

Dauvit Alexander 2015



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**20000 Leagues
Under The Seas**

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20000 Leagues Under The Seas

- The first part - 2008



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- The second part - 2012

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20000 Leagues Under The Seas

- The Source

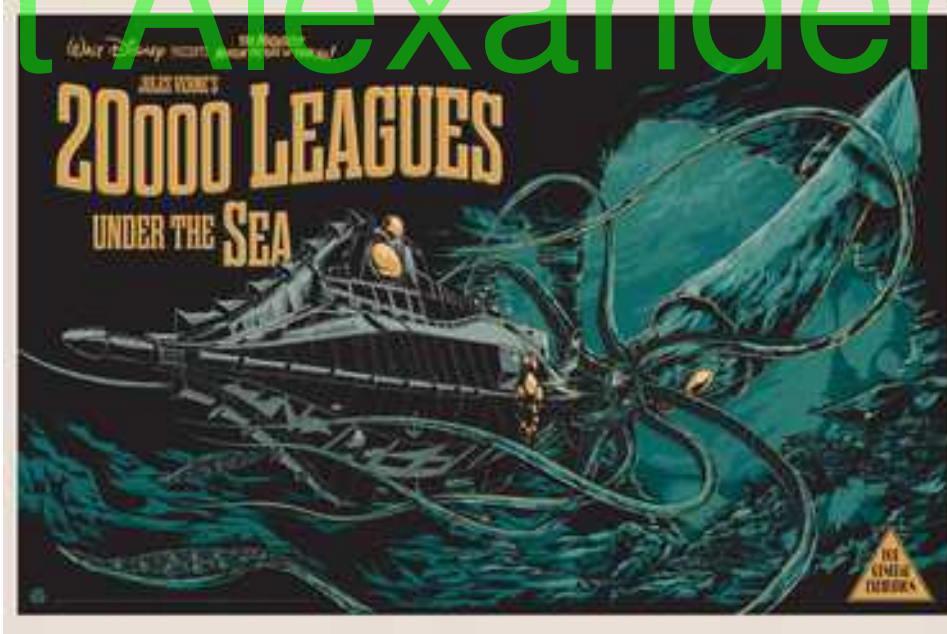


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20000 Leagues Under The Seas

- Why “20000 Leagues”?
 - Jules Verne – 1870
 - Film version – 1954

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20000 Leagues Under The Seas

- The Canning Jewel...



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- First page of notebook.



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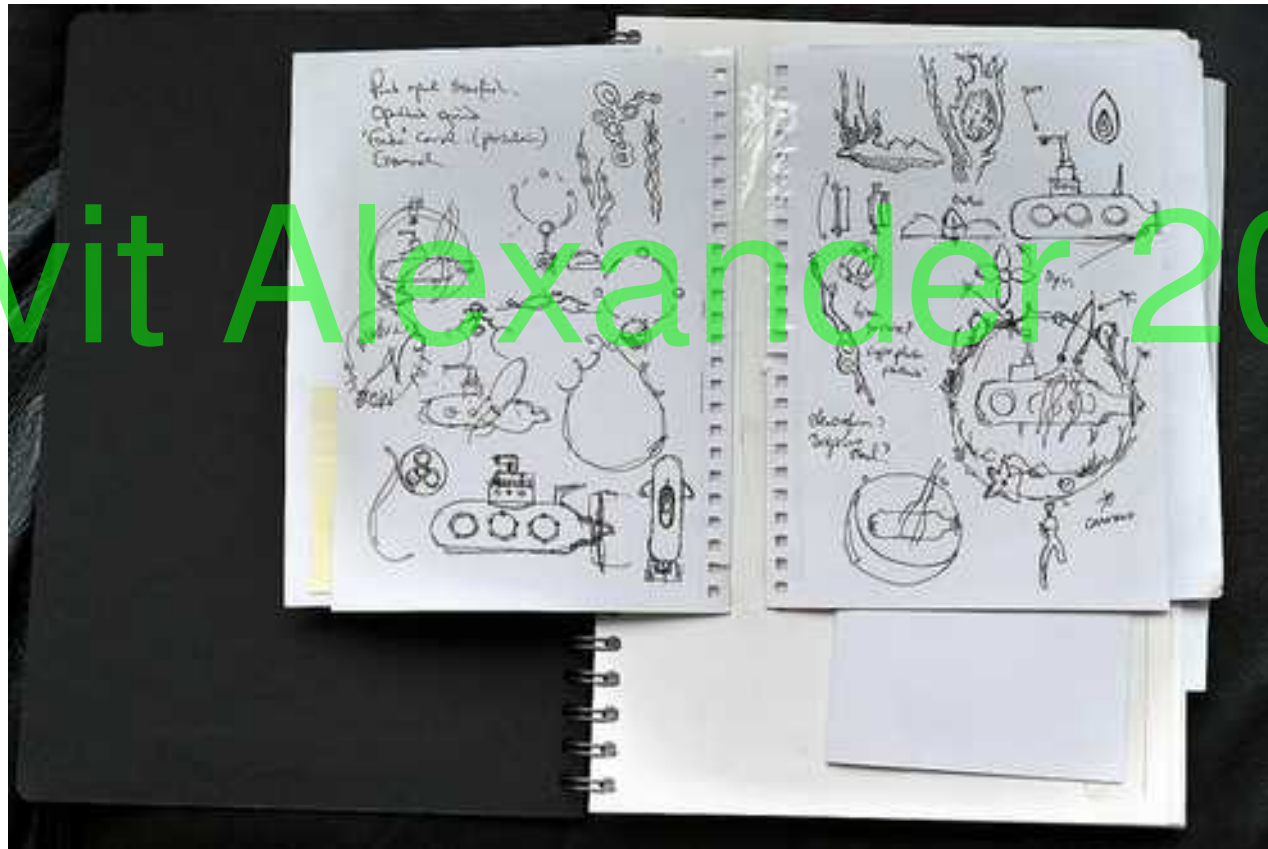
- Gathering other resources



