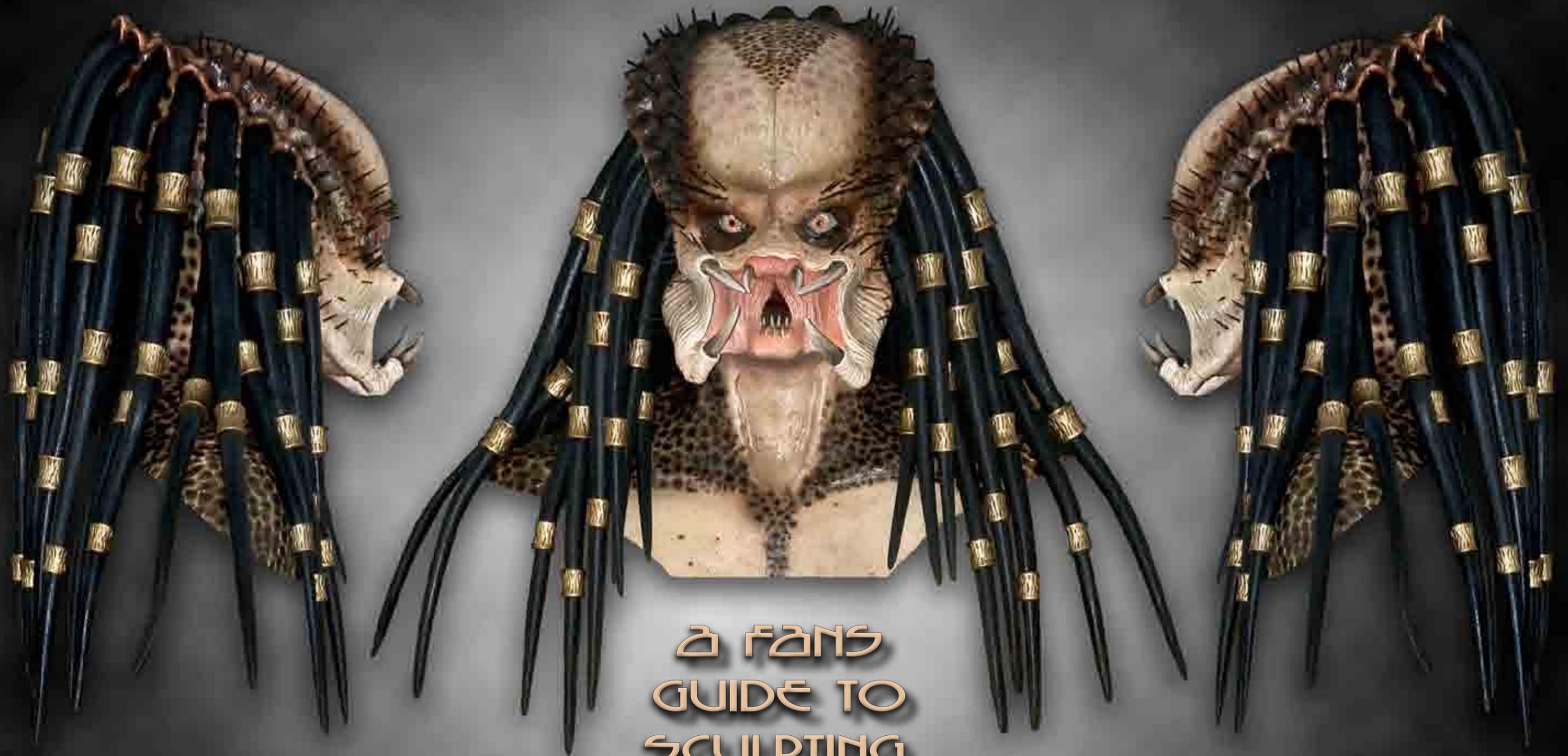


# PREDATOR EVOLUTION



A FANS  
GUIDE TO  
SCULPTING,  
MOULDING, CASTING  
AND PAINTING  
A SCREEN GIANT

Book written by  
Stephen Crawford

Step by step  
photographic manual

# Dedication



The project was inspired by the Predator film franchise and the late Stan Winston, the genius responsible for some of movies greatest sci-fi and horror creations.

This book is dedicated to my Dad, a man who could turn his hand to anything.

Artwork, photography, and book design by Stephen Crawford.

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# Introduction and Acknowledgements

Welcome to this highly illustrated photo book, with over 260 photographs outlining the creative process behind the making of my interpretation of the Predator. Follow the various modelling steps including sculpting with clay, latex and plaster mould making, resin casting, and painting using airbrushes.

An old adage goes that “The pen is mightier than the sword”; this book aims to convey that the brush is mightier than the pen, by keeping text to a minimum. Naturally, there will be times when you’ll think, “What on Earth is that” so I’ll try to pre-empt that with some explanation.

All the materials used in this project are easily obtainable from reputable art suppliers and DIY outlets with the exception of the vinyl dreadlocks. I have to thank a fellow artist from the USA for making them for me. His elegantly made dreadlocks and ornamental beads really bring the piece alive, but cheaper alternatives are available, albeit not as authentic looking.

I used extensive sources of material to conceive and

execute this build, but special thanks go to the imaginative work of the people from Stan Winston Studios (now known as Legacy Effects) and Amalgamated Dynamics Incorporated. I unashamedly took inspiration from their creations and incorporated many of their features in my hybrid model.

I would also like to thank fellow enthusiasts of online forums: The Hunters Lair, The FXLab, and The Hive for their help, critique, and encouragement during the build. Many a time I wanted to throw in the towel but they kept me on the straight and narrow. I thoroughly recommend you check these sites out if like me you love fantasy art and sci-fi/horror.

Finally, thanks to my long-suffering family who had to put up with my obsession for all things Predator and in particular my partner who proof read the text, her brother for my BIO photograph and my daughter who had to share the kitchen with this lumbering giant during the sculpting phase. (Not me, the Predator).

## W A R N I N G

Most of the techniques used throughout this text are relatively safe, but exercise caution when using airbrushes, compressors, Jesmonite, and glass matting.

# Author BIO



Stephen Crawford was born in Ayr, Scotland in 1956, and educated at Belmont Academy. His favourite subject was art but he left school with a sprinkling of certificates not having any idea what career to pursue.

He spent most of his working life as a laboratory technician and an IT analyst, not the career of dreams, but both taught him how to work in a methodical manner. He took early retirement at the first opportunity. "The decision to go to work every day or stay at home and muck about in the studio isn't really a contest," he said. This freedom from work allowed him to pursue his love of sculpting and model making, and so the Predator was born.

Stephen has no formal art training except from school, and is a self-taught sculptor. He first learned to use papier-mâché and plaster as a 10 year old under the guidance of Miss Kerr. Highlights included making animal heads, Greek soldiers' helmets, and various other para-

phernalia for use in school plays. Alas, school never got any better than primary five but the teachings of Miss Kerr live on in many of his later works.

A great lover of sci-fi, he was inspired by the movies Forbidden Planet, Star Wars, Blade Runner, Alien, Terminator and of course Predator. His personal heroes from the art world include James Cameron, Stan Winston, HR Giger, Patrick Woodruff Jr., Alec Gillis, Tim Burton, and Roger Dean.

Stephen used to paint landscapes but eventually found it boring compared to the "call of the clay". He has exhibited paintings in local hospitals and his life size Terminator statue and Superman bust featured at the Glasgow Science Fiction Convention in 2005. He has donated several of his sculptures to local charities and his Superman bust is now on permanent display at a regional hospital in Glasgow.

The author hopes this illustrated photo book both entertains and educates the reader, and encourages them to have a bash at creature building.

# Concept and Design

Building a Predator was something I always had at the back of my mind, but never really did anything about until late 2007. The sketches below pre-date this by about six years and although rather naive and rough looking, it does show that I was pretty obsessed even then.

Drawing sketches is one thing but translating to three dimensions is something quite different. In order to get some practise

I worked on smaller projects, but nothing really prepared me for the long and difficult task ahead. However, I had not long finished a full size Terminator and although its construction was completely different, it did reassure me that it was possible to do Predator.

Before I could make anything, I needed a mass of reference material, so the search was on. Luckily it wasn't

hard to find, God bless the Internet. Magazines, books, posters, and DVD's provided the rest.

I decided early on that I didn't want a fully-grown Predator, mainly for practical reasons because the original is over 7.5 ft in height. I also wanted him to look like an adolescent, with much more athletic and streamlined proportions than the original. He also wouldn't have much in the way of armour.



# Materials

## Reference material

Mainly pictures from the internet  
DVD's and books  
Scale drawings for templates

## Armature

Male body form display mannequin  
Polystyrene male dummy head mannequin  
Blocks of fine cell extruded polystyrene  
Modelfoam and adhesive  
Milliput cold setting epoxy putty  
Carving knives  
Aluminium wire mesh

## Sculpting

Newplast modelling clay  
Modelling tools  
Various texture stamps  
Liquid paraffin  
Measuring callipers  
Clingfilm

## Mould making

Liquid Latex  
Various brushes  
Hair dryer  
Aluminium shims  
Plaster bandages  
Super Sculpey  
Clamps and straps

## Casting

Jesmonite AC100 Liquid & Powder  
Quadraxial glass laminate  
Thixotropic agent (thickener)  
Digital balance  
Epoxy putty  
Rasps, sandpaper and files  
Dremel mini grinder/drill  
Various brushes  
Protective mask, gloves & goggles  
Mixing pots and stirrers

## Painting

White primer  
Airbrush paints (Createx and Com-Art)  
Iwata airbrushes  
Air Compressor  
Various brushes  
Matt and satin varnish

## Miscellaneous Items

Vinyl Dreads and beads  
Replica skulls and bones  
Leather belt and suede loincloth  
MDF baseboard and casters  
Cocktail sticks  
Tracing film

## Spear

Garden poles  
Tubular foam insulating  
Tin cans



# Principles of Mould Making

Before we embark on this illustrated tour, it is important that I summarise the principles used in the building of my Predator. If you cannot wait to get to the pictures then skip these two pages. However, you may get more from the book if you take time to digest some of the following details.



