Articulating a GIRAFFE

BY SABRINA BEUTLER

"The giraffe in question, a bull named Otto, died in a zoo in Germany in the 1960s and the bones ended up in the collection of the museum, where they stayed until they came to me."

PUBLISHERS NOTE: Preparing and completing an articulated skeleton can be a very challenging task. When you compare a small articulated skeleton for an animal such as a mouse or small bird with the many very small bones, with another like that of a giraffe, of immense size and height, you immediately wonder which would be the more difficult task. I may never attempt this task but I do find it extremely interesting as to how it is accomplished.

Preparing an articulated skeleton is common for European taxidermists as many of them either work for museums or contract work for museums. There are also numerous collectors of articulated skeletons in Europe. Although the practice is not common for taxidermists here in the USA, you have to look no further than the website of Skulls Unlimited and its large catalog to see that its staff has mastered this process and there is a market and source for skeletal reconstruction here in the USA. (See the ad page on page 26.) Outdoor Life *magazine recently did an excellent article on Skulls Unlimited, which can be seen at www.outdoorlife.com/articles/hunting/2014/06/skulls-inc-making-museum-quality-skulls-and-taxidermy. The fact is, most taxidermists reach out to Skulls Unlimited when a request for skeleton reconstruction comes their way.*

Back in 1996 (Issue 43) Glen Browning wrote an excellent article on preparing a study skeleton for BREAKTHROUGH, and recent World Show competitions have accepted an increase in the skeleton category entries. Over a year ago Sabrina Beutler contacted me about doing this article on mounting a large animal skeleton and I of course said yes, I am interested in publishing the process. She has now presented us with this excellent article on how this task was accomplished.

Even though articulating a giraffe skeleton is something you will likely never do, it will teach you a lot about what makes the outer dressing of mammals look the way they do. The first basis for the study of anatomy is the skeletal structure and the key to quality taxidermy is knowing anatomy and properly replicating it. I know you will find Sabrina's article very interesting. —LCB

SINCE SWITZERLAND IS SUCH A SMALL COUNTRY, surrounded by the borders of the European Union, the market for a taxidermy business is correspondingly small. That is why a specialization is often not possible and the range of the work we do spreads from mounting small birds all the way up to large mammals, as well as special jobs like restoring historical exhibits, building exhibitions, or mounting skeletons.

In the first year after I started my company, I took in whatever was on the market. That is how I ended up with the most challenging job of my career. The Hessisches Landesmuseum in Germany was renovating the entire building and all of the exhibitions, and was looking for someone with experience in restoring large skeletons. I, having had a previous opportunity to work on a whale skeleton, got the job. It is very rare that a semi-trailer truck comes backing up to your taxidermy workshop, but in 2009 that was the case. I got the skeletons of a minke whale, a narwhal, a manatee, and a bull giraffe. The giraffe was finished this spring and I would like to share my experience with this job with those of you who are interested in this less well-known aspect of our profession.

The giraffe in question, a bull named "Otto," died in a zoo in Germany in the 1960s and the bones ended up in the collection of the museum, where they stayed until they came to me. When I opened the box, I first checked if the skeleton was complete, which unfortunately it was not.

All "small" bones, like the tail, toes, wrists, and ankle bones, were missing. So, after discussing the issue with the museum, I started a request among taxidermists in Africa, hoping someone could harvest the bones in question during the next hunting season. A few weeks later I had all missing bones, even from a bull from the same subspecies—except the wrists and ankles, which I was able to cast from a collection specimen.

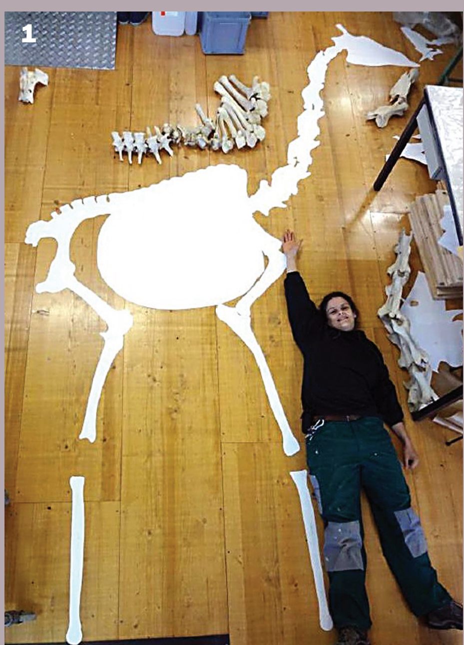
While waiting for the missing bones to arrive, I cleaned the old bones with a mixture of chemicals, which does not only wash off dirt, but also buffers acids. That is a standard procedure for all old bones, since I had no idea how they were cleaned and treated back in the 1960s. All old skeletons have a fat problem, and since fat is not stable, it decays into fatty acids, which damage the bones.