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- The drawings begin



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- Form of the submarine



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- Beginning to model submarine



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- All added elements CAD/CAM



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- The Squid...



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- The scanner...



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- Wax squid model



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- Too big to cast!



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- Cast in silver



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- Working out the collar



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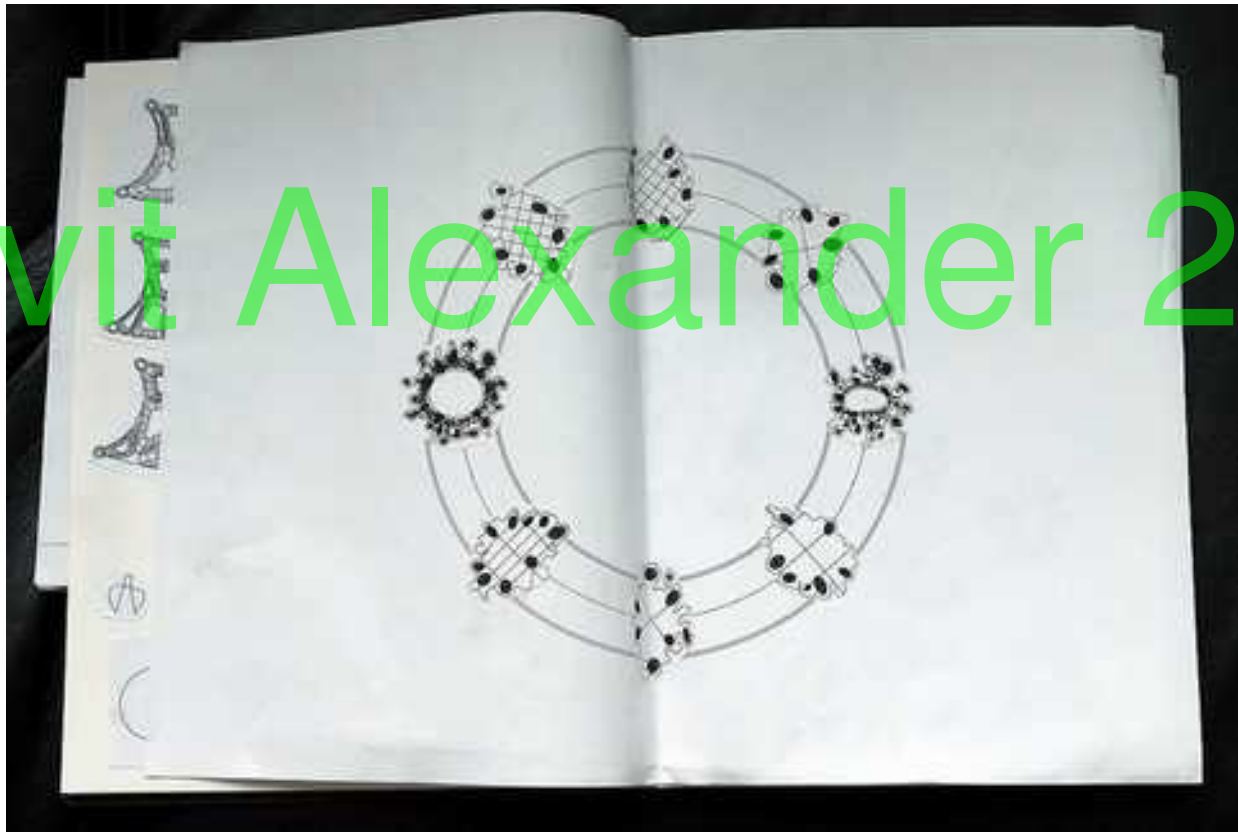
- Gemstones



