Unborn0x9 Residency Bourges 16th – 31st August 2021/ART4MED

REPORT by Svar Simpson

Revised 23rd July 2022

Research into moulding and casting the form of a 26-week human embryo (baby)- using silicone/cellulose mix which can be scanned with ultra-sound.

Testing and familiarisation with the silicone began on Tuesday 17th, mixing small amounts of silicon and pouring into small clay-walled moulds. Initial tests were to check the flexibility of the material, testing skin-tones, and the silicone's ability to 'set' with the added thinners. Also the way the cellulose blended with the silicone was also to be examined. It is the cellulose that picks up the ultra sound rays to provide the definition of the baby's form.

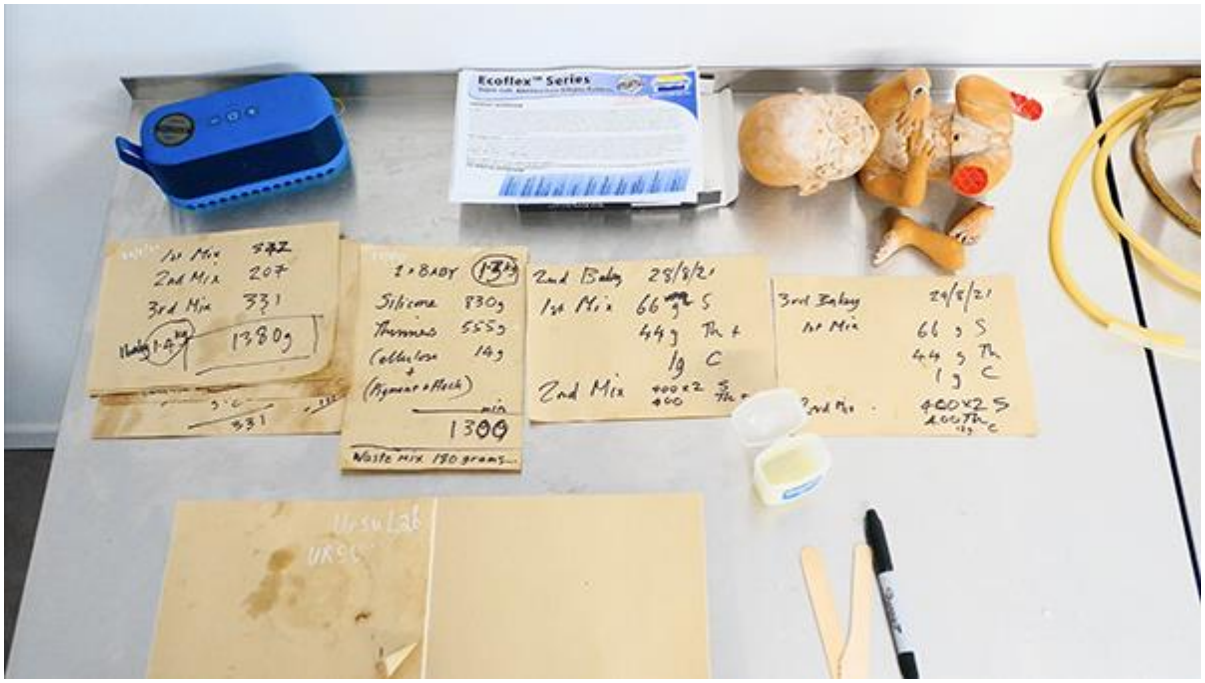
The MOULD of the baby was made from 1 part A + 1 part B with no added thinners (or cellulose), with a plaster casing.

The ratios of thinners to silcone proposed for the casting of the baby itself (65%) was way above the maximum guidline of 10%.

Preliminary tests on a basic 1 part A + 1 part B silicone mix and 10% thinners plus 3% cellulose proved too dense to provide an echo of any depth.

A basic 1 part A + 1 part B silicone mix and 10% thinners with no added cellulose produced some results, but only about 50% of that required.

After discussion and clarification of Vivien Rousell's research and results, it was agreed that I would produce two test-shapes (cauliflowers) of about the same mass as the baby's head.
Cauliflower 1: 1 Part A + 1 part B silicone
Cauliflower 2: 1 Part A + 1 part B silicone, 2 parts to 3 (66.6%) Thinners, 1% cellulose.