Here is the recipe I use: 700 ml ethanol 96%, 250 ml distilled water, 50 ml ammonia solution 25%. This is, by the way, also a good mixture to gently clean old mounts since they, too, often have an acid problem and unbuffered solutions can cause severe damage. I submerged the bones in the solution and let them soak according to their degree of dirtiness, then I scrubbed them and let them dry. After this cleaning and buffering process, the bones were degreased in a degreasing unit.

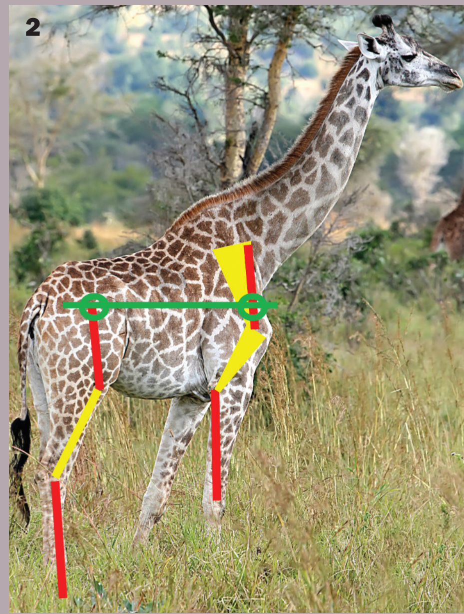
1. Having now a complete and clean skeleton, I started planning the body position in which we wanted to show the giraffe. I cut templates of the bones in cardboard and laid them out on the floor to get a first idea of what I was facing. I knew giraffes were tall, but I had not quite realized how huge they really are!

Then, as always, I started gathering reference material. When building a skeleton, the responsibility to do it right and anatomically correct is just the same as when mounting a life-size animal. As taxidermists we characterize the image of a specific animal in the eye of the observer, regardless of what parts of the animal we show them. Of course, the kind of reference photos differ some.

While the shape of eyelids and nostrils become irrelevant, the exact position of the bones in a specific movement becomes crucial. What, for instance, do the shoulder blades do when a giraffe walks? In which position are they in a standing animal? This and similar questions concerned me for quite a while, especially since the spotted coat of a giraffe makes it hard to perceive the exact shape of the body underneath. I gathered the information I needed at a nearby zoo, talking to zoo keepers, vets, other taxidermists, and animal anatomy specialists at different universities.



As a rule in most quadrupedal animals, the vertical axis of the shoulder blade always stands parallel to the underarm, as well as the thighbone to the metatarsal. Also, the forelimb does not rotate around the shoulder joint, but around a fictitious axis through the upper third of the shoulder blade. This point is when the animal stands calmly, right above the shoulder joint and at the same height as the hip socket. In animals with extreme long forelimbs, such as hyenas and giraffes, this rotation point is far lower on the shoulder blade in order to have four legs with the same length.

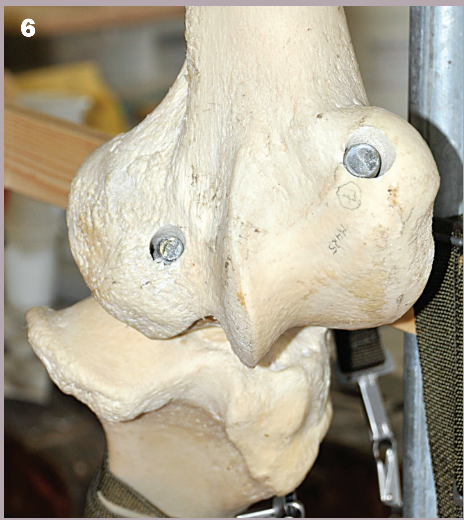


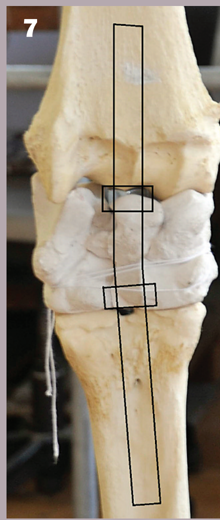
2. The underarm and metatarsal can be seen clearly on reference pictures, while the exact position of the shoulder blades and thighbones must be calculated, in observance of the before-mentioned anatomical rules. Picture 2 shows a survey of these rules: the calculated positions of the long bones, the parallelisms in red, and the axis of the rotation points in green.