When I decided I wanted to do Predator I had a mental Q & A session before I started the practical work:

Q. Should the finished piece be a wearable costume or a solid statue?

A. Solid statue

Q. Should I make the model using direct methods e.g., papier-mâché or self hardening clay or by indirect methods, casting a copy using an intermediate mould?

A. Cast a copy

Q. What material should I use to make the sculpture, oil based or water based clay

A. Oil based clay called Newplast (essentially just a type of plasticine)

Q. What material should I use to make the mould, liquid latex, silicone, or rubber?

A. Liquid latex

Q. What material should I use for the cast, conventional polyester resin and fibreglass or Jesmonite acrylic resin and Quadraxial glass?

A. Jesmonite/Quadraxial glass

Q. What should the finished model be painted with, conventional brushes/sponges or airbrush?

A. Mainly airbrush, but ended up using a combination

Q. What type of paints to use, acrylic, or oil based?

A. Acrylic

Q. What material to use to for the dreadlocks, backer rod, foam, latex, or custom made vinyl?

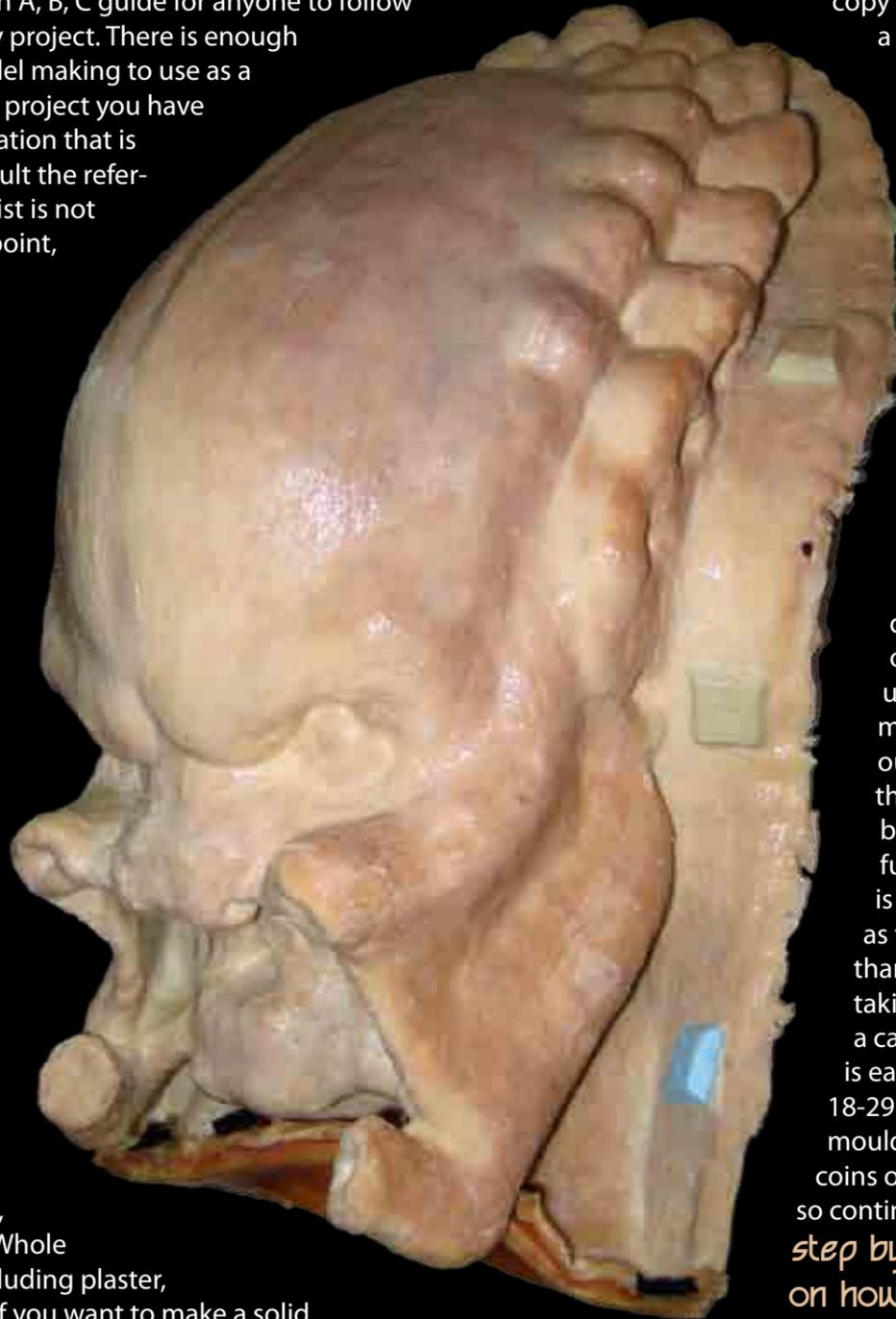
A. Custom made vinyl

This illustrated photo book is not an A, B, C guide for anyone to follow precisely, but simply a record of my project. There is enough detail for anyone interested in model making to use as a reference, and apply it to whatever project you have in mind. If the reader wants information that is more technical in nature then consult the references at the end of the book. This list is not extensive but it is a good starting point, and I found them useful.

Trying to explain the moulding process in words is quite tricky, but if you can imagine pressing a coin into a piece of plasticine, the impression left by the coin is a negative of the positive original. This negative or inverse copy is the *mould*. If you now fill the mould with plaster and let it set, you will have a perfect copy or replica of the coin. You have gone from positive original to negative mould to positive copy.

Things become more complicated, as taking the coin analogy further, the above method only gives us a copy of one side of the coin. In order to reproduce both sides a two-part mould with a *parting line* is required. Clearly, my project is much more complicated than a coin but the principles are the same.

Moulds are merely negative impressions of your original and can be prepared in many ways, depending on the finish required. Whole ranges of materials are suitable including plaster, resin, latex, silicone, clay, PVC, etc. If you want to make a solid



copy e.g. a statue or figurine you use a flexible mould, if you want a flexible latex mask, you would use a solid mould. There will of course be exceptions but this is beyond the scope of this discussion. What is vital in all mould making procedures is the ability to make bubble-free copies that are in registration and are easy to remove from the moulds.

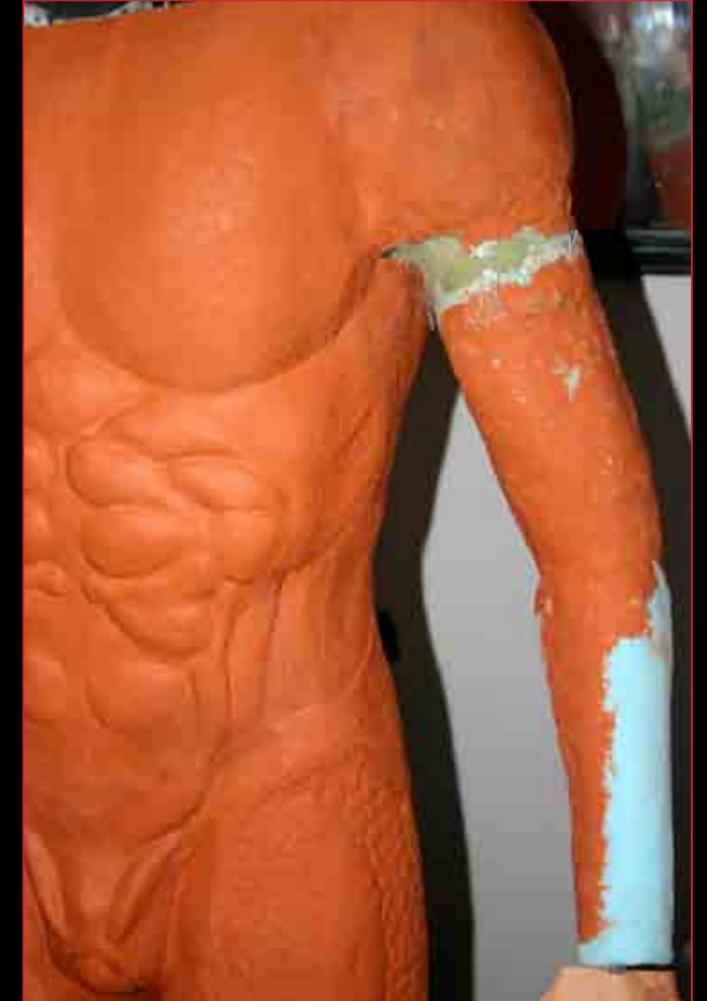
When making multi-part moulds you must choose your parting line carefully to avoid large undercuts. A parting line is simply a line that marks the division between each section of your mould, and if chosen unwisely the cast may jam and make removal impossible without breaking. You are probably thinking now, "Shoot me please" but stick with it, as I try to explain further. Think about how tricky it is to pull a jumper over your head, as the hole for your neck is smaller than the size of your head. Compare taking off a jumper with unzipping a cardigan: which one do you think is easier to remove? Photos on pages 18-29 should help clarify multipart moulds. Obviously, I'm not casting coins or pulling jumpers over my head so continue reading my *step by step illustrated guide on how to build a PREDATOR.*