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- Seaweed elements



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- Milled in wax and cast



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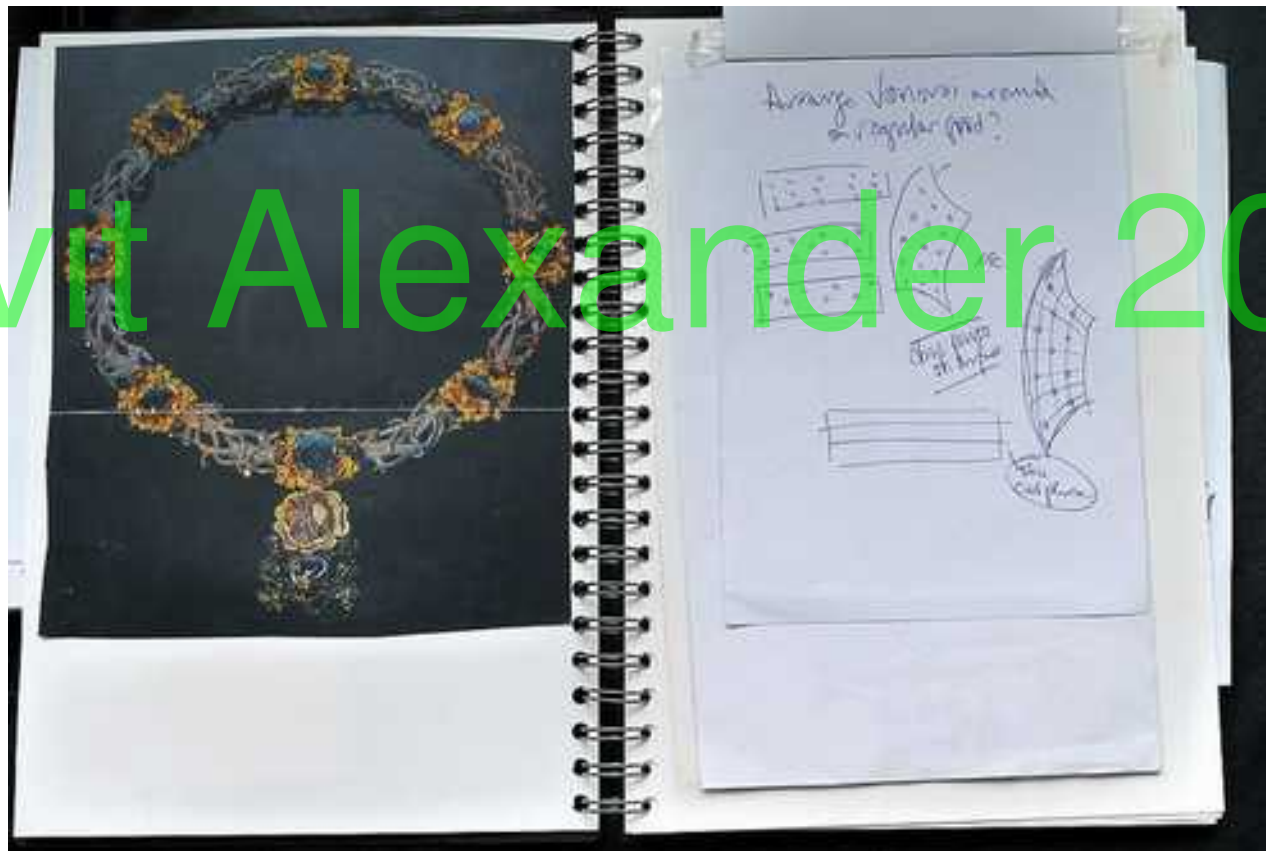
- Hand-cut elements