Never regard other mounted skeletons or drawings as reference! The risk of just copying the same mistakes over and over again is huge. Our model is, and must always be, the real living thing.

3. I then used my cardboard templates to discuss and determine the angle of each joint. Therefore, I built a scaffolding and attached a huge pin board to it . Here, I could play around with my templates and the reference pictures right next to them.

4-5. Once the position of each joint was determined, I fixed the bones to the scaffolding using strong straps, and drilled the holes for the bolts. That was one of the first moments when working alone became a real problem. It was the goal to build a free-standing skeleton, without visible supports, and able to be taken apart into transportable sections.





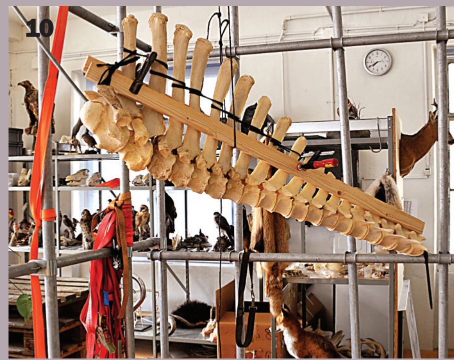
6. To create enough stability, I bolted each joint with a 16-mm and a 12-mm threaded rod. Mounting a skeleton is always a "controlled destruction" of the bone material and all holes and other modifications should be made deliberate, well considered and, well, "controlled."

7. Since the wrist and ankle bones were casted from another skeleton, I had to slightly adjust them in size. Fortunately, they fit surprisingly well. These joints, too, were bolted together with rods, embedded nuts keeping the pressure on the original bones and keeping the artificial parts unstressed. No rods were glued in; all of them are merely kept in place by the weight of the structure itself. Always keep in mind that the generations after us may need to take the thing apart again and glue is always difficult to remove residue-free.

8. Here is how the legs gradually took shape and for the first time I had a vertical impression of how big the entire thing was going to be. Once the legs stood, I positioned the pelvis.

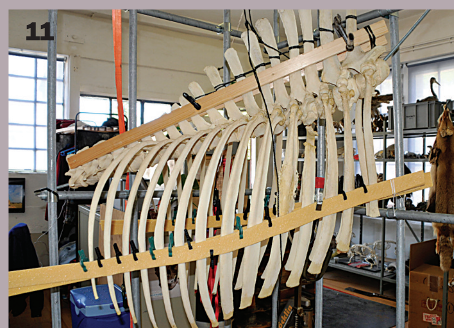
9. To help me stabilize the whole thing and

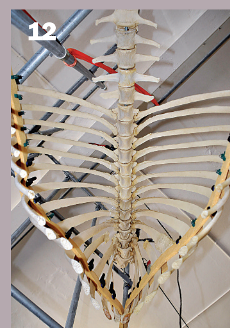
to allow me to walk a few steps away and look at it from a distance, I suspended the bones from a strong pipe fixed along the ceiling of the room. I had used this construction before for the whale skeletons and it came in handy for the giraffe, too. It allowed me to position the bones as you would position the limbs of a marionette. Once the correct position of the pelvis was determined, I merely fixed it in place with a strong cord, allowing me to remove it again to build the connection to the vertebral column.



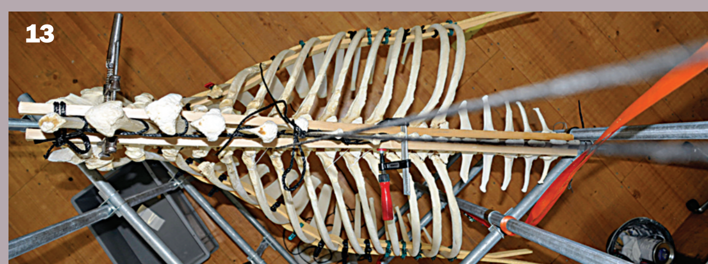
10. Then I started with the thorax. Here, too, the scaffolding came in handy. I first drilled holes through all of the vertebrates and threaded them on a 12-mm threaded rod, aligning them with wood and screws, securing them in place with nuts .