# Armatures and Clay Modelling

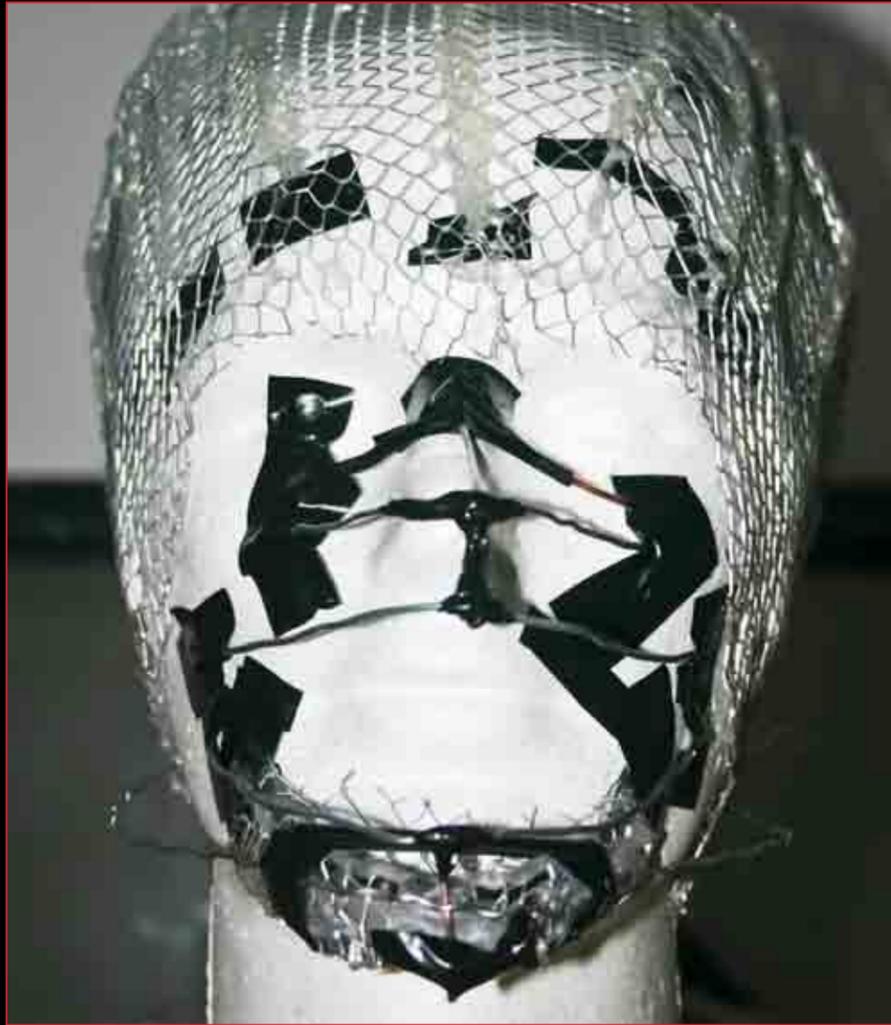


So let's get started with making the body armature. Many techniques are available, e.g. wire frames, wooden dowels, tin foil etc., but I used a half mannequin and blocks of modelling foam joined together. A sharp knife or hot wire is the best tool to shape the Modelfoam and Newplast oil based clay was my medium of choice for sculpting. This method minimizes the weight and cuts down on the amount of clay used, thus making it cheaper to build. I also filled the hollow between the front and back with expanding foam to aid holding it all together. Note the wooden cocktail sticks poking out from the black mannequin that act as anchor points for the plasticine.

A keyboard boom inserted into the lower back and connected to a photographic tripod (not shown) offered support. A bag of sand was added later to counterbalance the front heavy sculpture.



Building up the sculpture with oil-based modelling clay called Newplast. This is really just a finer, more expensive form of kiddies' plasticine. Note the "chicken wire" and epoxy putty used as joiners to hold the arm and body together.



Polystyrene skull and aluminium wire serve as the head armature.



The head was sculpted separately to make life easier (he stands nearly 7ft tall), but was later added to the body to get a better sense of scale. More importantly, I could not wait to see him standing all in one piece.

I used a variety of bought and homemade instruments to sculpt the basic shape of the model, (See page 7). Sculpting detailed skin textures with ordinary tools would try the patience of a saint so I used a sneaky shortcut method instead. Plastic netting used for holding packs of oranges proved to be a very effective texture stamp. I placed the net onto the clay and rubbed it all over with a flat-ended modelling tool. This transferred the mesh pattern onto the model giving the appearance of scales. Using two different sizes of mesh and continually moving them in a random pattern enhanced the look, and what a time saver this turned out to be.

*Middle left:* Detail of skin texture on top of the Predator's skull.

Head at various stages of modelling.

# Final Stages of Sculpting



After an initial setback, detailed later in the book, I'm amazed that after only a few months working on it part time (wasn't retired at this point) I finished the sculpture. I knew the tusks required modelling separately but I made temporary versions to see the overall effect, replacing them later between the casting and painting stage with Super Sculpey clay versions. Hardening in a domestic oven for 20 minutes at 160°C, and the combination of painting and varnishing gives the tusks a more enamel look and feel than the main casting material. (See page 48).





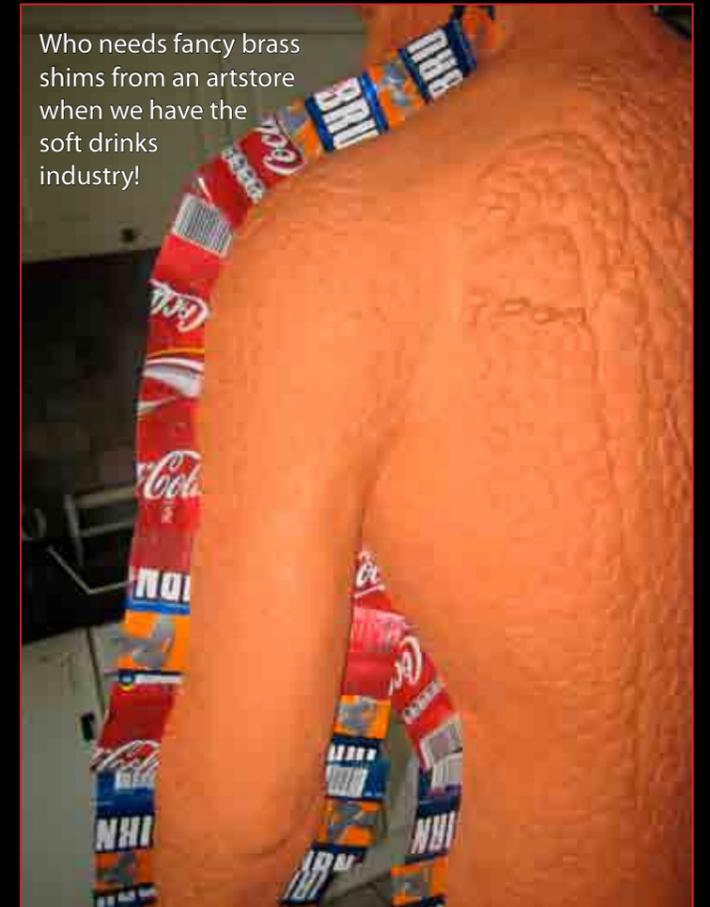
After months of work, the head and body are complete ready for the moulding stage. Note the plasticine dreadlocks are also temporary, to be replaced later with pre-made vinyl versions.

# Preparation for Moulding





Parting line divides the body into two sections.



Who needs fancy brass shims from an artstore when we have the soft drinks industry!

It is impossible to cast a resin replica of something as complicated as this using a single mould. The photos on this spread show metal shims located down the centre of the figure, that act as a parting line

for the future two part body mould. Building up lines of clay is an alternative way to create a dividing wall and is the preferred choice when making my head support case moulds (See page 27).

Success or failure of the build relies on producing accurate moulds and this stage is critical. Later on, you will see that I run into problems with latex moulds being out of alignment!

# Latex Moulding

Up to forty coats of liquid latex rubber are necessary to produce strong durable moulds of this size, and I applied these directly to the finished Newplast sculpture using cheap flat brushes. Latex can also be poured or sprayed, but painting was my preferred method. Unfortunately, brushes wreck quickly because of the nature of latex, but massaging a couple of drops of washing up liquid into the bristles before use extends their life.

You can buy latex in a variety of different grades, some being more suitable for flexible masks and others for preparing moulds. Quantities and prices vary, but one thing they all have in common is that no release agent is necessary, as the latex doesn't stick to clay, plaster, wood, metal etc. Just as well, as nothing ruins a carefully crafted sculpture more than moulds that don't release because of sticking.



Making the two-part body mould took over a week, and as you can see from the photos, the floor got into a right mess.

Substituting latex with silicone can greatly reduce the time taken to produce your moulds and it makes impressions that are not subject to the same levels of shrinkage. Shame it's so flaming expensive.

**Tip:** You must avoid air-bubbles when painting the first layers of latex as they register as holes in the final cast.

# Completed Body Mould

Photographs on this page show the full-length body moulds complete with metal shims dividing the back from the front. These worked remarkably well considering I cut them out of soft drink cans.

I must stress it is very important to add registration points at regular intervals along your mould, as these aid alignment at the casting stage. They come in many forms, the simplest being a bump in one side and a hollow on the other (See pages 26, 27 & 29). Eagle eyed readers will notice I didn't take my own advice as I forgot to add any to the body mould.



*Above:* Liquid latex thickener on the left, liquid latex rubber on the right. Please note the pink colouration would not be present in fresh latex. This container was old when photographed.



**W A R N I N G**  
Metal shims have sharp edges. To avoid cuts, cover all of them with electrical insulating tape.

Liquid Latex contains ammonia. Ensure adequate ventilation if working in enclosed spaces.

# Completed Head Mould





Note the brush marks from the painted on liquid latex. Each coat must dry before reapplication and this usually takes about 20 minutes. The latex changes colour from milky white when wet to creamy yellow when dry and is easy to detect.



Apply the first few coats carefully over the entire surface avoiding any air bubbles. A thickening agent added to subsequent coats cuts down on the number required to produce the mould. The whole process is accelerated using a hair dryer - but it plays havoc with the electric bill.

# Support Case Moulding



The rigid mother case mould (in white above) prevents the flexible latex mould from warping out of shape. This can happen when you add relatively heavy resin/glass matting at the casting phase.

Imagine putting water in a plastic bag inside a square box, when you remove the bag it doesn't retain its square shape any longer. Same principle applies to large flexible moulds.