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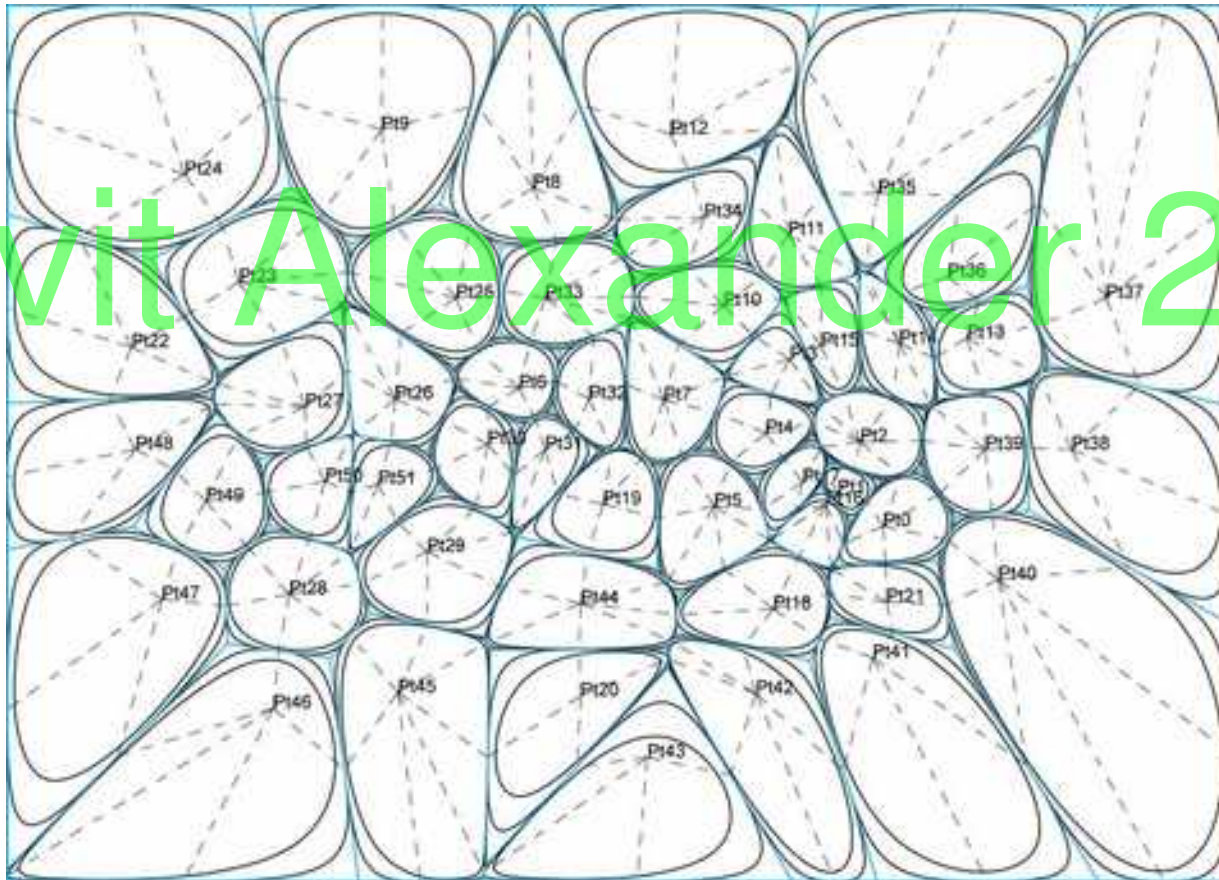
- Barnacle elements development



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- Voronoi diagrams



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- Voronoi structures



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- Voronoi barnacles...



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- 3D printed in steel with bronze infusion



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- Barnacles, deciding the layout



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- Assembly begins



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- Constructing the catch



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- Nearing assembly



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- Setting the stones



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- Mounted opals (unset)



