

THE BOOK OF -PROP MAKING-

WITH FOAM AND WORBLA



BY SVETLANA QUINDT



Author
SVETLANA QUINDT

DEAR READER,

Welcome to my third book and thank you for supporting me with your purchase! Also, I want to say thank you for staying with me for so long. We have come quite a long way! Now that you have learned how to make the armor of your dreams and how to paint it to make it look "real", we come to another very important part that should not be left unattended: Weapons!

Do not underestimate them

"But I'm already finished with my costume. What do I need a weapon for?" you might ask. Well, how is a mighty and bloodthirsty warrior supposed to slay through hordes of hellish creatures without his trusty axe in his hand? How is a beautiful sorceress supposed to cast a blazing inferno without her trusty magical staff? Weapons belong to a character just like his armor does. And portraying a character through cosplay without his weapon just does not feel complete. Weapons will actually help you getting into that character. They are awesome to pose with, because you have something to play around with and know where to put your hands. They are an extension of yourself and really help you to express yourself. And besides: Weapons are just freaking awesome!

Often the weapon a famous character is wielding, is almost as well known as the character itself. I mean

what would Cloud Strife be without his Buster Sword, what would Arya Stark be without Needle and the Lich King without Frostmourne?

Over the years I've built quite a few weapons and in the process learned a few handy tricks and techniques I want to show you. It's always a pleasure to help and inspire other cosplayers and costume designers and I get so much back in return. People are constantly showing me their creations and tell me they were only able to make them with the help of my tutorials and that fills me with joy. It is the whole reason why I am sharing what I have learned over the years. So again, thank you and let's keep on doing what we love! You guys are awesome!

Allow me to introduce myself:

I'm Svetlana Quindt or Kamui as most of you know me by and I come from the beautiful country of Germany. In 2003 I discovered cosplay as a truly wonderful and creative hobby. Since then I specialized in armor and prop making and made that my full time job. Many of you may also have found this book through my tutorials, which I love to share over the Internet. Cosplay is a community that grows by sharing experiences from of every member and since I learned so much from others, I want to give something back.

ABOUT THIS VOLUME:

If this is the first book you got from me it might be a good idea to take a look at my other two volumes first, "[The Book of Cosplay Armor Making](#)" and "[The Book of Cosplay Painting](#)", since some of the techniques I describe in this book are based on things I've talked about in my previous volumes. And while I try to summarize and refresh your memory about a few things, it may be a wise to catch up first. For everyone else – please bear with me while I repeat a few little things so that people who are only interested in weapon making can still work with this book alone. I'll try to keep repetitions at a minimum.

My main goal is to have a collection of books for all topics that are important for the creation of armor and props. It's supposed to be a guide that helps you during your

own projects and that can assist you, if you have any problems or questions. It won't be a step by step instruction for every single sword, axe, staff or shield you might want to build but it will teach you the necessary techniques that you can use to build basically everything you might want.

Everything in this book describes my way of building things. There are a lot of other techniques out there and some of them might be a better solution for the specific weapon you want to make. I want you to open your mind to new ideas and help you to find a solution by experimenting, trying and learning by yourself.

And if you still have a problem, you know how you can reach me!

www.kamuicosplay.com

www.facebook.com/kamuicos

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You can find my first two volumes in my shop: <http://kamuicosplay.storenvy.com/>



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Get to know your materials

As a prop maker you are able to choose from a huge palette of possible materials, from thermoplastics over foams, clays, woods and much more. Basically you are able to create everything from anything. The only difficulty is to find out how. But since it's nearly impossible to introduce all materials and all techniques, I'll stick to where my heart is - which means foams and thermoplastics. They are not only super easy to work with, but the final result will be durable and very long-living!



Worbla and other thermoplastics

In my first volume about armor making you already got a deep insight into the countless possibilities with thermoplastics, so I'll keep this short: Worbla and Wonderflex come in 1 mm (0,04 inch) thick sheets of different sizes that become very flexible once you heat them up and get very sturdy again after cooling down. These materials became very common for armor projects, but they are also awesome when it comes to prop making. A solid and sturdy coat over foam, intricate details and even small sculptures are no problem with these materials. And all you need to work with them is a hot air gun, sharp scissors and some heat resistant fingers – or other tools to help you shaping the material when it's hot (don't worry, after a while you'll get used to burning yourself – just try to be careful at least).

Many shops who offer Worbla, also carry Friendly Plastic or its European equivalent Worbla's Deco Arts. This material is another thermoplastic that gives you great opportunities to sculpt complicated details, fill bumps or correct cracks without using any glue. I'm going to show you how to work with it a little bit later in this book but I already explained a lot about thermoplastics in my first book, which is the place to go if you're looking for a beginners course.

Since these materials became pretty popular, many online shops around the world started to carry them. I published a short list of vendors in my first book but you can go to this link to find a more detailed list:

<http://www.cast4art.de/distribution/>

Note:

Aside from its easy handling, Worbla has another huge advantage: Durability. While the material is pretty pricey, you don't just pay for the easy handling, you pay for very durable results. While foam props might get badly damaged after some usage, the only thing you may need to do with thermoplastic props is fixing a few spots where the color is chipped off. They basically look new even after many years of usage.

EVA Foam

Since you are very likely going to carry your prop around for the whole day, lightweight materials are a must. A good choice for that is EVA foam, which is not only a great base for many builds, but it is also very easy to work with, cheap and readily available. This kind of foam often comes as 1 cm (0,4 inch) strong protection mats with kind of a puzzle grid on one side. You can also use products that are called "Evazote" or "Plas-tazote", which are pretty common in the making of soft foam props for LARP players. For the work with all these products you only need a box cutter and a Dremel. The common thing to do to get a bulky base is to glue a few of these mats together by using hot glue and then use your box cutter or a Dremel to carve it into the shape you require. But more on that later.

Note:

Foam mats are available pretty much everywhere, it's sometimes just difficult to identify them as such. Yoga mats and puzzle mats are a good choice and are easy to find. If you prefer to work with the original material, check out some of those LARP crafting online shops.



Who is your champion?

There is actually a big discussion going on whether thermoplastics or foam is the way to go and I honestly think that both materials have their advantages and disadvantages. I can see why many people would choose to use either material and I can relate to their reasons behind it. It's just that I found out for myself that a combination of both materials is (at least for me) the best solution. Combining the thickness and lightness of foam with the flexibility and sturdiness of thermoplastics is an unbeatable combination in my book (literally).



Craft Foam

Craft foam is cheap and easily available. It's a very popular material in many fields of application. As a base material for armor and props craft foam is used in many of my projects and I always have a few spare sheets lying around somewhere. It's basically just a thinner version of EVA foam and it's most common to find it in a thickness ranging from 1 mm (0.04 inch)

to 3 mm (0.12 inch). In this book you'll find craft foam mostly for the application of details and inside the Worbla to create more depth. It's one of the most universally useful materials I know. You can shape it, paint it, glue it, cut it, melt it and deform it and even make whole armor costumes out of it. It's all a matter of dedication.

Note:

Craft foam is available in every good hobby store and even in some of the crafting departments of well sorted super markets. It's a good idea to buy it in bulks since you always need more than you anticipate. It's not that expensive so don't hold back.



Expanding foam

Originally an insulation material for house building, expanding foam is also a great material to create big three-dimensional shapes and very lightweight sculptures. Also called "Great Stuff" in the US, this material comes in cans and hardens after being sprayed at which point it can be carved into any shape using a sharp knife. While

thermoplastics are comparatively expensive, expanding foam can be a great and cheap alternative material for all kind of props. Since the main focus of this book is the combination of thermoplastics and EVA foam, you'll find a more detailed explanation on how to use this material in the work example section on page 46.

Note:

Expanding foam is available in almost every Home Depot or hardware store. But just a word of caution: It is suspected and currently under investigation that breathing the fumes that are created when spraying expanding foam might be a cause of cancer. So make sure to spray in a very good ventilated environment and add a gas mask and some protective gloves to your shopping list.

Wooden sticks and plastic pipes



A great base for swords, staffs, axes and many other types of weapons is a solid and durable rod. There are tons of different products available, which can be found in nearly every hardware and hobby store around the world. You could also just use the broomstick in your closet. Basically any sturdy staff will do the trick. Personally, I prefer wooden staffs and plastic pipes

in different thicknesses and lengths. Both are not only very durable and cheap, but are also – like all of my other materials – easy to work with. In addition it's easy to saw wooden staffs into separate pieces and screw them back together, which is a great solution for suitcase-ready props. Plastic pipes on the other hand can be reshaped with heat and are extremely lightweight for their size.

Note:

A good address always is Home Depot, which should carry wooden staffs and plastic pipes in every thickness and length. There may also be a service to cut your staffs into the right lengths, so better calculate your required measurements before you go shopping. Online shops for live action role playing (LARP) and hobby stores have suitable or similar materials in stock as well. A quick Google search should do the trick to find the right store in your area.

Stock up on supplies

So now that you have everything you need, you are probably super excited to start making the weapon of your dreams. You've chosen a bad-ass prop of pure destruction and cannot wait to soak it in blood - I mean wood glue and acrylics! Well first things first, time to get more stuff together. Let's visit some shops first!

One of your most important destinations will be your local Home Depot or nearest hardware store. If you've never worked with any of the materials I've introduced, now is the time to check them out. Collect what you need and try to think about what kind of products or tools might come in handy down the line, like glues, primers, paints but also screws or sanding paper. If you need to order your materials online, it's important to act with appropriate foresight. Keep delivery times in mind and order your most important materials like thermoplastics and foam pretty early.



Note:

When buying new materials it's always smart to get a little bit more than you really need. Even if you have practice and experience, the day will come when you will have to rebuild something or your calculations just turn out as wrong. Getting a new pack of materials will cost you time and additional shipping. And you never have enough time before a convention starts. Even when you didn't actually use the extra materials: The day will come when you'll be thankful to still have some leftovers in your workshop.

