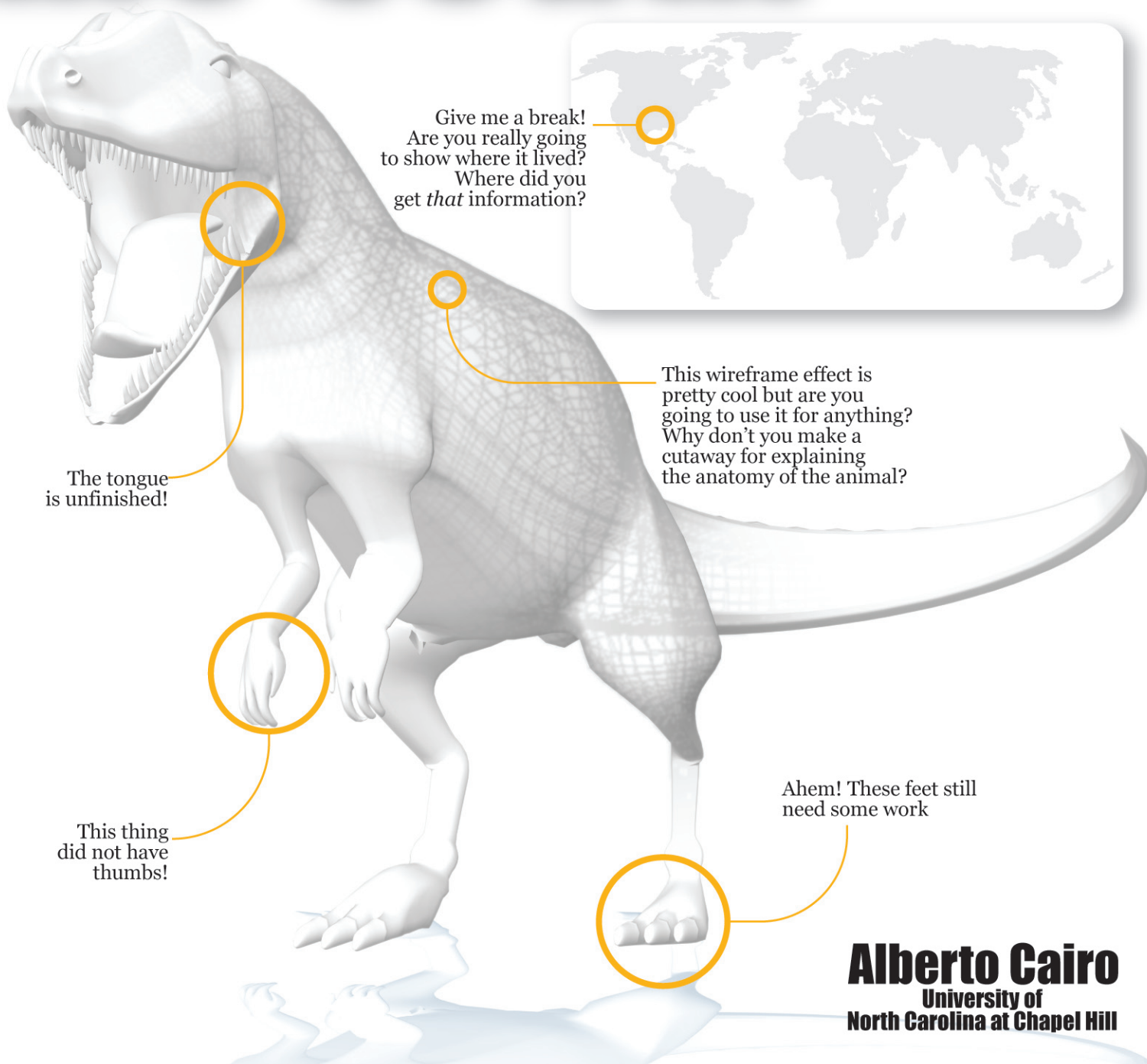


# the terror of the south

A practical guide  
on creating  
the same infographic  
for print and web



Give me a break!  
Are you really going  
to show where it lived?  
Where did you  
get *that* information?

This wireframe effect is  
pretty cool but are you  
going to use it for anything?  
Why don't you make a  
cutaway for explaining  
the anatomy of the animal?

The tongue  
is unfinished!

This thing  
did not have  
thumbs!

Ahem! These feet still  
need some work

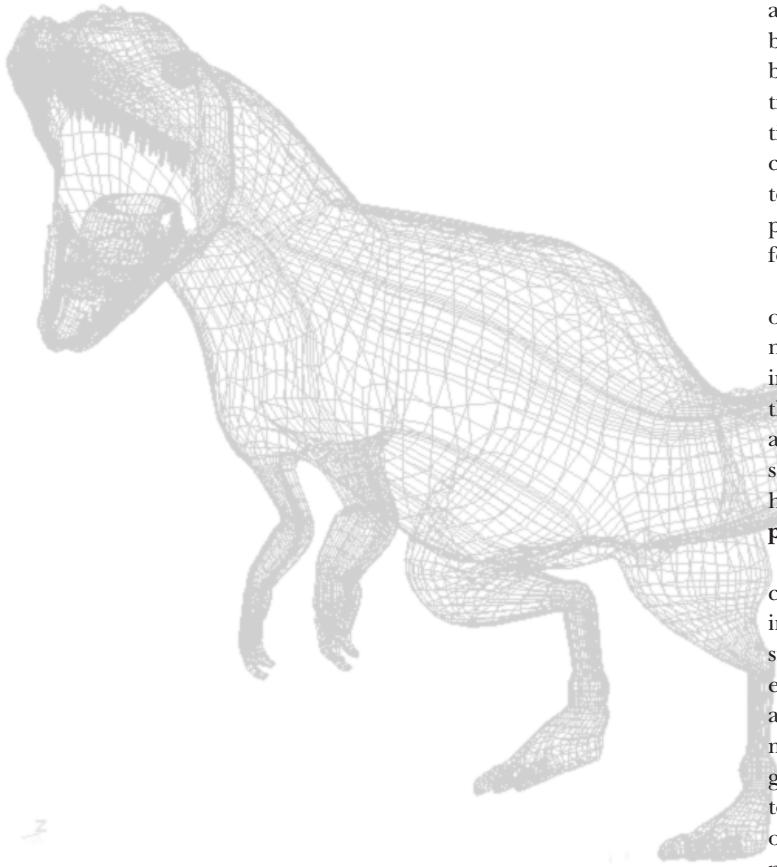
**Alberto Cairo**  
University of  
North Carolina at Chapel Hill

## How to Create the Same Infographic for Print and the Web

The modern newsroom is an interesting and scary place. Words like *synergy*, *integration*, *new journalism*, *citizen journalism*, *journalism 2.0* or (here comes the good one) *multimedia* are spreading like a particularly nasty variation of the flu. We live in a time of confusion because news organizations, one of the most hesitant-to-change types of business that you can find, face the new environment with a mix of distrust, fear and nervousness. But a time of changes is not necessarily a time of threats, but of opportunities. In an era when virtually everyone can start a small communication website, the only chance of survival is to strengthen what we do best: tell good, reliable stories in a way a non-professional-citizen journalist cannot. Infographics play a key role in this formula.

