

What we do

1: What is a pop-up book?

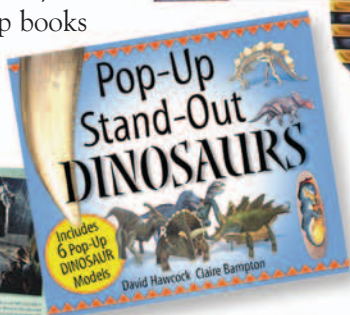
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There are many types of books that are grouped under the general title of 'pop-up book'. We produce many different types – here is a small selection.

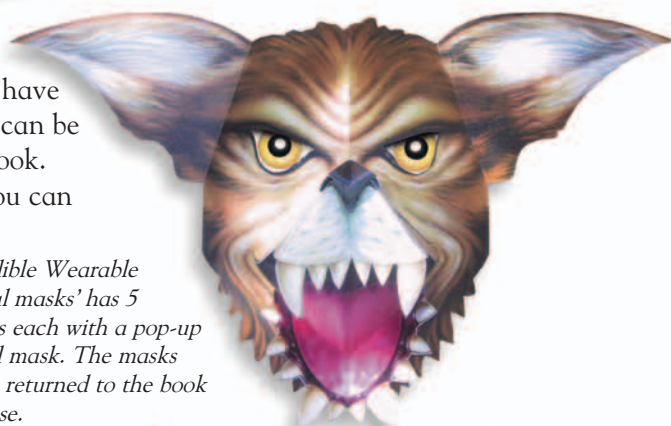
A pop-up book usually has between 5 and 7 spreads (double page to view). This is principally because of reasons relating to price, but also one with more spreads would be very thick and difficult to handle. Most pop-up books are for young children but this is not always the case. As you can see, we produce books for all ages.



'The White House Pop-Up Book,' and 'Ancient Egypt Pop-Up book' are traditional pop-up books with big impressive structural pops, pull tabs and lift-the-flaps.



Some pop-up books have pop-up models that can be removed from the book. Others have pops you can wear!



'Incredible Wearable Animal masks' has 5 spreads each with a pop-up animal mask. The masks can be returned to the book after use.

'Stand-Out Dinosaurs' contains 6 pop-up dinosaur models. After use, they can be pressed flat and placed back inside the book.



A different kind of book, 'Bug Box' has additional items attached to the cover inside a compartment. These novelty items are usually either soft or plastic toys.

'Bug Box' is a set of small books each holding a realistic plastic finger puppet in a drawer at the back of the book.



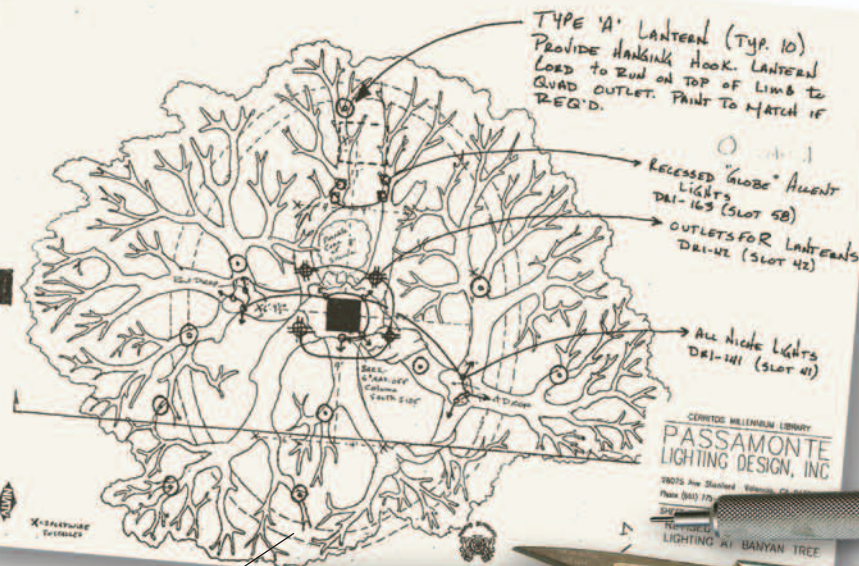
The methods by which all of these books are designed, manufactured and shipped is similar. In the following pages we hope to provide some useful information on how we do it...

How we do it

2: Paper engineering

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Making a pop-up book is a complex process we get asked about often, so we thought it would be a good idea to tell the story. It goes something like this...