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- Pearls and opal



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- Setting the squid



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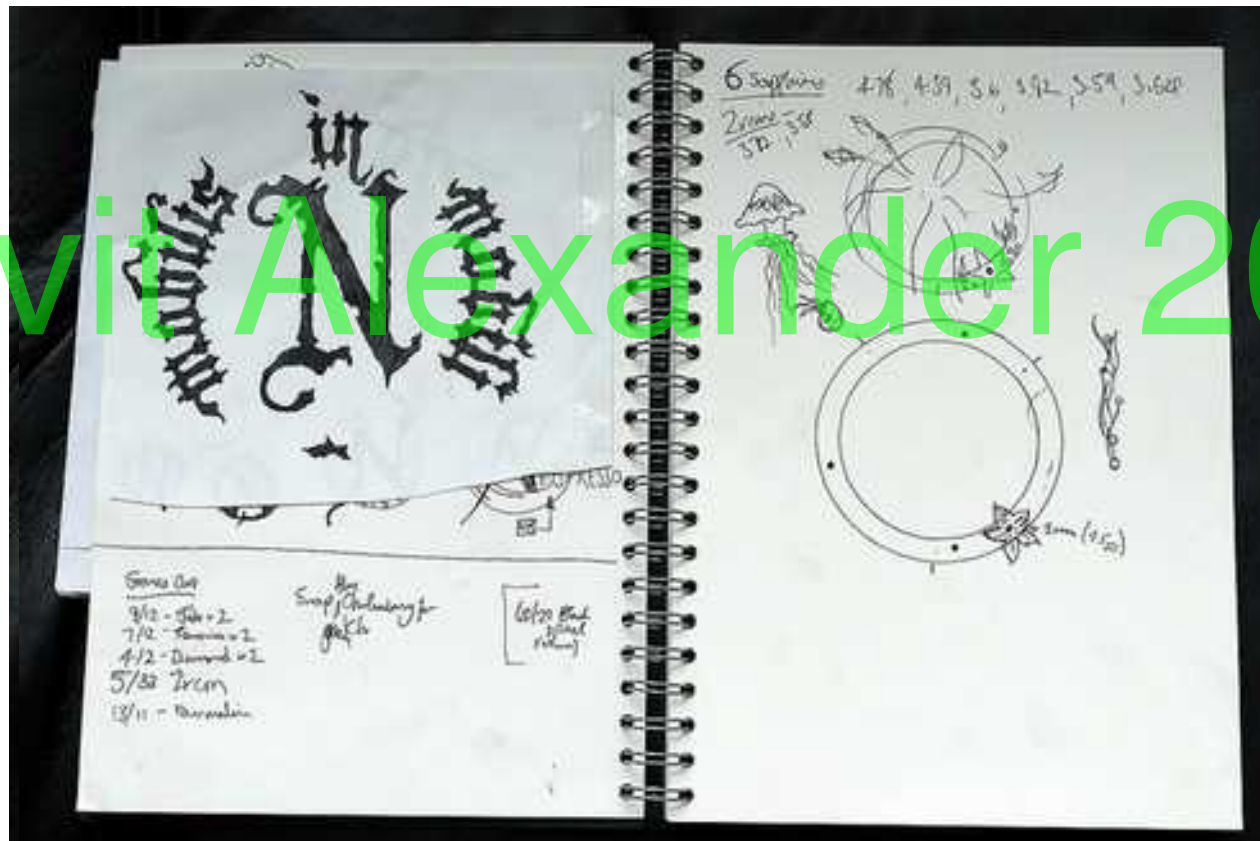
- Mobilis in mobili



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- Mobilis in mobili



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- Porcelain corals



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- Setting the collar



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- Catch and central elements



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- The collar, assembled



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- Original drawing for pendant



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- Hand-engraved elements



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- Set and assembled



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- Set and assembled



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- Set and assembled



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Thank you.

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• References

- <http://manybooks.net/titles/vernejuletext942000010.html>
- <http://www.imdb.com/title/tt0046672/>
- http://en.wikipedia.org/wiki/Voronoi_diagram
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- <http://www.designbuild-network.com/projects/watercube/>
- <https://www.facebook.com/pages/Seaurchin/464524910236281>
- <http://www.jewellerydoc.com/>
- <http://www.jewellerycastingscotland.com/>

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References

For references and links go to:

http://www.justified-sinner.com/20000Leagues_References.pdf

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Further Information

To download a copy of this talk:

<http://www.wringhim.co.uk/20000Leagues.pdf>

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Introduction

- Welcome
- Thanks to Nicola and Chris
- Overview of presentation
- Hanging about afterwards to talk

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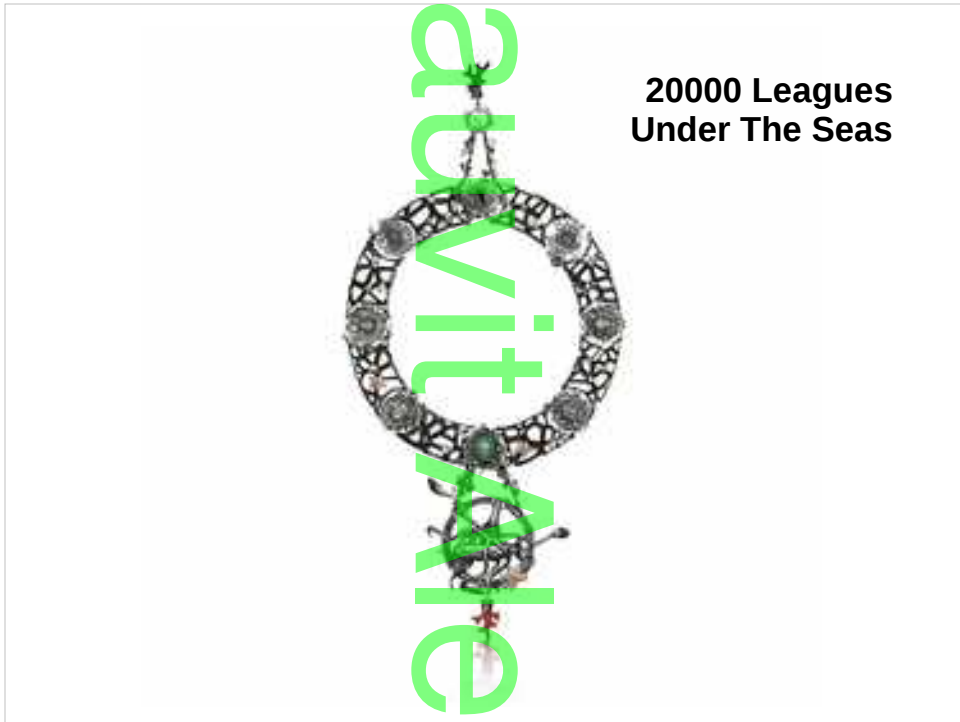