From the infographics standpoint, the integration of the print and online sides is so essential that it cannot be ignored anymore. The Internet has shown up in our workplaces as an unmanageable hurricane, and infographics directors usually don't know how to face the new challenges that the upcoming organizational models pose. The key to success is to ask the right questions. On the infographics desk, that question has been, so far, this: "How can I adapt my print art to the web?". But that question has to be correctly rephrased to finally get a useful answer: "**How can I produce the same piece for the print and the online at the same time?**"

**Integration does not mean melting.** that's the reason I usually talk about collaboration, rather than of full integration of the desks. You will need infographics artists specialized in print and in online. It is virtually impossible for a single person to master all the tools necessary to create visual explanations nowadays (although a sort of superficial knowledge of them all is achievable and desirable). It can take years to be a good programmer or to learn how to edit audio or video to be used in online infographics. That's the reason online and print artists should work closely together, in the same physical space, whenever possible. Too many news organizations have split their print and online operations in different newsrooms.



In this article I am going to show you how you can produce a print and online piece based on the same set of raw data. Different infographics desks, based on the peculiarities of their newsrooms, can come up with a different solution to the collaboration problem. I will use an imaginary example to guide you through the process.

### THE TERROR OF THE SOUTH

The *Acrocanthosaurus* was a dinosaur of the family of the carnosaurian-theropod (a.k.a. carnivores with strong and big back legs and small arms) that lived on the east coast of the United States during the mid-Cretaceous period. To give you an idea of how it looked, try to imagine a *Tyrannosaurus*, but a bit smaller, thinner and faster, with a narrow skull and spines on its back. This vicious hunter's nickname, 'The Terror of the South' describes how horrifying it probably was and where it was supposed to kill: the area near the coast of what is today Texas, Alabama, Georgia, South Carolina and North Carolina. It lived also in some areas of Oklahoma and other states.

Despite the fact that no skeleton of this beast has been found in the First-in-Flight-State, the Museum of National History in Raleigh bought some years ago the best kept remaining of an *Acrocanthosaurus*. The skeleton is one of the landmarks of a small but very nice exhibition about the prehistoric times of Dixieland.

All right, we are going to suppose that one day you arrive to the newsroom in downtown Raleigh, you go to the 10 a.m. meeting and the Science editor announces that the main story of the day is going to be that Professor Rich Beckman, from the University of North Carolina at Chapel Hill, has discovered a skeleton of *Acrocanthosaurus* nearby the town while his was preparing a multimedia documentary project. The Science editor is planning a double truck (this is a huge story) that should include a 3 or 4-column infographic with information about the dinosaur. The goal is to provide background information.

Along with the print presentation, the editor-in-chief also wants to run the story on the website that same night. He wants a visual, animated, interactive explanation as the main piece of the special coverage.

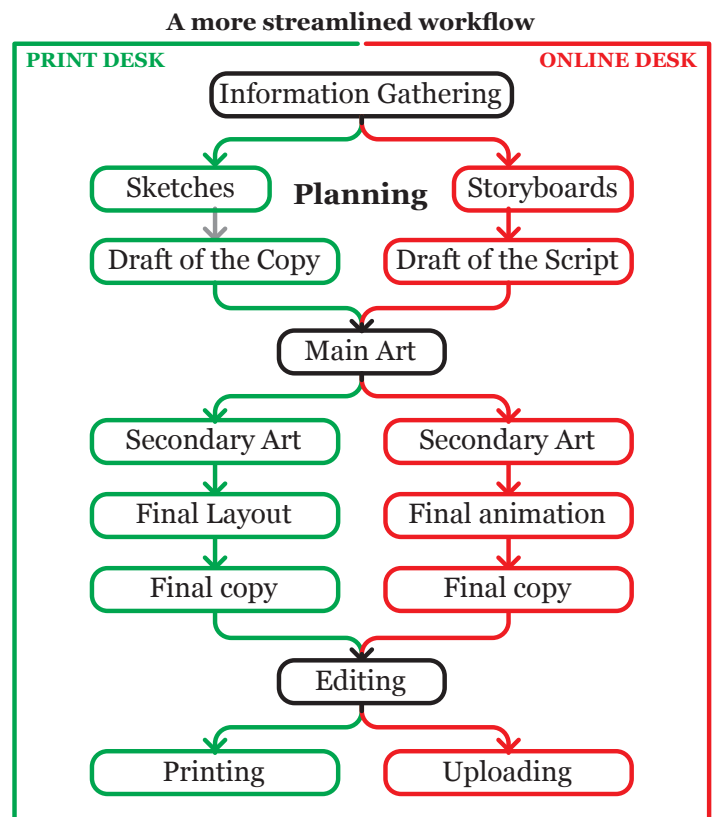
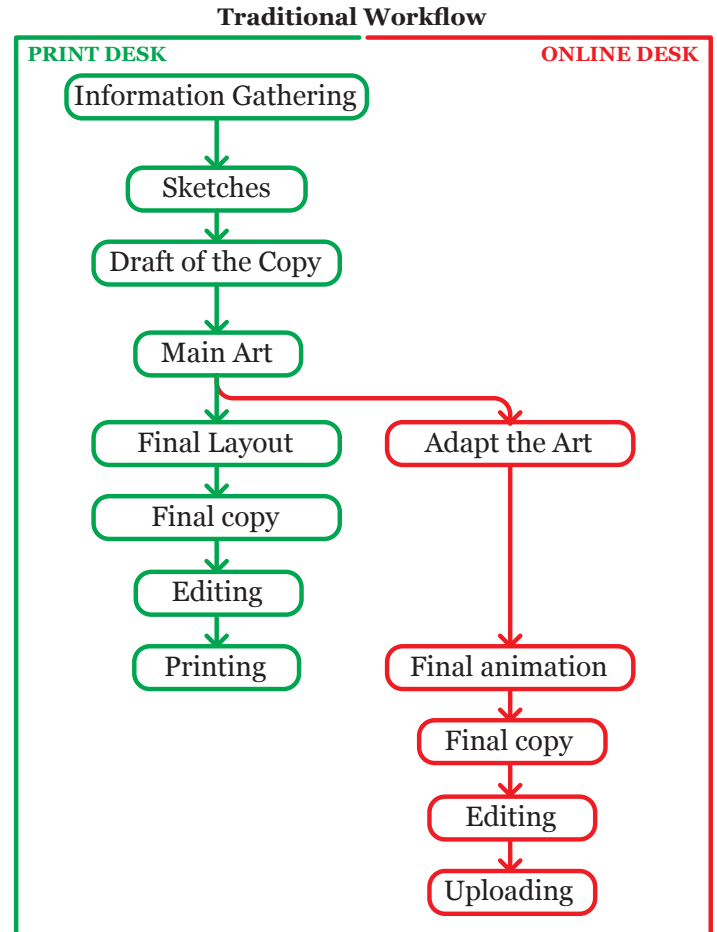
You have 12 hours and only three people to work on the story. The other people in the infographics desk are very busy taking care of the other charts and maps of the day. What shall you do?

