



Glass work in Mikebuda

Parks of Study and Reflection - Mikebuda

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What is the purpose of this material?	3
The beginnings	3
Furnaces	7
The first glass furnaces	7
The first annealing kiln	13
The second glass furnace	14
The second annealing kiln	20
Crucibles	21
Workshop, tools, equipment	24
Workshop	24
Tools	24
The glass raw material	25
Equipment	25
Security	26
Techniques	26
Drops	26
Glass sphere	26
Glasses, bowls, cups	27
Solid objects	29
Blowing, pouring and pressing glass into moulds	30
Colouring	31
Post-production	33
Glassmaking	33
Personal experience	36
Juci	36
Zsuzsi	38
Magor	40
Csefkó	41

What is the purpose of this material?

This work has two purposes, and we decided to do it in a moment when we reached a new stage in the process: we had our first experience with producing glass.

It seemed like a good moment, in part to make a summary for ourselves of our process of nearly two years, of getting acquainted and working with glass, and in part to write an overview of our experiences and make a contribution to other glass workshops already operating in other parks, or ones to come in the future.

The experience of working with glass is of great importance to all of us and is in some way linked to our ascesis, our personal process. This writing has been motivated in large part by the understanding that while experience is important, it is even more important to reflect on it, to integrate it, and so this work can serve that reflection. While each of us follows an individual path, an important element of the experience is the ambit, working together, sharing experiences, inspiring each other, and better understanding our own experiences through those of the others.

The first part of the material is an overview of the process leading up to working with glass, meaning the previous of the Fire Craft process. It is an integral part of the process for all of us, as it is where we began to learn about what our Crafts mean, how they relate to our other works, and what it means to work with materials.

This is followed by a rather dry, technical section, where the steps, tools, furnaces and kilns, techniques and materials involved in creating the "external conditions" for glass work are described in detail. The trials and errors are also discussed. We have done this mainly because it may help others who want to get started in this kind of work.

In the last part, we all share some personal experiences, reflections and inspirations on what working with glass means to us.

The beginnings

We had been involved in the fire craft for many years before the first glass furnace was built. By the time we started working with glass, we had been through every step of the fire craft process, from conservation of fire to iron casting.

Over the years, we have gained a lot of experience with fire, building and operating furnaces, raising temperatures, and working with different hot and cold materials. The first, most rudimentary furnaces were small mud ovens for transporting fire. For firing ceramics, we built a four-chamber kiln modelled on the Chinese dragon kilns, in which we fed the fire with wood and reached 1200°C (at least that was the highest temperature we could measure). We also used and later built gas and wood-fired barrel kilns in which we fired glazed ceramics, moulds and self-made refractory bricks (with fire clay/chamotte), reaching 1000°C. The next step was the forge, in which we melted copper, bronze and iron in crucibles using charcoal, coke and sometimes wood. It was the first time we made our own crucibles. In the 'Iron Age' we also tried to smelt iron from ore we had collected ourselves, and built a bloomery furnace for this purpose. We gained a lot of experience in making moulds, which we used mainly for bronze and iron casting, but also for our first rudimentary experiments with glass. For the moulds we used silicone, mud, various types of clay, plaster, fire clay (grog/chamotte powder), water glass (sodium silicate), sand, bentonite, powdered quartz.

During these experiments, we learned a lot about the functioning of furnaces, the importance of insulation, temperature control, proper combustion conditions and the behaviour of different materials.

The idea of starting a glass workshop had been on our minds for a long time, and this ambition became even stronger after some of us attended a two-day glass workshop in Punta de Vacas with Ariel in February 2014. This was a significant experience, especially in terms of how spiritual and transformative the experience of working with glass was, and how special the atmosphere was among the workshop participants.

Every year thereafter, we attended joint glass workshops in La Reja, Punta de Vacas, but we continued to place the image of the Mikebuda glass workshop in the distant future as a much desired image of great significance that seemed a little out of reach for us. We were very inspired by Ariel's experience, but as there had been no glass furnace other than those in La Reja and Punta de Vacas, we couldn't imagine how to get into this process through simpler steps. We planned to invite Ariel to Mikebuda and build a glass melting furnace with him. In order to do this, we also started planning the construction of a new workshop, obtaining permits, fundraising to cover expenses, and we also purchased some tools and started making fire clay bricks. So the image was forming.





In fact, we had started to learn about glass years ago through various experiments. We also tried fusing glass powder in plaster moulds in open fires and in the dragon kiln, as well as in a crucible in the forge.

Glass fusing (window glass) in plaster mould, open fire (2013):



Glass fusing (window glass) into plaster moulds in a wood-fired kiln (2013):





Glass fusing (window glass) in a forge (2015):



Ariel's visit was planned for September 2017, but it couldn't happen. However, the force of the image lead to some "coincidences," and so one weekend in September, Diego and Eva visited Mikebuda.



Furnaces

The first glass furnaces

In September 2017, Diego and Eva visited Mikebuda and almost overnight we found ourselves in a "glass workshop." With them, we built the first glass melting furnace in a weekend, using materials already available in the park, mainly in the workshop, and we learned that starting to work with glass is possible in much simpler and modest circumstances, provided you have the necessary inspiration, intuition and an experienced helper, which in our case was Diego.