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Introduction

- Welcome
- Thanks to James Thurman and Umut; thanks to UNT
- Overview of presentation
- Hanging about afterwards to talk

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20000 Leagues Under The Seas

Started in 2008; completed in 2014

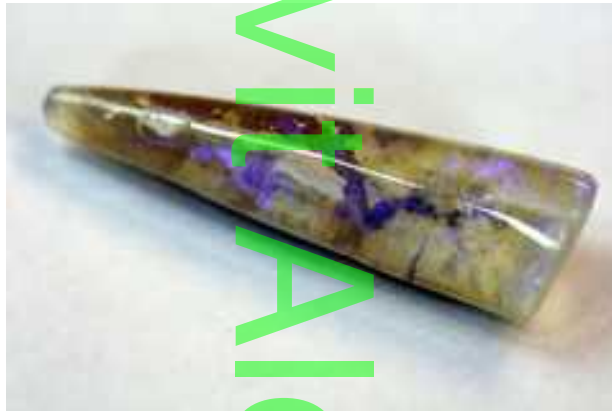
Idea formed in 2012

Came about almost backwards – wanted to make a piece based on the book – original thoughts very “steampunk” - never really went anywhere

Worked on intermittently during the period

**20000 Leagues
Under The Seas**

- The first part - 2008



2008 – bought an opalised fossil squid body from my stone-dealer, Marcia Lanyon when she was at ACJ Conference in West Dean

Knew that the form was important – would keep the squid form

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Under The Seas**

- The second part - 2012



Four years later, the same stone dealer brought with her, these hideous pink opal starfish. I immediately knew that I had to buy them, even though I was roundly mocked for so doing...
(Patrick Starfish - [click](#))

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Under The Seas**

- The Source



Almost all of my exhibition work references historical jewellery in various forms
Form for this piece – Hohenloe Collar, dating mid 15th C. - early 16th C

Image from Marian Campbell's book "Mediaeval Jewellery" V&A

Germany – discuss stones – role of precious and non-precious materials in mediaeval and renaissance jewellery

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- Why “20000 Leagues”?
 - Jules Verne – 1870
 - Film version – 1954



Adventure stories; have read most of Jules Verne's output – interest in Steampunk
Film version from childhood

I knew from the moment I bought the squid that I wasn't going to change the form at all and somehow wanted to preserve it as a squid, rather in the manner of the Canning Jewel

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Under The Seas**

- The Canning Jewel...



Previous talk – importance of jewel to
development of personal philosophy

Sea-theme

Use of a gemstone as a core element of the
design

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- First page of notebook.



Making the drawings – first page in the workbook

Gathering design materials and sketchbook ideas for construction

Idea of basic form already clear

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- Gathering other resources



Early doodle of ideas on the post-it note

Wedding invite – parure for wedding

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- The drawings begin



Draw all the time, endless variations, every scrap of paper, doodling

Scattershot approach

Importance of a dynamic approach to design and manufacture – change at any stage

Don't like working to rigid drawings

This illustration not typical as it is a combination of two notebooks

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- Form of the submarine



CO2 cylinders

Discarded in the streets from airguns and
cream-whippers

Challenges of working with pre-existing forms in
CAD, accurate measuring

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Under The Seas**

- Beginning to model submarine



Role of CAD in work
Rhino 3D

Scripts, specialist plugins for propeller design –
actual propeller on a tiny scale

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- All added elements CAD/CAM



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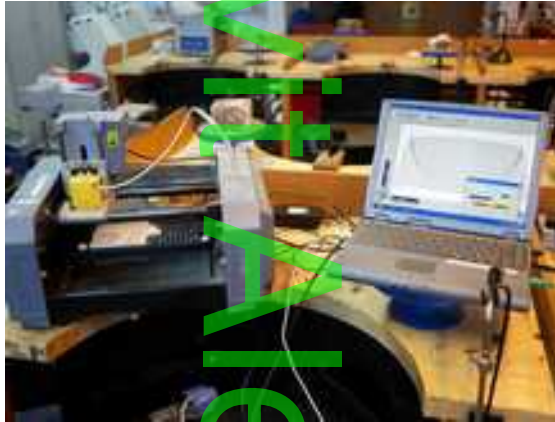
- The Squid...



3D scan of the squid, carved in wax by digital milling

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- The scanner...