### THE WORKFLOW

In the **traditional newsroom workflow**, the one that is currently used in many publications, the print version comes first and then the art is "translated" to the web (see flow charts on the right). This is not a very good way of doing things for several reasons: first of all, the print and the online use different languages. What is good for a print presentation might not be good for an online one.

Second, this model delays the uploading of the online version of the infographic a lot. In a situation like this, when you have to produce a very complicated infographic on a tight deadline, that could mean that the online presentation might not be ready until the next day. Animating and adding interactivity is time consuming. By doing this you are telling the readers of your website that you care less about them than for the ones that buy the print newspaper. Bad policy. The online reader is impatient: he or she will go somewhere else seeking the information you don't provide.

I suggest another **a more streamlined workflow** (see second chart). This corresponds to a fully collaborative model in which both sides are given the same importance. As you can see, the work is done in parallel. There are four main steps: *Information Gathering*, *Planning* (which





### The Reporter's Equipment

Besides a notebook and a pencil, a digital camera and a digital sound recorder are essential for the infographics reporter. The audio you could get with your recorder could be used in the online presentation to create a true multimedia experience... Why don't you interview Professor Doe and use his voice in the explanation? (Pictures: Natural History Museum)

includes a first version of the copy/script), *Main Art* design and final *Editing*. Within the first workflow, most of these steps were taken without even considering the online side. On the second one, print and online work together on the main steps. Instead of thinking first about print and then about how you can "translate" the results to the web, *you must think of both versions at the same time*. Let me explain in detail how this works.

there are some things that you know that you will want to include for sure: a map, an introductory text, a big illustration of the dinosaur and some sort of explanation about how this animal lived and got food. A timeline or a family-tree of the *Acrocantnosaurus* might also be a good idea. This is when the Internet is an invaluable source of information.

Am I saying that you should rely on the data you can find in amateur websites and blogs? Yes and no. On the "Yes" side, I must say that the specialized information you can find in science blogs and websites is quite reliable, more than what the old-fashioned old-school reporters want to admit. After all, they think that those examples of what is usually called "citizen journalism" jeopardize their role as gatekeepers. The truth is that those sites are usually run by geeky (sorry, guys...) but very knowledgeable specialists with an urge to tell the world the wonderful things they have learnt during their careers. That's something to consider.

On the "No" side we have to realize that 1) not all websites are equally reliable and 2) everybody makes mistakes. My advice is: print all the information you can find in professional and amateur specialized websites and then compare that to the data that the Reporter will gather on the site (the Museum, in this case). When a conflict shows up, keep the information gathered from the professionals that you've talked with on the site and discard the one gathered in the Internet. Use the Web as a preliminary research tool. And don't forget to tell the reader what your sources are.

The ride from the newsroom to the Museum is very short, both are in downtown Raleigh. The Reporter takes many pictures of the *Acrocantnosaurus* skeleton, takes a look to the information provided in the nice displays of the room and talks to the scientists who run the place. This should not take longer than one hour. He will be back in the newsroom after only one

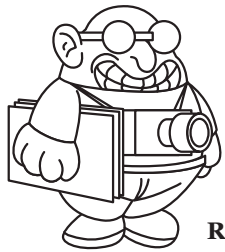
### INFORMATION GATHERING

You have **three people** working on the story of the day so it's time to organize them. The first one has to act as the **Reporter**. That person should be in charge of the information gathering and of writing the main copy. If you are short of staff, this role can be assumed by one of the **two other artists**. You can complete this project with two people, but not with less.

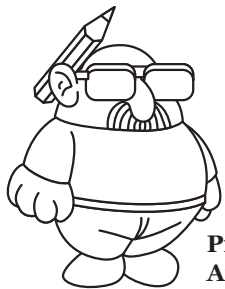
Send the Reporter to the places where the story has taken place. In this case, he should talk first with Professor Beckman. This can be done by phone because in this case the professor is not going to be the main source for the infographic, although he might be of some help. He will provide the information for the story (which is going to include pictures of the actual bones of the new skeleton), but the infographic is intended to be a generic background piece, so the main source should be the Museum of Natural History.

On your way to the museum, ask the professor by cell phone about what's so exciting about his findings and try to have him send you some pictures and the draft of the article he will publish in the next issue of *Awesome Science* magazine (a very respected publication, I must say) with the promise that you will not take any quotes from it (it's a draft!).

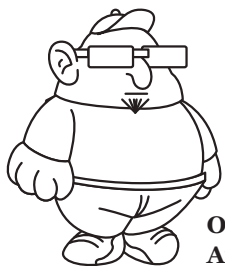
While the Reporter goes to the Museum, the two artists should start planning the displays in the newsroom. Even if you don't have a lot of data right now,



**Reporter**



**Print Artist**



**Online Artist**

hour and a half or two hours.

**PLANNING: SKETCHES, STORYBOARDS**

The **Print** and **Online Artists** will be very busy in those two hours gathering extra information, doing sketches and storyboards and writing a draft of the scripts.

It is a commonplace among infographics artists to say that they spend more time planning than on the art and the composition of the piece but that's not usually accurate. Actually, it's a romantic myth. It's *naïve* to think that because you spend five hours planning, sketching and brainstorming you will be able to finish your final layout in only one. Planning is an ongoing process and when you have a tight deadline it usually takes place mostly at the same time that you are creating the art. If you want to finish something as illustration/animation-heavy like this in 12 hours (and still have a break for lunch) try to spend only around 20-25 percent of your time on the information gathering/planning part of the process.

