

# The PT Interview: Gregory S. Paul

## Part I

The following interview was conducted by Bob Morales

About a decade ago while vacationing, I went to one of my favorite places to visit; the Los Angeles County Natural History Museum. Stopping by the museum's gift shop, which I usually do after enjoying and photographing the beautiful displays of dinosaur skeletons and other fascinating exhibits, I noticed a book on dinosaurs which I had not seen before. The book was called *Predatory Dinosaurs of the World*. In this wonderful book were illustrations depicting dinosaurs as I had never seen them before. Being so used to seeing dinosaurs restored as tail-dragging, slow moving creatures, I was amazed and delighted at this revolutionary way of portraying dinosaurs as fast-moving, active and cunning animals. Suddenly, dinosaurs became infinitely more exciting and I was inspired for the first time to try my hand at sculpture. Gregory S. Paul's fine work and the art of a new generation of illustrators and sculptors like Mark Hallett and Stephen Czerkas, gave me the drive to create these wonderfully dynamic beasts in sculptural form. In 1996, I attended Dinofest in Tempe, Arizona where I finally met Gregory S. Paul. It was a thrill for me to speak with Mr. Paul, the gentleman who's work most

inspired me to embark on a career of dinosaur sculpting. From this brief encounter sprang several letters and phone calls between Greg Paul and I. They ultimately led him to ask if I would like to work with him and create a sculpture of his favorite dinosaur, *Brachiosaurus brancai*. It was a dream come true for me and a real honor to work with Gregory S. Paul. After more than a year of very helpful letters, sketches, scientific papers and phone calls received from Mr. Paul, the 1:35 scale sculpture is finally completed and has since been released commercially as a resin hobby kit. Greg Paul and I are now planning to create a family group of *Brachiosaurus* sculptures;

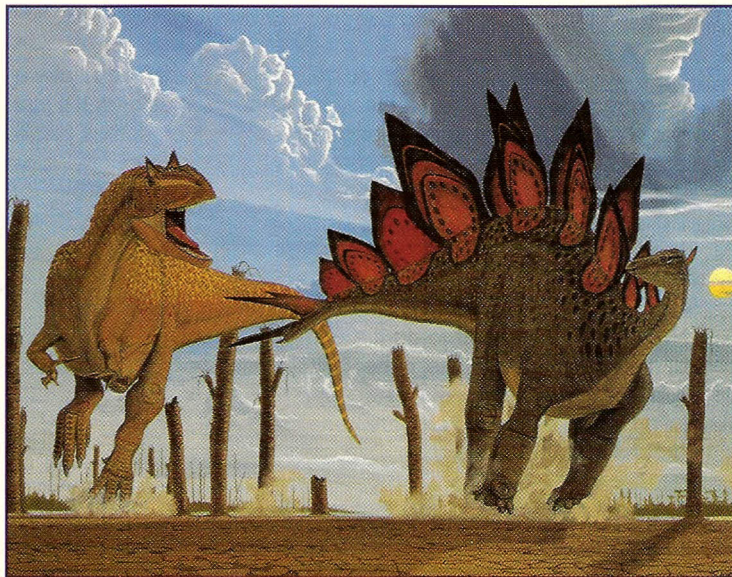


several adults and possibly juveniles, each to be released as a resin kit. On behalf of myself and the readers of *Prehistoric Times* around the world, I would like to extend sincere thanks to Gregory S. Paul for taking time out from his busy schedule to give the following interview, by phone from Baltimore, Maryland - Bob Morales

**PT:** Do you recall the very first dinosaur illustration you ever did?

**GP:** Not really. I was drawing before I can remember, and it was other things besides dinosaurs and so forth. I had a lot of other interests besides dinosaurs.

**PT:** Have you worked in other media, such as sculpture?



**GP:** No.

**PT:** Always drawings and paintings?

**GP:** Yeah, there are plenty of people doing sculptures, and I never had the time to do that kind of stuff. The only kind of sculptures I do are non-artistic, volumetric sculptures, to get a volume estimate in determining the possible weight of a dinosaur.

**PT:** There have been so many artists, both sculptors and artists who draw and paint, that have been influenced by your art. Do you find this flattering, or does it sometimes become a problem?

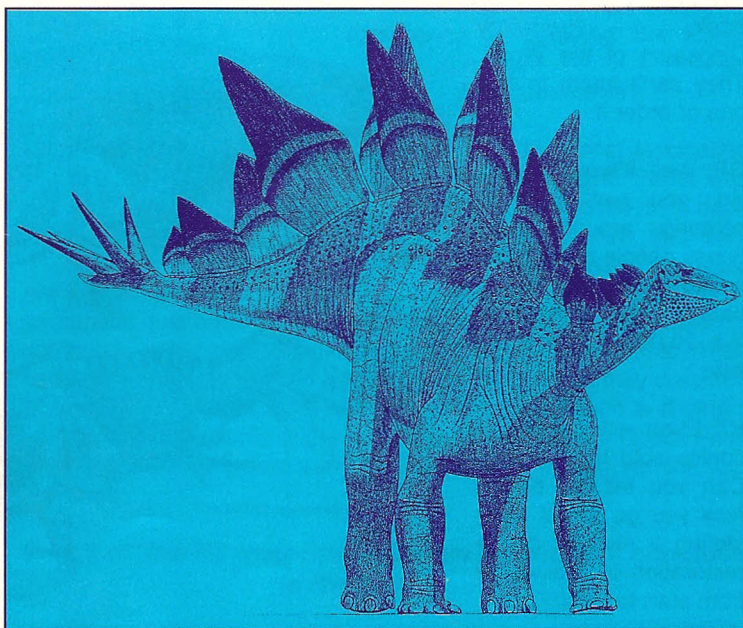
**GP:** It can be a problem.