Compared to the armor costumes that you've seen in my first book you fortunately won't need as much materials this time. Even my biggest and craziest props require only two sheets of Worbla. You also won't need that much foam, but in both cases you won't waste money if you order more. Better safe than sorry. You'll surely start with your next project soon and with the techniques you'll learn in this book you're not really limited to a specific kind of weapon like a sword or an axe. Go for something crazy, you can do it!

Organize your workspace

You can work faster when you know where you have placed your tools and materials. Create a little bit of space to store glues, acrylics, spray cans, fabrics and other tools so you can concentrate on your work without wasting too much time trying to find stuff in your chaos. Your workspace will get really messy sooner or later, so it's a good idea to work against that from the start.

Workshop and tools

Luckily becoming a prop maker doesn't mean you need to rent a huge workshop for your projects and spend your whole money for tools. My workshop is not as big as some people imagine it seems be. It's basically just a small room with two tables and a few shelves to store stuff in it. Working with thermoplastics means that you can start pretty small and don't need that many tools. Since it's not poisonous to work with (unless you're eating it, which I would not recommend), there is also no need for any "professional" ventilation or safety measures.



All you need is a hot air gun, a Dremel and some quality scissors. Just make sure not to set any carpets or curtains on fire while working with the hot air gun. What follows is a short explanation of the tools you'll need and will sound familiar to everyone who has read my first book. Since not everyone has done that, I want to explain a few things again in a very compact manner.

I often get asked what type of hot air gun I am using and my answer is always the same. It doesn't matter. It's already good enough to buy a very cheap and simple one from your Home Depot. However - if you're planning to make a bigger project or just want to get a quality tool that works for years instead of months it can be better to spend more money. The hot air gun will be your most important tool when it comes to working with thermoplastics and you will appreciate a quality product. If you want to work very fast, it saves a lot of time to heat the material with one hot air gun in each hand.

If you do not own a Dremel, this tool will be a good and solid investment for your upcoming projects and will provide you many possibilities to shape, create details or just to smooth out a surface. It is essential for clean, sharp edges and for carving any shapes or details into foam mats. Handling a Dremel however can take some time to get used to, since the tool itself is anything but lightweight. A good solution is a flexible shaft attachment, which allows you to hold the tool almost like a pen.

When it comes to cutting tools I prefer a sharp leather scissor in combination with a sharpener. They are not only able to cut through several layers of thick material, it's also easy to get them sharp again. Despite them being a little bit on the pricey side you'll learn to love them once you have to cut your first piece of Worbla, foam or plastic.

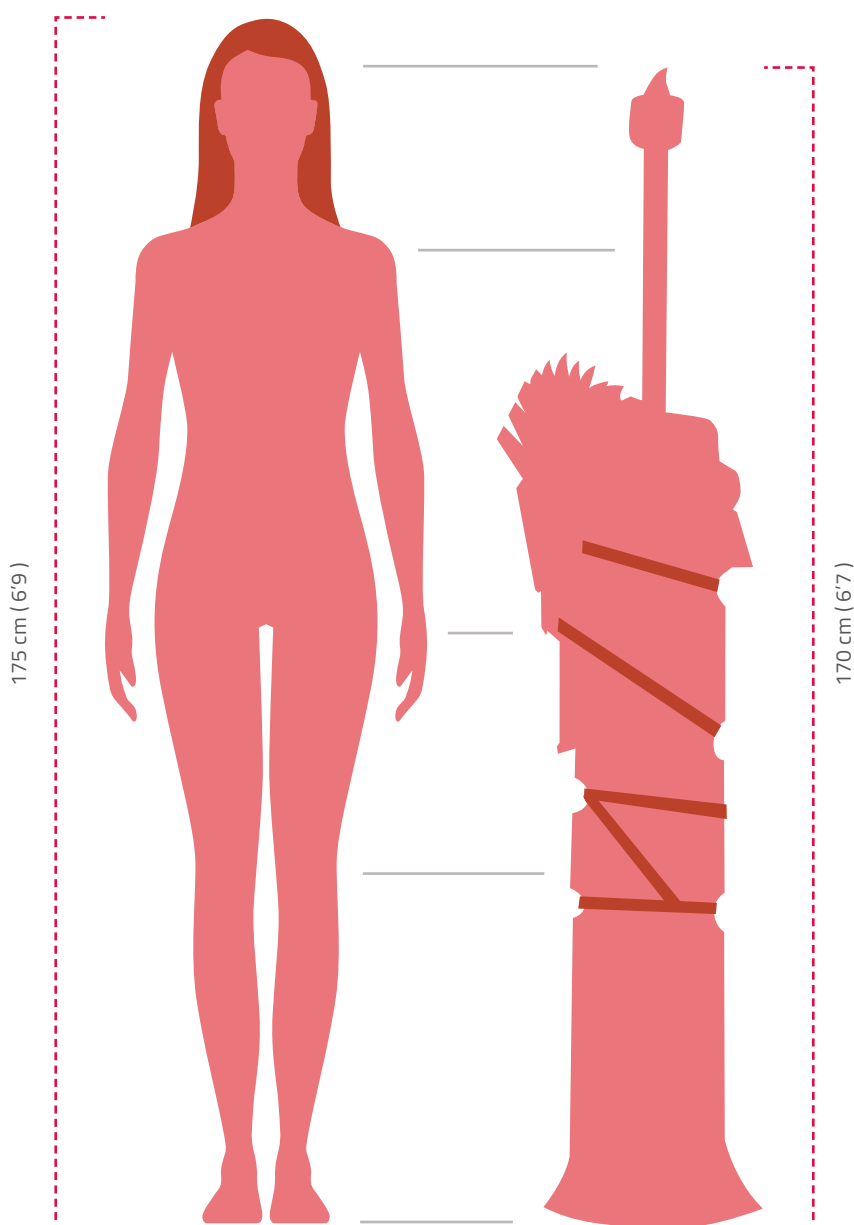
Another one bites the dust

Basic safety equipment is a very important investment and an absolute must in every workshop, even if you only plan to work with some harmless foam and thermoplastics. During your projects you will need polish your props at some point, most likely using a rotating or orbital sanding tool. This does not only create a lot of fine dust and splinters, it's also quite loud. Protect your eyes, ears and especially your respiratory tract. You may also use spray cans of glue, resin or acrylics, so get a good gas mask. And be warned about working with thermoplastics: No matter how careful you are, be prepared to get some burns from your hot air gun!



Oh yes, size does matter

Imagine you are standing in front of a mirror. The awesome armor cosplay you have worked on for months is finally done and then you notice that your axe is way too small. Now you know how important it is to keep the scaling in mind way before you actually start building your prop. While fictional characters tend to have weird measurements like massive orcs or tall elves you'll always stay a human with human proportions, no matter which costume you'll wear. And as a human you may be taller or smaller than you would need to be for a certain costume. So, it's not only important to transfer a fictional prop to real life, but especially to adjust it to your own body measurements.



Luckily there is a pretty simple method to get an initial idea about a suitable size of your weapon. First, try to find an image with the prop close to the character. Aside from a full body image it's important to get a frontal look of the piece you want to craft, because it's the easiest way to get an undistorted and clear result. Now just imagine the character you want to portray has your size and use this size as a scale for the prop in his hands. This method is actually so easy that it's even possible to guess a suitable height of a spear just by looking at the character. Do you have many props in your mind and your decision depends on the ability to transport your weapon this trick can be pretty handy.

That way the same weapon can end up very differently depending on the cosplayer being a woman or a man and how tall that person is. It just has to look good on you and that's all that matters.

Note:

If you don't find an image of the character in full size, it also helps to use the size of a head, hand or another body part as a reference. Count in feet and arm length if it's necessary and don't worry about exact measurements. A rough estimation is mostly enough. It's always a good idea to have your own body measured out to have data to compare, which makes it very easy to plan ahead.



Creating weapon patterns

Finding patterns for your piece seems to be the most difficult part but actually it's pretty easy if you just know how. All you need is an image of your prop from the side and a graphic program on your computer.

To get a clear idea of your weapon, all you need to do is just to take its silhouette and follow it with a pen or a line on your PC to create an outline version. When you've caught all of the outer lines, resize this image to fit the dimensions to the full body comparison you did before, to get the exact measurements you need. Now just press on print, but without fitting the image to the page so the printer will automatically split your image onto several pages. Puzzle together the pages using tape and you're good to go!

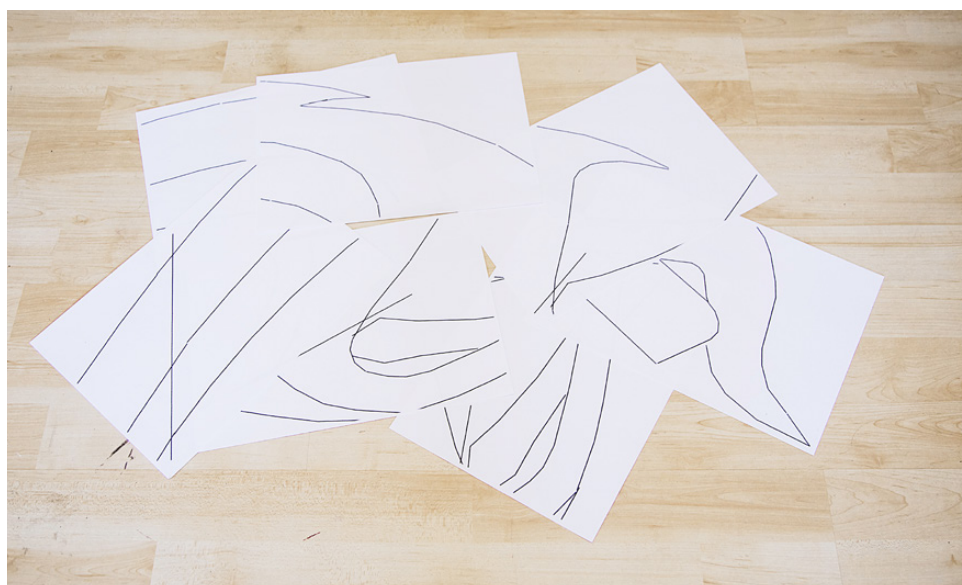
It's a pretty simple and fast method, and you don't need to be an expert in 3D sculpting, own a Autocad program or any plotter to pull it off. I've used this method for a pretty long time now and it works for simple and for complicated forms just perfectly.