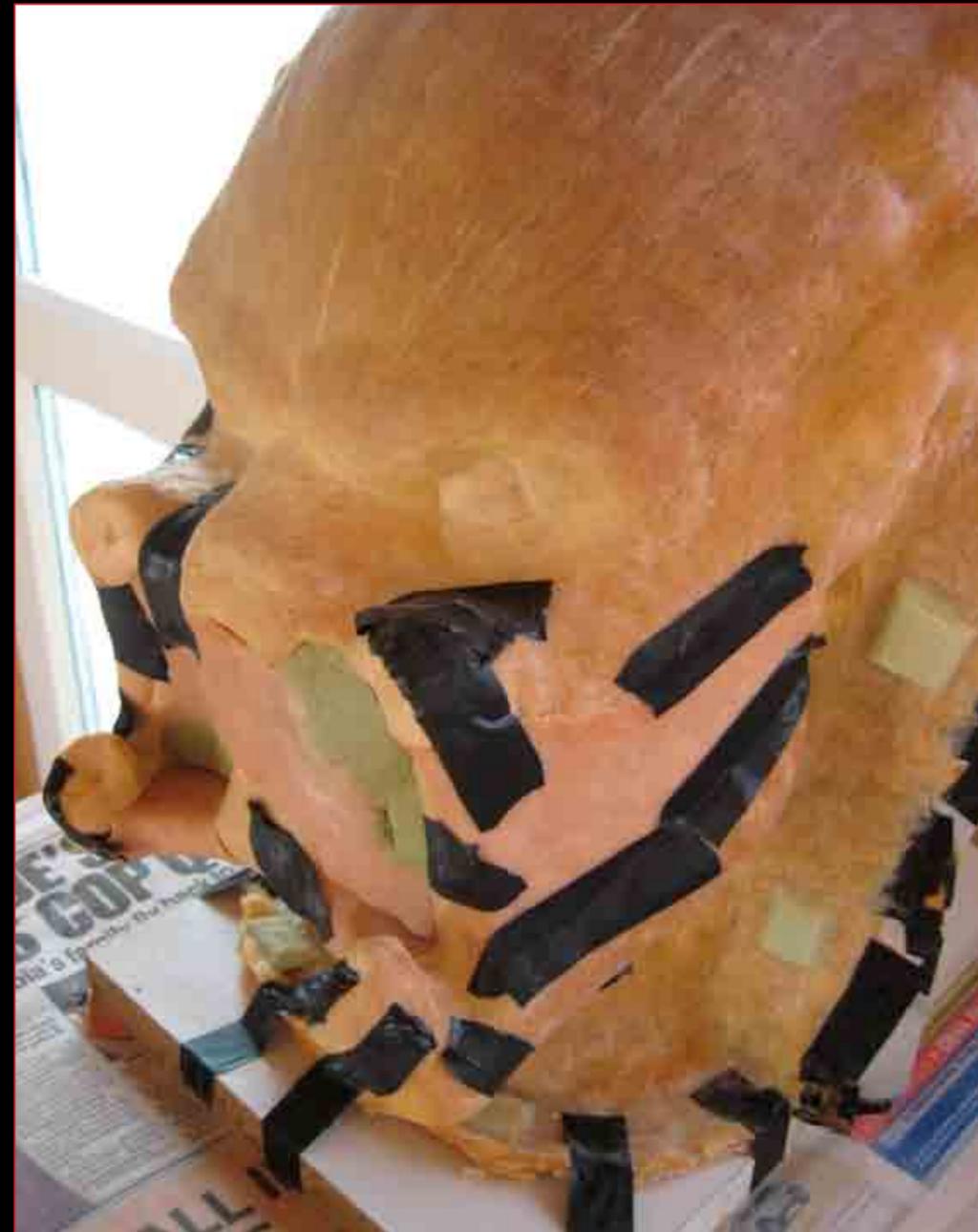


The case mould was prepared with strips of plaster impregnated bandages dipped in water, and layered using a criss-cross action to give it strength. Five to six layers usually suffices. With hindsight, I should have attached long wooden struts to keep the case mould rigid. The plaster bandages themselves are not really strong enough for a structure of this size.



*Left:* Plaster bandages cut to size with a dish of lukewarm water, ready for making the rigid case mould.

*Below and opposite:* Super Sculpey infills around the mouth prevent undercuts in the case mould. This aids removal of the cast from the mould without breakage - yeah right!





Here we have a variation of the dividing wall theme. Plasticine substitutes the metal shims used earlier, as they wouldn't penetrate the latex or be able to take grip. I removed the

plasticine wall after covering one side of the model with the plaster bandages and smeared the edges of the mould with Vaseline. This prevents the individual sections of the case

mould sticking together. Get this wrong and you will be well and truly snookered.



*Below and right:* Note the metal shims sticking out from the mother mould.



*Opposite page:* When the plaster set, I used a blunt flat-headed screwdriver and wooden wedges to prise the mould apart. Photos show the latex moulds removed from the sculpt ready for resin casting.

*Left and right:* The four part case mould is complete and ready for the next stage. This is light relief from the rigours of sculpting because it is a bit of a no-brainer. Just slap the bandages on without worrying about making a mess.



Anyone having the misfortune to break a bone might be familiar with the material used here. Heavy plaster casts used to be the order of the

day in hospitals but lightweight fibreglass has largely replaced them. I unfortunately have personal experience of both so recommend

the latter. Next time I make case moulds I think I'll use something lighter too, as these beasts were heavy to handle.



# Resin Casting

The sculpture, latex and mother case moulds are complete and it is now time to cast the replica. Sounds easy if you say it quickly but believe me, easy it is not.

I made my mind up long before I reached this stage that headache inducing polyester resin and skin/lung irritating fibreglass roving was not for me. Fortunately, during my research for an alternative, I stumbled upon the water soluble and much safer to use product called Jesmonite. This comes as a two component, acrylic polymer/mineral resin system and is suitable for casting and laminating, without the hazards normally associated with solvent-based compounds.

In order to impart strength to the casts, I laminated layers of a material called Quadraxial glass with the resin. This is also much safer to use than ordinary fibreglass. Two to three layers is usually sufficient but stress points benefit from extra reinforcement. I will not bore you with cookery class weigh this, measure that nonsense, and so let us press on with resin casting.

The various parts of the latex moulds are supported with their respective case mould, the Jesmonite com-

pounds are mixed in the correct ratio, avoiding bubbles, and then painted over the inside of the mould. Mixing the first layer with a thixotropic agent prevents the resin running down the sides and acts as a gel coat, or beauty coat. It is vital to keep air bubbles to a minimum as these show in the resultant cast, and to make sure the Jesmonite penetrates all the little hollows in the mould. Once the beauty coat is finished, paint or pour more Jesmonite on top and while still tacky, apply the first pieces of glass matting. Usually you have about 15 minutes working time before the Jesmonite sets, so you have to work productively with just the right amount of material. As always, practise is the order of the day.

I repeated the process until the cast reached the required thickness and I usually finish it off to leave a smooth finish with a layer of surface tissue coated with a thin coating of Jesmonite. Once everything is set, carefully remove the casts from the moulds, and keep your fingers crossed they come out without breakage. I normally trim the rough edges using a rasp, sandpaper, or my Dremel before it cures properly. Twenty-four hours

later the cast is rock solid and any sharp edges left can cause real pain.

Now assemble the sections together and reinforce the inside seams with more resin/glass layers. Once set, pour more resin into the mould, shake it all about, and leave it to set. Remove the support case and flexible latex moulds and hey presto a finished cast. It will probably be a bit rough in places but these imperfections can be sorted with some filler or sanding.



*Above:* Cheap flat brushes for applying Jesmonite.

*Far left:* Quadraxial glass matting.

*Middle:* Jesmonite casting kit with custom mixing blade.

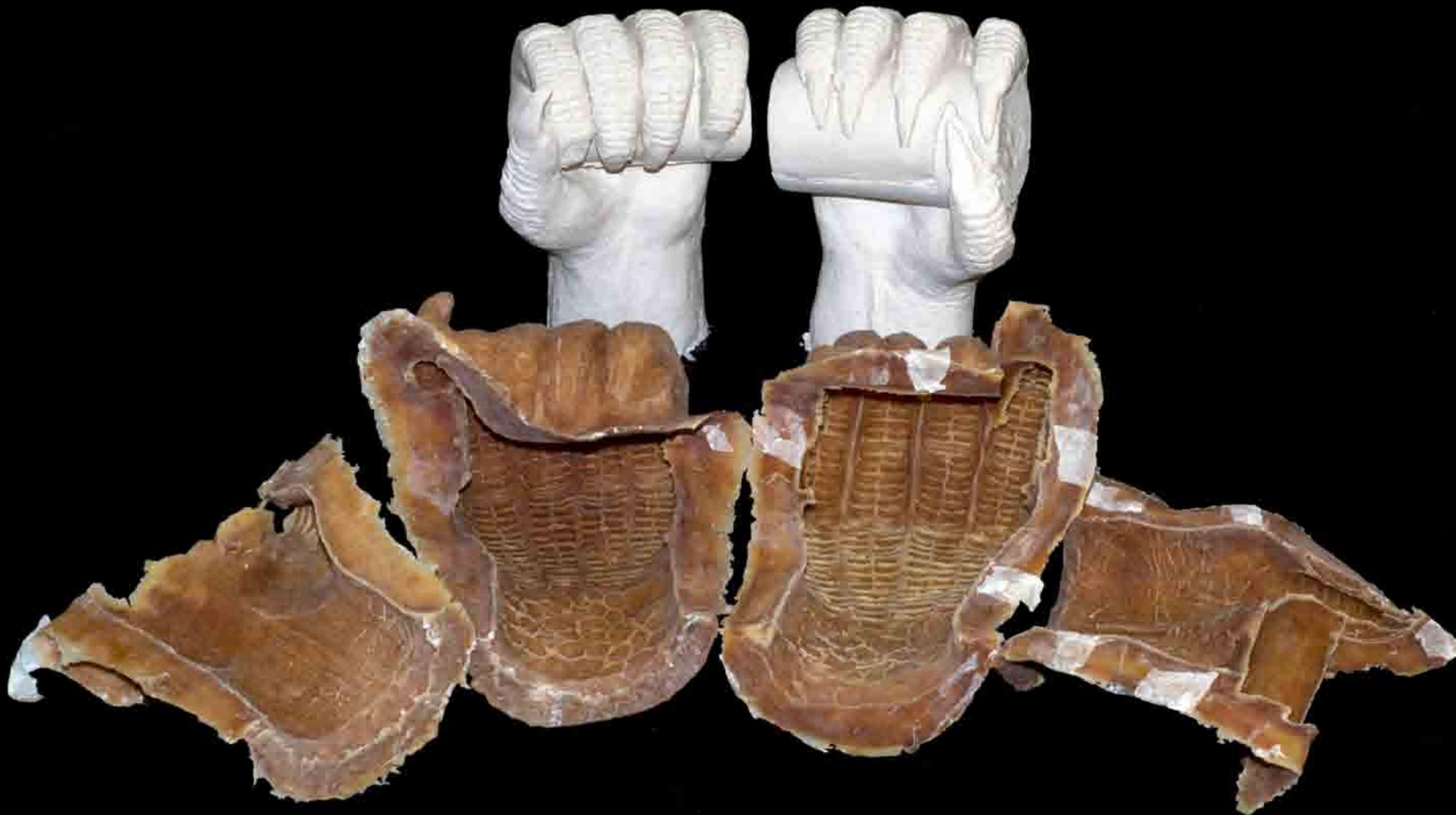
*Near left:* Surface tissue.

