deconstruction of an artefact. Before one of the conferences of the Société de paléontologie, Realsaurus was found to be endowed with a ridiculously small brain, and naturally his son, Scientosaur, had one that was no larger. Now, it happened that shortly after the symposium, both were found to have "just the proper size brain that one could expect to find in a large reptile." What had happened to their brains, so ridiulously small up to then ? During the conference, the smallness of Realsaurus's brain had gradually been transformed into an artefact, under the repeated assaults of Harry Jerrison. Whereas this proportion was part of the nature's evidence, it had first slipped from

Realsaurus to Scientosaurus (as though the ancestor no longer wished to assume the responsibility for a trait whose origin was becoming doubtful), then it had become a simple interpretation in the head of the paleontologists, only to be transformed into an error. Where were all the obvious proofs of a small brain — flat skull, brain [\$\$\$ cavity?] the size of a pea ? They had quite simply melted away into the air as completely as the electrons of a text written on a computer and erased by mistake. The celebrated smallness of dinosaurs' brains was only an artefact, an error of calculation, a myth, an opinion, less than nothing, a fiction. Realsaurus was as intelligent as he could be, and the scholars now scoffed at those who saw the dinosaurs bent "under the yoke of an artificially imposed stupidity".

Our sociologist friend declared triumphantly that without any possible doubt Jerrison's brilliance was certainly the only cause of what had transformed Realsaurus's brain and not the consequence of any change in the patriarch, who, without the courageous intervention of this researcher, could have remained for a hundred and seven years endowed with a grotesquely small brain. When he concluded that Jerrison was really Scientosaurus and that in the end it was he alone whose work was animating, from inside, the enormous model of Realsaurus, no one applauded. In fact, he was purely and simply expelled by a group of furious paleontologists and excommunicated from all future symposia. As in Ionesco's play, his friends the researchers had been half transmuted into dinosaurs, and the rattling of their jaws and their claws pursued him for months.

"Why didn't they believe me?" he asked himself, still trembling, "despite my irrefutable demonstration? Something must have escaped me." Suddenly he remembered the third dinosaur, which he had completely neglected until then, since the latter had modestly proclaimed himself the youngest child of the family. Our hero therefore decided to interview Popsaurus.

What a difference between the life of this lucky devil and that of his supposed ancestors ! Realsaurus remained invisible except during periods of calm and in the books of philosophy of science, where he crept about and ruminated in the company of his father Realrealsaurus. Scientosaurus led a hard life, confined within several saluare meters of the Museum of Natural History or the British Museum, manipulating (or manipulated by) slides, footprints, moulds, and calculations, existing only through fragile networks woven among scarcely more than a few hundred passionate and underpaid paleontologists. But as for Popsaurus, he was displayed everywhere, comfortably installed in animated cartoons, on milk bottles, in Jurassic Parks, in [\$\$\$Palais de la Découverte], in television ads, in science fiction novels, and populating the wondering minds of children or terrifying them through special effects. He could be made of wax, concrete, plastic, or papier mâché, in any shape or size at all. While Realsaurus remained deaf and idiotic, and Scientosaurus extremely circumspect, Popsaurus was unbelievably sociable, to the point of mingling with anyone or anything. Our sociologist often encountered him with cavemen, lions, and rockets ; he saw people drinking tea in a concrete reconstruction of his stomach and even saw him in the form of a pendant tickling a young lady's chest.

As he talked with him, our paleosociologist discovered an unexpected detail. Popsaurus claimed this time that he had not issued from Scientosaurus, but had come

"in a straight line" from Realsaurus. Disconcerted by this answer, the investigator tried to push on, and what he discovered was much stranger. Questioned about Realsaurus, most people described details belonging clearly to Popsaurus. If they knew of a trait identifying Realsaurus, they had noticed it at an amusement park or a fair, in a children's book, at best in a dictionary... It was as though Popsaurus was really the source of Realsaurus, and no one could find a trait belonging to the second that did not come from the first. This was true not only of illiterates, but also of the paleontologists. Back in 1853, the hall of the iguanodon had opened at Crystal Palace : the Iguanodons had a slight resemblance to the "scientific" iguanodons, but real iguanodons were largely inspired by their popular image³ !

Our poor sociologist could do no more, now, than recognize that all the characteristics of stability, solidity, permanence, and exteriority that were attributed to Realsaurus came in fact from Popsaurus, even if a few details of skeleton, behavior, or ecology were indeed furnished by Scientosaurus. There were two reasons for people's resistance to admitting his constructivist point of view : the first was the "natural" reversal of the genetic domination between Realsaurus and Scientosaurus while polemics were raging ; the second came from the surreptitious transformation of Popsaurus into Realsaurus in order to build up the "exterior reality" a little, since otherwise it would have been too evanescent.

Thinking he had untangled this little problem of genetics, he wanted at last to write the final report, but a sepulchral voice interrupted him: "What force gave birth to the three dinosaurs ?" He woke up suddenly, shaking off the last fog of his nightmare, and, after breakfast, settled down in his office to compile the statistics of the *Science Citation Index*, swearing, though a little too late, never to become involved with philosophy again.

³ See the surprising examples given in Martin J.S. Rudwick, [1992]

The Three Rs (3Rs) in relation to science are guiding principles for more ethical use of animals in testing. They were first described by W. M. S. Russell and R. L. Burch in 1959. The 3Rs are: Replacement: methods which avoid or replace the use of animals in research. Reduction: use of methods that enable researchers to obtain comparable levels of information from fewer animals, or to obtain more information from the same number of animals. Three Little Dinosaurs book. Read 31 reviews from the world's largest community for readers. With its sweet illustrations, appealing characters, and clever... Three Little Dinosaurs was a funny and an ingenious tale, unique to the world of children's literature. There has not been a story of its kind yet. With the turn of each page, you see a more vivid depiction of the young dinosaurs in water color. Three Little Dinosaurs or A Sociologist's Nightmare. Bruno Latour in *Fundamenta Scientiae*, vol 1, pp.79-85, 1980. A fable to be read aloud on the tomb of the unknown relativist. There were once three little dinosaurs. The first was called Realsaurus, the second Scientosaurus, and the third responded to the sweet name of Popsaurus. None of them knew where he came from, and this is why a sociologist was hired to untangle the genetic skein of their incestuous relations¹. From the beginning his investigation ran into problems of method. First he tried to establish the great beasts chronology : th Three Little Dinosaurs or A Sociologist's Nightmare Bruno Latour in *Fundamenta Scientiae*, vol 1, pp.79-85, 1980 A fable to be read aloud on the tomb of the unknown relativist There were once three little dinosaurs. The first was called Realsaurus, the second Scientosaurus, and the third responded to the sweet name of Popsaurus. None of them knew where he came from, and this is why a sociologist was hired to untangle the genetic skein of their incestuous relations¹. From the beginning his investigation ran into problems of method. First he tried to establish the great "The Last Dinosaurs" is a short funny story to teach that things can change, and that we must be remain flexible and adaptable. This tale belongs to our "Bedtime Stories" collection. When the work was done, all the dinosaurs carefully sharpened their claws and teeth, in readiness to terrorise the world once again. On leaving their home of thousands of years, everything was new to them, very different to what they had been used to inside the crater. However, for days, the dinosaurs continued on, resolute.