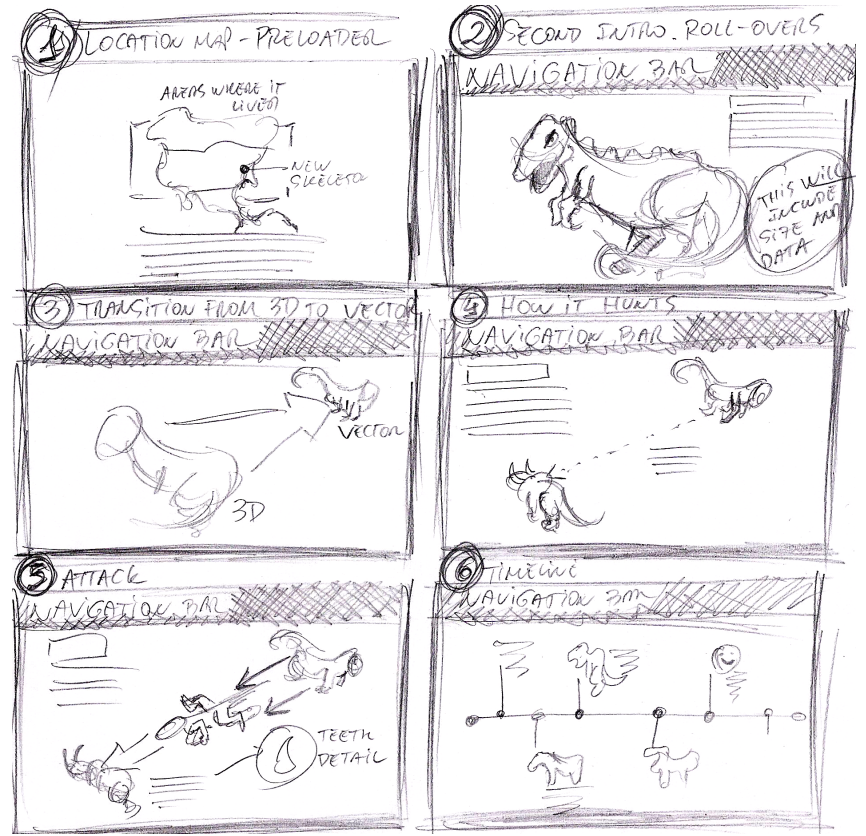
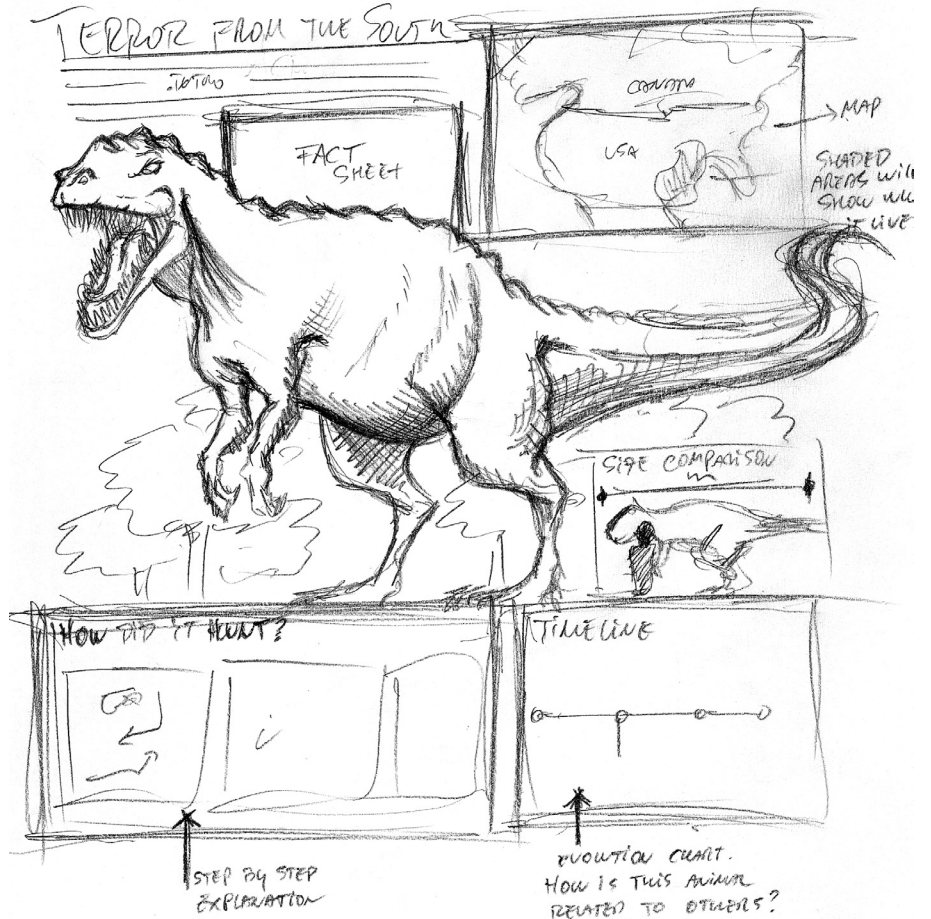
Remember that for the print we use sketches, but for the online you will need storyboards that will show the flow of the information. In the online, the information is not presented all at the same time, but will be split up into slides that can be organized linearly or not. Never keep the first versions of your sketches-storyboards. They will change a lot when the fresh information gathered by the Reporter makes its way to the newstroom.

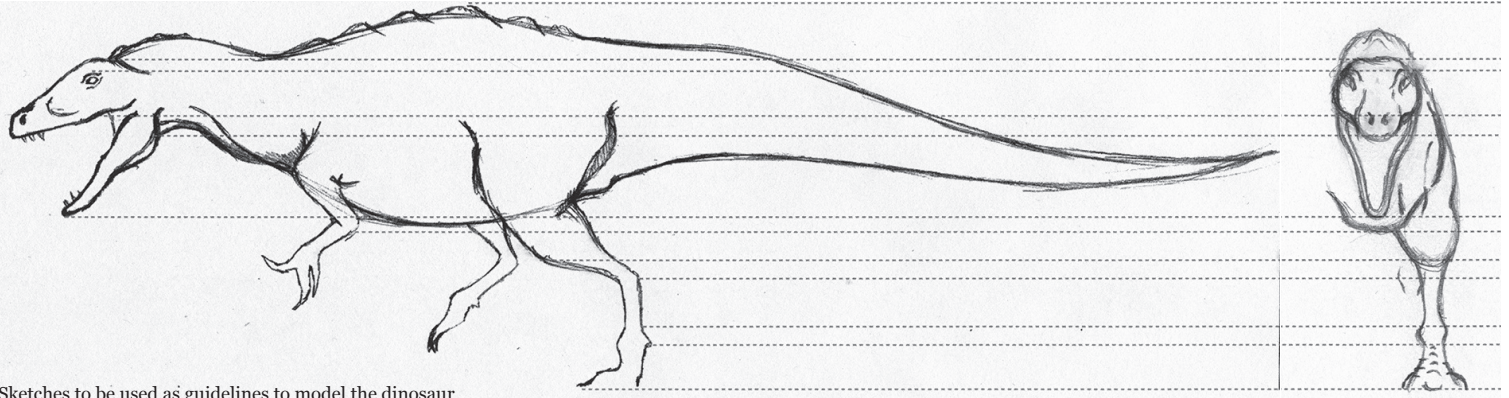
How detailed should the drawings be? It depends on what you are used to and the time available. Many infographics masters (John Grimwade, Nigel Holmes) usually create beautiful drafts that look pretty much like the final art, but that's not usually the case in a newspaper where the timeframe is usually much shorter than in a weekly or monthly magazine.

The level of detail of your sketches/storyboards is up to you, but never skip this step. It is essential to organize your ideas before you start with the hands-on work in the computer. Think about what sections you are going to need and plan accordingly.