# Casting the Hands



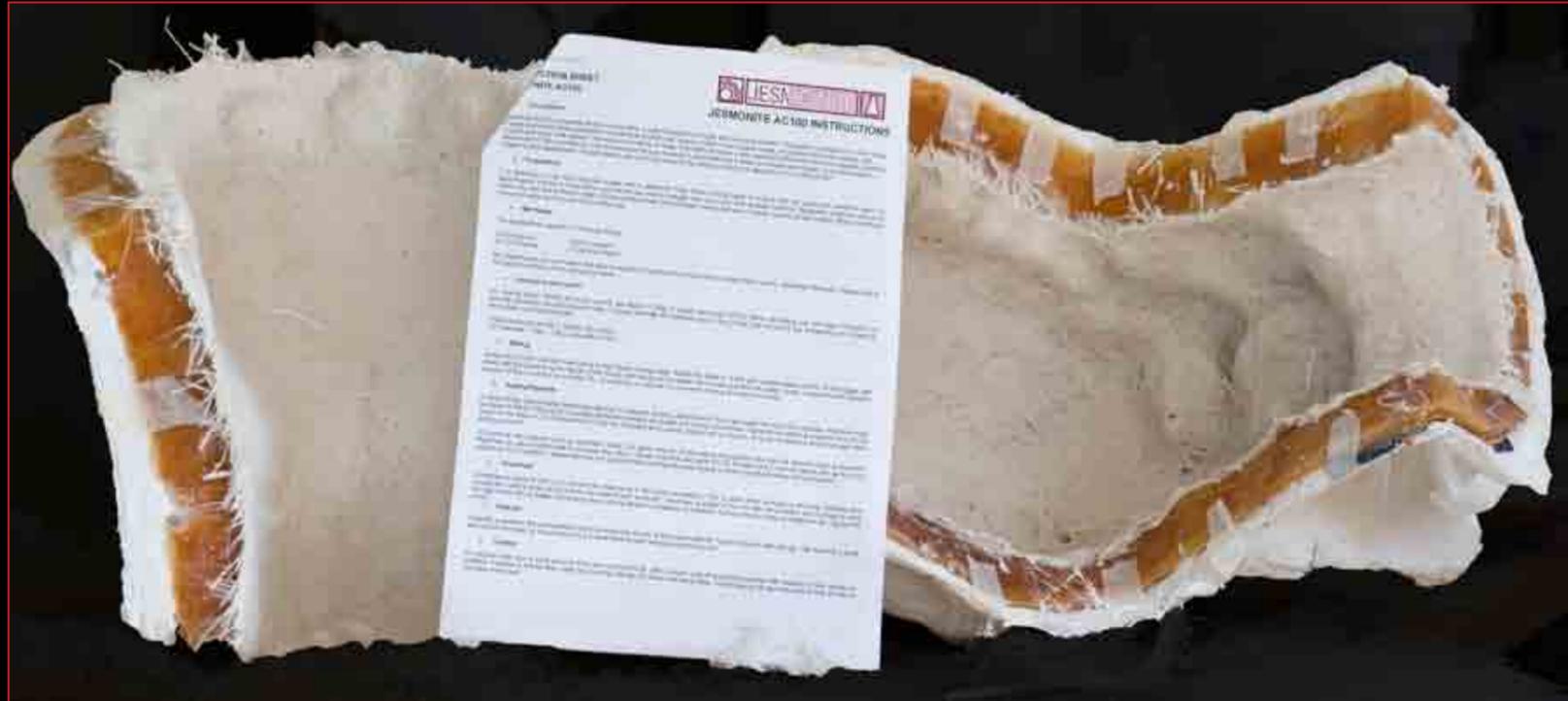
I accidentally make the hands two different sizes. I remedied this by grinding the larger (right) hand with a multi- purpose Dremel Hobby Tool and by building up the smaller (left) with epoxy putty. This wasn't entirely necessary, as a trophy partially ob-

scures the finished models left hand. Note the slight registration problems with the hand casts marked in the photo above. However, this was a walk in the park to repair compared with body casting later on.



I saved time and effort by incorporating the spear handle in the right hand and the spine of his prey in the left. As I didn't need to sculpt the insides of the hands, I only needed simpler two-part instead of three-part moulds.

# Casting the Head



Casting the head was more time consuming than doing the hands, as the complex structure demanded a more elaborate case mould. The hands were cast using two-piece latex and two-piece case moulds. The head however required the same number of latex moulds and a four piece case mould. Shaping Super Sculpey fillers for the mouth area eliminated any large undercuts, and it saved me having to make a more complicated case mould.

Photo on the left shows the head cast in two parts. Notice the glass fibres extending out from the edges of the mould: these need trimmed before joining the two sections together. At this stage, the Jesmonite/glass mixture is still wet as the colour changes to a whiter colour when dried. The combination of cross laminating layers of glass and acrylic resin makes a very strong cast with minimal weight. This isn't as light as conventional fibreglass but it's much safer to work with. However, for safety reasons I still wear eye, skin, and lung protection.

**Above:** The Technical Data Sheet for Jesmonite AC100 reproduced by kind permission of Jesmonite Limited, Shropshire, UK lists product descriptions, mix ratios, properties, etc. Probably too small to read but the A4 sheets imparts scale to the inside of the head cast.



**Far left:** Case mould all strapped up ready for adding joining material.

**Middle left:** Underneath view shows the two laminated halves held together before adding any joining material. Applying Milliput epoxy and sanding easily corrects any registration errors.

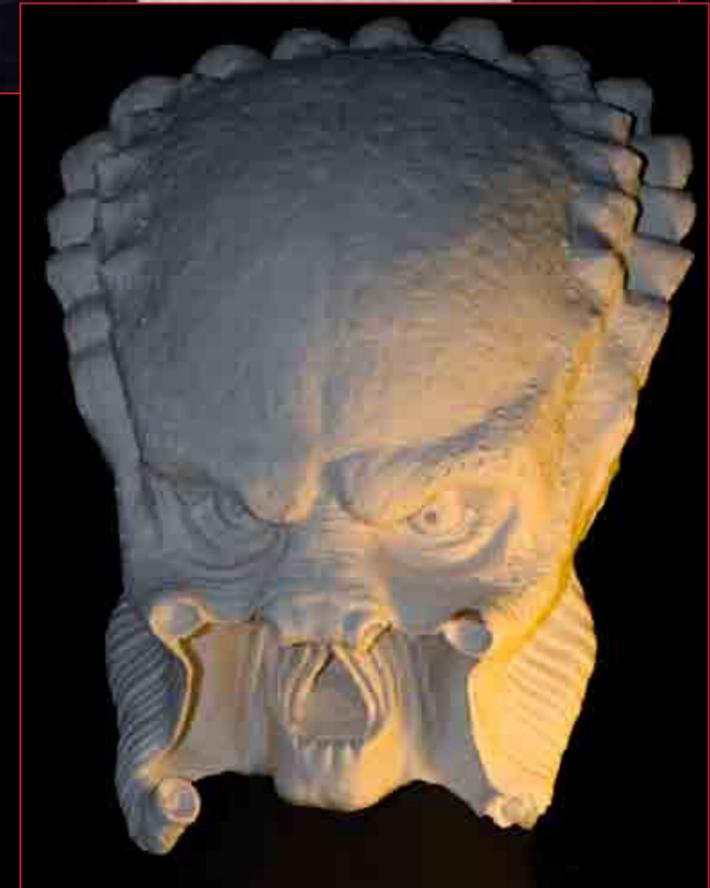
**Near left:** First head cast out of the moulds.



*Left, right & above:* You can clearly see the parting line on the side and back of the head. Imperfections always arise when using multi- part moulds but the repairs are simple using a little sanding or filling.

*Below right:* Lower left mandible broke when removing the cast, as the latex mould was too thick and couldn't bend properly.

*Below middle:* Strong side lighting reveals the textures on the Predator's crown.





**I'M ONE UGLY...**

# Casting the Body



*Right:* Front half of body cast.



*Middle right:* Back detail.



*Far right:* Worms eye view of feet from below.



*Right:* Abdomen detail. Note the orange bag texture described earlier.



*Middle right:* Rear of arms removed because of registration problems.



*Far right:* Head mould in foreground, body cast and moulds in the background.



*Right:* Upper body detail.



*Middle right:* Shoulder detail and close up of rear of arm removal.



*Far right:* Upper part of photo shows the gap between the front half of the leg cast and the rear part mould. Bottom photo shows the mould pulled into place ready for re-casting the rear lower leg.





Latex mould secured to plaster case mould ready for resin casting.



An exciting moment ahead, as the front half of the body cast is ready for removal from the mother mould. The act of laying down successive overlapping

layers or laminations means the cast is only about 5mm thick, making it amazingly strong and light for a structure this size.