Note:

It helps to add basic detail elements to your drawing, since you are able to cut them out and to use them directly as a pattern for your further detail construction. That way you can build your prop more accurate, since you don't need to experiment with self made patterns.

Note:

Even if you've adjusted the patterns of your prop perfectly to your own measurements it's not rare that you'll still need to change something. Print out your patterns out and try to hold your "paper weapon" in front of your mirror. I often don't feel comfortable with the size and the mirror confirms it with a weird image. Don't worry to scale something up or down. It's important to make it look natural - fictional measurements can look really strange in reality.



Separation for transportation

There is no denying it: Running around at conventions with huge monster blades in your hands is pretty awesome. The only big problem however (especially for people who have to fly with their creations) mostly is the question of how to get these babies of badassery to the desired location of the event. You may have to travel with a suitcase or if you're going by car the chance that you don't own one of those crazy big monster truck cars the US guys have, is small. So you will need to think about how to stuff a really big weapon into a really tiny suitcase.

In fact there are many ways to travel with a large prop: You can try to disguise your blood soaked broad sword as a handbag and declare it as hand luggage (probably without success), travel with massive cardboard boxes and pay tons of fees for transportation or you plan well and use handy screws. You heard that right! Screw your weapon!



Note:

To get a clean and straight staff after screwing it back together it's essential to drill the holes exactly in the middle of the wood and with a 90 degree angle. Doing this by hand with a drill is almost impossible and it's a good idea to find professional support. I was lucky enough to discover a tuner workshop in my city, which is able to give me some perfectly drilled staffs after a few minutes. Try to search for somebody with a drill press to save you a lot of hassle. It is possible to drill the holes yourself but beware that the connected pieces might not be as straight as you hope them to be.

Before you start sawing and drilling it's important to intelligently break your prop down into smart parts. To find the right spots, try to search for hidden places or clean cuts in the design of your weapon. For staffs those areas can be the beginning of a head piece, swords perfectly can be separated between grip and rain guard and bows offer themselves for a cut straight through the middle. Really complicated weapons however make it very difficult to get squished into a suitcase, if not im-

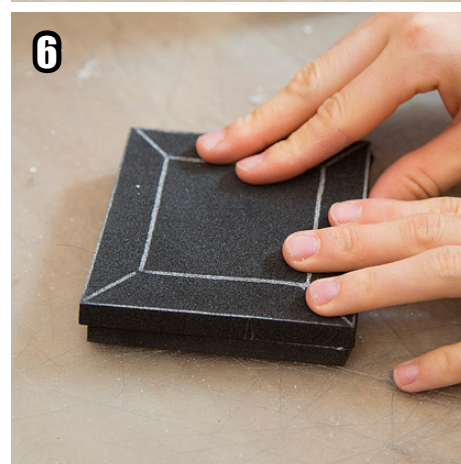
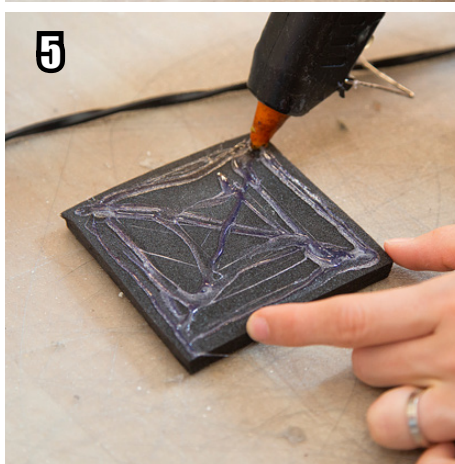
possible. So it's also important to recognize the possibility of transportation during the decision process of your costume. How much space will it require in your luggage, how heavy will it be, are there any possible areas for a cut and will the final pieces be small enough for transportation? There is a lot to take into account before you can actually start building your weapon but it's really worth it unless you want to have a finished prop while there is no way to get it into an event.

Now we are getting to the real deal. Everything up to this point was more or less basic knowledge and preparation. Just keep that all in mind when you start working on your prop so you won't get stuck.

From here on it's all techniques and actual work examples which make it a lot easier to understand and follow the actual work-steps than just reading about them.

Shaping a foam base

When EVA foam arrives at your home you'll open the package and immediately think: "Wait. This doesn't look like awesome prop making material at all!". With a few simple steps however you're able to create blood-thirsty blades, massive bows and powerful staffs out of it. To explain my work process I created this small medallion that incorporates almost every technique that is important for prop making. We begin by giving our foam base some shape!



When you've chosen a prop and created a pattern, you'll need to transfer it to your EVA foam sheet. Select your markers or sharpies in a different color than your foam and trace the borders of your patterns. Now cut along the lines with a sharp cutter while holding the blade straight over your foam if you don't prefer a special angle. A sharp knife is necessary and it's always a good idea to use a sharpener before. Curved lines can be a bit tricky to get right, but it's not that important to get super clean lines since your Dremel is a great tool for rescuing messed up edges.

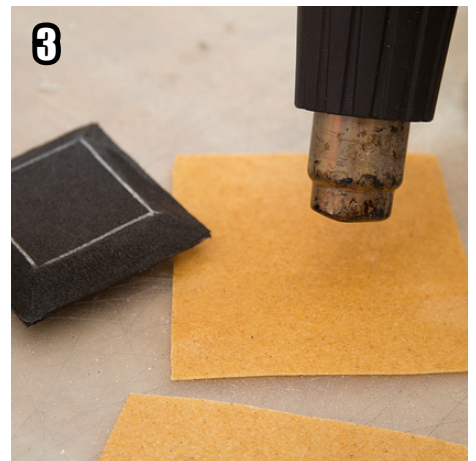
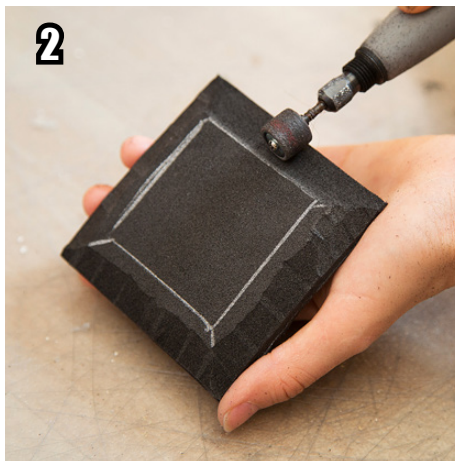
Another great way to create clean and even edges at every side of your prop, is to mark where the shape begins and where it ends by using another pattern just for them. Just use a piece of paper that is smaller than your actual pattern, put it in the middle of your foam and draw some additional lines on it.

Now repeat that process and glue as many mats together until you got the thickness you want. EVA foam is very soft and easy to handle. So even massive blocks are still perfect for some carving

work. There are tons of glues you can use to connect two pieces of foam. If you're as lazy as me your good old hot glue works just fine. Make sure to apply only a thin layer. Also don't worry if your glue cools down - just grab your hot air gun, re-heat the adhesive and your foam a little bit up and then press everything together.

Sanding edges and covering it all with Worbla

Now it gets real messy! Sanding the edges will cover your workshop / living room with a thick layer of black foam dust. To minimize the dirt and to speed up your work, it's a good idea to pre-cut edges with a sharp knife before you start to dremel. For that just hold the knife in the right angle and remove some of the material between the marked lines. But be careful and don't cut too much. Once your foam is gone it is gone forever!



You'll surely not be satisfied with the raw, bumpy edges you got now. But it's pretty easy to clean them up! Use your rotary tool and sand them slowly and carefully. Try to find the right rotation speed that you're able to work with fast and precise and just follow your edges from one end to the other. You'll notice the angle of your edges depends on the distance between the border and your foam and the inner line you've drawn. Use this knowledge for sharp blades or rectangle shaped ornaments later.

If you want to save time and nerves on cleaning, it's a good idea to keep a vacuum cleaner close to you and chose a secluded area as a work space. I choose to roll my dusty ass on the floor in my hall-way with all doors closed around me.

Don't just protect your room - protect yourself from foam dust as well! While sanding foam, you'll automatically inhale without any protection. Get a dusk mask and also save your eyes during your work with some protective glasses.

Note:

Covering your foam with Worbla works exactly like the sandwich technique I showed you in my first book. Take two larger pieces of Worbla, heat them up and wrap your piece inside of it. Press the edges together and cut around the shape to remove unnecessary material.



Wicked details!

Applying details can become addictive! While many props and weapons seem to look boring in the original reference, it's not a bad idea to add some tiny little swirls, lines or dots here and there. It only becomes a problem if you just don't want to stop.

In video games, comics, manga and other source materials, props are often blurry, unclear or just don't show any interesting depth in general. They look just fine in their world, but once you brought them to reality this can end up in a looking dull since their design may be just an abstract form which might not really work well in reality. So it leads to the question, whether you like the simple look and want to stay true to the original artwork or if you prefer to give your piece a personal touch.

As a fan of lines, swirls and dots I'm clearly part of the second category, but that's just a matter of taste. Bringing a prop to life is always a matter of interpretation and people see different things in the source material. Nobody will hold you accountable if you chance a few things to make it look better. Or they will and then they will run away from you chasing them with your bad-ass weapon! At the end however keep in mind that you always create your work for your own satisfaction and not for the judgment of somebody else.

Note:

When your blurry reference image is giving you a hard time, look for inspiration on the characters armor or other designs from the same game and try to use those patterns to make the details look like they belong.