11. The ribs were fixed in place with splint pins. These are the only joints I had to fix also with glue, since the weight of the ribs pulls downwards. Straps of pliable foam and strong clips helped to place the ribs equally spaced and to fix them in the proper position while the glue sets.

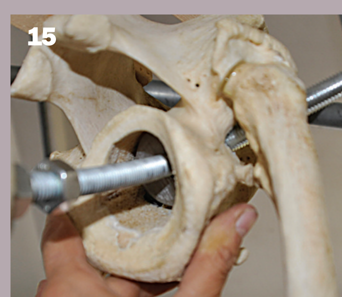




12. Later I decided to leave these supports in place during the entire mounting process in order to help stabilize the rib cage and prevent damages. Check the proper position from all angles. It can especially be helpful to have a look from underneath to see if the ribs are aligned symmetrically.

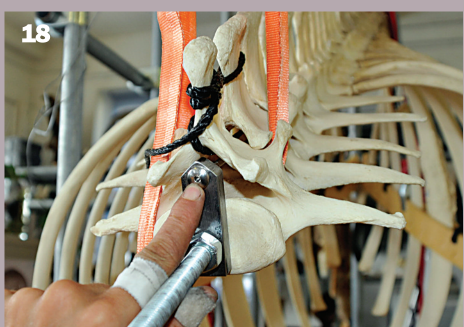


13. Having my scaffolding, I was even able to look at the thorax from above. Note how narrow the rib cage of a giraffe is at the height of the shoulders! The first pair of ribs even points inward, instead of arching outward! This is to allow enough space for the massive shoulder muscles that stabilize the transition to the neck.



14-15. I decided to build the skeleton dismountable into seven parts: the four legs, the body, the neck, and the skull. So, to create a solid foundation to secure the forelegs in, I embedded a piece of round steel in the first thoracic vertebra, again securing it in place on the central rod with nuts. I then drilled a hole from both sides through the vertebra and halfway into the steel where I then cut an internal thread to later secure the supporting structure of the forelegs. We will come back to that later.

16. A giraffe skeleton has basically the same problems when it comes to stability as the living animal does: endless slender legs and a considerable forward overload, created by the long neck and head. Fortunately for the giraffe, the big herbivore belly works as a counterweight and keeps the animal from falling forwards. The huge nuchal ligaments, which stretch along the dorsal spines of the vertebrates all the way up to the skull, support the weight of the head and the neck like the cables in a suspension bridge. That is one of the reasons why these dorsal spines are so long in the shoulder region. In a skeleton, the counterweight of the belly, as well as the supporting ligaments, are gone and the height of the dorsal spines cannot be used to stabilize the neck. The stabilization of the heavy neck becomes a real problem.

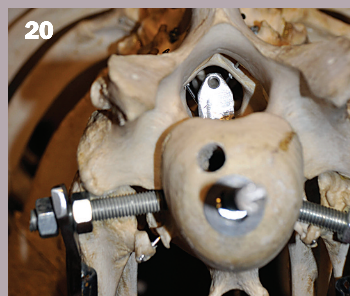


17. I decided to insert a wire cable in the nerve canal of the vertebral column to compensate for the missing ligaments. This cable features a clamping screw on both ends which allows me to pull it real tight. Of course, the effect is not as great as it is with the ligament running over the tops of the dorsal spines, but, as I found out later, it still does the job.

18. A wire cable under tension needs a firm anchorage. Therefore, I fixed a piece of steel on the central rod after the last lumbar vertebra. This piece features a fitting hole for the cable at the height of the nerve canal (picture 17) and provides a firm hold for the clamping screw. Since the thickness of this piece is greater than the intervertebral disc would be, I had to mill-cut some space into the last vertebra to embed the metal in. The other end of the cable is secured at the top of the neck (we will come to that later).

19. At the height of the first thoracic vertebra, the shape of the vertebral column changes from a horizontal to a more vertical line. Here, the tightly drawn cable would have been pulled right along the top edge of the nerve canal and would, little by little, have eaten into the bone. To keep the wire cable from causing damage, I inserted a guide, also made of steel.