We started building the furnace on the iron structure of an old table. We put iron plates on it, and on these we put a ring cut from an old iron barrel, which formed the wall of the furnace. We lined the bottom of the furnace with fire clay bricks, filled in the gaps with fire clay pieces and other rubble, and sprinkled sand on top. The outer wall of the furnace was made of a series of Ytong bricks (autoclaved aerated concrete bricks), and the inside was made of 6 pieces of self-made fire clay bricks.¹ To maximise insulation, all surfaces were coated with kaolin. Sand was sprinkled between the Ytongs and the barrel. The top of the furnace was covered with kaolin-coated fire clay bricks and the bottom of the barrel was lined with ceramic fibre.

We left out a brick and a half for the door, cut a section of the rim of the barrel and bent it out to support the gas burner, which we also introduced through this door.



¹ Based on Ariel's recipe: 40% kaolin, 30% white clay, 30% chamotte powder





The top of the furnace was made from the bottom of the barrel. It was lined with ceramic fibre, coated with kaolin and fixed with heat-resistant wire.



We used the 50mm diameter gas torch burner from the previous barrel furnace as the burner head, connected by a tube to a leaf blower to mix more air with the gas and achieve the highest temperature with the least amount of gas.



The head of the burner was directed to the side of the furnace so that the flame would not hit the crucible directly.

A gas-cylinder with a pressure gauge was used to control the amount of gas flowing out and to check the cylinder pressure. A non-return valve was connected to the pressure gauge. The amount of air was controlled with the leaf blower.



We started with the chamotte crucible we had bought earlier for melting bronze (we coated it with kaolin, but this later proved useless), which we placed on a brick in the furnace to raise it.



At first we couldn't measure the exact temperature well, but we easily reached the required temperature, managed to melt glass and were able to make drops and blow spheres.



The next time, we modified this “primeval furnace” by making a connector between the gas burner and the blower to make it more stable and to prevent air escaping.



Since in the second attempt we failed to reach the temperature needed to melt the glass and the bricks we had made became deformed, leaving huge gaps between them, we decided to rebuild the furnace completely.



During the rebuilding, we reinforced the iron table, bought solid chamotte bricks and used chamotte powder mixed with water glass to join them together, making them fit together more precisely. The outer wall layer was also built with new Ytong blocks. The bottom was lined with chamotte bricks, quartz powder and chamotte powder mixed with water glass. The roof was reconstructed from bricks cut to exact dimensions, again to reduce heat loss.



Video of the reconstruction: <https://www.youtube.com/watch?v=283VzWA-ck8>

With this furnace, we reached 1110°C in six hours, much slower compared to the first attempt, and managed to melt the glass. From then on, we worked with glass every week.

It was assumed that one of the reasons for the difficulty in reaching the temperature was that the flame circulated around inside the furnace, choking the flame coming from the gas burner and impeding it from spiralling upwards as we wanted. We tried to correct this by putting a chamotte ramp in the way of the flame, which lifted it. Thanks to this less, gas was needed and we reached the desired temperature more quickly. At the same, because we always raised the temperature slowly in any case to avoid thermal shock (in the furnace and the crucible), we heated up the furnace in about six hours.

2017 work with the furnace: https://www.youtube.com/watch?v=OA_YrEmWFhQ



The first annealing kiln

Glass objects need annealing and gradual cooling in order for them not to crack. The bigger the objects, the more important the annealing.

As we were blowing bigger and bigger spheres and experimenting with other objects, it became apparent that we needed an annealing kiln to cool down the glass objects in a controlled way so that they wouldn't crack. Previously, after finishing the objects, we quickly covered them with heat-resistant gloves or ceramic fibre and then placed them in a simple kitchen oven fuelled by gas to avoid them cracking during cooling. This proved inadequate as the objects cooled down too quickly once the oven was turned off.

Our first annealing kiln ended up being a converted kitchen oven with extra insulation, which proved to be more efficient. Even though it only reached 400°C (instead of the required 500°C), it cooled down a little more slowly, so some items survived the cooling process.



The second glass furnace

As we advanced with the work, our needs grew. Given the size of the furnace, we could only use a small crucible which would have to be refilled many times, and this would give us us less time to work because we would have to wait a long time for the bubbles to disappear after each refill. This made it rather uneconomical to operate, too. And in addition, as we made bigger and bigger objects, we needed a bigger door, which meant a bigger furnace.

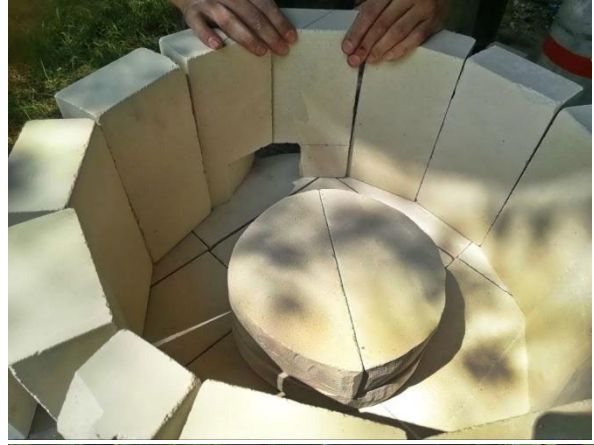
In this larger furnace, we wanted to implement the same principle as in the previous one, i.e. to feed the flame into the furnace, albeit through a separate opening placed at the bottom of the crucible, in such a way that it would not strike the crucible directly. We put the crucible (which we made ourselves) on the floor of the furnace, and directed the burner head so that the flame would surround it.

Hand-drawn diagram of a kitchen layout with dimensions in centimeters. The layout includes a sink (TOMOR SAMOT), a stove (TOMOR SAMOT), a refrigerator (KEMAHIA PAPLAN), and a counter (YONG). Dimensions are provided for each component and the overall space.