Note:

Don't be afraid to try out new things since almost everything can be used to make cool and unique details. I've seen some really good examples that made use of 3D liners, lace, threads or rivets. There are no limits for your creativity and your crafting skills. Maybe you'll create a new trend by sharing your experiments with the cosplay community.

1. Heat up leftovers



2. Squish them



3. Stretch and repeat



4. Pinch an edge



5. Add a curve



6. Connect the ends



7. Add details

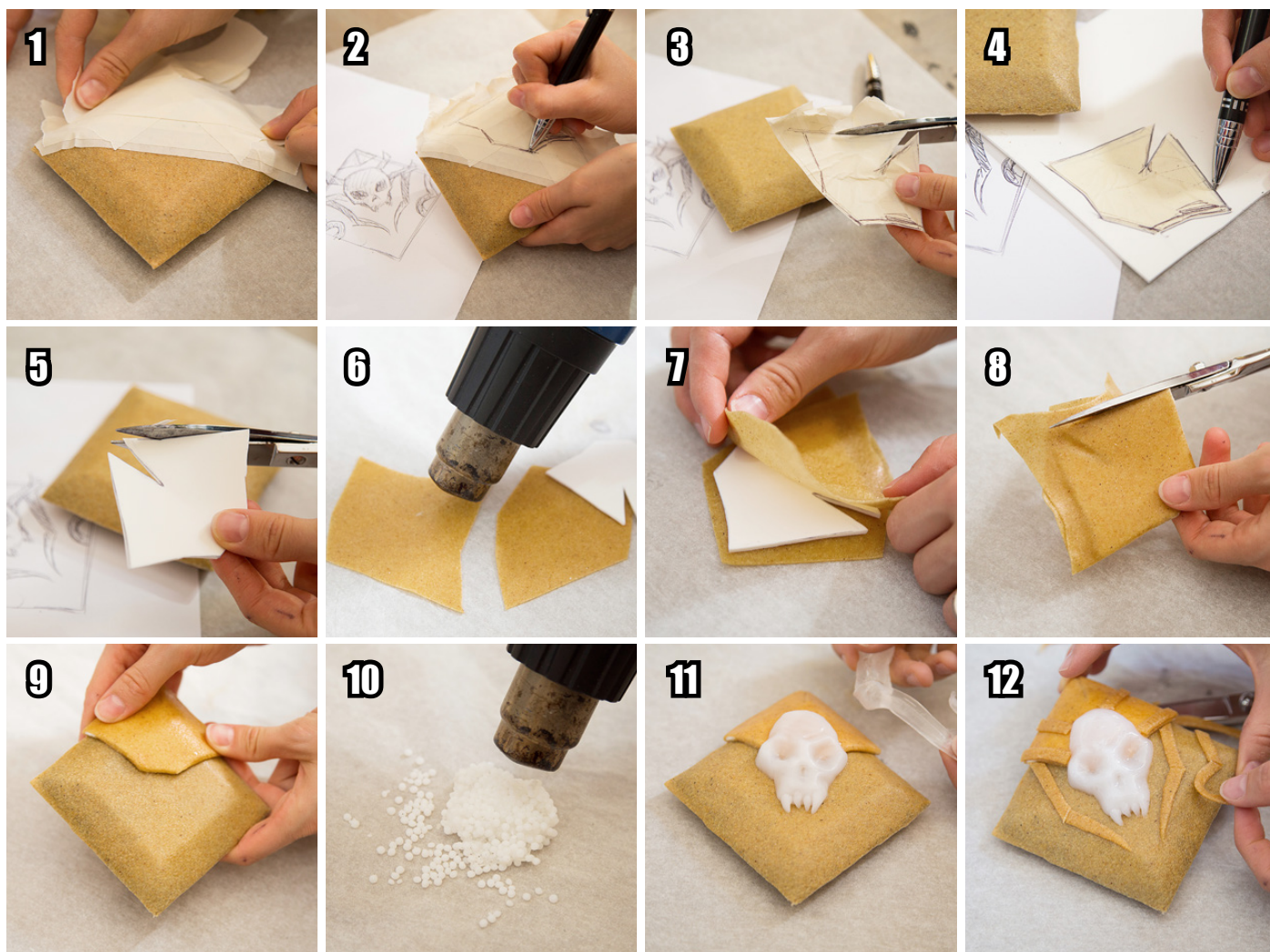


While working with Worbla you'll get tons of leftovers that you might think about throwing away. Keep them! Leftovers are a great opportunity to give your prop some additional shapes in the form of sculpted details like spikes, horns, raised twirls or even chain pieces!

All you need to do is to collect some of those leftovers and to heat them up steadily from all sides. Once the material becomes soft, press it together and repeat that process until you have a thick worbla clay. After a while you're able to shape and deform it pretty easily – so now it's

time! Roll it, press it, squish it! As long as the material stays hot enough, you're able to create anything you want out of it.

I myself use three different kinds of details for my props:



A sandwich layer of Worbla with craft foam inside (like I showed you in my first book) is my basic method of detailing and creates even more depth through adding more layers. An easy way to find the pattern directly on the prop itself is to cover an area with painters tape (1), draw the

details on (2), cut these out (3), transfer them to craft foam (4) and to cover the cut out craft foam with layers of Worbla from both sides. Now all you need to do is to reheat the surface of the prop again and just press the piece you've just crafted on there softly.

Note:

If you want to test something you've built, use heat on only one piece you want to connect with the other. The material will still stick, but once it's cooled down you'll be able to pull it off again if you're careful. This method helps a lot to avoid mistakes and test assembling before the final adjustments.



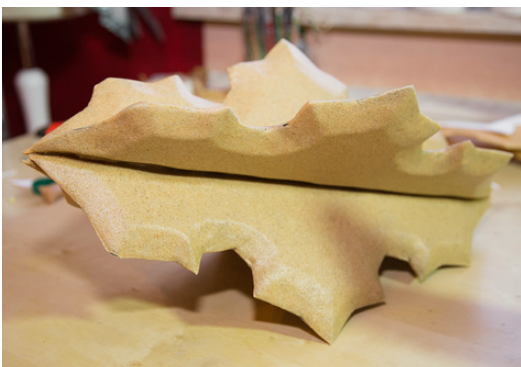
While Worbla itself is a pretty sturdy modeling clay, Friendly Plastic or its European equivalent Worbla's Deco Arts is a great alternative which allows much more freedom in your work. As a thermoplastic it's also perfect for sculpted details like this skull for example. During this step it's easier to work with small pieces of material you add here and there instead of sculpting something out of a

massive block. Also keep some cold water on your fingertips since this material is sticky and requires a high temperature during the sculpting process.

Good old stripes

A pretty simple, but effective detail technique is just to cut some stripes out of a double layer

of Worbla and use them to line shapes or add patterns or elegant ornaments. If you like this method, calculate additional material for your shopping list. It's surprising, but such details can cost you half of a Worbla sheet and even more for your project. If you want to know more about these techniques take a look into my first book where I cover this topic in more detail.

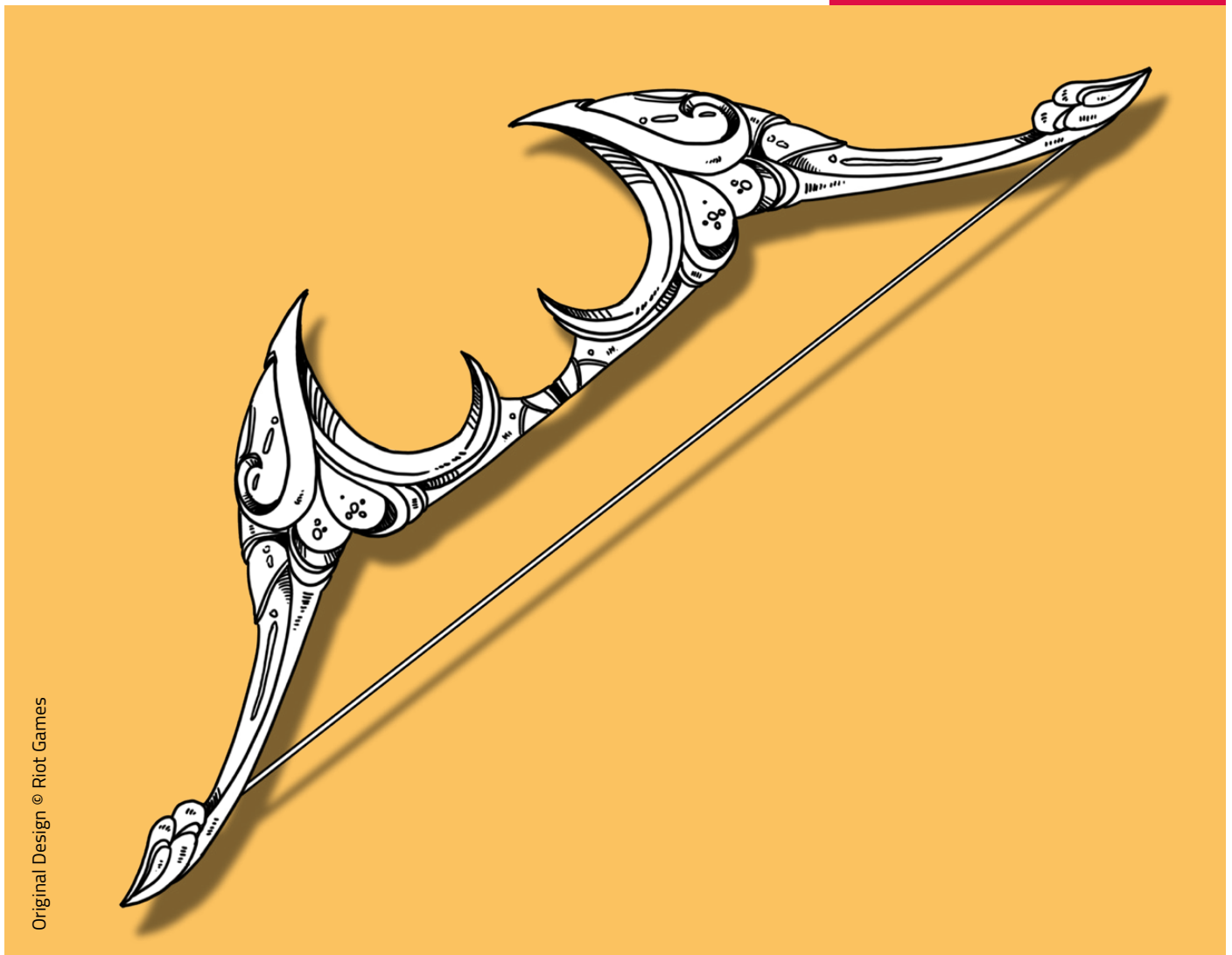


And now on to some work examples. This is the important part of my prop making book since understanding these techniques is much easier when you can actually see how they are applied in real cosplay weapon projects.