**PT:** Because sometimes you feel you're being plagiarized?

**GP:** Yeah.

**PT:** For your paintings, what kind of paint do you use, and do you work on canvas?

**GP:** For color, I almost always do oil on canvas, using fairly standard type paints and a "medium" to give it some depth and gloss. also, I've been doing a little bit of colored pencil on coquille board.



**PT:** What kind of pencils do you use for your drawings?

**GP:** For black and white I use soft colored pencils; when you have a box of colored pencils, there's a black one in there; that kind. It's just a soft, black pencil. Something along those lines. Sometimes just a regular pencil, sometimes ink. I'll often use a ball-point pen. I gave up on technical pens because they jam up all the time.

**PT:** Have you ever done any murals, or ever considered doing murals?

**GP:** No. Well, I don't want to do it a lot, because I wouldn't have the patience to do it on a regular basis. But, if an opportunity comes up, then I'd do it. Hopefully one that's not too tall; I have a fear of heights.

**PT:** You had mentioned to me that you were going to have a one-man traveling art show? Can you tell us when and where, and can we obtain a schedule?

**GP:** No, and I'm not sure how it's going to happen. It may be tied in with Dinofest.

**PT:** Do you plan to write a book on herbivorous dinosaurs of the world?

**GP:** I hate that question because I'm asked about it ad nauseam. Not particularly. I might do something like that, someday, but I don't have any immediate plans. If I do, it'll probably be on prosauropods and sauropods.

**PT:** That sounds great! Several people have asked me about a dinosaur book you did which was published in Japan. Can you tell us a little about that?

**GP:** That's done by Gakken (Mook). I don't have additional details, but they were doing a series of things, on dinosaur stuff. They ran either a two or three-parter with my skeletal restorations, with text that they modified from *Dinosaurs, Past and Present*, and they put them both together in a book with the Japanese translation and the original English version. It's a fairly updated version showing my dinosaur restorations.

**PT:** Many readers have asked me where they can buy a copy of your book, Predatory Dinosaurs of the World. They can't seem to find one or order it.

**GP:** Well, it's out of print. So, you just have to scrounge around, and I guess people are holding on to them, so they're hard to get. Something like 20,000 copies were sold.

**PT:** Even with that many copies sold they're rare. Can you tell us, briefly, how you go about completing a skeletal or life restoration of a dinosaur from start to finish?

**GP:** It's hard to describe, because the situations are so variable. The research depends on what sort gets published. If there's a really good description with excellent illustrations or photographs of the skeleton, then you can use that. On the other extreme, a specimen may not yet be published and one has to do all the photographs, etc. It's extremely variable. So, once you've got the basic data, then you do illustrations of the bones, come up with a common size and you basically put it together on paper. I sometimes do multiple views, other times, side only. It's really hard to describe verbally. I see a lot of skeletal restorations, and they're visually not quite right. The bones are often

the wrong dimensions. Putting a skeleton together is not really that difficult in some ways.