Dimensions:

- Overall dimensions:** 100 cm (width) x 100 cm (depth).
- Sink (TOMOR SAMOT):** 40 cm (width) x 20 cm (depth).
- Stove (TOMOR SAMOT):** 40 cm (width) x 20 cm (depth).
- Refrigerator (KEMAHIA PAPLAN):** 80 cm (width) x 180 cm (height).
- Counter (YONG):** 100 cm (width) x 100 cm (depth).











After several minor modifications and failures, we decided to redesign the furnace. This meant reducing the interior space of the furnace in both width and height by adding a layer of solid chamotte bricks to the bottom, and a new row of light chamotte bricks around the crucible. We also placed the burner head higher so that the flame would go above the crucible. We still did not achieve the desired temperature, so we replaced the burner head with a larger one (and made a mantle around the burner head to help premix the air and the gas). The crucible was completely built in, surrounded with quartz powder and light chamotte brick pieces, and this layer was sealed on top with water glass. This was necessary mainly because the crucible often cracked due to thermal fluctuations, and glass would leak out. But with this new design, the crucible would be held together by the wall around it. The chimney opening at the top of the furnace was completely useless and so we covered it with a brick. Now the flame ended up going straight over the crucible, as in the furnace of Punta de Vacas, and in fact the idea of a circular furnace became pointless, as the fire could not surround the crucible, which was our original idea.

Initially, we used pieces of ceramic fibre to close the door opening and adjust its size (to control the airflow when heating up). Later, we made a door that could only close the opening completely, and finally we made an adjustable sliding door.



The second annealing kiln

With the refurbished kitchen stove lined with extra insulation, we made some progress compared to the regular stove, but it still didn't reach a sufficient temperature (about 500°C), didn't heat evenly, and because it was a gas stove fuelled by an external tank, we couldn't keep the heat in it for long periods of time and then let it cool gradually (a process which ideally should take about 6 hours). This caused objects that were not cooled gradually enough to explode when cooling or, in many cases, much later (even months later).

We thought about buying an annealing furnace, but the ones we found were all very expensive. That's when we decided to build one ourselves, one that was electric and programmable.

As this is our technically most complex furnace, we made models and calculations before building it to ensure that its heating capacity, insulation and power consumption were appropriate (length of the heating wires, the sizing of the solid state relay, the heat dissipation of the relay, etc.) Its walls consist of a layer of light chamotte bricks on the inside and a layer of Ytongs outside, held together by a welded metal frame. The kiln's door follows the structure of the walls. On the sides and the back walls, we carved grooves into which we inserted heating elements that we coiled ourselves. The length of the heating wires determines the power of the kiln, which we sized at 7kW. The heating chamber is 50 x 50 x 50cm.

So now the annealing works as follows: the objects are placed in the kiln at 520°C; when all the objects are inside, they are kept at that temperature for 2 hours, then cooled to 300°C in 4 hours, and then the kiln is turned off and cools down on its own.



Crucibles

The first crucibles were made in 2018 for the original small glass melting furnace. They were made from the mixture described by Ariel (40% kaolin, 30% white clay and 30% chamotte) and were made using a coil technique, i.e. we did not press the material into a plaster mould like Ariel did but built up the walls by coiling. We were not sure about the proportions of the ingredients (whether Ariel's recipes use volume or weight, refer to dry or wet material) so we tried different mixtures but none of them proved durable; the crucibles cracked after a few uses.

The larger sized crucibles for the big furnace initially were made using the same technique, but later we used a plaster mould and pressed the mixture strongly into it, hoping to eliminate all the air bubbles and prevent the crucible from breaking. This technique was quicker and more comfortable, the walls were more even and did not crack as they dried.

Since we only used the plaster mould crucibles 1-2 times, we do not know how much more durable they would have been.

However, when we made these kinds of crucibles and built them into the furnace (surrounded them with quartz powder and chamotte pieces), they cracked after a few uses, but since the crack could not expand we could continue to use them for a long time after. On only a few occasions did we have to replace the built-in crucibles; that is, when they became so worn that pieces of the crucible fell into the molten glass, and made it unusable.

The real breakthrough came when we made the crucible from red clay with a high % of chamotte and emptied the crucible after each use, which we hadn't done before. This allowed us to use the crucibles for a long time. It is not yet clear which of these two new elements (the type of the clay or the emptying) is the crucial one. This red clay is very easy to work with, no plaster mould is needed to make the crucible, and it remains mouldable without watering.





Workshop, tools, equipment

Workshop

Originally, we had planned to build a new workshop in the park specifically for glass work, which would have taken a lot of time and money, but it turned out that we didn't need this to start working with glass, and it was enough to convert the existing 20m² open pavilion and furnish it properly. We placed the furnace in it and covered the sides with transparent plastic sheets, and this proved to be sufficient in winter as the furnace heats the space. As in the case of the oven, all of this also evolved organically with the process, and we progressed step by step, developing the place further as the need arose.

Tools

Our first tools came from a glass factory that had just closed down: 4 glass-blowing pipes, two shears, a pair of tweezers, wooden moulds, wooden tools. We also bought a metal rod for making drops (which, by the way, soon started to rust because it was not made of the right material). These were enough to get us started.

When we were missing something, we tried to adapt the tools we already had in the workshop, but later we needed real tools for glass. We made these ourselves: a shovel to fill the crucible with glass, jack (mainly for necking), tweezers, puffer (soffietta), optic mould, other wooden moulds, etc. We also use wet newspaper to mould the glass.