Jerome's next visit on Saturday 21st proved more fruitful, with both shapes showing up on the scan, but Cauliflower 2 with much more depth and clearer outline.
This was the recipe resulting from Vivien's previous research (Viv mix).

By this time, I had completed the extra modelling upon of the 3-d printer baby with plasticine; to personalise its facial features and improve upon the form.
The mould was almost finished; the 3rd part of the 3-piece mould was poured on Wednesday 25th.

After a meeting between Ewen Chardronnet, Shu Lea Cheang and myself on Tuesday 24th, it was agreed that I should go ahead and cast a first baby with the Viv mix:

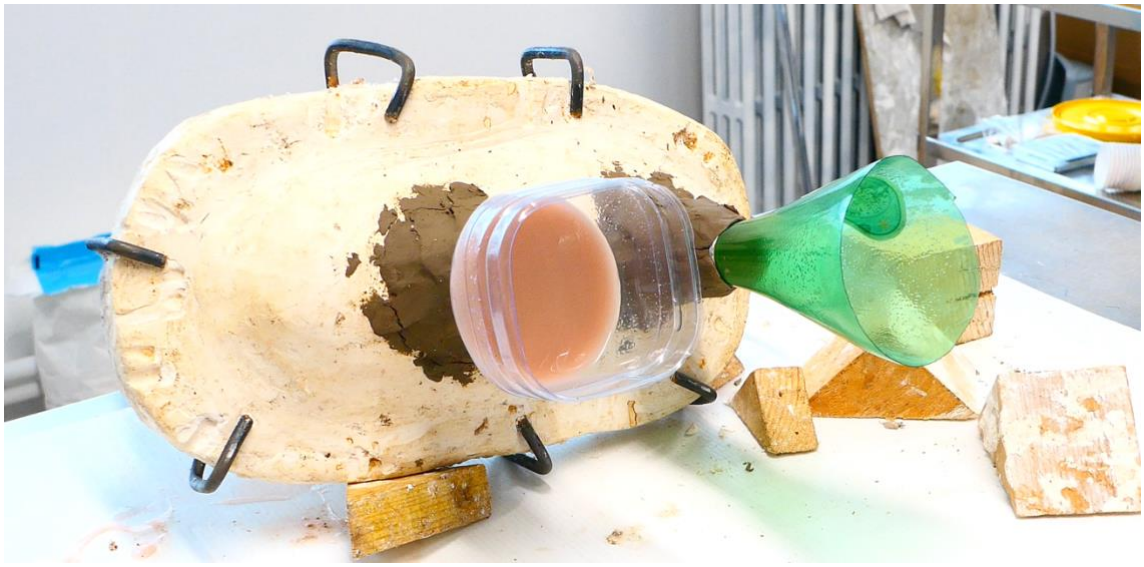
1 part A + 1 part B silicone, 2 to 3 parts Thinners (66.6%), 1% cellulose, also adding negligible amount of pigment and flock (a powdered substance to create a more skin-like surface).

Baby 1

On Thursday 26th, I cast the first baby:

1 part A + 1 part B silicone, 2 to 3 parts Thinners (66.6%), 1% cellulose, also adding negligible amount of pigment and flock (a substance supposed to create a more skin-like surface).

It took 3 separate mixes to fill the mould: 1st mix:842g, 2nd mix 207g, 3rd mix 331g – TOTAL: 1380g



dI opened the mould on Friday 27th, and Claire Guillaum, from Antre Peaux, documented the event with photos.

The results were both promising and disappointing:

-The baby's face looked realistic and beautiful.
-The fingers and toes had not cast sufficiently.
- the mould parts were very unaligned.
-The body texture was good, if slightly 'powdery'.
-The skin-tone was too pale and lifeless; it needed more red and yellow pigment, to 'inject oxygen!'

When Jerome arrived on Saturday 28th, the first baby was in a large container of ordinary tap water, ready for scanning,
and I was already in the process of casting baby 2, but just needed confirmation that the mix had been successful.