# Painting and finishing

Before I could think about painting, I had to seal the cast with white primer; this prevents the Jesmonite absorbing the relatively expensive airbrush paint and presents a good surface for spraying. I based my choice of primer on price and availability, so I used household acrylic paint that happened to be in my garage.

It is important to leave the primed statue for 24 hours or more to let the Jesmonite soak up the paint. After drying, the model is ready for painting with acrylic spray paints. My method of choice after many experiments was a pair of lawata airbrushes and an air-compressor from Airmaster. This seems a bit like overkill but waiting for a small hobbyist compressor switching on and off all the time rapidly becomes very tiresome. The model I use has a 24-litre air receiver so it only re-fills after about 10 minutes continuous spraying. The first model I

bought switched on after 40 seconds and eventually cut out because of overheating. If you intend using an airbrush for any large model work choose your equipment carefully.

I used several stages to achieve the finish I was after. Firstly, a thin base coat of creamy white paint sprayed all over the cast added some warmth to the base colour. I followed this with a succession of colours, getting darker with each coat until it received about six coats. The secret to spray painting is always applying thin layers and to keep the brush moving. I also prefer to start with lighter colours first and build up gradually with darker pigments. The paints also come in opaque and transparent varieties, so this has an effect on the final look. There are countless DVDs books and other instructional material outlining airbrushing techniques, but the best way to learn is to dive in and have a go

yourself.

I chose Createx and COM-ART products, as they come ready mixed and do not require dilution, although I occasionally watered them down when applying a thin misting layer. Changing the colours with each coat and varying the degree of spread from the airbrush resulted in a mottled, scaly finish that complemented the subject well. I hope that you can see the other-worldly creature look in the various photos overleaf.

Sometimes the airbrush was less effective than a fine rigger brush e.g. when trying to detail the veining in the Predators' mandibles, and this may be down to my inexperience. However, the airbrush is better at laying down thin semi-transparent layers and imparts a translucent quality to the skin.

Painting the Predator proved to be the part of the project I liked the most.

*Previous two pages:* Completed Predator cast. Note the whiter areas on the cast where I used Milliput filler to repair problem areas. All the seam lines are now virtually invisible and painting should enhance the look of a single piece replica.

*Far right:* Assortment of airbrush paints

*Right:* My lawata airbrushes, paints and miniature stirrer.





*Above & right:* My gravity fed airbrush from the Hi-Line series. Note the flexible airline that connects to the compressor, below far right.



The price of the lawata airbrushes fairly added to the cost of building my model, but what terrific pieces of precision engineering they are. They should, if looked after properly, last a lifetime. There are two main types of airbrush: siphon-fed or gravity-fed. I started with a siphon fed brush because it was cheaper and the screw-in reservoir holds much more paint than gravity-fed brushes. This proves invaluable when painting large areas, as you don't need to keep re-filling the reservoirs with more paint. The nozzles also tend to be larger so they can spray wider and cover relatively large areas quickly. I was so impressed with it I decided to buy another lawata for more precise work. In contrast to siphon fed brushes, gravity fed brushes normally have smaller reservoirs and offer narrower nozzles for finer spraying. They also require less air pressure to operate. The Hi-Line series cost a bit more than the Eclipse range but they are in my opinion worth every penny.



*Left:* Eclipse siphon-feed airbrush on the left, Hi-Line gravity-feed airbrush on the right.

*Right:* The Airmaster 8/36, a real workhorse of a compressor.

Other companies produce similar devices, Badger being another reputable example, but I don't have any experience using them and they can be just as expensive.



The oil-free Airmaster Tiger 8/36 boasts some impressive specifications including 24 litre air capacity, 5.3 cfm air displacement, 1.5hp motor and 115-psi maximum working pressure. As a safety precaution, I added a separate pressure valve for fine adjustment of air pressure and an inline moisture trap. It's noisy at 94dB when re-filling, but it only needs to recharge the air reservoir every 10-15 minutes. Move to the top of the class if you understand what all this jargon means, but from a practical point of view, it means a fine compressor capable of air pressure far in excess of what I need, and with a decent sized air reserve.

Before I started painting the model I practised airbrushing on pieces of resin discarded from earlier casts. This

also let me experiment with various colour combinations, as I was never sure how best to paint him. After many test sprays I settled for the colour scheme you see here. Note the gradual progression from light to dark colour as described on the previous page. It might not be obvious from my photos but the scales appear to change colour depending what angle you view the model. The individual paints themselves are not opalescent, but the combination of transparent and opaque pigment probably contributes to this welcome illusion.

I changed my mind several times with the spot patterns, particularly around the abdominal and rib areas, forcing me to wipe them clean and re-prime. I can tell you this caused more than a few nerve-jangling moments.



*Left:* The business end of the compressor showing the air pressure regulator valves, inline moisture trap and airline.







**Early stages of painting.**

Colour applied using thin layers of paint progressively moving from light to dark tones. Each coat is left to dry while cleaning and re-charging the airbrush with fresh colour. The Createx paint dries to a plastic finish and it promotes a fleshy appearance. This is never more evident than in the two pictures *left* and *right*.





I didn't expect the finished paint texture to mimic scaly looking skin either, but it was an added bonus. Try comparing the in-progress photos with the final model and you should see where I've changed my mind about the spot patterning and colouring. It took at least three attempts to get the finish I was after.







# Dreadlocks and Beads

Two of the most distinctive physical features of any of the screen Predators are their mouthparts incorporating mandibles, tusks, and teeth. The other is the ubiquitous dreadlocks. As these characteristics are so recognizable to anyone interested in this genre I wanted to be as screen accurate as possible. I covered the methods for making the mouthparts earlier in the text so I will concentrate here on the dreadlocks.

If ever there was ever something that brought this project to life then it was the fitting of the dreadlocks. I wish I could take credit for making them but I bought them from a talented artist in the USA after struggling with ways to make mine look authentic.

The methods used to produce these self-skinning vinyl works of art is complex and involves using some rather nasty chemicals. My advice is not to attempt this at home unless you have adequate air extraction and protective clothing. So, I saved myself a whole load of grief and forked out the cash.

Once I cut them to length and fitted them with the ornamental beads the deranged cries of "It's alive" echoed from my studio.



*Left:* Dreadlocks loosely fitted to the skull before cutting to length. After some debate I decided that an intermediate length between classic P1/P2 and AVP suited my "young gun".



*Below:* Dreadlocks cut to various lengths to give a tapered look, and glued into the pre-sculpted holes in the skull. Beads grip the dreadlocks without the need for glue.

# Armour, Trophies, and Weapons

## Armour

No Predator is complete without a selection of trophies, weapons, and armour. For reasons stated earlier, I did not make much in the way of armour, but any great warrior no matter how young should at least have his modesty covered. So I made some groin armour using Jesmonite resin and glass matting but without using moulds. I covered the model in Clingfilm and shaped the resin/glass matting over the contours of his body. I applied a few layers, let it dry, sculpted Milliput putty on top, dried, and painted. He still looked a bit naked so I made a loincloth cannibalised from an old suede skirt belonging to my daughter. An old leather belt of mine with a homemade buckle finished off his "costume".



## Trophies

I saved a bit of time here by using dried chicken and salmon bones for his necklace and I bought two replica human skulls for props. Not much else to say here, except the chicken tasted delicious.

## Weapons

Only one weapon for my Predator and that's his spear. I thought long and hard about his Bio helmet with lasers, shoulder cannon, and gauntlets but that's a separate project for a later date.

I constructed the spear using mixed materials, including garden poles, foam pipe insulation, washing machine tubing and tin cans.

A variety of glues, paints and miscellaneous other items meant I ended up with something that approximated the spear from the Predator II movie, but looked convincing enough from a distance. I initially wanted the spear to be retractable but it wasn't worth the effort so I fixed it permanently in the extended position. As a novelty, I incorporated my own initials SJC in Yautja on the handles onboard computer. For those of you not geeky enough to know, Yautja is Predator language. I repeated this theme on the base plaque with my full name and the date I completed the model.

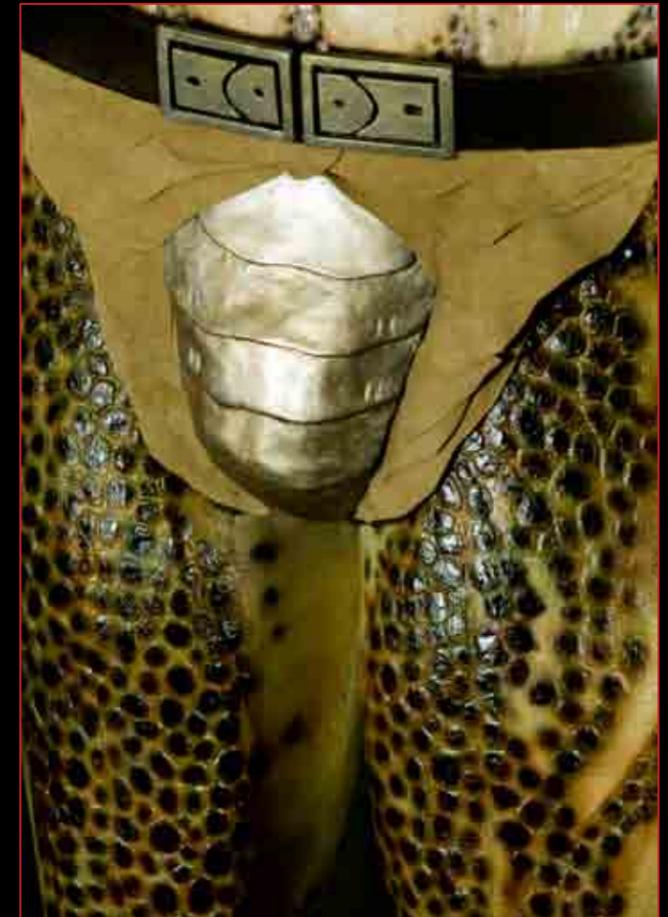


*Above left:* Detail of groin armour paintwork.