Later, from the Czech Republic, we imported professional pipes for blowing, making drops and transferring. We also bought wooden moulds and professional glass on a "study tour."

When making bigger objects, we needed thicker and factory-straight pipes.

Also, we needed several stainless steel pots to serve as containers into which we put the hot objects we discard, as well as for the leftover hot molten glass when finishing the work.





The glass raw material

We use transparent bottles of soft drinks, beverages, etc. (Mason jars are not suitable.) There are different qualities; the clearer, the more transparent, the better; thicker bottles produce less bubbles.



Equipment

We also made the equipment ourselves: a stainless steel marver with a pipe holder yoke, bench (with right- and left-handed tool holder!!!!), a pipe holder stand.

Safety

Return valve on the gas cylinder
Heat resistant gloves: PBI Kevlar
Safety glasses
Gloves and safety (Kevlar) sleeves

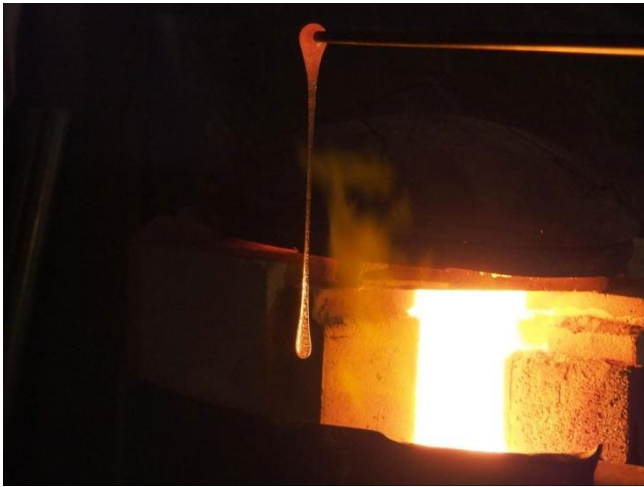
It is advisable to wear long-sleeved clothes and closed shoes to avoid burns, and to drink plenty of water, because in the heat of glass blowing you often don't realise you are dehydrated. Wearing metal jewellery and belt buckles that come into contact with skin is not recommended, as they can heat up and cause burns. Every piece of glass should be treated as if it was still glowing hot, even when it doesn't appear that way.

One of the main dangers is the steam that rises in a glass-blowing pipe when you put it in water without plugging the hole at the other end. Don't do this because the pipe will overheat and the hot steam can easily hit you in the face.

Techniques

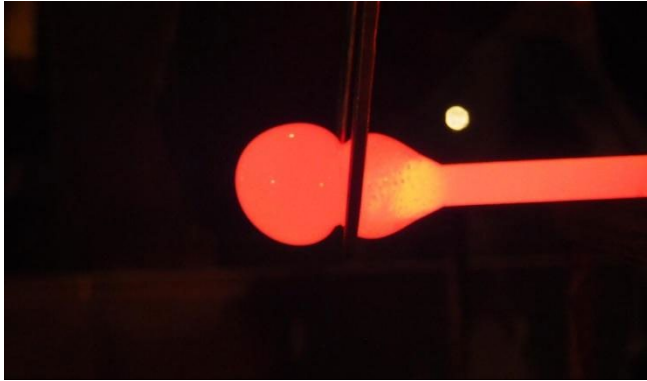
Drops

Here we learned how the material moves at what temperature, how much material to use to get the right droplet size, how to rotate the rod, etc. Making drops was the basis for making all the other objects.



Glass sphere

Blowing spheres required a new tool, the blowpipe, and it was a challenge to learn how to blow air into the glass. This is where it became indispensable to keep the material centred on the pipe by constantly rotating it and only blowing into it when it is completely symmetrical. Temperature is an important factor here as well; only very hot, very fluid material can be worked with properly. In order to get the sphere off the pipe, you need to neck it. We did this initially on the edge of the marver table; later, with the jack on the bench.



Glasses, bowls, cups

In the next step, we learned how to transfer the object to another rod (punty) and how to open the mouth and shape the object with a jack and sofietta.





Solid objects

We learned how to make solid objects (flowers, horses, yoni lingams etc.) using tweezers, tongs and shears.



Blowing, pouring and pressing glass into moulds

We tried to pour and press glass into moulds of white clay, clay, sand, red clay (with chamotte). These experiments ended in failure due to unsuccessful sooting, unsuitable material, rapid cooling of the glass and other problems we still don't understand.





Pressing:

<https://www.youtube.com/watch?v=NNIKT96QLTk&t=1s>

Colouring

We coloured blown and solid glass objects with coloured glass powder. The experiments were varied and inspiring.



In addition to all this, we also conducted other experiments (and sometimes even succeeded in these attempts), e.g. glass flutes, air shapes inside the glass, the so-called reticello technique, experiments with moretti rods, enclosing small metal and other objects into the glass.



Post-production

We use a bench grinder with a diamond wheel or a hand-held rotary grinder for finishing, to grind off any extra material left on the objects.



Glass production

On a bright spring day on 18 April 2019, we decided it was time to produce our own glass. Originally, we wanted to use an ancient Roman recipe but that would have required ingredients that we couldn't immediately obtain. In the end, we chose a recipe from a university materials science paper for our first experiment, because for this we had all the ingredients at hand: limestone, which in our case was marble powder (about 7%), baking soda (18%), quartz flour (75%). For this experiment, we used the small "primeval furnace" and made a new crucible for it, which we built into the furnace. We produced common natron glass.