First Jerome scanned with the Echopen probe, and then with the Unborn project's own probe, which needed some soldering repair on-site, and would also need more repair for it to be used again in a live performance.
Both scans produced good results!

Jerome took baby 1 away for further tests.

On Sunday 29th, I opened the mould for baby 2
1 part A + 1 part B, 2-3 parts Thinners (66.6%), 1% cellulose, plus Flock and a negligible amount of pigment.

The results were as follows:

- The body skin was lumpy, and difficult to separate from the mould itself.
- The skin tone was much richer and healthy looking!
- The mould-parts were still unaligned, making a 'shelf-effect' between the front and back of the baby.
- The device I had inserted into the mould, so that the umbilical cord could be 'plugged in, had shifted during the cast, making a hole in the torso.
- The face had some large flecks visible, which I presume were Flock.
- The mould had lost silicone on the underside of the baby, making the back of the head and the back slightly flat.
- The fingers and toes were better formed, but left hand still imperfect.
- The hands and feet were sticky, as if not quite set?

Baby 3

That same Sunday I also cast the 3rd baby.
1 part A = 1 part B silicone, 2-3 parts thinners (66.6%), 1% cellulose plus pigments as with 2nd baby, but no Flock.

I cast this 3rd baby in 2 stages.
Firstly, I made a small amount of the mix, (101g) to feed some silicone by hand into the mould's extremities: hands, feet & ears.

I let that silicone settle before closing the mould and making the main mix (1212g).

I opened the mould on Monday 30th am., as a presentation about project and the casting process to the Antre Peaux team.

Shu Lea contextualised my work into the broader realms of the Unborn0x9 project and the theme of Ectogenesis. I opened the mould and explained the casting process and my experience with the materials.

The results for baby 3 were as follows, and documented by photos:

- Again, the body skin was lumpy, and difficult to separate from the mould itself.
- The skin tone was good. More evidence of the silicone settling to the surface of the face and other extremities…good for scanning.
- The fingers and toes were better formed, but the left hand still imperfect.
- The ‘plug-hole’ for the umbilical cord worked well!
- The hands and feet were still sticky, as if not quite set?
- The mould was better aligned, but this could be improved.

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Umbilical Cord

I made the umbilical cord on Sunday 3rd, whilst clearing up and cleaning the LaB.
The mould was in a horizontal metre length of flattened clay, into which I made an indentation like a canal, firstly with a metal rod and then working it texturally with my fingers and knuckles.
I used a mix of:
1 part A = 1 part B silicone, 1-2 parts thinners (50%).
(30g+30g silicone, 30g thinners)
I poured the silicone into the long strip and let it set. I removed the transparent ribbon, and poured a same mix of silicone again:
1 part A = 1 part B silicone, 1-2 parts thinners (50%).
(30g+30g silicone, 30g thinners)
Again, letting it set.

I made a small amount of the same mix and spread it along the flat surface of the set silicone mix in the long horizontal mould. I stuck the flat surface of the first transparent ribbon to the sticky flat surface of the second set mix and left it to set.
Late in the day I peeled the textured length of transparent/translucent silicone ‘cord’ from the length of clay.

Project to date

The 2nd baby is now resting in distilled water, in a 5 litre pickling jar, to test for endurance.

The 3rd baby is resting in polystyrene balls, along with the umbilical cord.

Conclusions after Reflection and Discussion.

The sticky hands/feet and adhesions/blending of the ‘Viv mix’ with the silicone of the mould itself were obviously due to such a high ratio of thinners needed in the Viv mix. Also, the cellulose gravitated to the bottom of the mould where the hands and feet were most extreme. This was the reason the fingers and toes were sticky and in some cases malformed.

The mould would need to be made of a firmer & different chemical make-up of silicone, or preferably a harder plaster (a mix of the existing fine casting plaster and herculite plaster?). This would mean alignment of mould pieces would be more accurate, and there would not be any ‘blending’ between the mould itself, and whatever material is poured into that mould: to this date the Viv mix.

Modification of the embryo form could be increased to make the form more original and more robust to cast.

With silicone being a material with one of the highest carbon footprints, I can not imagine a better use for it than with this particular ART/MED investigation

All studio photos by Shu Lea Cheang.

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