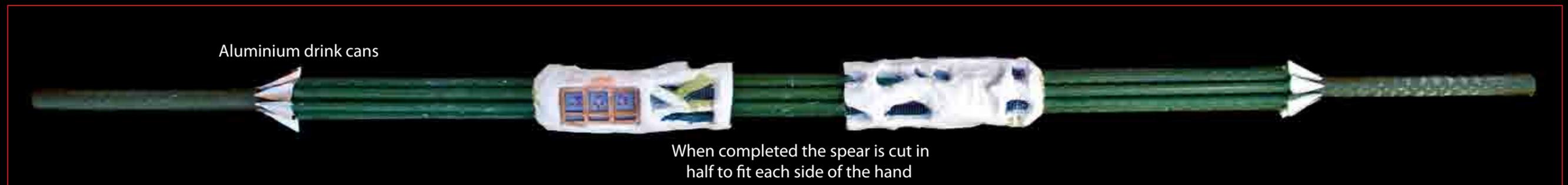
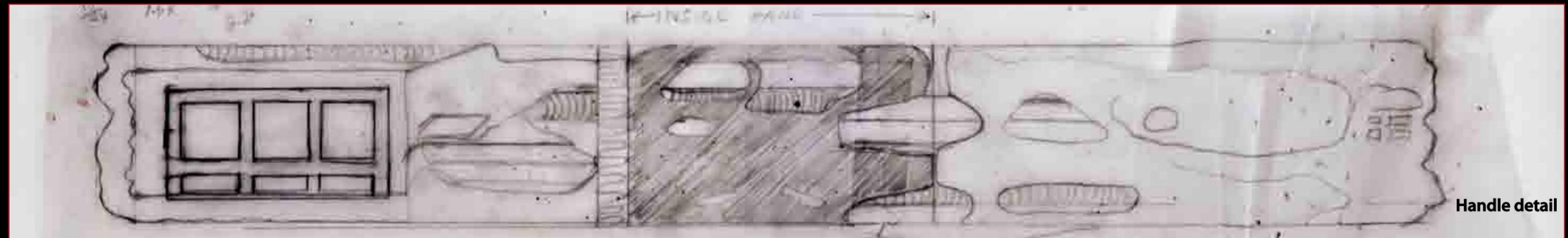
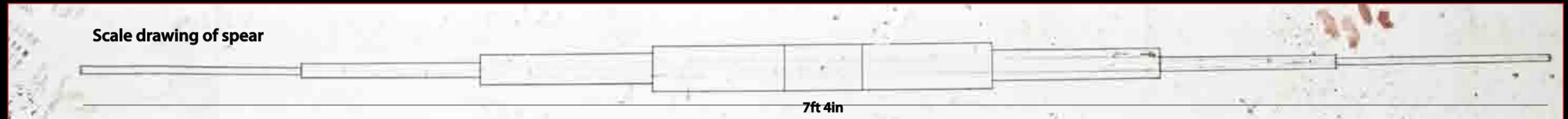
*Above right:* Groin armour, loincloth, belt and buckle.

*Above, left & right:* A right bone selection.

*Overleaf:* Spear construction.



# Spear Construction







# The Demon Who Makes Trophies of Men Complete



Predator all painted, dreadlocks, quills, armour and trophies added and moveable base labelled with a plaque.

His quills are cocktail sticks, cut to length, painted black, and placed into pre-drilled holes in the skull without glueing. If I ever get round to making his Bio helmet I will need to remake the quills with flexible Super Sculpey, as the rigid cocktail sticks prevent it fitting properly.

Not much else to do now except photograph the completed work and think about the next project.



*Right:* Detail of veining and textures on the chest area. Strong side lighting also reveals the translucent effect of multi-layered paint.



*Far right:* A few of the dried chicken bones adorning the Predators necklace contrast with his shiny skin.

*Right:* A bit of artistic license taken here with the male member of the species.



*Far right:* Exaggerated and not quite human abdominal muscles in all their glory.





*Left & Right:* Looks like my young Predator has a serious case of gum disease. I only noticed his dental problem when taking photos with my macro lens.



**Head  
Detail**



# Where it Nearly all Went Wrong

I've added this section more as a reminder that the path from the start to finish of a project never runs smoothly. It also lets the reader see that even after making mistakes that might warrant abandoning the work, perseverance sometimes pays off.

My first brush with disaster happened early on in the sculpting stage when I got up one morning and found the entire chest and abdomen area lying in pieces on the floor. Naturally, I was "not amused" so an assortment of choice words not normally read in any sculpting manual screamed from my makeshift studio. Now wasn't the time for rash decisions, so I took a couple of days rest to cool off and decide how to proceed. During that time, I reminded myself that most projects I've ever worked on have faced setbacks, so I used them as the catalyst to get back to work.

The photograph shows the broken pieces lying on the floor in a right old mess. Luckily, it hadn't completely fallen apart, as the cling film and masking tape was still holding most of it together. Putting it all back together again wasn't as easy as sculpting it in the first place, but I made sure I wouldn't make the same mistake twice. So, I improvised by glueing the salvaged bits back onto the armature using the cocktail stick as anchors with fast drying epoxy, and I repaired any damaged areas. Luckily, it worked and 2 days swearing was all behind me. Or was it?

Fast-forward a year and yes, you guessed it more swearing and gnashing of teeth, as I faced my next obstacle. This one was just as serious as a year's work nearly went down the drain. The sculpt, latex and mother case moulds were complete but the results of my casting technique using multi-part latex moulds were a cause for concern. The two body halves were out of registration by a country mile although I took the precautions of leaving the mould on the sculpture for as long as possible, and created the case

mould with everything still in situ. I also stored the moulds in a cool dark cupboard but the long delay in casting meant the two halves shrunk by different amounts. Reluctantly, I removed sections of the arms and recast the rear of the right lower leg to solve the problem. I really wish I could have afforded silicone as multi-part latex moulds are not recommended or for the faint-hearted. To cut a long story short: "Copy me and face the consequences".

I'd also forgotten what the sculpture looked like as a period of 6 months or more passed between moulding and casting (original sculpt destroyed). At the assembly stage, I decided I didn't like some of the details, so once again, more frustration as I reshaped parts of the chest, lower back, and legs using boxes and boxes of Milliput epoxy putty. These modifications show as whiter areas on the off-white cast.

Fast forward once more to spray painting and here we go again. I started painting the back but I didn't like the base colouring, so I wiped it off and re-primed. After a week of re-painting, I was generally pleased with my progress on much of the body, but then I became cocky and sprayed spot patterns on his abdomen and ribs that I hated. I can't tell you how much bother I had trying to match up the colours and texturing again. I might have saved time by re-painting the entire front half of the torso, but I really liked the chest colouring and I didn't want to destroy it.

Naturally, I made other blunders e.g. not using custom-made glass eyes, instead of my hand-sculpted efforts, or forgetting registration points on the body cast, but these were only a source of annoyance and not project killers.

After a lot of time and effort, I thankfully cleared all the obstacles and completed the model, but only after extensive re-writing of the sculpting dictionary.



Above: The first disaster that nearly finished off the project.



**Above left:** Black mannequin with cocktail stick. These anchor points helped to hold the damaged sculpture in place.

**Above centre:** The white Milliput filler used for alterations to the cast contrasts with the off-white Jesmonite.

**Above right:** Note the large gap between the edges of the front cast with the rear mould. This caused a major headache with resin cast mis-alignment.

**Far left:** I hated the spot pattern on the ribs so I elected to repaint them. I wasn't too keen on the lower abdomen either, but I knew his loincloth and belt would hide the spots there.

**Left:** Rib area primed ready for re-painting. I had at least two attempts at this before I got it the way I wanted it.

# Photography

I love to see projects finished, but reliving the journey through photographs or videos is just as exciting. It's all very well having the images on the computer but nothing quite beats seeing pictures in print.

Obviously, no illustrated book exists without photographs so here are a few details about my methods and photographic gear. I used several different cameras during the two-year project, from crappy pocket digitals to a cropped frame dSLR, but it's better to have, than have not, as they say. Unfortunately, I lost some of the early sculpting photos so there is a bit of a jump between the armature and the finished sculpture.

Digital cameras come and go but lenses tend to stand the test of time. My current camera is a Nikon D300 with a selection of lenses including 50mm, 16-85mm, 70-200mm+1.8 convertor, and 105macro. Funnily enough, I used the cheapest one the most, as the 50mm is fast, light, sharp as a tack and works well at middle distance.

Lighting the model for photography was a bit of a nightmare, as I ended up using a whole range of light sources. These included daylight, electronic flash, tungsten, and fluorescent and daylight bulbs. A sturdy tripod proved to