We mixed all the materials and started to heat it up. From time to time, we took samples of the material, which became clearer and clearer. We brought it up to 1230°C in about 4 hours, and in the end we could blow a relatively transparent, whitish sphere. This was a novel experience in every way, a breakthrough, as if we had discovered something new. Here, we experienced again what we had experienced before, that we had reached a seemingly very distant aim much faster and easier than we had thought possible.





The different stages of making our own glass:



Personal experience

Juci

For me, the glass craft, just like everything else in the fire craft, is a laboratory; a physical laboratory of mental processes in which, by working with the material, internal processes, difficulties, attitudes, tendencies, resistances, etc. can be observed as if under a magnifying glass. It is thus a catalyst for inner development and learning. (And sometimes it is just great fun!) The ambit, working in a team, is an important part of this learning; without the ambit, this extraordinary experience would not have been possible for me.

Glass itself is fascinating: fascinating when it glows and is liquid, and fascinating when it solidifies, becomes clear, sparkling and transparent. It has great appeal. The most suggestive material I have ever worked with.

Every material we have worked with in the fire craft has its own register. Clay, bronze, iron are all dense and heavy. These kinds of fires, glowing materials and kilns, have a different effect on me than glass. Glass is not so connected to the earth. The glass furnace and this kind of glow that characterises glass has a different effect. I represent it up high. We often are working with it up high: when making drops or blowing spheres, we work in the air and with the air, swinging the material from side to side, lifting the pipe high up and expanding the sphere with our breath. Glass is translucent, shiny, fragile and therefore, has a different effect. Like the sphere in the ceremony. Like the walls of the hidden city.

When I reach into the crucible with the pipe, take out a batch of liquid glass and start working with it, it's like trying to transport something from another world into this one. It's like going into the profound and trying to translate it into this world.

Much of the work with glass is fast, it is done in real time. Maybe that's why everything is more intense. There is constant interaction with the furnace and the fire. You have to cooperate with it to shape the material. There is constant movement, there are no long breaks in the process. You have to be very present to move with the material. Learning its times, its temperatures, its malleability. Maybe that's why I've learned a lot, especially in the last few months, in terms of tone and care. To be present, to be "in theme"... I've observed the constant daydreaming. Being open to learning, humility as a basic tone has become very important, and of great significance in all aspects of life.

I also learnt a lot about the importance of images: how difficult it is to visualise the object I want to create and the steps to get there. It is very difficult to transcend one's own tendencies, and I am confronted with this again and again.

Two previous personal notes that describe these internal processes well:

"Working with glass is like trying to approach your most profound aspirations. You are dealing with a lot of charge, light and heat, with a material of great internal resonance, of the most cristalline and radiant images. It takes a lot of time, a well built oven, the right mix of air and gas to get the necessary clarity and fluidity. The material is extremely fascinating but once you touch it you realize you are dealing with something extraordinarily delicate. Then you understand that fascination is not enough, it gives you the initial kick but it drives you "outside" of yourself, and there... you are lost. Eventually, you realize if you want to advance you need to get to know the material in order to merge with it, breathe with it, flow with it, but for that you have to learn to stay in the silence of your centre. You can only manage things from a centre. Then slowly you start to get to know its times, different stages, its rhythms, its mobility... And you fail... all the time... you

meet your beasts, your apparently unchangeable tendencies, your lack of humility, permanent distractions of all kinds... but as you open yourself to learning you can become more and more thankful for these encounters..."

"Making a Turkish tea cup: I started noisily, a bit tired, I didn't draw many conclusions from the previous two attempts, there were a lot of people, it was noisy inside and out, and I didn't know what I wanted to do differently from the previous attempt. I also coloured the glass improvising a bit, which always makes things harder.

Then I started to look for the possibility to make a change after the difficult start (in this I can clearly feel the experience of the last few occasions and the gift of having taken notes). And there was a moment when I said, okay, so this is the "condition of origin", I have to accept it as soon as possible and look for the best from here. Then I was fully in the present and it was just me and the object and the effort, but most of all a willingness to learn. I started to love what I was doing and my intention to make the best out of it. There were a lot of sudden repairs in the process because it was dented, sometimes it was overblown, the surface looked uneven because of the colour, but from that shift in the internal placement it was not the result that mattered, it was the learning. Learning as much as possible. There's this interesting duality when it's not the end result that matters, but there's still a kind of obsession and intensity, where there's a huge focus on what I'm doing, the world is completely 'narrowed' down to this activity, every movement matters, and I'm present in every movement because I can learn something with each one. It's very intense yet quiet inside. I feel that there is an opportunity to learn, to understand and cross boundaries, to observe tendencies, etc.

The relationship with myself changed, whereas before I was a bit angry with myself for starting off so badly and there was an unpleasant undertone, from that moment of change there was a kind of softness, and I felt that everything was absolutely fine; I started to appreciate this moment and the learning process.

When I opened the mouth of the glass, it was a very intense process. I didn't let it cool, I went back to the furnace many times to reheat it, each time imagining what I should reach next time I opened it. These images of the next step are important. By this time I really loved this object, even though I could see that it is not the shape I was looking for. I noticed that even though I knew I had to heat the object up a lot (more than I was comfortable with), and not just the mouth, but a little deeper so I could fold it out from deep enough, I still always did it tentatively. I then decided to heat it back up one more time, and whatever happens, I'll heat it to the maximum glow and not hold back on the opening movement. And that's when I realized how to open it, where and how to put the jack to get the shape I hadn't been able to see before. And this little object, bleeding from so many wounds, finally came close to what I had imagined and what I had been so obsessively looking for. But above all, I felt that I had learned about myself, about glass and about technique. It was a really valid experience because it was coherent, I grew through it, and it definitely opened up the future not only in working with glass, but in the inner attitudes and behaviours that facilitate learning and growth in general. Many principles were proven true here, but most of all this one: "If you pursue an end you enchain yourself, but if you do everything as an end in itself, you liberate yourself."