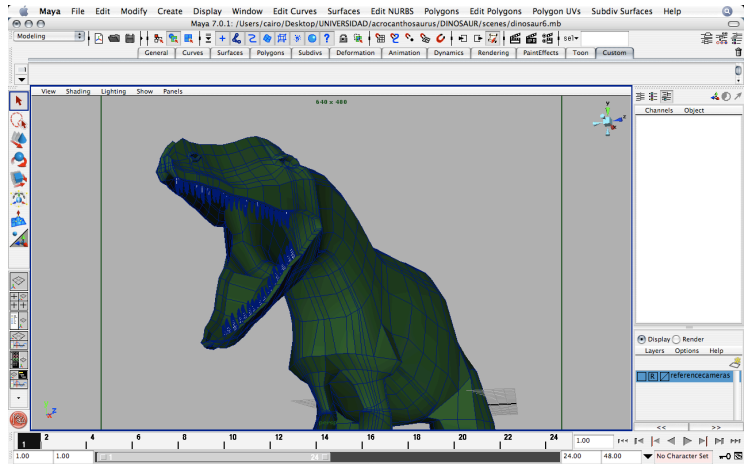
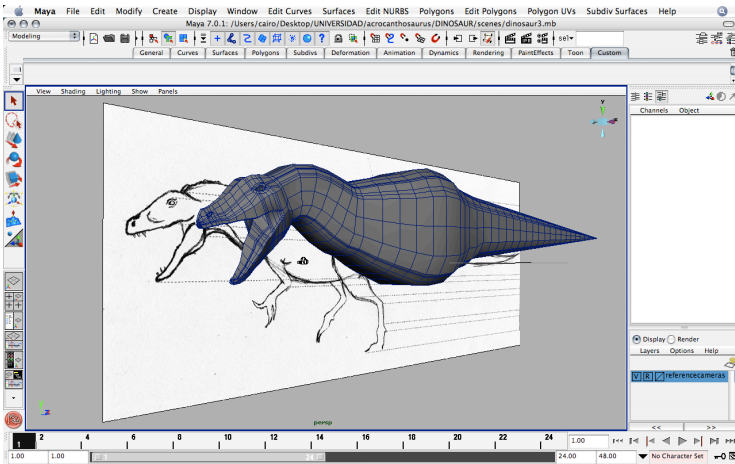
**MAIN AND SECONDARY ART**

If you take a look to the flow chart on page 3 you will see that I've made a distinction between "Main" and "Secondary" Art. In a big print display like this, the Main Art is the central illustration, the one that's intended to attract the reader's attention to the piece. In an online presentation it's more difficult to identify the "Main" Art, as the hierarchy in a step-by-step explanation is not established by the size of the graphic elements, but by their position in the timeline: as a general rule, in an animated graphic the Main Art should be the first or second step of the process, the one that carries the greatest amount of information and, in many cases, the one that provides newsworthy data. The steps at the end are the ones that will give

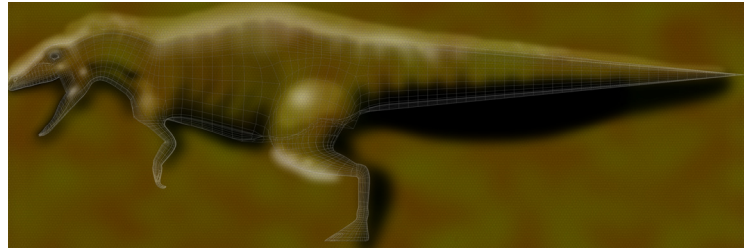
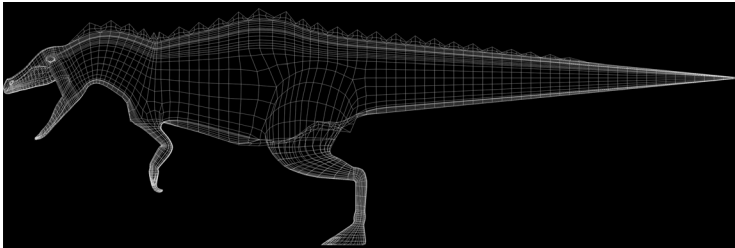




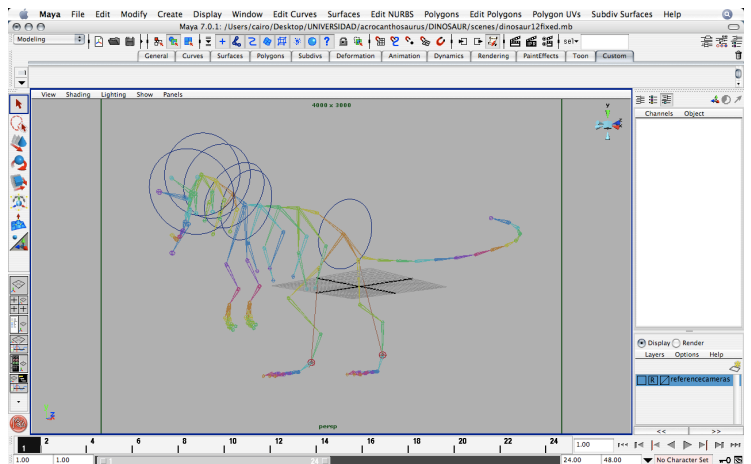
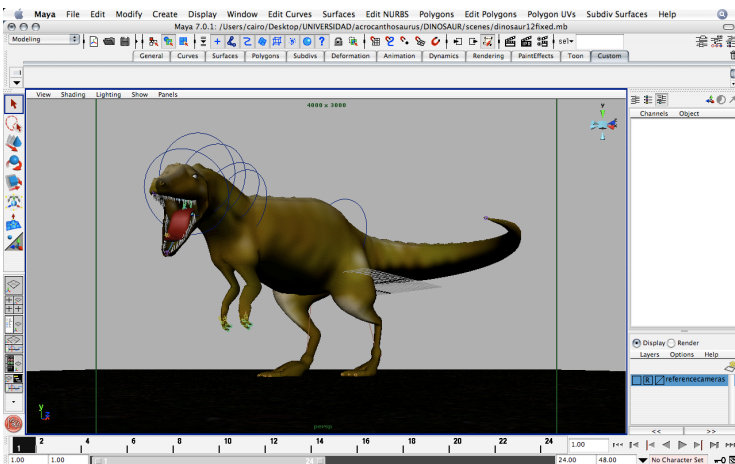
Sketches to be used as guidelines to model the dinosaur



A model usually starts being a simple cube. You can add many subdivisions to that cube and start pushing and pulling its vertices to get the desired shape.



Once the geometry is created, you will need to create a "material" or "texture", a bitmap file (it can be done in Photoshop, for instance), that will be used to wrap the geometry and will add color and relief to its surface. Also, you can create a "skeleton" (below), a set of invisible "bones" that will control how the geometry fill deform. This process is called "rigging".



secondary background information to the reader (if you are following a linear structure, of course).

You should plan to use the same Main Art elements both for the print and for the online. That will limit your stylistic possibilities a bit. For example, I find it extremely difficult to use big hand-drawn illustrations in online presentations. Hand-drawn illustrations look great in print because they allow you to use a lot of detail and, at the same time, they are more “human”, “warmer” than vector or 3D displays, that usually look more “technical” or videogame-like. However, when you take them to the online graphic you will probably be forced to scale them down, shrink them, so most of the details will be lost.

Moreover, hand-drawn pieces are, by definition, static and not easy to animate: try to think about making a sequence of hand-drawn illustrations! It can take forever. That’s the reason I usually prefer to use vector displays or 3D models in this kind of situation.