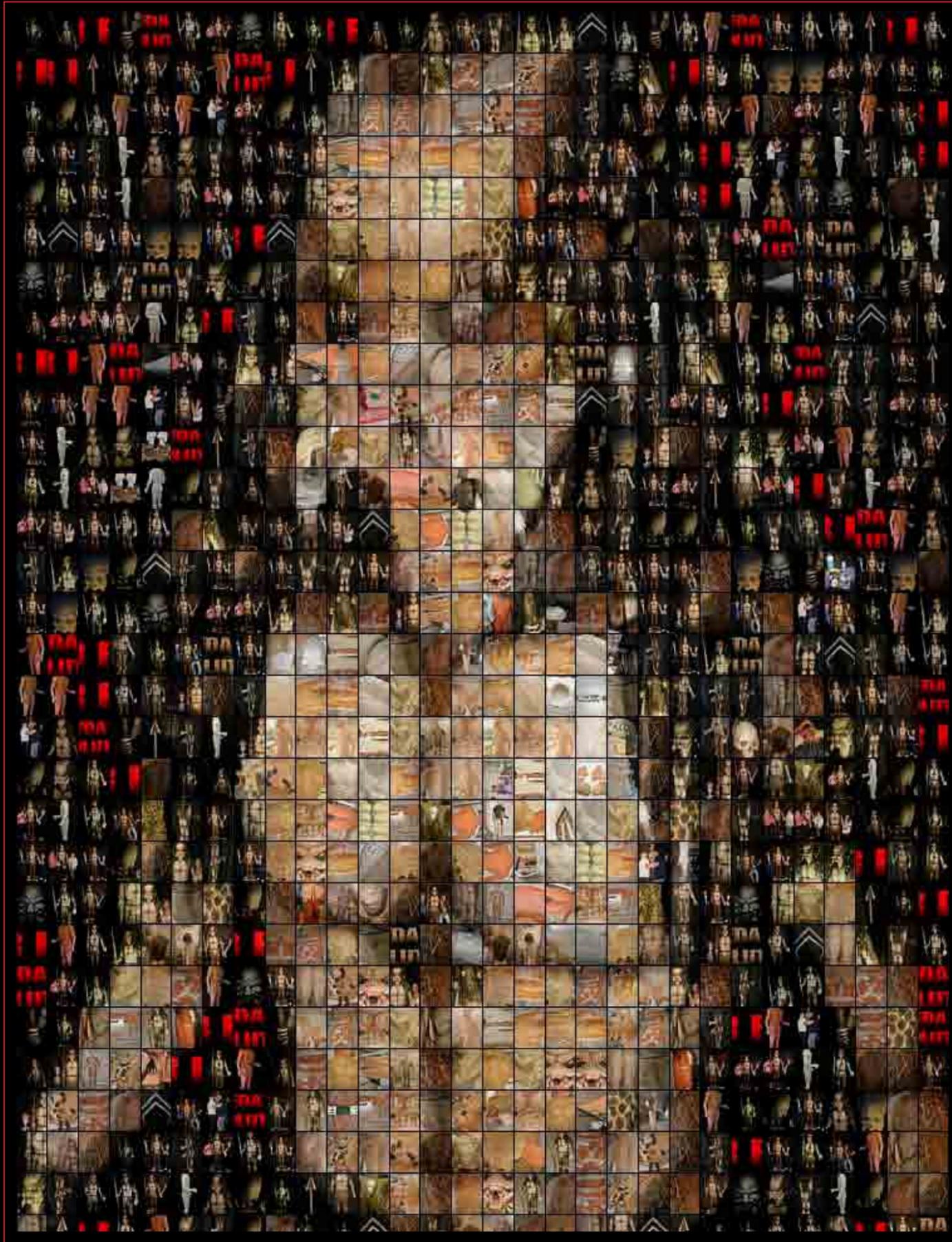
be a valuable friend too. I also tried different backgrounds e.g., natural backdrops in and out of doors, and artificial ones using black weed control fabric, or sheets of coloured card. I wish I had proper studio lights and more room but hey, I'm only an amateur and sometimes the messy business of mould making gets in the way.

I saved all images as Nikon NEF (RAW) files except when using the pocket digital cameras, where I saved as fine JPEGs. The RAW files underwent conversion with Adobe camera raw, manipulated with Photoshop CS5 and saved to different formats. The photos used throughout this book are high quality JPGs, but I kept uncompressed TIFFs for high quality printing and multilayered PSD files for any further manipulation. The montage on the opposite page is the only exception as I processed it directly with Mazaika 3.3 software.

Most of the photographs underwent a simple levels correction while I manipulated others more to convey the effect I was after, e.g. removal of distracting backgrounds or introducing deliberate colour casts. Any unintentional colour casts are down to the vagaries of reproduction from camera to page.

I hope the images in this book provided a stimulating insight into how I built my take on the Predator.





Note how my library of Predator photos makes up the "pixels" of this image. I wear glasses for PC work but the individual pixels become less detailed and the overall image somehow appears clearer when I remove them. If you are fortunate to have perfect eyesight, try defocusing your eyes and judge the effect for yourself.

Image processed with Mazaika 3.3 software.



Predator de-cloaking.

I was mucking about with Photoshop filters on this image when it evolved into something approaching the Predator's camouflage. I applied Photoshop CS5 ocean ripple and liquefy, modified the colour with graduated filters, applied render clouds and finished it off with a simulated lightning effect.



I wanted to create a Predator experience for family and friends, so I blacked out the room and played the movie soundtrack at each showing. Everyone's laughing in the pictures, but they all looked mighty apprehensive when they first entered my "studio".



A bit of family nonsense



Left: The author and sculptor taking his work seriously while in classic Predator pose.



# Idiots Guide to Building Predator

- Made concept drawings from material collected from the internet, magazines, books, and DVD's, to establish the look and feel of my version of Predator
- Printed scaled photos for use as sculpting templates
- Made armatures for the head, hands and torso using mixed materials
- Sculpted the model with Newplast oil based clay
- Prepared multi-part latex moulds
- Made multi-part plaster bandage rigid support moulds
- Cast the separate model parts using Jesmonite acrylic resin and layers of Quadraxial glass, the safe alternative to fibreglass
- Joined all the pieces together, repaired seam lines and re-modelled any problem areas
- Sealed the statue with white primer



- Spray-painted several thin coats of acrylic paint using airbrushes
- Continued building up layers of colour with airbrushes
- Made the spear from a myriad of objects and painted
- Cut the vinyl dreadlocks to length and spray painted the ornamental beads
- Sculpted and painted groin armour
- Made tusks, teeth, and quills
- Made belt buckle from thick card and cod-piece from a skirt belonging to my daughter
- Collected a selection of bones for use as ornamental jewellery. Acquired two human skulls for mementos of the hunt (honest, they're only resin replicas)
- Rounded off the project with a moveable base and added a plaque.

## And finally...

After a sometimes long and arduous journey, my version of the Predator is more or less complete. Artistic license has allowed me to produce something that is not a direct copy of the screen icon, but rather an immature Predator who has not yet earned his rite of passage nor is qualified to wear full battle dress. This premise allowed me to make him more slender and athletic looking than the original and it was a lame excuse for not making any armour. No doubt I'll tackle this in the future along with his additional assortment of weapons.

I used numerous techniques throughout this project, some of which I tackled for the first time. The most rewarding of these was airbrushing but it was a difficult art to master and I really should have cut my "tusks" on something smaller.

Of course, the methods I use are not an endorsement for anyone wanting to make something similar, as I made loads of mistakes along the way: none worse than using latex instead of silicone for multi-part moulds. I also recommend anyone making large body moulds to incorporate wooden splints to support the case mould. In hindsight I would also use Jesmonite instead of plaster bandages for a more rigid and stronger case mould construction. Nonetheless, even after my many blunders I still ended up with something that passes muster as my favourite sci-fi creature.

When people see my finished work, they usually ask me the following questions:

1. How much did it cost you
2. How long did it take you
3. Why did you make it
4. What will you do with it
5. What is it made of
6. How did you make it



The order and importance of the questions asked varies and those who ask question 5 or 6 first will benefit most from this illustrated guide. Just for the record the answers are:

1. Don't remember or don't want to tell you
2. Nearly 2 years
3. I'm a monster making, sci-fi/horror film fanatic
4. Keep it
5. A fibreglass substitute
6. If you've read this far you will know by now

I hope you have enjoyed this illustrated venture into the extraordinary world of monster making and it might inspire you to try sculpting, mould making, casting, and painting for yourself. I gave it a go and as my skills developed over the two years, the build underwent a metamorphosis from lumps of modelling clay to mould to the finished painted piece.

Truly a case of **Predator Evolution**.

Stephen Crawford 2010



# References and Art Supplies

## Predator related

Aliens vs. Predator Requiem  
Inside the Monster Shop  
Alec Gillis and Tom Woodruff Jr. with Chris Ayers  
Design Studio Press

AVP Alien vs. Predator  
The Creature Effects of ADI  
Alec Gillis and Tom Woodruff Jr.  
Titan Books

The Winston Effect  
The Art and History of Stan Winston Studio  
Dody Duncan  
Titan Books

The FX Lab  
<http://theeffectslab.com/>

The Hive  
<http://www.thehiveforum.net/forum/>

The Hunters Lair, Predator Costume & Prop Forum  
<http://thehunterslair.com/>

## Sculpting

Creature Sculpting  
Peter Konig Vol. 1  
Massive Back DVD

Human Anatomy for Artists  
Andras Szunyoghy and Dr. Gyorgy Feher Konemann

Sculpture Community  
<http://sculpture.net/>

## Mouldmaking

Mouldmaking and Casting  
Nick Brooks  
The Crowood Press

The Mouldmaker's Handbook  
Jean-Pierre Delpech and Marc-Andre Figures  
A&C Black, London

Mark Alfrey's  
Standard Molds and Castings (DVD)  
Mark Alfrey Productions

Mark Alfrey's  
The Ultimate Life Casting Video ((DVD)  
Mark Alfrey Productions

## Airbrushing

Createx Colors  
How to Begin Airbrushing Kent Lind  
An Introduction to Airbrush Colors

## Suppliers of Art Materials

Artstore Glasgow  
<http://www.artstore.co.uk/>

Creative Resources Distribution Limited  
<http://www.propbuilder.co.uk/>

Drawwrite  
<http://www.drawwrite.co.uk/>

Everything Airbrush  
<http://www.everythingairbrush.com/>

Machine Mart  
<http://www.machinemart.co.uk>

Millers Creativity Shop  
<http://www.millers-art.co.uk/>

PKM Signs & Digital Studios  
<http://www.pkmsigns.fsbusiness.co.uk/>

Polymer & Silver Clay Pit  
<http://www.polymerclaypit.co.uk/index.asp>

The Airbrush Company Ltd.  
<http://airbrushes.com/>

Tiranti  
<http://www.tiranti.co.uk/>

TOMPS Mould Making & Casting Supplies  
<http://www.tomps.com/>

Trylon  
<http://www.trylon.co.uk/>

The Internet has a vast catalogue of predator reference material and it doesn't require much effort to find useful information. Same applies to instructional texts and videos on sculpting, mould making, casting, and painting. For that reason, I've only listed those I found the most useful.

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*Step by step illustrated guide  
on how to build a*

**PREDATOR**

Book Design by  
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