Zsuzsi

Antecedents, working with the craft

As I progressed in working with different materials based on the fire craft material, I noticed that each material affected me differently, moving different centres. But in the learning process of each one, there was something that was the same. Personally, working with fire and clay was what I felt closest to, perhaps because they brought me closest to the process of being human, and it was while working with them that I most often felt, for a moment, that I could sense the intention that drives human beings to evolve... These works have always touched me deeply, and I have always felt that there is something about them that allows me to transcend myself, to find inspiration, special moments of silence that give rise to answers and comprehensions about the works I am working on at that particular point in my inner journey. Maybe because of the silence... this place (the workshop) is like looking at myself and everything under a magnifying glass.

The first experiences

When I first heard that there were people working with glass in Argentina, I was still in the bronze phase. This news and the few photos we saw were so inspiring that as a result we began our first attempts at fusing glass into moulds in a simple open fire. These experiments, although not successful, were very new, interesting and inspiring. I feel that this was the beginning of working with glass.

Then, about a year later, I attended my first real glass workshop in Punta de Vacas, Argentina. We were there from the moment they started the furnace. We watched the fire, the melting glass, and I remembered the human being, the sense of wonder he must have felt when he first found glass as a material, when he first created it and started working with it... Something that is shiny and transparent (well, translucent at first). There is something unearthly about it. This workshop of a few days touched me deeply, it was very different from my previous experiences. The light, this softness, the heat, and the people we worked with had a special effect on me that I have not felt with any other material. And on the last day, in the Hall, I had a powerful experience with the Force that I had never felt before either.

Construction of the furnace in Mikebuda

We had been planning a new furnace for a long time, but it seemed very complicated, expensive, etc. Then, when a friend, Diego, came from Argentina to visit us, we built the first small furnace in two days using materials we found in the Park. On one hand, it was a miracle! And on the other hand, it shows that we were very ready for glass but were missing one last encouragement or push, or the experience and courage that Diego gave us. After all, we had the bricks, the crucibles, the tools, the gas burners, etc... Yet, when we built it, I felt like I was in a dream of some kind, it's incredible that here in Mikebuda we have a glass furnace. I felt that this step was not only important to me and my friends in the fire workshop, but it was as if the whole Park was even more elevated by having a glass furnace in it, like a real, working luminous center.

Working with glass

Glass is quite different from all the other materials I know. Or I was different by the time I started working with glass... I don't know. It's a mystery to me how it works and why it works, but it touches special depths or heights in me (and I know it's not just me).

Maybe the light. The light definitely. Whether it's the light of the big glass furnace in Punta de Vacas or in La Reja, or the tiny light of our first "primeval furnace," it has a big effect on you. Maybe because it reminds me of the experience of encountering light in the Service or ascetic practice... light is above, it always represents a connection with a higher centre, and maybe that's why the light of the furnace and the glass triggers a mechanism that puts me in a more elevated state, more attentive and inspired...

The sight of the material, with its softness, transparency and purity, inspires me to find this softness and purity in myself, which is like liquid glass... Then to blow a glass sphere from this material is like creating the transparent and luminous sphere of the Service... and this "external" work is reflected in my inner world...

Working with glass is incredibly intense, it moves a lot of energy. I also noticed that if I don't direct the extra energy I get when I do this, it can lead to discomfort... because as much as I can use the energy to move forward, I can also use it to destroy... The key (here again) was the control of the energy, which is what the others mainly taught me. How to learn... to observe, to take advantage of the fact that in working with glass you can advance very quickly because it reacts immediately to what I'm doing, and how I'm doing it.

Concentration and continuous "presence" with the material. As the material is very hot, sensitive and mobile, it requires close attention. You have to be there all the time, because if you lose focus, you lose symmetry in a second and it's very difficult or impossible to get it back. But this attention or presence cannot be tense, because then I start to force the material, and that's why I lose the form... It's not good to think about anything while working, not even about what I want to do. I've noticed that if I have the image, the goal, and I place it well in my mind, then when I go in front of the furnace, I don't have to do anything, I just let the object take shape... it's a little miracle too :). And if I can tune into the material, then I can create this collaboration with it. Just the material and me in Silence. An inner Silence where new things can be born.

The glass somehow makes me softer internally. I have very often had the experience of changing my state of being as I started to work, and fusing with the material and the people around me. It's as if the light of the furnace somehow brought us so close, that the sense of "We" is created that I so often seek...

Producing glass

The experience of creating this amazing transparent and luminous substance from some white powder is something incredible! It's like magic! I was completely captivated, like I was in a trance!

This sense of wonder or amazement always opens something new in me. It's as if when I experience something completely new, a new part of the inner landscape opens up. I can almost feel this new part being born, or maybe I just feel that I have found this part, because if it wasn't there, this new thing couldn't be born outside... hmm... So creating a new material is like creating something new within yourself, and it opens new doors to the future. Possibilities for new experiments, new images, colours, feelings and questions. And because there is not much experience yet of this elsewhere, it is also accompanied by the feeling that this experience is now everyone's experience, not just ours...