I've created a few props just to show you how it is done in this book, so I hope you can forgive me for not showing you any finished costumes with some of the following weapons.

Heartseeker Ashe's Bow from League of Legends

Heartseeker Ashe's weapon was actually the very first bow I built, but it was the perfect chance, not only to test my foam carving skills, but also to explore some interesting abilities of Worbla.



From the beginning this project was destined to be transportable. Just like most of my props I've used a wooden core with a screwing function as the base. The two parts are separated directly in the middle of the bow so that I have two mirrored parts to work with. The measurements of my suitcase in mind, I was also pretty limited in their size. Since this weapon was for a friend of mine who is a bit smaller than me, I actually scaled the prop down a notch which made it easier to transport. I ended up with two parts of 65 cm (25,6 inch) and then screwed both pieces together to get a 130 cm (51,2 inch) long bow.

Note:

I chose this example to show you how to shape EVA foam. The bow has a very bulgy look and just using sandwiched Worbla would have never been enough to make it look as three-dimensional as it needed to look. So the combination of many layers of EVA foam and a Worbla skin was just perfect to show you this.

It was pretty important to get clearly drawn patterns, which I transferred as a huge puzzle to EVA foam mats – the result was 54 separate pieces! The bow itself is pretty bulky, so I decided to layer up to five sheets of foam together. The base however consisted at first out of only three layers, since one part of the bow is thicker than the rest.



At this point the carving had already started. The ends of the bow needed to be made thinner and the edges on the back side required a round shape. Also all separate elements needed to get in shape and especially carving the heart was not only pretty time consuming, but also cost me a lot of patience. To give all of the four hearts the same shape I drew some additional lines for orientation and tried to follow them as close as possible. I was not sure in my skills, so I used some simple forms beforehand and practiced before going for the real thing.

Gluing all of the layers together was a bit tricky. No matter how exactly you cut or glue, there will always be some pieces that are a bit too small, a bit too long or a bit too wrong. I had to use my dremel a lot, to sand something down here and there, cut this and that shorter until everything really started to fit together. Don't rush at this point and take your time to adjust everything until you are satisfied. Getting the base right is essential and your final result will show your patience!

Note:

If you are using hot glue and need to connect huge foam pieces together, don't worry if your glue cools down. Like I already said before, take your time, make it proper, thin and even, grab your hot air gun afterwards and heat the glue up again before pressing the layers together.

Make sure to try out different kind of glues since you may get better results than with hot glue.

Without any need of further preparation, the EVA foam build then was ready for its warm and fuzzy Worbla coat. Despite of there being huge height differences, thin foam borders and bumps carved deep into the layers, this thermoplastic material is just flexible enough to cover everything perfectly. All I needed was just to heat it well and then to press it deep into every furrow. Wooden modeling tools or something similar can be pretty useful at this point.



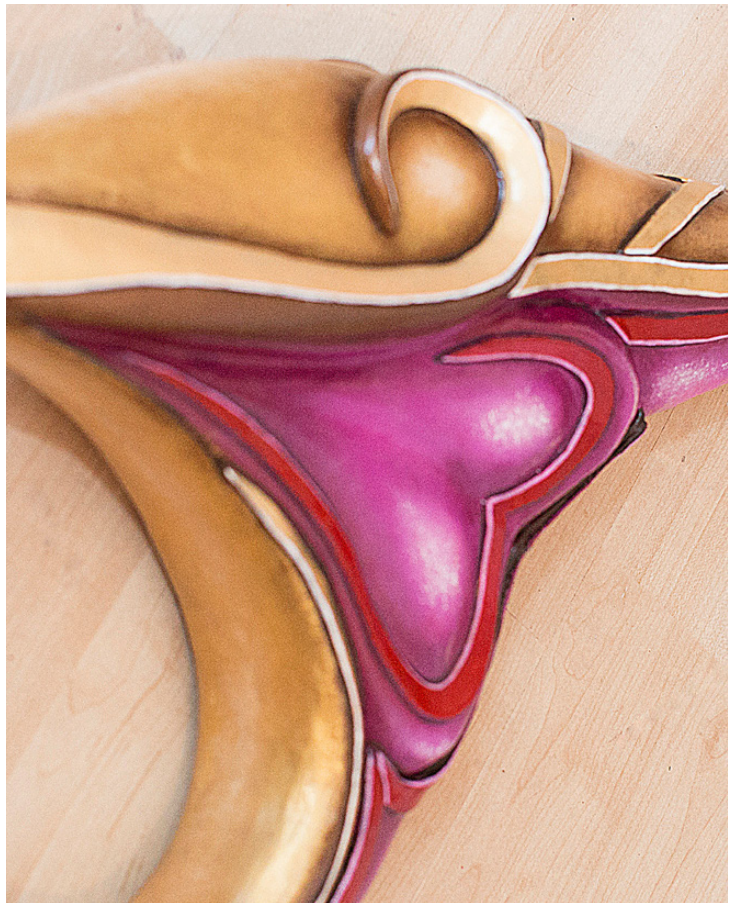
Once my bow had his delicious Worbla cookie dough skin the hardest part of the project was finally behind me. Only a few basic detail layers of Worbla craft foam combinations and thicker and thinner lines were enough, until the build of the prop was completely done. Many of these details however were my own additional touch and not part of the reference.

The only work-steps left were the surface treatment, the painting and the finish. If you are interested in those processes – I will not go into detail about that here again, since I have already covered everything there is to know about painting with acrylics in my last book [“The Book of Cosplay Painting”](#). For the entire bow I used one XL Worbla sheet as well as about 1.5m² (60in²) of EVA foam sheets.

Note:

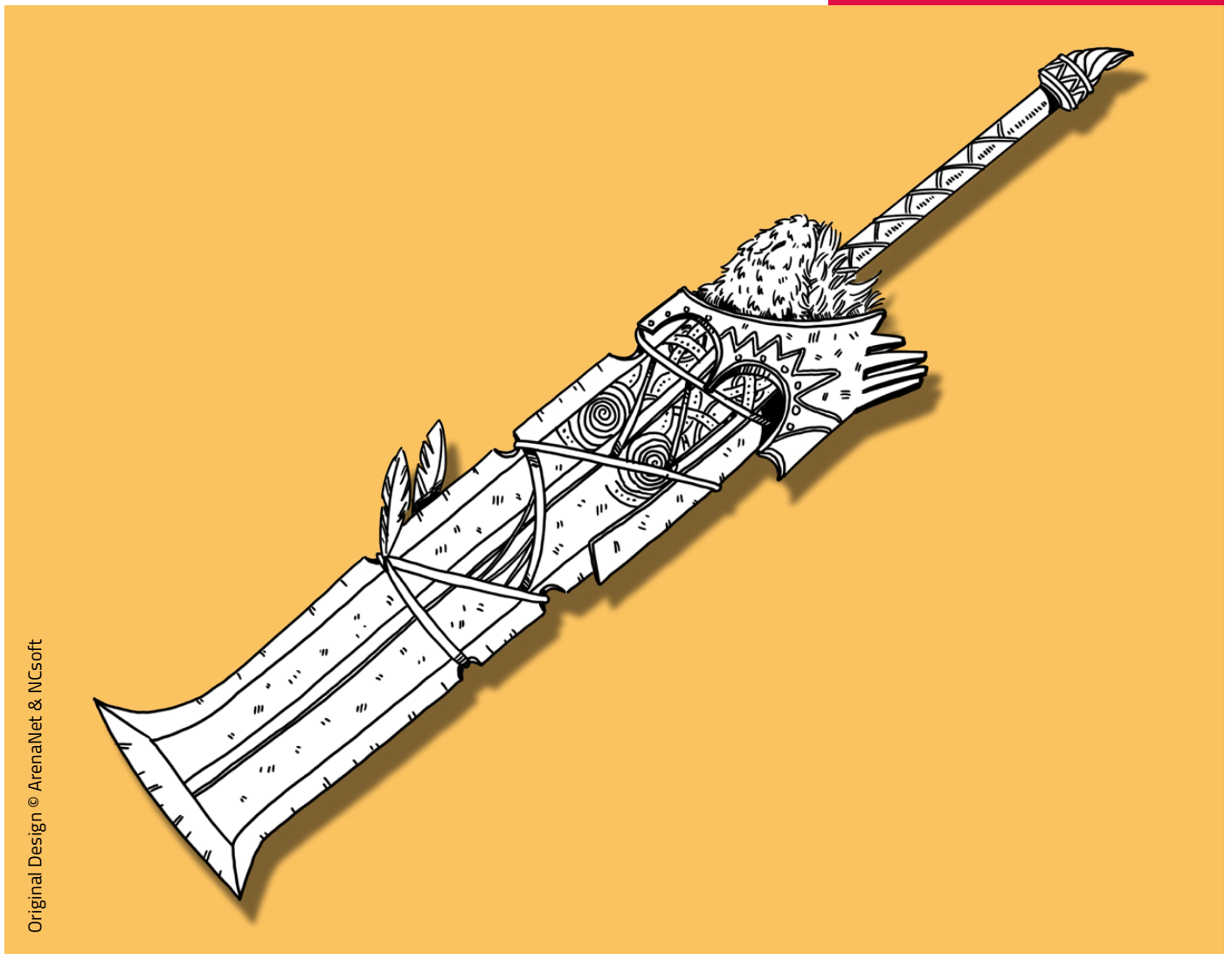
If you want to cover uneven surfaces you'll have to stretch your Worbla. This thins the material and can even create holes or tear it apart. Work carefully and use filling primers like Gesso or putty to hide these holes during the priming process.