3D tools are extremely versatile because once you have modeled the main object of the explanation, you can *render it* (a.k.a. represent it, export it as a bitmap file) in whatever position you like. On the previous page you can see the steps taken to model a simple *Achrocanthosaurus* using a 3D software. First you need at least two line-art sketches that will be used as a reference to “trace” the creature.

Once those drawings are imported into the software, you will use them to model the object in the 3D space. An illustration like the one I am showing here should not take you more than six or seven hours to complete. It seems like a big time investment but, believe me, once finished you will not regret the decision, as the 3D object can adopt any pose and be seen from as many perspectives (usually called “cameras”) as you like.

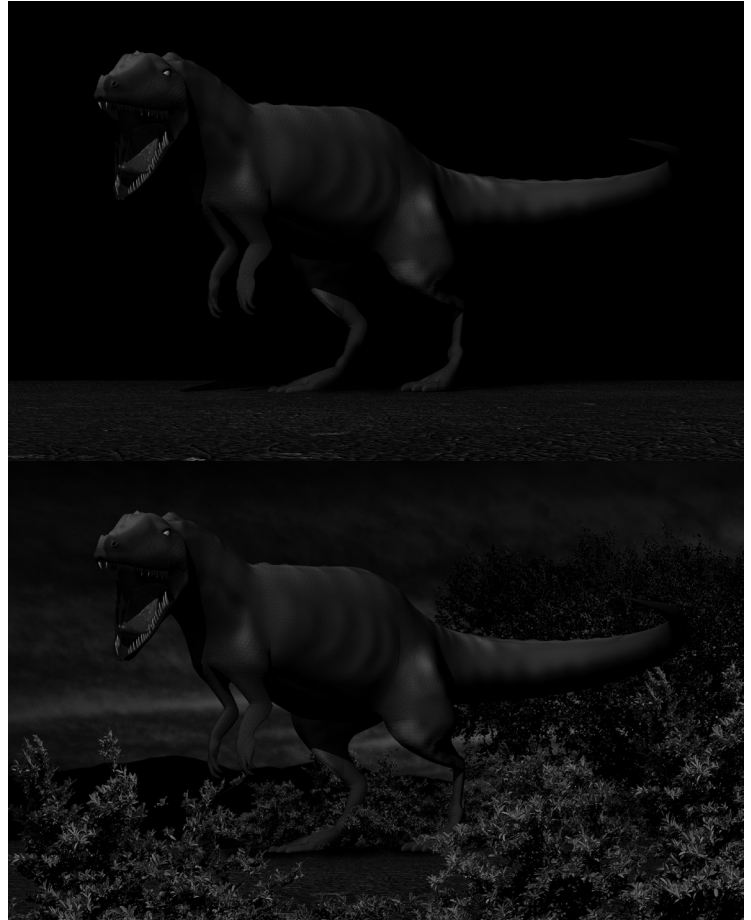
Once the dinosaur is modeled, textured and rigged (that is: you will be adding a bone structure that will control the animation, see page on the left) it can be exported as a bitmap file that can be manipulated in Photoshop, in this case to add a background sky and some plants. “Why so many extra background elements?” you can ask, and you’d be right. Well, you’ll see, those feet are not very well modeled. We have to hide them a bit! And, hey, this is a breaking-news situation, we need to finish this ASAP, we cannot go back to the 3D model at this point!

Most modern 3D packages include a tool to render your objects in vector format. That means that you can create a set of illustrations pretty quickly to be used as Secondary Art (see right below). These files can be imported by any vector-based software (Illustrator, Freehand or Flash) and can be easily manipulated to strip them away or to add more detail when needed. The Secondary Art shown below will be used for both versions of the infographic, but be aware that if you plan a frame-by-frame animation, the online graphic will need many more renders than the print one.

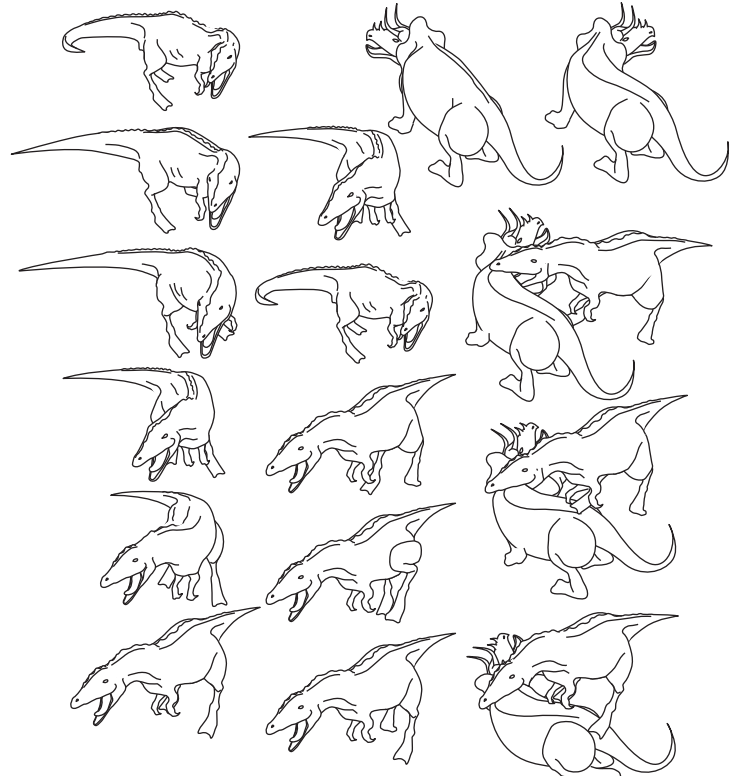
#### LAYOUT AND PRODUCTION

So around eight or nine hours have passed and you have almost all the elements that you need for the infographics. You still will have to create a map that will show 1) Where the new skeleton was found and 2) Where the *Acrocanthosaurus* used to live. Also, according to the preliminary sketches and storyboard, you will need a timeline/family tree of the animal. If all the information for those pieces has been gathered in advance, the execution should not take longer than half an hour. That means that you still have two or three hours left for the Layout of the print infographic, the Production of the online one and the Edition of the copy and script. More than enough.

The Print Artist will import all the elements to the stage and follow



Above, the Main Art, before and after being edited in Photoshop. Below, the vector illustrations that be used as Secondary Art in both versions of the infographic.