The last day of the glass retreat

We had been working for three days when we got stuck on how to proceed. It was getting a bit difficult, we couldn't decide how to work, in which groups, how much time, etc. After a long discussion we finally agreed on something, which was good, because at least we were out of immobility. That made us feel a bit relieved. Then (perhaps because of this shift) something else came up which changed everything. We came up with the idea of a joint project that could only be done by the four of us. A glass dorje that follows the proportions of the golden ratio. Everything smoothed out, as if we had been waiting for this idea, as if we had been anxious because of this. We moved to a new level. Creating something that we can only do together, where it doesn't matter who is doing this or that part... We all evolved at the same time, but we didn't plan it like that. We didn't plan that you do this because you have to learn this and you do that because have to learn that, but everyone participated exactly where they were supposed to. It's like we were planets of the universe orbiting the center, the Shining Sun :). It was like in Punta de Vacas when we made drops in groups of three, like a dance. We stumbled at first, but then we found this harmony where we were working not only with the material but with each other, as if we

were fusing into a kind of new material. It was very different to be in this shared purpose, where the difficulties related to the I (when I mess up something or even succeed at something and it throws me off balance) were gone. And we created the dorje of the golden ratio, which although later it fell apart, the experience of the process remained, and it was a very new experience.

Dream

Last night, in semi sleep: I was standing in front of the glass furnace, but in the "nothing"... I mean, not in a workshop, but in a white space with just the furnace, a bench and me... In the furnace there was liquid glass, but it was even brighter than in reality... it really was like liquid light... And I rolled this Light onto the stick, forming it into a sphere... waited until it turned golden... then again... then, away from the light and energy of the furnace, I sat down and began to shape this "glass" with tongs. And then I was overwhelmed by the feeling that I had brought a piece of the Luminous Centre with me, and that I was now transforming this piece of Light to be given to the people.

Magor

Personal experience of the glass workshop

How is working with glass different from anything before?

-dynamics (things happening live) → what's very different from the previous stages and materials is that things are happening live. This also means that you are not putting all your eggs in one basket, that it is not almost all about the making of the mold, but that you have the opportunity to get involved in the process of making the object, in the dance of the maker and the made, but there is also a much greater commitment to the process, there is no stopping, once you start there is no chance to step back, 'smoke a cigarette' and think about how to solve a situation, you are there, you have to do it. This is the most "intuitive" process for me, because you have to constantly feel what you have to do, "feel" the material, but at the same time it takes a lot of practice and accumulated experience, at least in my case, to dance together. Constant knowledge-based inspired intuition.

-proximity → for me it is also a huge difference, compared to the previous materials, that I am much closer to the glass, like in the case of the potters' wheel. The making of the object is therefore a much more direct translation of the creative intent, a process that is much more alive. The contact with the object is also much more intense, I can feel its softness, its heat, I can see its glow, and my movements follow its movement, which makes it almost part of me, and the distance is minimized, internalized.

-the material itself→ not "over-technologized" for the ordinary person (except maybe for lab technicians), the two main properties of matter are that it transmits light and that it does not react with the environment (except for hydrofluoric acid), two properties that produce registers that are related to strength and eternity, to "being outside of the I," to those registers that are not touched by the "affairs" of this world. It is also a very special property that once you make it from its raw materials, it does not change in its materiality afterwards, its form is only dependent on the intention and purpose of the maker. It does not rust, it does not develop a patina, it does not "age." It is as if the material has a different configuration from other materials, which is only affected by direct energy (heat), but not by other materials.

Allegories

-centering → working with glass is all about keeping it in the center. When the glass is centered in the axis of rotation (and radially symmetrical), it can create a very special experience, a huge silence with a lot of movement, yet it's as if everything has stopped. It's at the centre, and as long as it stays that way, it can't go wrong. If you want to transform it, it will let it, it won't tip over and create a fault or a distortion that you can't fix later and have to start again. And as this happens with the glass, I feel it happening in parallel within me, and then the fears are smoothed out, I stop worrying, the forcing stops, and there is only the glass, and the intention of projection. There's complete alignment between my feelings and my thoughts and the transformation of the object. Consciously moving my hands seems not to be a factor anymore, it is so much in synchrony with the object's movement. This union with the material also somehow brings along the experience of union with everything, because then in me and in the material, which are no longer two separate things, there is everything that exists, everything that "is", and also within this is the one who experiences it and the one who observes it.

-heat management→ this is an allegory related to the experience of force, of working with the force. At this high level of energy you make something (malleable hot glass) and you want it to last. Like if you get signals from the profound, or when you have an understanding, etc. If you don't tend to it right after the experience or you don't do anything with it, it won't last. In the same way, if you don't cool the glass, if you don't introduce it to the "temperature of this world", it won't stay as it was made, it will shatter. It is a kind of integration, a transition between spaces, between energy levels. You have to take good care of the experience, connect it, "tame it", and introduce it into this world.

Workshop triad

Of all the stages of the workshop, it is at this stage that I find it easiest to observe the triad of permanence, care and tone in the approach to the work, and to try to shape and balance it. I attribute this to the emotional charge of working with glass, and I also associate this material more strongly with higher regions of representation, sacred spaces, etc., which makes one feel very humble. This humility is very important in being able to approach the work with the right tone, which is usually the area I need to develop the most, both in the workshop and in other areas of my life. It carries a softness, a curiosity and a sense of being in the presence of sacredness. This work is also prominent for me in terms of permanence, sometimes in a way that is almost obsessive in its copresence (many times during the day I suddenly see the spinning, glowing glass in front of me, which evokes the inner centre in me, my regular associations lead to the theme of the glass, etc).