20. This photo shows the critical situation around the first thoracic vertebra as a whole. You can see the guide for the wire cable in the nerve canal, the two threaded rods secured in the metal inside the vertebra to fix the forelegs on, and the end of the central threaded rod sticking out of the vertebral body where later the neck was put on. The second hole in the vertebra body was made during maceration to clean out the bone marrow. Unfortunately, these holes were made very carelessly, otherwise I could have used them for the mounting process.



21. Having the legs and the body ready, I started with the neck. While the cervical vertebrates of a giraffe look really huge, their actual body is in fact very slim. The massive appearance comes merely from the wide and flattened extensions, providing the attachment points for the muscles. I wanted to use a rod as thick as possible to gain as much stability as possible, but a rod more than a 10 mm would not fit through the vertebra bodies all the way up to the head! To determine the ideal drill direction, I secured each vertebra on the workbench using straps. Then I projected the desired drill hole on the bone using a laser beam.

22. This laser beam sounds fancy, but this kit just came with my power drill. Having both hands free and seeing the desired drill direction as a red line on the bone, I was able to aim the drill pretty precisely while drilling the hole all the way through the vertebra body.

The difficulty is to come out at the exact point you wanted to, without breaking out sideways beforehand through the thin walls. Only in the second vertebra, the last "normal" one right under the atlas, I intentionally broke out upwards into the nerve canal, since the vertebra body ends here and I wanted to construct the upper anchorage for the wire cable inside the nerve canal.

23. Having drilled through all of the cervical vertebrates except the atlas, I again threaded them all on a central threaded rod. To provide for a secure hold for the wire cable running through the nerve canal, I inserted a drive-in nut into a spar of the diameter of the nerve canal. This allowed me to screw and fix the spar directly in the central rod without having to insert nuts in the narrow space of the nerve canal. This piece of wood worked as a stop for a similar piece of steel as the one I inserted after the last lumbar vertebra.

24. Hidden inside the nerve canal of the second cervical vertebra, the construction is almost invisible. All you can see is the clamping screw to pull the cable tight.

25. At the lower end of the neck, I needed a device allowing me to stick the neck on the end of the central rod, sticking out of the thoracic vertebrates. Therefore, I welded a few nuts on the end of a piece of pipe and screwed it on the end of the threaded rod. The whole thing I embedded inside the last cervical vertebra. This pipe can now allow the central rod of the thoracic vertebrae. This way, I have a dismountable connection between neck and body which is completely invisible from the outside and yet strong and stable enough to carry the weight of the neck.

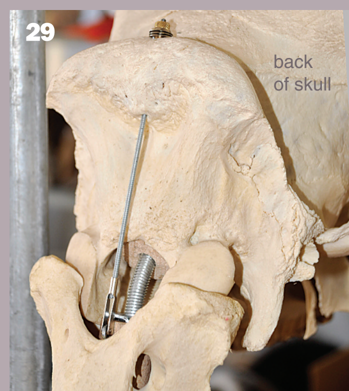
26. Having the neck completed, it was the moment to stick it on and assemble the whole vertebral column for the first time. To make statics easier to assess, I left the neck straight for this first test fit.

27. Once I was sufficiently convinced that my construction indeed held what it promised, I gave the neck a slight upward bend, as it does in nature, and what happened then was logic, but still not what I expected. The neck escaped sideways. Fortunately, this problem could be solved by pulling the wire cable inside the nerve canal real tight. Still, the experience made me nervous enough to secure each cervical vertebra against the other with splint pins and thus make all twisting movements impossible. I did not want to risk this happening again with the body actually standing on the legs and the head towering almost 5 meters above ground!

28. Once I trusted the neck to be stable enough, I stated developing a secure anchorage for the skull. Again, I inserted a drive-in nut into a length of spar and screwed it on the upper end of the neck rod. Into this spar, I screwed an eyebolt to later secure the skull on. Then I cut the rod to the desired length and covered the top with another piece of spar. I carved and ground the top of this spar to fit the top of the brain cavity of the skull to create a good surface for the skull to rest on without causing damage.

29. Then I stuck the skull on the construction, test-fitting the shape and size of the top spar. Once I was satisfied with the stability, I secured the skull with a thin threaded rod, running through the bulge at the back of the head. To adjust the angle of the skull, this rod features a clamping screw on the top end and a fork with an internal thread on the lower end, clasping the eyebolt screwed into the spar.