Greatsword „Zweihänder“ from Guild Wars 2

With a size of 1.70m (6'7) and a final weight of around 3kg (6,6 pounds) my Norn Greatsword was destined to be a royal pain in my butt and I knew from the beginning that it was not the smartest idea wanting to bring it to the States in a tiny suitcase. But life is like a box of swords. You never know how many parts you're gonna get. Challenge accepted!



A wooden staff separated into three pieces was the base of this beast. Aside from the grip for the first cut, the design actually allowed me a further perfect point for the second joint. Directly over the blade was a small leather belt that covered about an inch in the middle of the sword – exactly this belt was the turning point that made me bringing this sword to life. In the end I used 75% of a XL Worbla sheet as well as two EVA foam puzzle mats to get this baby done.

Note:

The massive size of this prop made me chose it as another example. I wanted to show you how to realize a big weapon like this and what where the difficulties you have to overcome when choosing such a big prop - like balance and transportation.

Despite of it being so huge some hot glue – or better tons of hot glue sticks – were enough to connect the wood and the two layers of EVA foam. At this point however it's very important to screw together all wooden pieces and first after that start to work on the actual sword. There is nothing more annoying than to be done with a prop, putting everything together and then noticing that your separate parts don't match together.



I prefer to build my props as solid as possible since they need to survive many trips squished into a suitcase with many other sharp, heavy or hard costume parts and other repairing tools. So again I've decided to use a solid, massive coat out of Worbla instead of using glue or a silicone to harden the foam, which is a technique that is very common in LARP or for foam costume fabrication.

Note:

During this project it was particularly important to keep the length of the wooden pieces in mind since there was only one place the sword could be separated. Plan and calculate well before you start to cut.

There is another point about prop making that I have not mentioned yet though – and that is balance. You know when in movies the hero gets hold of a sword, swings it around and then says something stupid like “This is a really well balanced sword.” I never knew there was so much truth behind a sentence like that until I tried to lift my Norn sword into the air using only one hand. It was so badly balanced that it hurt my wrist because the heavy blade was always dragging the front down to the ground. I would neither be able holding that thing upright nor fighting with it. So what can you do in a situation like this? I didn’t want to use only foam for the blade. This would have made it lighter but also much more likely to break or get scratches during transportation. There was only one thing left for me to do. Make it even heavier!

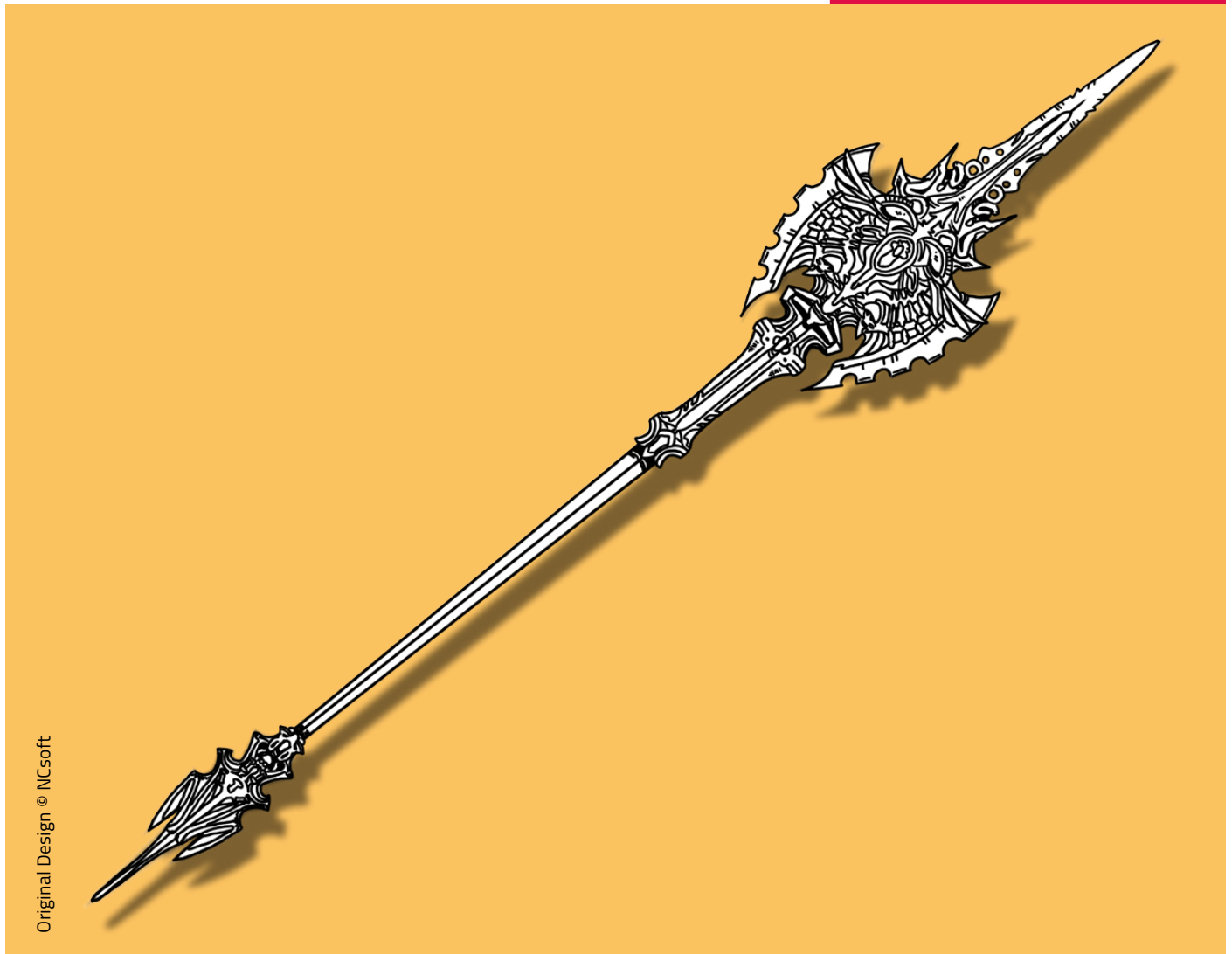


This means heavier on the other side of the blade – the end of the handle to be precise. To balance out the sword I would need it to drag down on both ends instead of just on one side. That way it would end up a lot more balanced. So I took a lot of heavy Worbla leftovers, squished them together and crammed it all in the end of my handle which made it much easier to hold albeit being a lot heavier than before. So think about things like balance when making a big weapon. It is not so important when you build small props, since they normally don’t really weigh much. At least try not to forget thinking about how you would like to hold your weapon and then distribute the weight evenly over your prop to make it easier to hold.



Infinity Spear from Lineage II

Despite of its complexity and a pretty detailed look, the Infinity Spear was anything but complicated and in fact pretty straightforward and simple to build. The only problem was: It required a crazy amount of patience!



You surely know this problem: You pick a project because you like the design and think you could probably pull it off in about a hour or two. So you start working, full of motivation and a big smile on your face. But after days of cutting, gluing, sculpting and shaping you notice that this project just doesn't want to end. No, it becomes bigger and bigger and instead of reaching your aim, the visible end of this project slowly slides away into the distance.

Note:

The Infinity Spear made it into this book to teach you the most important lesson in prop making - Patience! You can accomplish extraordinary things when you really set your mind to it and never give up. The finish line may not be in sight for quite a while when working on such a complicated prop but the end result will be well worth the effort.

Exactly this happened with the Infinity Spear. Such projects are not really a problem when you have enough time and don't need to rush. It can be just a bit depressing and very exhausting to keep on working with the tiny hope that you're going to be done soon-ish. It also can be pretty exciting, since you know that the result will look really good and it will turn out as something you'll be really proud of. When it's *finally* done. Someday. Maybe.



For the Infinity Spear I started with a pattern I got directly from the original artwork. Since the design had so many details, it was hard to separate layers, forms and shapes, but these decisions already formed the final piece. During this process it's important to keep the upcoming construction in mind and to already think about the different steps of the building process. Or you just draw some wild, undefined lines and hope nobody notices the difference between prop and reference as long as the basic feeling of the prop comes across – like I did!

Note:

To keep yourself motivated throughout your project I would recommend taking a creative break every now and then. Getting back to work will be exciting again and will help you finish your project with new energy.

My reference was just a huge convoluted mess of details, so it was pretty important to get a pattern with clear shapes and defining lines. After the basic build of a prop, such shapes helped me a lot to create the following details. I had to add just some lines here and there and didn't need to adjust any positions or really create something new. The head of the staff was a combination of a lot of different layers of Worbla combined with Worbla lines and sculpted Worbla leftovers.