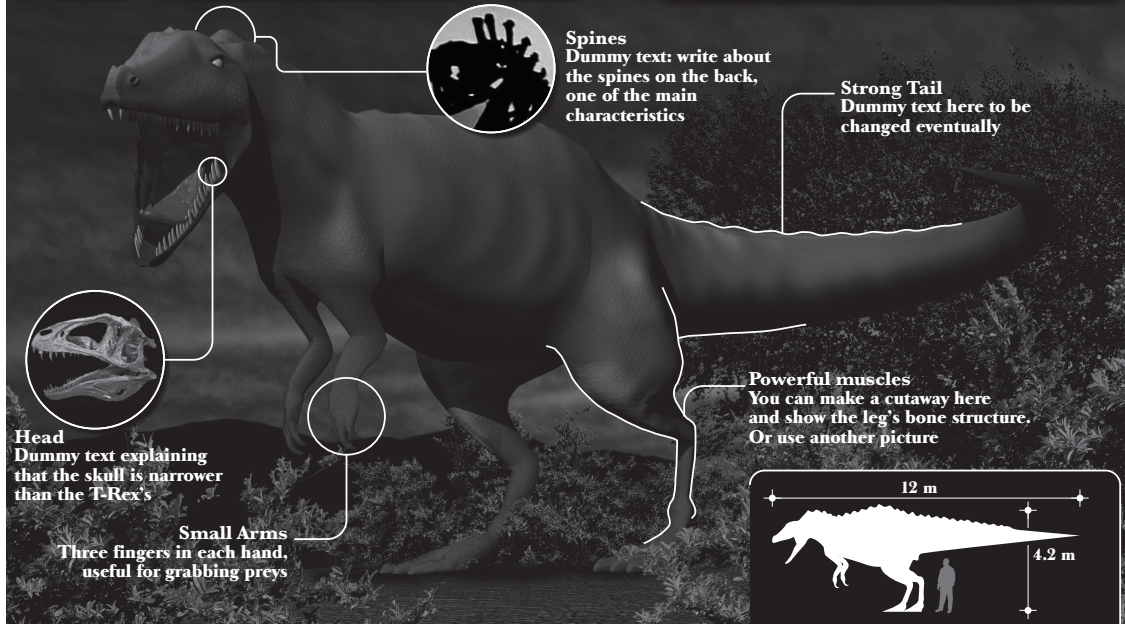
# Terror of the South

Subtitle About the New Skeleton Found in North Carolina

This is going to be a nice and very clear introduction to the infographic talking about the new skeleton and the main physical characteristics of the dinosaur. It is important to write about the story of the day here. Remember that texts in infographics should be short and clear. Use short sentences. Avoid a very complicated style. Give some context before the reader moves on scanning the rest of the piece.

You can use this area to explain some basic facts about the animal or to make a picture gallery of the new findings

## Where it lived



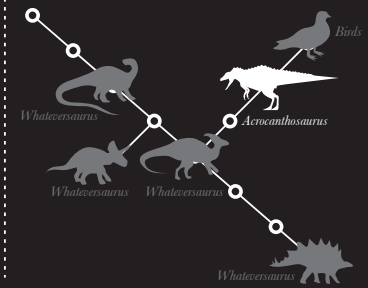
## How it hunted

Dummy introduction to this section



## Family Tree

It will show this animal related to other dinosaurs



SOURCES: Museum of Natural History (Raleigh, NC), History of Dinosaur (Prof. James Bricker)

INFOGRAPHIC: Alberto Cairo

the plan: create the hierarchy of visual elements and display the information following a logical sequence (see the draft above). The Online Artist will have a bit more work ahead, as the production of a Flash infographic is quite time consuming. But it is not a big deal: if the planning step was followed thoroughly and all the graphics and illustrations are already finished, the animation is child's play. My advice is that, if you want to meet the deadline, you must stick

closely to the plan agreed upon some hours ago. The good thing about online infographics is that they can be updated after being uploaded to your website so don't worry if you think that some small details don't look as great as you would like. At this step within the process in a breaking-news situation the most important things to consider are that 1) they look at least good and, more importantly (I'm never tired of remembering this) 2) the information is reliable,

accurate, and it is conveyed in an understandable, readable and attractive way.

Both artists and the Reporter have done a good job. There is still one hour left. That's enough for Editing, review and corrections. Now, a few words about this.

A common practice in some newsrooms is to send only the texts/script to the copy editors and have them reviewed. Sincerely, I think that this is wrong. An infographic is a display where both



# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >



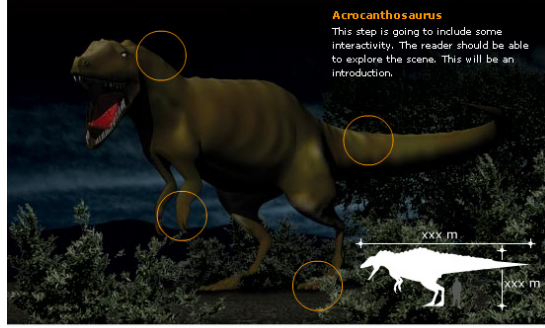
This is going to be the first introduction of the infographic. It will include a map showing where the animal lived and where the new skeleton has been found.

Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >



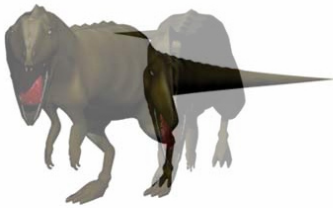
**Acrocanthosaurus**  
This step is going to include some interactivity. The reader should be able to explore the scene. This will be an introduction.

Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >



Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >



Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

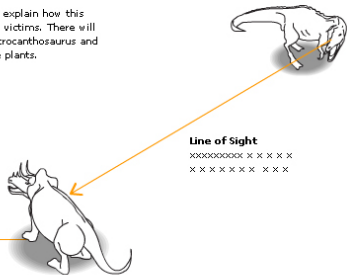
Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >

## How it hunted

This second part will explain how this creature attacked its victims. There will be two dinosaurs (Acrocanthosaurus and herbivore) and some plants.



Line of Sight  
xxxxxxxxxx x x x x x  
x x x x x x x x x x

Nonsensaurus

Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

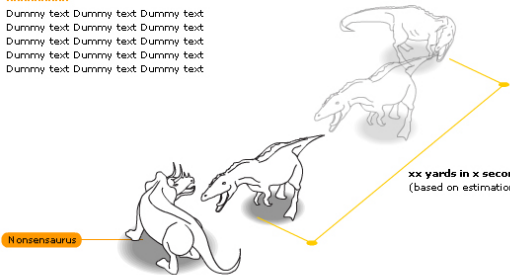
Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >

xxxxxxxxxx

Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text



xx yards in x seconds  
(based on estimations)

Nonsensaurus

Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

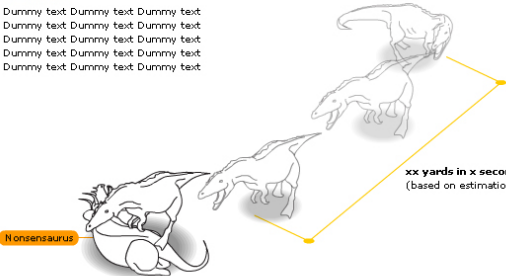
Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >

xxxxxxxxxx

Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text  
Dummy text Dummy text Dummy text



xx yards in x seconds  
(based on estimations)

Nonsensaurus

Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

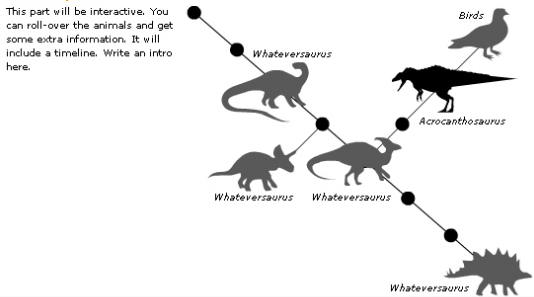
Staff Artists

# the terror of the south

Acrocanthosaurus | How it hunted | Timeline < Back | Next >

## The family tree

This part will be interactive. You can roll-over the animals and get some extra information. It will include a timeline. Write an intro here.