Banyan tree plan

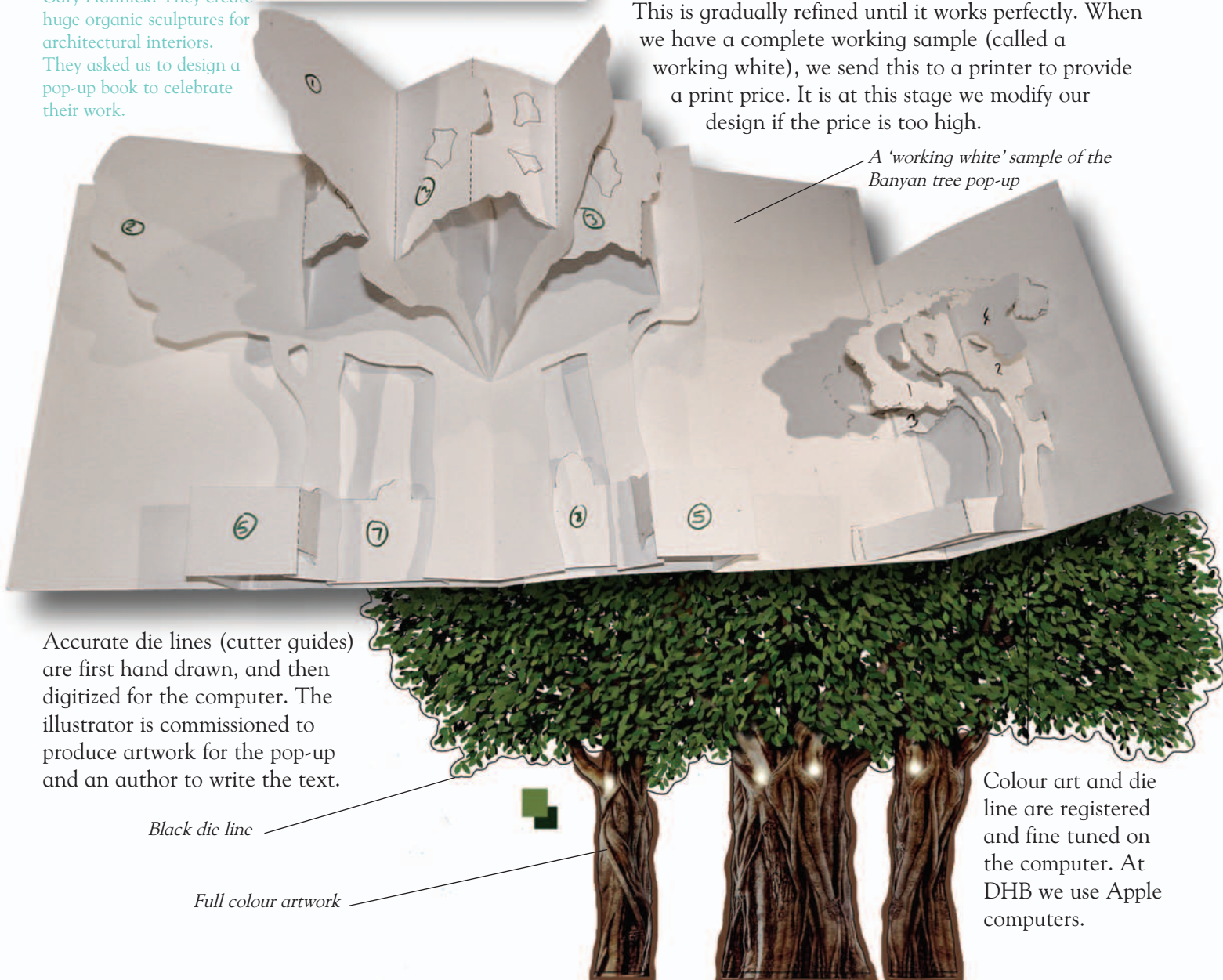
Banyan tree under construction

Project: NatureMaker. NatureMaker are a California based company set up by artist Bennet Abrams and his partner Gary Hannick. They create huge organic sculptures for architectural interiors. They asked us to design a pop-up book to celebrate their work.



It all starts either with an idea of our own, or a call from a client asking us to realize one of theirs. First we go through a research stage, gathering information and reference images relevant to the subject. Soon an initial pop-up is designed from the reference material. This is gradually refined until it works perfectly. When we have a complete working sample (called a working white), we send this to a printer to provide a print price. It is at this stage we modify our design if the price is too high.