How the 3D scanner operates... here scanning a
spectacle glass lens for a future project,
“1694: An Eye for Optical Theory”

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- Wax squid model



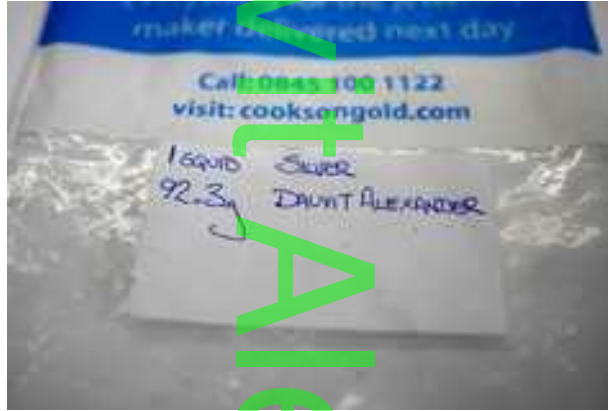
Collaboration important – no point in not working with people who are good at doing things I can't be bothered doing or who can do it better than me

Carol Docherty – one of my ex-students, superb wax-carver

One of two collaborators on the project – will discuss the other later

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- Too big to cast!



Sent to a casting company for casting. Too big for casting company – cut up and cast in sections

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- Cast in silver



Soldered back together. The detached leg is to allow the submarine to be fitted in and held in place

Some of the other elements had been completed by this point but for purpose of this talk, it is easier to go through each stage separately

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- Working out the collar



The collar was largely worked out in digital form as it was going to be constructed from digitally-produced elements... the colours for the collar were determined by the theme, sea-colours

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Under The Seas**

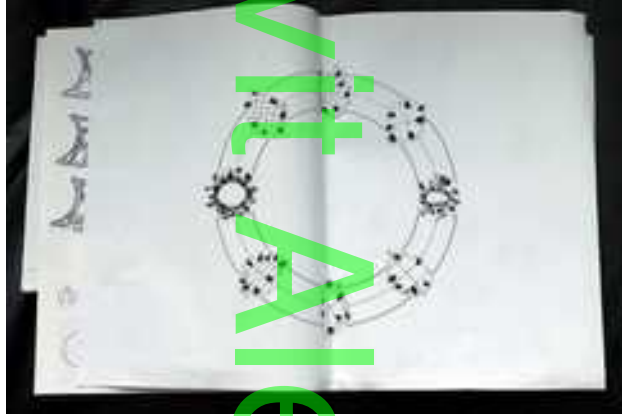
- Gemstones



Colours of Chrysoprase (green) and Chalcedony (blue) old-cut stones, bought in Istanbul

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- Seaweed elements



Collar consists of two sections, the “seaweed sections” and the “barnacle sections”
Seaweed sections developed in Inkscape from drawings of seaweed

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- Milled in wax and cast



Top layer – forms which would be challenging, if not impossible to make by hand
Each seaweed and barnacle element is unique to create an organic feel to the piece
Skulls not part of piece but an element I made years ago and which are part of my general practice – one on bracelet brought to show

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- Hand-cut elements



Seaweed sections made from double-layer, bottom element hand cut and formed and soldered to the upper, digitally produced section

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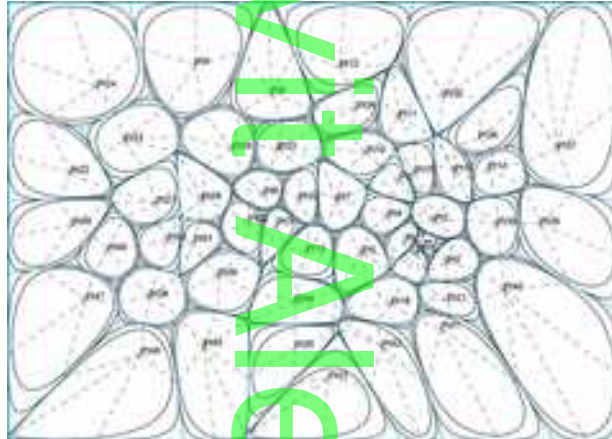
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- Barnacle elements development



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- Voronoi diagrams



Development as a digital design allows for use of complex mathematics to emulate natural growth processes

Used to create structures which simulate micro-structure of bone, for example

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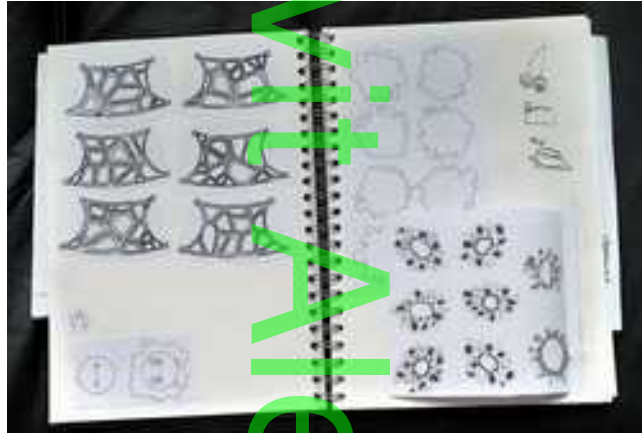
- Voronoi structures



Water-cube Beijing swimming centre, entireley modelled on Voronoi mathematics – Ove Arup

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- Voronoi barnacles...