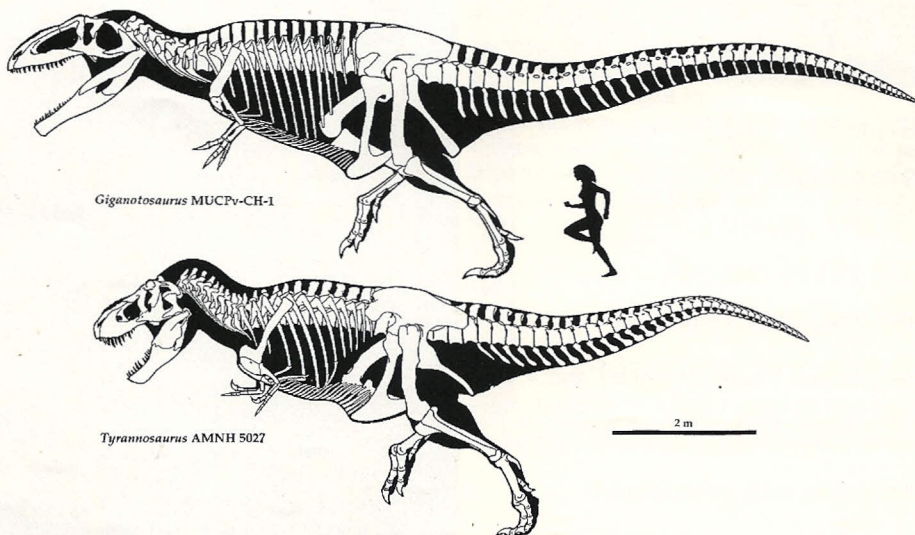
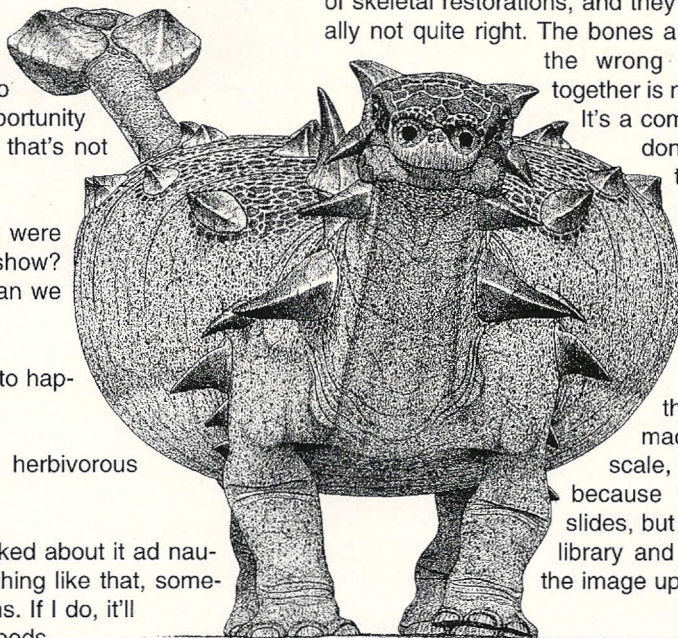
It's a common problem in that some people don't understand how to put a skeleton together, particularly a dinosaur skeleton, after all these years. One of the most important things about doing dinosaur skeletal illustrations is not artistic talent. Anybody can do it if they're just patient enough, and know how to measure and trace. The best thing that's happened are all the xerox machines, where you can change the scale, up or down. It made a big change, because I used to use photographs and slides, but now I take a bunch of prints to the library and use the Xerox machine to adjust the image up and down in size.

**PT:** Yes, I agree with you. I used a Xerox machine when adjusting the size of your drawings while we worked on the **Brachiosaurus** sculpture project. Your name is in the end credits of the movie, *Jurassic Park*. How were you involved in the film?

**GP:** I was involved in it initially. I did skeleton studies of **Tyrannosaurus** and **Deinonychus** which can be seen in one of the opening scenes. Inside the trailer at the beginning of the movie, they're up on the wall. they're just briefly there. You can barely see them in the background. But they were used in part to help design those things. In particular, Mike Trcic, who did the **Tyrannosaurus** sculpture, used the **Tyrannosaurus rex** skeleton stuff, and there's also muscle studies and life studies. unfortunately, (Steven) Spielberg and (Stan) Winston wanted **this** changed a **that** changed, so it's not as accurate as it should be.

**PT:** I heard about that. Stan Winston had a problem with the way the pubic bone protruded on the T-rex. Is there one dinosaur or group of dinosaurs that tend to be your favorite?

**GP:** My favorite dinosaur, in general, is **Brachiosaurus**, the African version. Theropods and sauropods...I love them all. I have not paid a lot of attention to ankylosaurs, because they're difficult



to do.

**PT:** I love your illustration of the armored dinosaur. **Euplocephalus**. I'd love to do a sculpture based on your drawing. The body of this dinosaur is so very wide, or as you referred to it in your Dino Report article, it's a "really, really, really FAT ankylosaur".

**GP:** There's a dispute over whether there are one or two different types there. Ken Carpenter had something to say about that at SVP (Society of Vertebrate Paleontology).

**PT:** Along the same line of questioning, is there a particular illustration of yours that is your favorite?

**GP:** I like my **Tyrannosaurus rex** pair painting. I also like my **Brachiosaurus** herd illustration, the one you used (for the **Brachiosaurus** sculpture/kit project).

**PT:** Do you plan on doing, or are you working on restorations of some of the latest dinosaur species discoveries such as **Suchomimus** or **Deltadromeus**?

**GP:** No. I'm doing some of the new feathered dinosaurs for my book. I might end up doing those other species for **Dinofest**.