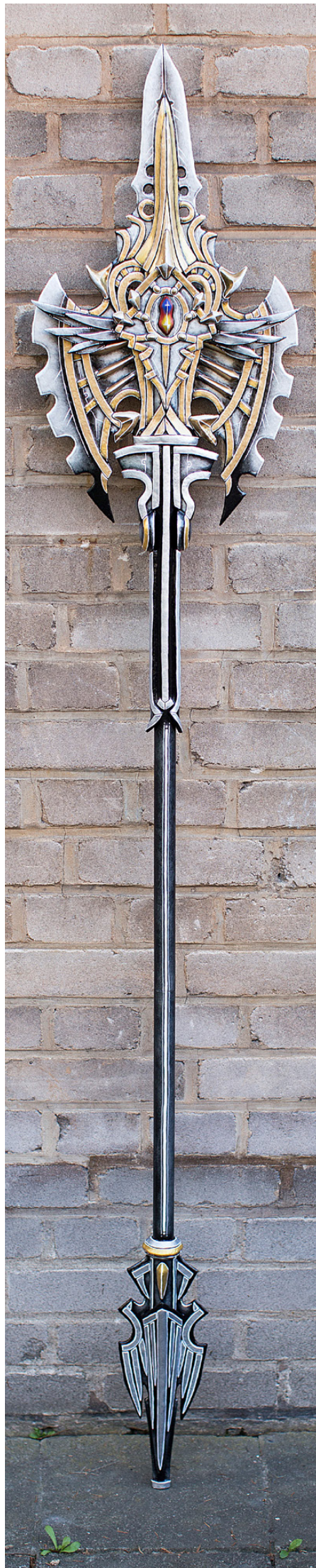
Separating a staff like that is also pretty simple since most of the time you can just screw off the head piece. Almost every staff has some kind of details in the middle and there is always a place where you can make a second cut without anybody noticing. It's very important to fit in the

screws just right so when you screw together your pieces again the head and the bottom face into the right direction and fit together in harmony.

This baby cost me about 75% of a XL Worbla sheet and some craft foam.

Note:

When you notice that your pieces do not match when you screw them together you can take a reacher and force the screw into the wood a little deeper until the rotation is right and the pieces fit again. Just be careful not to wear out the attachments or the screws will go wobbly and loose their strength. There is no exchanging the attachments and screws once they are inside and the staff is fully built. So do try to be extra cautious.



Gorehowl axe from World of Warcraft

Designed as an axe with a massive blade, Gorehowl – like my Norn Sword – turned out to be a very unbalanced prop. To keep the blade as lightweight as possible, I used EVA foam as a core and covered it with Wonderflex afterwards. As long as the surface doesn't require too much stretching, Wonderflex is at this point as useful as Worbla. And as a thermoplastic it glues itself together with Worbla just fine which I used again to add the finer details.



If you take a closer look at the separate steps on the next page you'll notice how simple Gorehowl was in its construction compared to the final result. All you need is a PVC pipe that you bend by heating it up with your hot air gun, thermoplastics and some patience for the details.

Note:

I wanted to show you Gorehowl since it incorporated a lot of different materials and techniques. I also think it's one of the props that actually tells a story.



In addition Gorehowl was a great project for efficient use of spare material. All Worbla leftovers that I collected during the creation of the basic layers were perfect for spikes, horns, teeth and rivets. In total I even had to use some leftovers of older projects for the sculpt of over 50 separate modeled pieces. Since a skull is easier to create with Friendly Plastic I used that instead of Worbla.

Despite having a very lightweight core, the additional details created a massive imbalance between the blade and the end of the grip. The solution again was to fill the end with extra material to distribute the weight more evenly. When your Worbla leftovers are not enough, you can also use additional weights from the hardware store. A lack of balance in a prop seems to be a second-

ary problem at first, but after carrying this massive axe for the whole day, you'll be glad that you are not forced to drag the massive head over the floor of a convention hall. It's much easier to hold something in your hand that doesn't fall off to one side or the other and refuses to stay upright.

In total Gorehowl required two EVA foam puzzle mats, 1.5 XL sheets of Worbla, one sheet of Wonderflex, some grams of Friendly Plastic and a plastic pipe. To create a smooth, nice blade I used a thick layer of Gesso on this part of the prop and covered the rest with several layers of wood glue.



As the name Gorehowl implies this weapon was not created to cut grass and trim flower bouquets but was forged in the bowels of hell to vanquish evil in the most splattery gorefest the world has ever witnessed. One way to show this to everyone is to actually let the prop tell a story by itself by painting it in a used and withered fashion. By adding bruises, dirt and blood splatter the weapons gains life and experience and actually looks like it has seen quite a few battles in its time in-

stead of just looking like fresh out of the smithery. Even when you build a blade very smoothly and even out every bump with perfect precision you can always count on the painting to make up for your perfect mistakes. Try to decide how worn out you want your weapon to look and paint it accordingly. Have no fear to get your prop dirty and to bend or crack a few things - it will only make it look way more realistic.



Malthael's Scythes from Diablo III

Malthael's scythes seem to be a pair of two very complicated and detailed props, but in fact it was an easy, yet time consuming project. Just creating each side four times (twice for each blade), was not an easy task and cost me a lot of patience.



By now you should know the drill. Their base was very simple and quickly done: One blade consists out of two layers of 1 cm (0.4 inch) thick EVA foam, which was connected through a thin layer of hot glue. Afterwards I used a sharp cutter to remove a big part of the foam, which made it much easier and faster to sand the foam into a sharp, clean edge on both sides of the blade. In addition it was necessary to give the grip a nice, round shape by mainly using the Dremel again.



It's hard to get a really clean and perfect surface, which real scythes would require, but pressing the Worbla steadily with a roll of painters tape to the foam helped to get rid of most of the bumps.



Then it was time for the base of the details. Covering the blade with painters tape also helped to create some of the major Worbla sandwich pieces. The bird head shape on the front cost me a bit of experimentation, but once I've found the right shape, it was easy to adjust it to the smaller pieces. At this point it's important to keep on being patient and just keep on painting, drawing and cutting different versions on newspaper until you've found the right one.

The main issue here was not the crazy amount of lines, twirls and spikes; it was the challenge to transfer all these details two times on each blade

completely in the same shape, size and form. To achieve that, it was very necessary to draw the patterns on it at first and to keep on working with enough patience to repeat the same work-step 4 times without getting sloppy. It often also helps a lot to apply all details without pause on all sides of the blades. Taking long breaks between similar working steps can get you out of the "zone" and may cost you your "work flow" by changing the style you had at the beginning or during the project. However it doesn't require any special skills to apply fine details. For Malthael's scythes it was already enough to use a bit thinner lines of Worbla than I usually work with.

Note:

Working with pretty thin Worbla lines can be quite tricky, since the material tends to tear apart once you heat it up. Experiment a bit with different thicknesses before you try to set your details. This not only helps to prepare you to work more carefully, you'll also find a limit of material you're able to work with.

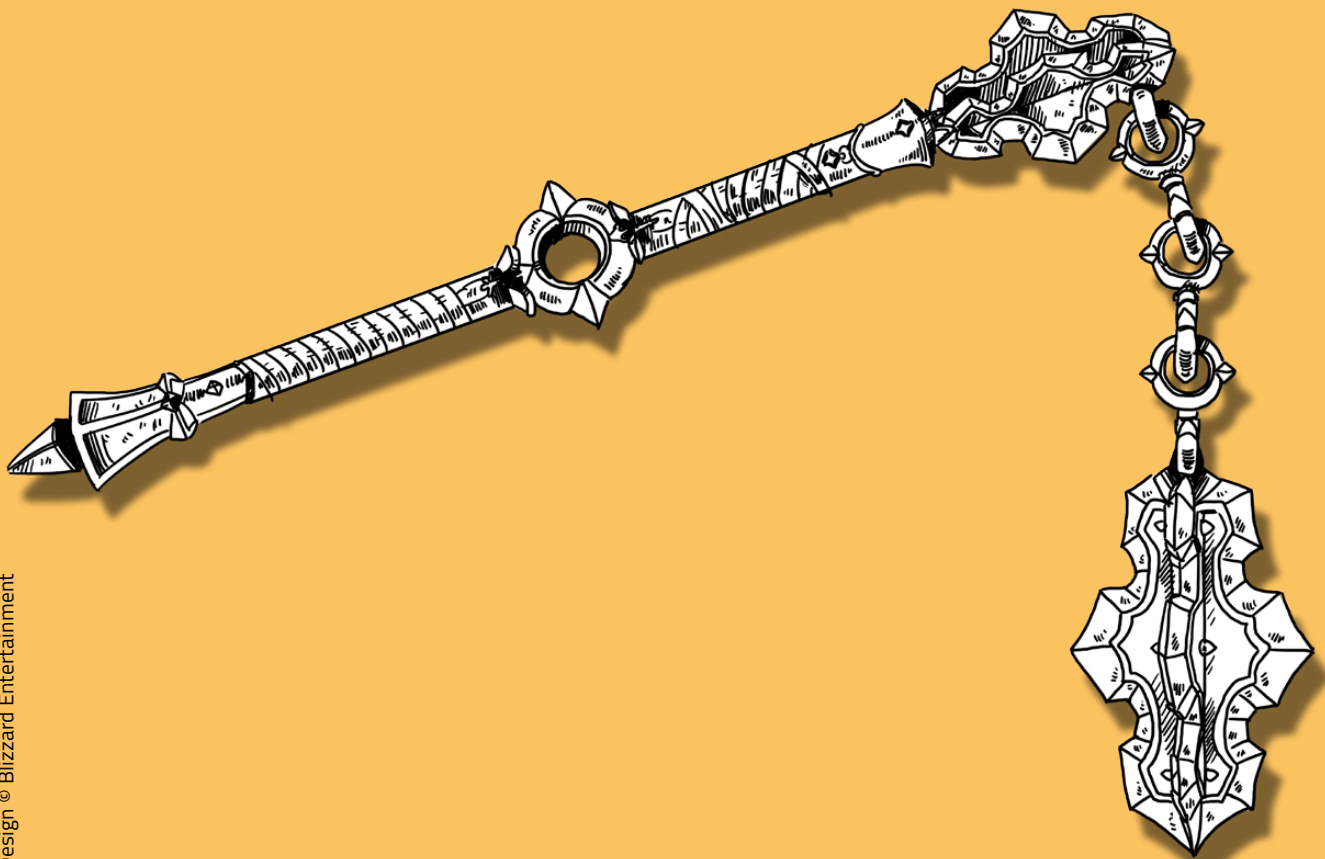
In total Malthael's scythes required 0.75 m² (30 in²) EVA foam and 75% of a XL sheet of Worbla. To create a smooth, nice blade I've used a thick layer of Gesso on this part of the prop and covered the rest with several layers of wood glue.