A 'working white' sample of the Banyan tree pop-up



Accurate die lines (cutter guides) are first hand drawn, and then digitized for the computer. The illustrator is commissioned to produce artwork for the pop-up and an author to write the text.

Black die line

Full colour artwork

Colour art and die line are registered and fine tuned on the computer. At DHB we use Apple computers.

How we do it

3: Pre-print

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Pop-up books are manufactured mainly in the Far East (Thailand, Singapore, and China) and South America (mainly Ecuador). After designing the pop-up book we send a fully working sample with die lines, complete colour art and text to a printer.

Our sample is sent to the printer's paper engineers to evaluate, the computer discs containing art and text files go to the reprographics department. We also provide the die lines digitally. The printer has a sophisticated CAD (computer assisted design) system that enables the paper engineers to cut out the pop pieces by machine.

Colour proofs are cut out and assembled. The skilled paper engineers work out the best way to put the pop together for bulk assembly.

Our working white sample and die lines are studied and a new sample is made by the printer with suggested modifications. This will help to make the mass production of the books more efficient. At this stage the printer provides us with a final print cost.



This is a nesting sheet. All the pieces of the pop-up are laid out to use as little paper as possible. Here there are two identical pops on the same sheet: this is called 'two up'.



At last the book is printed. This very advanced printing press can print up to 16,000 copies an hour.

Project: Dragon's Egg.

This is not a typical pop-up book. It comprises a selection of items, one of which is a pop-up free-standing dragon. We created this project for Walker Books.

This book contains all the stages the engineers have worked out to assemble the pop-up in the most efficient way possible. Every fold and glue point is marked, and the best order to assemble noted.



How we do it

4: Cutting

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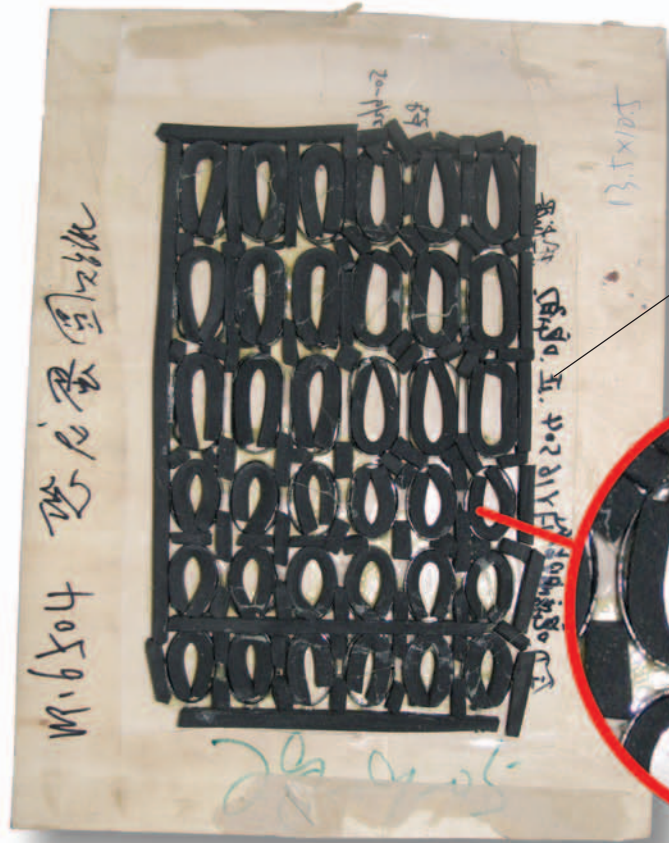
After printing is complete, the sheets are machine cut and creased one at a time. The cutter boards are called 'forms'. Making a form is a very skilled job.

Foam rubber protects the cutter, and stops the cut pieces clogging the form.

A ply wood board after the cutter metal has been carefully inlaid

The cutter is called a 'form', each form is labelled

Sharp metal cutter



The final cutter line is transferred onto a piece of ply wood board. A strip of metal is hammered into the board (following the cut and crease lines exactly). Where the metal is to cut it is very sharp, where it is to crease it is blunt.

After printing, the cutter forms are stored. If the book is popular and reprints, the cutter can be re-used. Some books are so successful the forms wear out and have to be remade.