**PT:** Where can fans purchase prints and posters of your work?

**GP:** Right now, they can't. I may do some in the future.

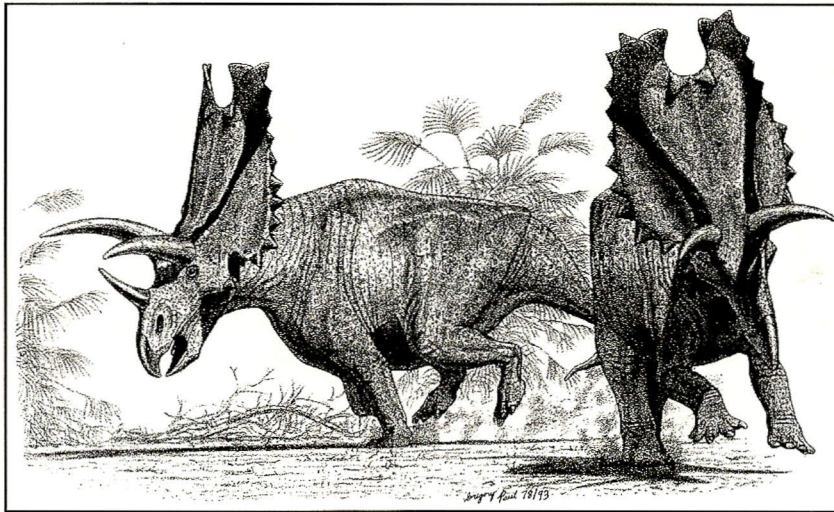
**PT:** That would be great. I'd like to own a few of those myself. Mike Fredericks has told me that he has received so many letters from readers telling him how much they admire your work and love to see your art in **Prehistoric Times**. How do you feel about this, what I would call "celebrity status" where dinosaur art is concerned?

**GP:** I adore it. I enjoy it. It's really nice.

**PT:** That's good to hear. Can you tell us, Greg, since **Predatory Dinosaurs of the World** came out, have your views changed as to how you think dinosaurs should be restored in art as far as their overall look?

**GP:** Not terribly. We know a lot more about skin patterns than we used to. IN **PDOTW** I show the (theropod) hands facing posteriorly, with the fingers curled up. I would rotate the hands (inward) 90 degrees. In my illustrations I show the palms facing backwards. There's some question as to whether that's true. They certainly could face directly inwards. They may not have been able to rotate the hand so that the palm faced directly backwards.

**PT:** I notice that a number of your paintings and drawings have two different dates of completion by your signature. I assume the latter



date is when you revised the illustration. Do you tend to generally revise the existing illustration or do you do it all over again?

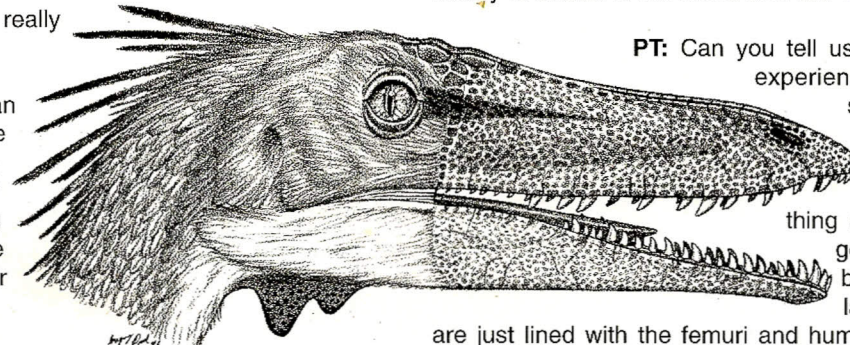
**GP:** I generally revise the existing drawings and paintings, if there are just minor changes to be made. On rare occasions it just gets too hopeless.

**PT:** What influences did paleontologist Bob Bakker have on your art and your career?

**GP:** When I was a kid, I had vague discomfort about people thinking dinosaurs were reptiles. Charles Knight restored dinosaurs as reptiles, particularly, with narrow thighs that would not nearly cover the entire pelvis. There was just sort of all this bone there and I always kind of wondered about that. Then back in the 70s I read an article in a magazine by Bob Bakker saying dinosaurs were warm-blooded and it really made sense. Basically, he was right. Nowadays virtually everyone agrees that dinosaurs had aerobic exercise capacities above those seen in reptiles. We're now arguing over the details.

**PT:** Some people have told me that they have a problem with your sometimes "lumping" together certain dinosaur species. For example, there is some confusion over whether **Velociraptor antirrhopus** is actually **Deinonychus antirrhopus**...

**GP:** New remains are tending to suggest that **Deinonychus** is distinct from **Velociraptor**; we shall see. Dinosaur taxonomy is screwy. **Iguanodon atherfieldensis** and **Iguanodon bernissartensis** are very dissimilar in many regards; The first being more hadrosaur-like in some details; are in one genus, while extremely similar **Corythosaurus** and **Lambeosaurus** are in distinct genera. There has always been a tendency for people to give a new name to the latest find. Some consolidation is probably a good idea. **Monoclonius**, **Centrosaurus**, **Styracosaurus**, and **Pachyrhinosaurus** differ mainly in details of the horns and frill. They could be in one genus.