Crusader's Flail from Diablo III

The sizes of my props are mostly pretty limited by my plans for transportation and the measurements of my suitcase. Since my Crusader is clearly too big for any trips outside of Germany and I still needed a flail, it was finally time to go all out!



Original Design © Blizzard Entertainment

A two handed flail as the associated weapon of the Crusader class from Diablo III was the perfect choice. After some measurement calculations and test prints however I decided to scale my patterns down for about 20 %. The original size didn't suit to my own body scale and after a look into the mirror I felt much more comfortable with a "smaller" version. My patterns however consisted only of a single silhouette of the club and the head, which I transferred four times on EVA foam. The core was a very massive PVC pipe since a wooden staff would make the prop unnecessarily heavy. While the combination of foam covered with Worbla was still quite light-weighted, it gained a lot more after applying details and chain rings I made out of Worbla leftovers.

Note:

I've chosen this example to show you just to how big of a scale you are still able to work with Worbla. Your prop will become heavier the bigger you go, but other than the weight, there is nothing stopping you from going as big as you want!

When you create massive Worbla pieces you want to deform later, it will be pretty hard to heat them evenly without destroying the whole shape. In case of my rings, I had to connect them into each other once they were all shaped. To solve this problem I heated up my hobby knife with the hot air gun and cut out a piece of the ring.



The opening that resulted was perfect to let a further chain piece slide into it. Once I was done I let the separated piece slide in back again and closed the cutting lines with the necessary heat. The finished chain was so strong that it was no problem at all to carry a heavy weight around with it.

After connecting the PVC pipe, the head, the chain and the club, all weight was now focused on the top of the weapon. Since you hold the flail horizon-

tally to the ground, it became impossible to hold it in one hand. The final prop with all its details turned out to weigh around 3.6 kg (7.9 pounds). At least holding it in both hands makes the prop a little bit more comfortable to carry around.

The main issue of however was not really its size or its weight but surprisingly the paint on the chains. While the material is extremely solid, it's

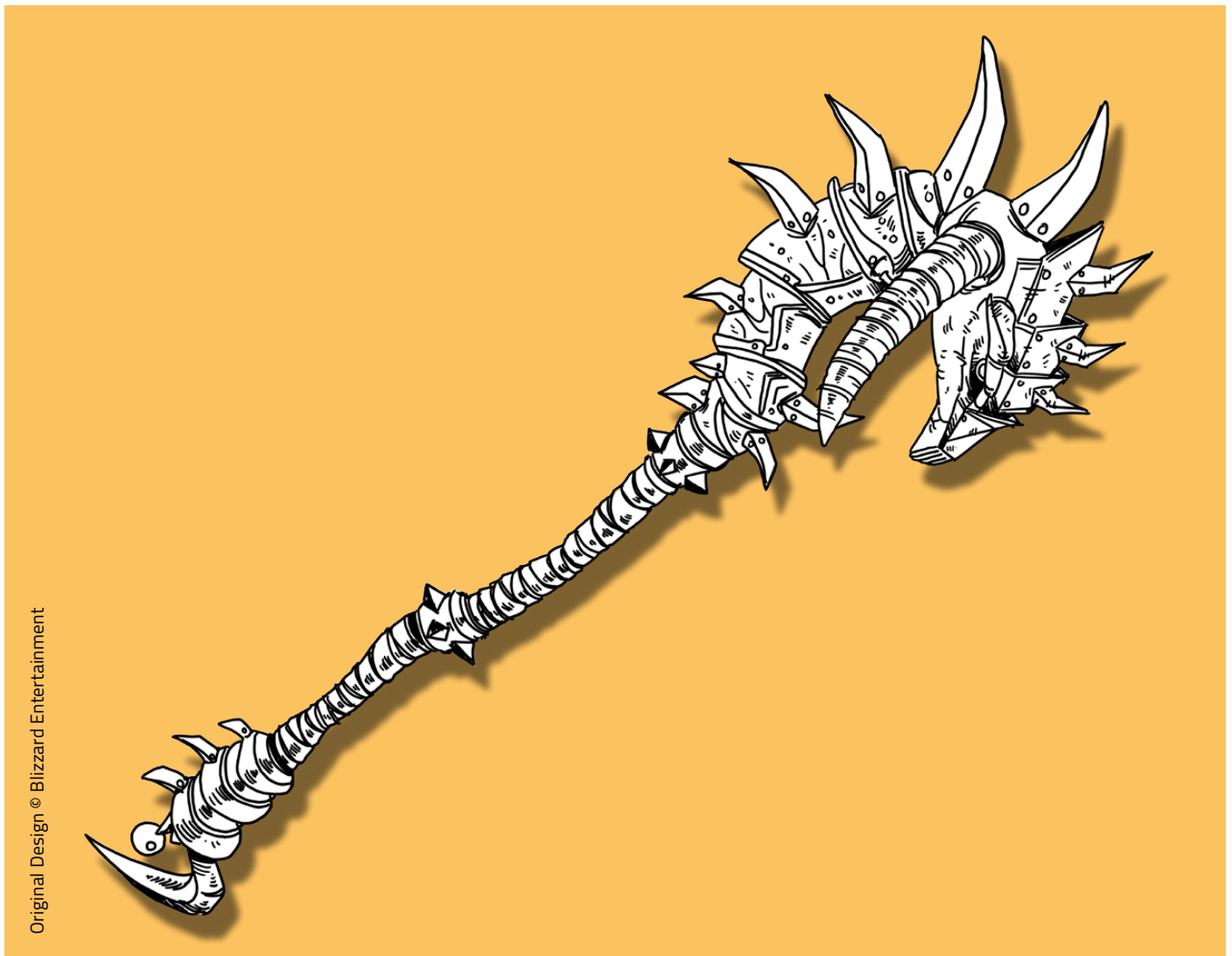
still made out of a plastic wood mixture, which is not the best choice for a metallic chain replacement. With a huge weight on its end, the chains rubbed strongly against each other and not only damage the paint pretty quickly but also the material itself. My Crusader flail was not made for long durability at a convention, so if you want to build something similar, keep this problem in mind.

Added up, I used 1.5 XL Worbla sheets and 1.5 m² (60 in²) of EVA puzzle mats.



Gladiator's Greatstaff from World of Warcraft

Cosplay can be a pretty expensive hobby depending on the materials you work with and the time you put into creating everything. Especially thermoplastics will let your purse suffer a lot. If you have problems to afford these materials or don't have access to any tools, expanding foam could be the perfect solution for your problem. Before discovering Wonderflex and Worbla I've built a lot of props just using expanding foam and paper mache.



Expanding foam was in fact for a pretty long time one of my favorite crafting materials. It's lightweight, it's cheap and it allows you to work extremely creative. To be more exact it's a spray foam, also called Great Stuff in the US, which you find mostly in cans from your local Home Depot. One can is able to fill around one big paint bucket with foam and once this foam is dried, you're able to carve it with a sharp blade into any form you desire. It has a few disadvantages though, but there are ways to counter them without too much effort.

Check out my Youtube videos about working with expanding foam:

<http://youtu.be/O23TM-z0OXk>

<http://youtu.be/MDDo83M68Kk>

http://youtu.be/bn_RosA4uFc

One hurdle are the air bubbles that hide inside the drying expanding foam that you need to close after you've carved it. In addition expanding foam fumes are under the suspicion of being toxic and also carving will create a huge mess in your workshop. Once you know how to handle this material however, you're able to create wonderful things with it.



A pretty old project, but the best example I can use to show you how to work with it, is my Gladiator's Greatstaff from World of Warcraft. To get a basic idea and an orientation of the final shape it's helpful to transfer the silhouette on something solid like a cardboard that I fixed onto a wooden rod using hot glue. After spraying expanding foam on both sides, it took a bit of time to dry. Usually it's a good idea to let the foam rest over night, since you never know if it is still soft inside even though small parts can already harden within four to six hours.

Once the material is dry and hard you can use a box cutter to cut away the material until you reach the orientation that you've set up beforehand by hiding a cardboard pattern inside. Keep a sharpener and some additional knives at hand. It is very easy to fill up holes and to add even more foam on top of the existing shape by simply spraying more expanding foam on top and letting it dry again. So there is no need to be afraid if you cut off too much. Just keep in mind that it always takes time to let the newly added foam dry again. Once you have reached the shape you desire - which goes much faster once you have gained a little experience in carving with a knife - it's time to fill up

the remaining holes and to smoothen the surface. One big advantage of expanding foam is that it nearly weighs close to nothing and the only weight comes from the wooden stick in the middle. You also need to work a bit to get a clean surface you can paint on. A cheap and easy method is to mix some newspaper stripes with paste and create a hard, cardboard like structure that you then can clean up with paper mache in powder form. Once everything is dried and hard, all you need to do is sand it a bit and paint it.

It really is a good alternative to some of the more expensive materials.

Thank you!

This concludes my third volume about armor and prop making. If you followed my other books you now possess the knowledge to plan, to construct, to build, to shape, to transport, to repair and to paint cosplay armors and weapons.

I really hope that I was able to inspire you and to teach you a few new things along the way. Be sure not to just stick to proven techniques but to keep on experimenting and trying new things. There are tons of different approaches to costume making I haven't even dreamt of waiting to be discovered. And when you find them, make sure to let the community know as well, because sharing when you know is half the fun.

Stay creative, believe in your dreams and don't forget to have fun!

TO BE CONTINUED...

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Author: Svetlana Quindt

Layout: Benjamin Schwarz

Germany

www.kamuicosplay.com