Using Rhino plugin to create the forms – wrote a script to form and shell the objects

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- 3D printed in steel with bronze infusion

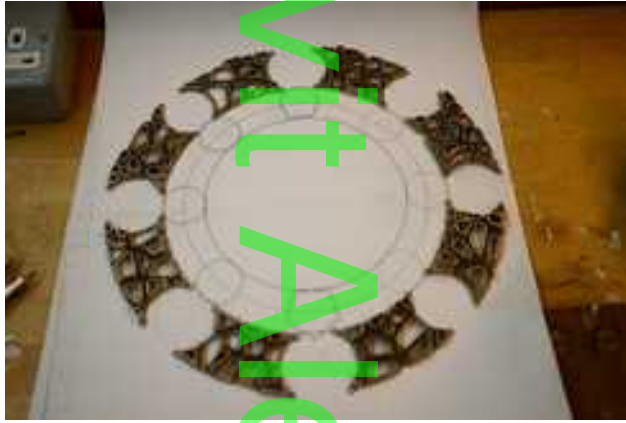


Printed in steel by Shapeways' bureau; bronze-infused for strength and colour; texture left as-sintered

Note error on this piece.

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- Barnacles, deciding the layout



Selecting the order of the barnacle elements
around the collar

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- Assembly begins



Starting to take shape... catch section almost completed here.
Labels on sections

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- Constructing the catch



For me, it is very important on an exhibition piece like this that the catch is an integral part of the work

Click through stages

Enjoy making catches and mechanisms

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- Nearing assembly



Post-it notes with gemstone lists

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- Setting the stones



Starting to add the stones – starfish opals and pearls on the steel elements

Difficulties in drilling the steel

Using a PUK welder to directly attach the pearls and starfish to the steel

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- Mounted opals (unset)



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- Pearls and opal



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- Setting the squid



Setting the peridots, jade, tsavorite and garnets
in the main central element.

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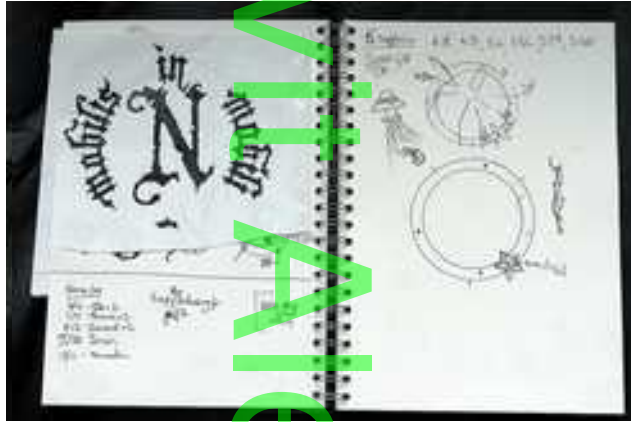
- Mobilis in mobili



Point out coral and “N” elements – story “Mobilis in Mobili”

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- Mobilis in mobili



Development of the “mobilis in mobili” motif

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- Porcelain corals



Coral by Lisa Stevens

High-fired porcelain with glazes – worked with
lisa a lot on other pieces – commissioned her
to make these – red coral popular in
Renaissance jewellery – not sustainable

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- Setting the collar



Construction – set the elements and linked afterwards

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- Catch and central elements



Setting the catch and main central element

Click through – catch tourmaline; selection of stones, zircon, tourmaline, topaz

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- The collar, assembled



Main collar assembled... work on the pendant.
Although the squid was finished, the pendant
hadn't been made ...

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- Original drawing for pendant



Originally planned to use a lump of gemstone crystal -

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- Hand-engraved elements



Using engraving to create rocks and seaweed elements – setting here
“A Chance To Cut” - C&B hand-engraved... no video of this piece being engraved

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- Set and assembled



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- Set and assembled



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- Set and assembled





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Started in 2008; completed in 2014

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Thank you.

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• References

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- <http://www.designbuild-network.com/projects/watercube/>
- <https://www.facebook.com/pages/Seaurchin/464524910236281>
- <http://www.jewellerydoc.com/>
- <http://www.jewellerycastingscotland.com/>

References

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Further Information

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