**PT:** Can you tell us a bit about your first-hand experience in studying the Berlin specimen of **Brachiosaurus**?

**GP:** The most fascinating thing about my trip to Berlin was going down into the dark, dank basement. There's this very large room where the walls are just lined with the femuri and humeri and other long bones of sauropods; just bone after bone after bone. It looks like the result of somebody going out and shooting a few herds of elephants. They had about a thousand people working at that site, and they collected a vast amount of stuff. A lot of it has not been published and others are working on describing the collection. Going through Check Point Charlie at 6:00 AM before it officially opened was fun too. Ah, the cold war days.

**Part II of The PT Interview: Gregory S. Paul will conclude in the next issue**

# The PT Interview: Gregory S. Paul

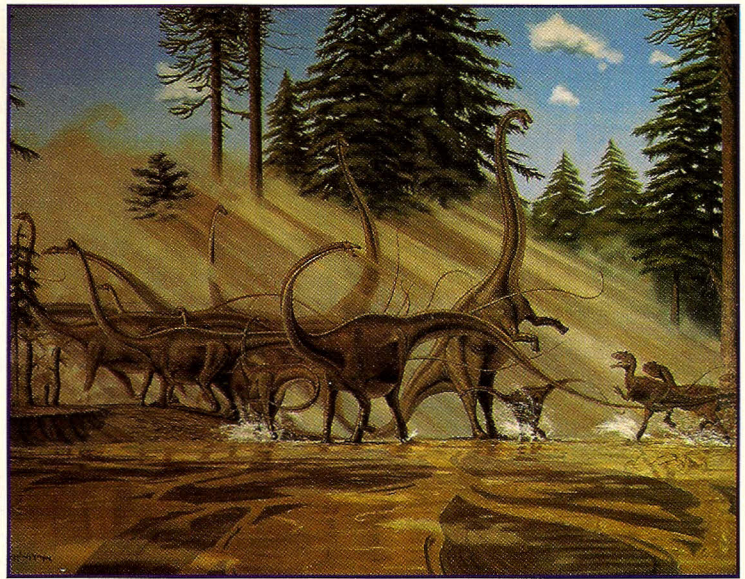
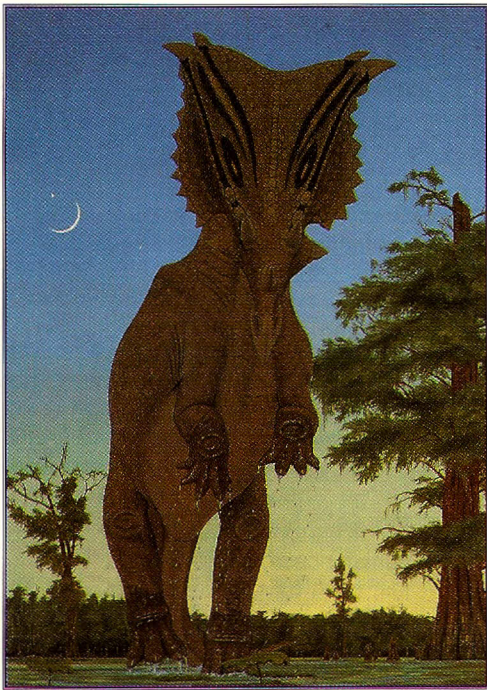
## Part II

The following interview was conducted by Bob Morales.  
Part I appeared last issue.

**PT:** In *Dinosaurs, Past and Present, Volume 2*, you state "Paleontological restoration is a discipline as valuable to the field as its other branches. At their best, when rendered with daring and boldness, restorations are also a form of art". With that in mind, today, dinosaur illustrators and sculptors are less inclined to restore the chubby, Godzilla-like, tail-dragging images we used to see as recently as the 70s and 80s. What would you say are some of the inaccuracies which still plague dinosaur art of today?

**GP:** One thing is the persistence of putting elephant skin on sauropods. Of course, they really had reptilian skin; scales. And the hypothesis being that they were really large, like elephants, they should have saggy, wrinkly skin like elephants. But, only elephants have that kind of skin. Rhinos are large, they have very different skin. Traces of sauropod skin are getting better. It had a rosetta pattern, a mosaic of scales. So, that's one thing that bothers me. Also people still often get the incorrect footfall patterns in their dinosaurs. They haven't studied the animal's motion enough in terms of the mechanics of how things work, which is pretty well understood, but which they probably haven't paid attention to. Another

problem that really bothers me very much is that people continue to put straight knees, that are too vertical in side view on many dinosaurs, such as theropods and hadrosaurs. The only dinosaurs that had very straight limbs, like elephants, were sauropods and stegosaurs. And also, although we've gotten away from the balloon dinosaurs of the past, pretty much, still on a lot of dinosaur restorations you really can't quite fit the skeleton inside the animal. They're just not paying enough attention to the actual skeleton and the key areas where the muscles are at. People also sometimes put sprawling forelimbs on ceratopsians. It's true that the hind limbs on chasmosaurs do bow out, but the lower limbs come back in, under the body. The new trackways falsify wide gauge ceratopsid gaits. But I should not complain too much about the state of post-modern dinosaur art. It's much better than it used to be.