30. This picture shows the whole situation. Between the atlas and the second cervical vertebra, you can catch a glimpse of the spar and the clamping screw to tighten the wire cable running all the way down to the last lumbar. Inside the



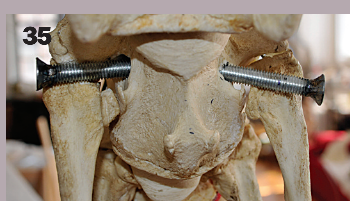
atlas is the length of spar with the eyebolt barely visible, stabilizing the skull. Disappearing inside the occipital is the other length of spar, carrying the weight of the skull. When I was satisfied by the fact that the whole construction fit nicely into the nerve canals of the vertebrae and was barely visible from the outside, I dismounted the neck and the skull again to continue with the connection between the body and the legs.

31. First, I carefully hung the body between the legs and little by little, lifted it using straps. This was another moment when working alone was an obstacle to overcome.

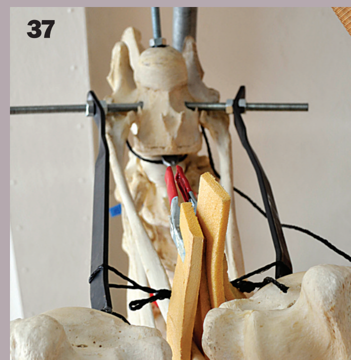
32. The pipe fixed under the ceiling of the room was just barely high enough, as you can see. Having the body in position for the first time, I became apparent that I had positioned the legs too close to each other. Because of the considerable forward-weight of the neck, giraffes stand almost in front of themselves! The foremost point of the body is by far not the stern, but clearly the shoulders.

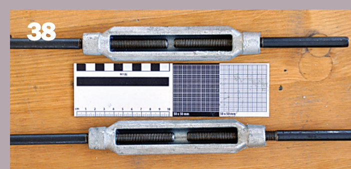
33. I adjusted the position of each leg by drilling new holes into the pedestal and securing the legs' rods in with nuts. The animal was gradually taking shape.

34. The hip joints were easy to fix using a length of threaded rod sticking out of the femur heads and right into the hip sockets, again secured with nuts, however, the shoulder does not provide any bony connection at all.



35. I had my two rods sticking out of the first thoracic vertebra to start with, but no idea how to continue. The connection to the forelegs needed to be dismountable for transport and at the same time extremely stable, since almost all the weight of the skeleton is standing on those two forelegs. Plus, the distance between the vertebral column and the shoulder joint is very long. I had my sofa positioned right in front of the skeleton and sat there quite a while, drinking coffee with different people, pondering the dilemma. Normally, they became even more panicky than I was, once they started to really grasp the problem.



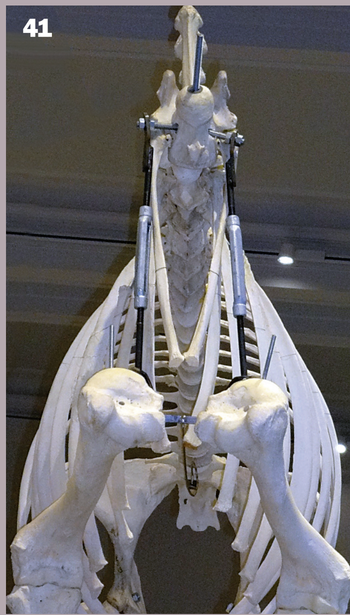


36. Finally, I gave myself a push and just started experimenting. First, I tried to make the transition between vertebra and humerus with a piece of strong flat steel, bended and cut in shape.

37. I quickly found out that it was impossible to work precisely enough to create a symmetrical support. The shoulders kept shifting; the dorsal spines of the thorax kept tilting from one side to the other as I kept trying to adjust it. Even a slightly tilted shoulder would result in a serious slant of the head, since the length of the neck multiplies the effect. Finally, I gave it up.

38. Whenever I get stuck, I leaf through catalogues of different suppliers, looking for inspiration. What I found this time were turnbuckles. I quickly ordered a pair via the local locksmithery.

39. I then mill-cut both ends of the turnbuckles to create a flat surface for welding. Pieces of flat steel were cut, drilled, and shaped to fit over the threaded rods at the vertebral column, then I welded them on the turnbuckle's flattened upper end. On the lower end I welded a similar piece of flat steel, shaped to fit the head of the humerus and also sporting a hole to accept the length of threaded rod I fixed into the humerus head.