Sources: NC Museum of Natural History, John Doe (UNC-Chapel Hill)

Staff Artists

## See the infographic

The online infographic template is here: <http://www.albertocairo.com/imagenes/dinosaur/animation1.html>

Always check that the geometry deforms nicely: <http://www.albertocairo.com/imagenes/dinosaur/dancingdinosaur.html>

text and visuals work together and the editing process should take this into account. So call the copy editor and have him sit down and go through the explanation with you. And *voilà!*

You should be able to complete two infographics like these, print and online, in around 11 or 12 hours maximum. Some people, especially at small newspapers, may argue that they would not be able to have three artists working at the same time on this topic... maybe because that's the number of infographics artists in the newsroom!

In this case, simply adapt the process explained in previous pages to your limitations. I am convinced that two people could still do a reasonable job. Of course, you should be a bit less ambitious. There are small desks out there that are leading the way in the infographics field, think about El Correo, in Spain, for example. You don't need huge resources to succeed, you only need the will. So be realistic, but be bold.

#### BEYOND TRADITIONAL INFOGRAPHICS

I said before that online infographics are different from those in print. Online infographics are animated, interactive and can be also multimedia. Why don't give audio and video a try? You can try to write a script and create a narrated explanation. Why don't you interview professor Beckman, for example?

This is not as difficult as it sounds and it will add another layer of interest to your infographic. It is difficult to read and pay attention to an animation but it is not that difficult to listen to a narration and enjoy a video at the same time. That's exactly what we do when we watch a good documentary movie on TV, isn't it? Of course, in an online infographic you have another possible dimension: interactivity. The reader can control the flow of information.

If you are seriously considering going one step further and incorporating multimedia explanations to your website you should also start thinking about...

#### SEPARATING CONTENT AND DESIGN

(Skip this if you have never used Actionscript).

Very complex multimedia infographics and presentations in general are the result of teamwork. It is possible for a single person to gather the information, work on the pictures, create the 3D models, write the script and record it, animate the scene in Flash, develop the actionscript code, prepare XML files that contain the text... But in the near future specialization is the key. Several specialized people will take care of most of those activities.

That has a consequence in an ambitious presentation like the one we are talking about: each element of the infographic should be a separate file that can be loaded dynamically inside the Flash template. Take a look to the diagram on the next page and then come back.

Ready? Let's go.

The final Flash file, that we are calling "template.swf" can include just the main navigation and an empty space where the content will be loaded. The actionscript code that will control the actions in this file can be stored in an external ".as" file that we are calling "actionstemplate.as". That would make things easier for your programmers to edit the code without messing around with the final art (you definitely *don't want a programmer to do that*).

The text is not inside "template.swf" either. It will be placed in an external XML (Extensible Markup Language) file that can be easily corrected or changed by an editor. We all know that copy editors are not very tech savvy! They will LOVE not to have to open a file that has so many things as a Flash presentation. As with the actionscript file or any other dynamically loaded element you see in the diagram on the next page, every time that the copy editor changes the content of the XML file and uploads it to the server, both "scene1.swf" and "template.swf" will be automatically updated. It is not necessary that you edit the Flash files by hand.

If you are going to divide your infographic into scenes it is useful to create secondary Flash files (called "scene1.swf", "scene2.swf" and so on) that can be loaded inside "template.swf" and will affect its behavior.

If you take a second look to the diagram, you will see that I am suggesting also that you load the sound (an mp3 file) and the pictures of your animations (JPG files) dynamically into "scene1.swf". The reason for this is that maybe you would like to edit those elements separately at some point. If you work this way and you change "dino.4.jpg" you will not have to import it again into the "scene1.swf" timeline. It will be automatically updated.

How can you do all this? Well, it is beyond this article to explain the different techniques that you can use to achieve the goal of separating content and design (that's the whole point, as a matter of fact, just to make things easier to edit quickly). There are tons of websites where you can find useful information about the intricacies of actionscript. Here you have some suggestions to explore:

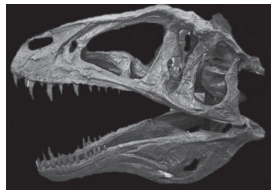
<http://www.actionscript.org/tutorials.shtml>

<http://tutorialoutpost.com/flash-tutorials.php>

Separating content and design is an idea many infographics artists don't like. They think (and rightly so) that in a visual display content and design work together to convey the message. But believe me: if you create a workflow similar to the one on the next page at least for your most complicated presentations you will be automating a lot of tasks. You will be able to use "template.swf" and the code in the ".as" file over and over again. And it will allow your team to work on different parts of the infographic without opening and exporting it again. That will save a lot of time.



dino1.jpg



dino2.jpg



dino3.jpg



dino4.jpg



dino5.jpg

"soundscene1.mp3"

This include the voiceover narration that will drive the infographic

"scene1.swf"

"textscene1.xml"

This file will include captions, headlines and texts in general that will be displayed in the scene

"actionstemplate.as"

This file includes all the actionscript necessary for the presentation to work

**Main file**  
"template.swf"

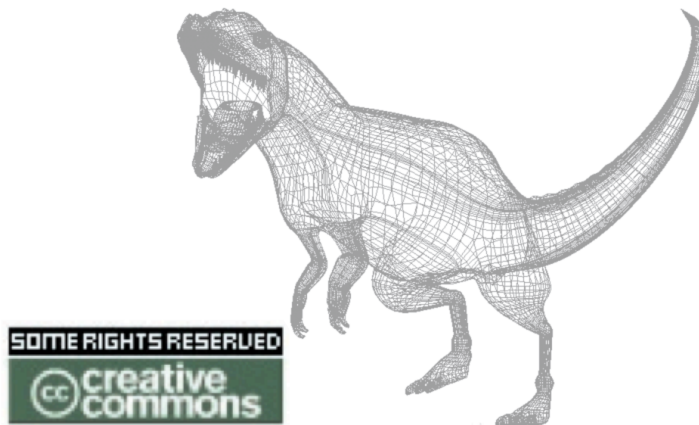
This area of "template.swf" will be empty until "scene1.swf" is loaded in it

NOTE: As you can guess, you can create as many secondary files as you like (scene 1, 2, 3...) to load into "template.swf" when the reader hits a button

This is going to be a nice and informative caption that someone will write (eventually).  
If you write dummy text, be careful...

"template.swf", which is initially empty, will gather all the elements. This is how it will look when all the pieces are present

The slider and time in "template.swf" will be updated automatically when either "scene1.swf" or "soundscene1.mp3" change and are loaded dinamically again



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