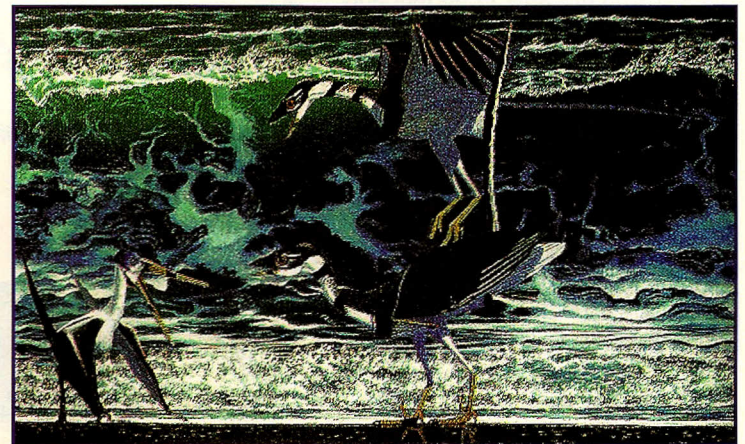
**PT:** There seems to be a kind of "competition" where new dinosaur skeleton discoveries are concerned, much like the feud between Cope and Marsh in the early 1900s. In your opinion, does there seem to be more of a close relationship, or network of paleontologists keeping each other up to date on new finds, or is the competition just as fierce between "dinosaur hunters"?

**GP:** Things are a lot more cooperative today than they used to be back then. That was unprecedented and it will probably never rise again. It's been pointed out that nowadays we have a poor review process. Scientists are tending to be nicer to each other than they used to be. There are still some personal issues between various paleontologists. There is a certain amount of pre-publication secrecy that goes on, sometimes justified, sometimes not. But it's not nearly as bad as it was back then.

**PT:** If you collect dinosaur memorabilia or figures, what kind of collection do you have?

**GP:** I'm not a really big collector of dinosaur material. I do have a lot of dinosaur items around, a lot of it of course is my own art. I have a few sculptures. My prize possession is one of those ancient **Tyrannosaurus rex** skeleton kits from the 1960s (ITC, re-issued by Glencoe in the 90s) which I re-did some years ago. I don't have a huge collection of dinosaur stuff. In fact, some of what I get (by mail), unsolicited, I sometimes give away. One thing, people should never send me original dinosaur art unsolicited. I don't mind receiving photographs or copies, but sometimes I get the actual original art of some sort.

**PT:** As we worked on the **Brachiosaurus brancai** kit project together



er, I found that the spines along the back look really cool. But, several dinosaur artists have called to ask me if there is any evidence that these spines existed on **Brachiosaurus** in particular. I will usually refer these artists to a paper written by Stephen Czerkas, "The History and Interpretation of Sauropod Skin Impressions". You and Stephen Czerkas feel that most, if not all sauropods, had some type of spines?

**GP:** The way you said it was not quite correct. It's a little like the old feathers issue, "Should we put feathers on small dinosaurs?". Basically, what some people say is, unless you have positive evidence for it you shouldn't put it on. But, that's not how it works. When you have no evidence, you can do what you like as long as it's within reason. In fact, it's always been reasonable to put spines on the backs of sauropods, because nobody knew. There was just no data either way. We now have data that's fairly convincing that at least some sauropods had spines and it's quite possible that other ones did too. The embryo skin discovered, that was just reported from South America shows a lack of spines, but that's an embryo, anyway, so that may not tell us what's going on with the adults. As far as I know, no adult has been found with skin along the dorsal series that shows they didn't have spines. Basically, it's okay to do what you want as long as it's not directly contradicted by the evidence. This is a basic problem, a failure of people to understand how science works, which is very common in paleontology. It goes back again to the issue of feathers, "if you don't have positive evidence for it you shouldn't do it". But, it's always reasonable to do what you like as long as it's plausible and doesn't violate the data.

**PT:** Who contacts you when it comes to new skeletal finds? How is the data collected to start the process of doing a restoration?

**GP:** That depends on the circumstances, again. If I hear of something, I might call up the person who is involved with the specimen that was just found, or is describing it and will allow me to use it. One tends to avoid doing that, in general people are interested in doing their own sketch, then publishing it. On the other hand, for example, **Eoraptor**, which hadn't been described yet, I just noticed the skeleton was on display at the Lost World dinosaur exhibit at the Maryland Science Center, so I thought I'd go ahead and take photographs of that and do a skeletal restoration. So, there's no real simple answer to that, you have to be flexible and deal with whatever the circumstances are. I also have an advantage in that I'm a practicing paleontologist and have better connections with a lot of the people who are able to do that sort of thing.

**PT:** What qualifies a person to be a paleontologist? Is there a degree that one must obtain?

**GP:** I'm not really qualified to talk about that much, in terms of going through the degree system. I never did that, myself. I'm independent, and I almost really avoided going through the university path.