40. I then inserted these pieces into my mount and was now able to adjust the height of each shoulder by simply twisting the turnbuckles and thus extend or shorten the distance between the vertebral column and each shoulder joint.

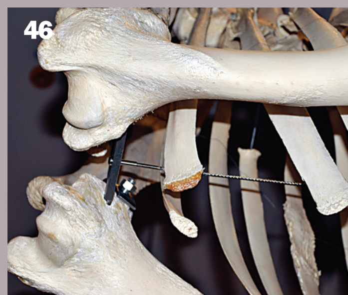
41. This proved a very good solution to carefully lever out the shoulders and set the dorsal spines perfectly vertical.

42. Having now some metal on the surface of the shoulder joints, I had to grind some material of the shoulder blades away to make space for it. I drilled a hole in the joint surface of the shoulder blade to accept a piece of threaded rod. To find the exact same position on the humerus head, I fitted a dowel center into the drilled hole, held the shoulder blade in position on the humerus, and gave it a firm slap with my hand. The dowel center left a fine but clear mark on the bone and I knew exactly where to drill the hole. It made no sense to bother half of Europe with my shoulder blade-position questions and then work sloppily…

43. I then inserted the threaded rods into the humerus heads and stuck the shoulder blades on. They covered the turnbuckles nicely, just like a casing created for this very purpose.

44. Being satisfied with the shoulder anchorage, I decided to loosen the straps supporting the body and see what my constructions would do when actually carrying weight. The hips held nice and firm, like expected, but the shoulder moved forward. My turnbuckle construction is indeed strong enough to support weight, but it can rotate around the rods sticking out of the vertebra. Thus, the leg tilted forward, the weight of the body pulling downwards slightly behind them. This picture shows the effect, along with a very concerned taxidermist. Imagine having a bookshelf with only the top shelf and no stabilizing crossbeams. Then add an overload in one direction. Again, a perfectly logical thing to happen!

45. What I needed was a construction which would pull the shoulder backwards towards the pelvis and thus keeping it from escaping forwards. Again, I decided to work with a wired cable. I shaped a piece of square steel in a way that both ends would be round and slightly bent, with a hole drilled in the middle to accept another cable with clamping screw.



46. I drilled holes and inserted the rounded ends into both humerus heads.

47. I ran this wire cable all the length of the body and anchored the other end with another clamping screw in the same piece of steel after the last lumbar vertebra, in which the long cable running through the entire vertebral column is also anchored. One anchorage is in the upper end, at the height of the nerve canal, the other is in the lower end, stickling out of the intervertebral space. This proved to be a very discrete and elegant and yet extremely strong stabilization of the shoulder!

48. At this moment, I had to move the entire project to a higher room. Fortunately, my neighbor, Fritz, has a mechanical workshop in the same building and he let me occupy the front portion of it, with a ceiling almost 5 meters high. So I dismounted the skeleton and moved over. For the first time, I was able to build the entire thing in its full size! That's when my experience in rock-climbing came in handy to reach the ceiling and working safely at heights.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49. To give you an overview of what we talked about until now, I tried to sketch the rods and cables into the picture. To simplify the representation I'll limit myself to one side. Red = wire cables; yellow = threaded rods.


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L/R: Fritz Iseli (my neighbor who lent me his workshop), me (behind the giraffe), Martin Troxler, Sirpa Kurz and Constantin Latt (all 3 from the Natural History Museum in Berne).

50. For the first time the skeleton stood, with only details like tail and toes still missing! Probably the biggest disadvantage of working alone, apart from the lacking additional hands, is the lack of automatic feedback. I had the strong desire to discuss my interpretation of the giraffe's anatomy and my solving of technical problems with expert colleagues. So I phoned Martin Troxler at the Naturhistorisches Museum in Berne and he agreed to spontaneously drive over with his colleague Sirpa Kurz and their new apprentice Constantin Latt. An hour later they stood in front of my giraffe and we had a good time of evaluation, discussing and explaining.