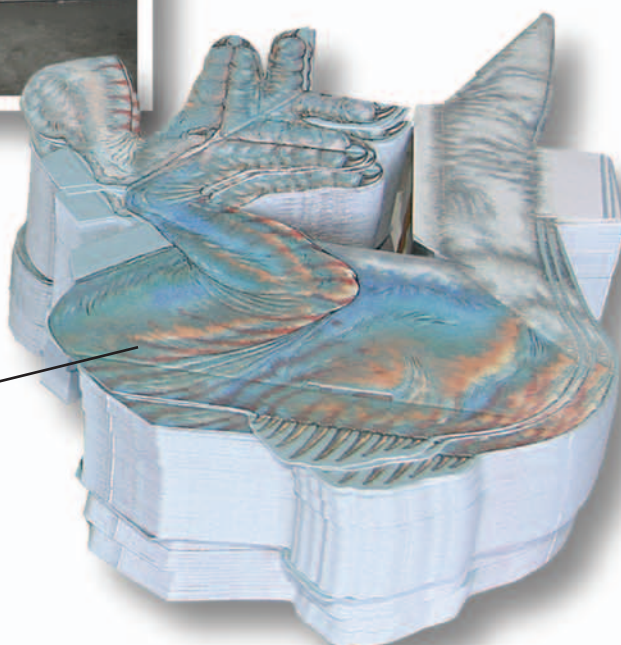


A die cut machine with a form in place



Cut out pop-up pieces

After cutting, the pop-up pieces are pushed out from the printed sheets. The left over paper is removed and collected for recycling. The cut pieces go on to be assembled.



How we do it

5: Assembly

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The cut out pieces are taken to the assembly area. This is the process that involves the most people. Pop-up books are so complex they must be put together by hand.

All the staff are well paid (like Europe a minimum wage is set by the government) and have meals and accommodation provided. All the printers we use are regularly checked and approved by international organizations. Very vigorous standards are complied with.



All the cut pieces are sorted into small piles. The piles of pieces are replenished regularly to keep production going.

Each person has a single, simple task to perform.

Some tasks involve just folding, others gluing.

Each task is designed to take the same time. If this was not the case a production bottle neck would develop.

It is not unusual to have over 100 people assembling a book.



At last finished copies of the project appear at the end of the line. The number produced each day depends on the complexity of the item, and the number of people working on the project. The finished books go on to be packed and shipped



How we do it

6: Shipping

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Completing the final product is not the end of the process. We have to ship the books to the publisher's warehouse. This is also a specialized job, to ensuring nothing is damaged and that the books arrive on time.

We ship books and 3D items all around the globe. There is a huge amount of detailed documentation that must be prepared accurately to comply with each country's import and customs regulations. Failure in this part of the project can lead to costly delays.



The book packing area.

All cartons are custom made for each project. The publisher will have a number of specific requirement that must be complied with. Failure to do this correctly can mean repacking the books at the port of arrival.

Carton weight, book title and the number of books inside must be clearly marked on each carton.

The cartons are stacked onto pallets.

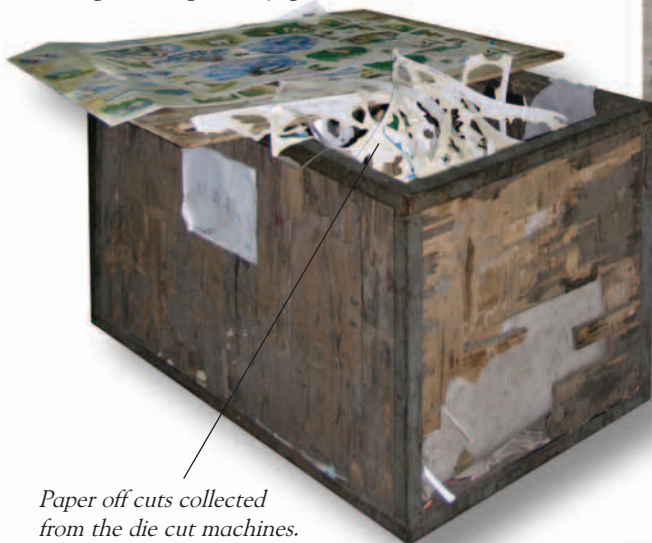
The pallets are loaded into a shipping container. The container is put directly onto a ship, so it must be packed carefully to avoid any movement of the cartons which may result in books being damaged during the voyage.



The container is 48ft long.

Fork-lift trucks load the pallets into the containers

Finally all the waste paper is collected and packed into bales for recycling. The recycled paper may well find its way into the cover board of another pop-up book!



Paper off cuts collected from the die cut machines.

Bales of paper ready to go to the recycling plant