**PT:** Have you gone on any dinosaur digs?

**GP:** A few. The most fun I had was in '78 when I went out with the Johns Hopkins group. We went to New Mexico, Utah, Wyoming, and Colorado. So it was a whole swatch of things. The extended work we did was at Como Bluff, where we excavated a substantial part of a very large sauropod, which I don't think has ever been completely identified. I've also been out with Ken Carpenter's crews a few times, in various areas, particularly Garden Park, Colorado. We did a lot of work there. I helped excavate one of the most complete stegososaurs, and particularly worked on the skull. I was looking for and was pleased to find a mosaic of armor; throat armor, a pouch beneath the lower jaws which I'm sure if we were not very careful would not have stayed intact. So that was cool.

**PT:** Can you give us a little background information on your naming of the brachiosaur, **Giraffatitan**?

**GP:** Well, first it was going to be **Giraffasaurus**, being that it was a giraffe-like form. But when I said that to somebody, they said "Oh, why are you going to put 'saurus' on yet another dinosaur name?" So, I decided to use titan, "Giant Giraffe-like form." So, that's how that came about. That sounds neat. The name is not a genus yet. I did it as a sub-genus, to distinguish it from the North American brachiosaur. They seem to differ. The evidence seems to be increasing that these are not exactly the same animals, so maybe **Giraffatitan** will become a genus. It's my favorite dinosaur, so if I was given a chance to name it, I wanted to make sure I gave it a good name.

**PT:** What specimen is this based on? The largest?

**GP:** **Giraffatitan**? It's based on the Berlin **Brachiosaurus** material, which is quite extensive.

**PT:** Dinosaur sculptor Charlie McGrady would like to know if **Carnotaurus** had three claws plus a thumb spike, or just three claws, as Bob Bakker claims.

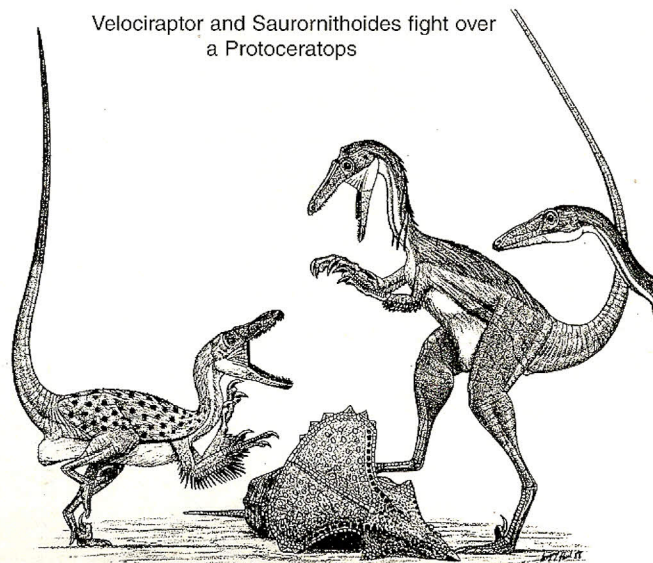
**GP:** I'm a bit vague on it. I think the hand's incomplete, and, from what I recall, it's a little too unknown to make a firm determination.

**PT:** I have not seen too many prehistoric mammals that you have done. Do you intend to do any of these?

**GP:** I've done a few and I'll do them if the opportunity or circumstances come up. But, I just don't have enough time to do more of the dinosaurs including those that you had mentioned. I have a time limitation factor, so I just don't have enough time to do more mammals. They're neat to do.

**PT:** Many dinosaur enthusiasts, including myself, find the bizarre creatures of the days before the dinosaurs to be just as fascinating. Animals like **Dimetrodon**, **Edaphosaurus**, **Saurosuchus**, etc. Will you be doing more of these?

**GP:** It would be the same



thing as with the mammals. they are interesting and I would like to do more, but I just haven't had a chance. I did **Saurosuchus** in PDOTW. It's actually quite an outdated illustration. But, again, it's the time factor. I'd love to do a lot more of those things.

**PT:** Can you tell us who your favorite dinosaur artists are?

**GP:** I'm not sure I'm willing to get into that, in a way, Because I don't want anyone's feelings to be hurt, if I fail to mention anyone's name. Besides, I'm not a really big dinosaur art fan. It sounds ironic, but I'm not the kind of person who collects it and always looks for the newest dinosaur illustrations. It used to be true, back when dinosaur illustrations were relatively rare. But, now they're so common it's not as interesting as it used to be.

There are a bunch of really good people out there that do dinosaurs, who's work I admire. One of my favorite, late dinosaur artists was the wildlife artist Bill Bony. He did a lot of, yet virtually unknown, small water colors of dinosaurs for Dinosaur National Monument back in the sixties. They're out-of-date now but superb art. Bony was killed trying to break up a fight in Alaska; paleoart can be rough.