This was one of the most important parts of the entire project. It can be good to find solutions alone, to analyze alone and to work alone, since that can prevent you from just following the trodden paths and copy "traditional" mistakes. But it is crucial to discuss these findings with others, struggling with similar problems, share the experiences made, and listen to theirs. I am very glad that we have this familiarity and friendship amongst each other, helping and allowing each other to grow to the challenges! Martin is an experienced expert in skeletons and his judgment was important to me. I was happy that he did not find any major flaws.

Then it was time to organize the transport back to the museum. I built two sturdy wooden boxes to safely transport the disassembled skeleton back to Germany. Again, it was time for the semi-trailer truck and we loaded ten pallet boxes plus two big ones with the bones of the whales and the manatee, plus the two with the giraffe-segments. My workshop was eerily empty, with all those bones gone after 5 years! Suddenly, it looked more like a ballet room than a taxidermy studio.


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51. A few months later, I drove to Germany to finally assemble the giraffe in the exhibition hall. My husband Hubert agreed to come and help, for which I was very glad. We had seen the situation at the museum a few weeks before when we hung up the whales, but it is always stressful to work outside the workshop! The possibilities to react on unforeseen events are dramatically limited!

Unfortunately, the skeleton had to be built on a pedestal with no access from underneath. We had to pull it on a temporary construction, jack it up high enough for me to crawl under it and secure the rods and then gently push it back into place with the skeleton standing on it. That alone made me terribly nervous. Also, there was no pipe running along the ceiling to suspend the body from while assembling. We used a scissor lift as a crane, which was a bit shaky, but sufficed the cause. In the background, you can see the minke whale.

52. Finally, Hubert and I had the body and the legs ready and standing


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on their own. We adjusted the distance between the hooves and the pedestal in each leg and locked the nuts.


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53. I decided this was the best moment to lift the pedestal back in place. We gathered all available people to help in that since the whole thing is pretty heavy and jerking movements could have caused damage.

54. The museum wanted to show the giraffe skeleton without any glass in front of it and it stands close enough to the visitors for any child to reach a leg and yank it. For safety reasons we decided to secure the skull with a thin cable to keep it from swinging too much. Therefore, I had to fix an anchorage for this cable under the ceiling. Again a rock-climbing moment!


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55. Then we stuck the neck on its anchorage. You can see the threaded rod and the wire cable in the gab between the thoracic and the cervical vertebrates. While I gently lowered the neck, Hubert threaded the lower end of the wire cable through the nerve canals all the way down to the pelvis, where it was pulled tight with the clamping screw.


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56-57. Once the neck was mounted, I climbed up to secure it with the thin cable I previously tied to the anchorage at the ceiling. Working at almost four meters above ground, I used fall protection equipment. This enabled me to work with both hands free and without fear of falling. Then, I fixed the skull in its anchorage. Again, the taxidermist, skull, neck, and equipment were all secured with ropes and loops.


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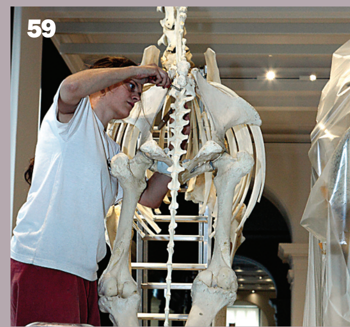
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58-59. Finally, I mounted all the "small accessories" like shoulder-blades, the tail, and kneecaps.

60. At last, the complete skeleton stood before us — an even bigger stone was lifted from my shoulders! We cleaned our stuff away and took one final picture showing my husband Hubert with me. It was a tremendous challenge and I am very glad I was given the chance to mount these large skeletons! It greatly changed the way I look at anatomy. Also, I learned to deal with the huge challenges that big animals present, be it in theory or practice. The exhibition with its impressive skeleton gallery opened the summer of 2014. ■

SABRINA BEUTLER: "I started doing taxidermy at the age of 10, bugging local and remote taxidermists (especially Christoph Meier and Lorenzo Vinciguerra) with my wish to be trained. I opened my full-time business five years ago at age 25, after five years of full-time learning whatever I could from whomever would teach me. I hold a nationally recognized vocational qualification in taxidermy, as well as an Educational Mission of the University in Bio Hazard-Training. I am a board member of the Swiss Taxidermists Association.

"I do all kinds of taxidermy except fish, from small birds to large mammals, small to large skeletons, as well as building and managing exhibitions and collections. I married my husband Hubert in 2013. I can be reached under 0041 26 492 06 73 or via my website www.tierpraeparatorin.ch."