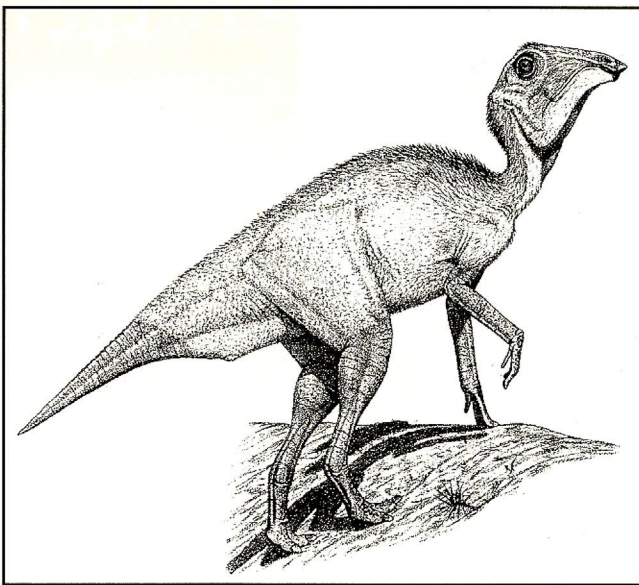
One of the important things about other dinosaur artists is that we are competing, in terms of we see what somebody else has done, and how good that is, and so we say "I have to do better than that". It's a good thing, it pushes us all to strive to do better art. it's very helpful.

**PT:** Where dinosaur finds are concerned, do you habitually search for new data on existing finds, or do you tend to move on to the newest findings first?

**GP:** In this kind of business, you're always looking out for new data on everything to incorporate into and update your research. The big thing right now is neck posture. In fact, that's a whole story in itself. **Brachiosaurus** was originally restored by Janensch with the neck going up about 45 degrees. When I did the restoration I gave it a vertical swan-like S-curve, partly because I felt that would reduce the load on the neck, the head, the most. but then other people started arguing "no, it's horizontal". The problem with that is that the neck base vertebrae are not well preserved in any specimen yet. I don't know how they articulated there. It doesn't really make sense for an animal with such high shoulders and an upward-pinned back to have a vertical neck. So, I've gone to doing the neck at about 45 degrees, like Janensch originally showed and also the way the nuchal ligaments suggest. There are definite withers, the very tall shoulder spines on brachiosaurs, that were well suited for anchoring very nuchal ligaments that would bring the neck up at a 45 degree angle, which is still a very erect posture. It's very high. But now there are European researchers who have done some stress calculations and they concluded that the neck had to be in a vertical S-like swan curve like I restored it back in the 80s. So, I know the neck wasn't horizontal. It was either 45 degrees, or the vertical S-curve. I'm not sure which, yet.

**PT:** Were either of your parents involved in paleontology or paleo illustration?

**GP:** Not even close. They encouraged my interest. One of the things we did was drive out west to visit relatives in Salt Lake, back in '62.



We stopped by Dinosaur National Monument.

**PT:** In my opinion, your contributions to Volume 2 of Dinosaurs, Past and Present is the final word in laying down rules to help dinosaur artists in achieving plausible dinosaur restorations. Your rigorous how-to guide would be extremely helpful in aiding even the most experienced of artists in providing basic information for accurately restoring dinosaur anatomy and action. Can Dinosaurs, Past and Present Volumes 1 and 2 still be purchased?

**GP:** That was put out by the Czerkases (Stephen and Sylvia). I think I recently saw it on sale at Border's Books, so maybe it is still

available.

(Bob Morales checked this out and found that only Volume 1 is available through Borders. Both volumes may be ordered through Barnes & Nobles.)

**PT:** These wonderful books were published in conjunction with the traveling art show of the same name. I was fortunate enough to be able to see this exhibit at the Los Angeles County Natural History Museum. What part did you and your art play in the exhibit?

**GP:** Well, that was the first major dinosaur art show, I guess, ever done in history. It was very, very well done by the Czerkases. Major artists like myself, Hallett, Gurche, Stout and so forth, we all had major parts in the art exhibit where we each had separate sections, old art, numbers of paintings involved, each helping out with our own representation. It was a very nicely done show.

**PT:** Did you travel with the exhibit?

**GP:** No. The only thing they did do was pay all our ways out to Los Angeles where the show started. It was great fun.

**PT:** What projects are you working on now?

**GP:** Currently I'm working on and finishing up Dinosaurs of the Air, which is on the origin of birds, and the possible loss of flight in some dinosaurs that were very closely related to birds. That could be out via Johns Hopkins Press sometime late next year. And I'm also starting to work on various Dinofest projects.

**Contest Winner Ralph W. Miller III of Menlo Park, Ca asks:**

Dinosaur science is, unfortunately, often seen as "just for kids", and gets short shrift in public education. Can you make a case for the relevance of understanding natural history? What lessons can we learn from studying the fossil record?

**GP:** The attitude that dinosaurs are for juveniles is itself juvenile. Dinosaur paleontology is a field of science like any other, no more or less important than other "nonessential" areas such as archaeology or deep space astronomy. Understanding the group of animals that dominated the air, is crucial for understanding Earth history. The extinction of dinosaurs is also important towards understanding extinction processes in the modern world. In the end there are all of those dinosaur skeletons eroding out of the ground. It would be silly to just ignore them.