Csefkó

In the craft of fire, the making of the first furnaces, the conservation and production of fire, and the melting of bronze and iron were somehow related to the question of where we came from. These works were accompanied by myths, ancient blacksmiths, the knowledge and transformation of materials, the raising of temperature, the images and registers of becoming a human. A lot of energy, high temperatures, heavy materials, the world of "lower" regions.

Working with glass is more about where we're going. Liquid glass is clean, shiny, untouchable, intangible, mobile. It is always connected to images and registers of "higher" regions.

For sure, becoming moved by the craft of fire is also a question of personal habit, but I was inspired by it right away. Even on Hajógyári Island, when I first made an oven and then lit a small fire within it, I wrote, "I can face death easier now after having seen the fire burning in that little furnace." So there is some basic compatibility between my inner world and the symbols, allegories and processes of the craft of fire.

In January 2016, when we melted glass with Ariel in La Reja, I described this inner recognition: "When I tried again to make a drop, I felt that the drop was the extension of my body, and I was a little bit there in every drop.

It was a very special feeling. And when the drop is stretched down, it's an inner movement too. It is a very special moment, when the external and the internal are fully interconnected. I have recognized that there is always only one material I work with, and that is my inner world. "

So in the workshop, the essence of the intensive work is to work with my inner world. It's all about that. As I approach the glass, as I want to shape or blow it, as we prepare the furnace or the crucible, it is always clear that the essence of all of these things is to transform myself, ourselves.

One of the repeating experiences is that the outside world is eliminated during glass work; only the workshop exists. From the moment we start the furnace, an inner world is created. The outer walls of the workshop (even if they are imaginary in Mikebuda, under the pavilion) create an interior space that is very different from everyday space. This space is full of symbolic content for me.

Everything is done within this space. In this spiritual and physical space, nothing is about everyday life, something very special is happening here. Here, there is the essence of everything. Here, I am always in touch with the very deep aspirations of the human being. We transform the material to transform ourselves and surpass our limits.

Each time we're working with glass, my everyday climates and tensions also appear. Others are much more skillful, I cannot do it, I deceive myself, I'm impatient, I have no inner faith. In my everyday life, these climates and tensions are often elusive, unnoticeable. In the workshop, they are concentrated, they invade me in minutes or in hours. It's like looking at the roots and expressions of my inner contradictions in a laboratory, but also the responses to them. And since there is a generally inspired state, sometimes I can give a non-mechanical answer. It also helps that there is often a goal beyond the specific glass work. For example, when I ask for someone and in an object I try to express my best feelings for him or her. Whenever there is such a goal, it is always works as an internal reference, it helps me to stay connected with the essentials. In this case, the glass work could be an internal journey as well.

Glass: my inner world. I cannot touch it directly. I can transform it with indirect, subtle movements, only through inner intuitions and understandings.

Permanent instability: nothing in the workshop is ever sure. Can we reach the required temperature? Will the crucible break? Will the items remain whole? Can I blow a sphere? Can I do anything with the glass? Nothing is ever sure. Everything is a continuous intention, but there are very few external handles. In the face of all the continuous failures, only the internal search is permanent. In the process of my ascesis, I feel constantly that I'm not sure about anything, I do not know anything. And the biggest trap is when I think I've experienced something, I've understood something, and I lose my inner humility and register of failure. In that case I always get stuck, and I always have to remind myself that I do not know anything. Just like with the glass, I do not know anything about it.

The inspiring and symbolic images of the glass help me to enter to the profound. The transformation of liquid glass evokes inspirational images that sometimes take me far away.

When I'm thinking of others during glass work, or asking for others, this inspires me to explore inner roads where I always realize, at the end, that I'm not the most important thing and that there is this common Purpose, something we all share.

And the most extraordinary experience I've had with glass:

When I first stood in front of the oven, I formulated an asking for two dear friends who wanted to have a baby. And inside, I dedicated this glass work to this baby-to-be. This asking was present until the end of the work. I wanted to make a nice flask which expresses my best wishes for them.

In the first experiment I made all the well-known mistakes; the glass was not even; my movements were fragmented; I didn't have a clear image of what I should do and how I should do it. The well-known tensions also appeared: I'm not able to do this anyway; I don't have enough patience; I will make a mistake again, but instead of accepting it, I will try to save whatever I can.

This went on during the following experiments, but each time I started again, I reinforced this asking for the baby-to-be, this inspiring image of a new life, my best wishes for my friends. Suddenly, I started to feel profound gratitude towards them; I remembered a lot of memories and inspiring moments together. I was grateful to them for certain beautiful experiences in my life.

I tried another flask but failed again. Tensions and expectations again.

"We have faith that our call for well-being will reach them."

I just wanted to believe and trust, leaving my personal pettiness behind. A kind of certainty started to grow in me. I could feel this profound and spiritual joy I felt when my daughter was born. Life is sacred, the infinite evolution of life is sacred. Life will always find a way to grow. I wanted to make a real effort, to do my best for a perfect flask without any expectations.

I attempted another flask, but this time I spent a lot of time making the glass even on the tip of the rod before blowing air into it. I heated the glass up several times and I sat on the bench to even out the glass with the wooden tool. With one hand I was turning the rod, with the other hand I was trying to make the glass even, but my two hands did not cooperate very well. I failed, but I did not mind. I felt a profound joy in trying my best. It was as if more and more energy was being liberated in me, accompanying my asking. Serving life is the most coherent action of all.

I attempted the next flask, I sat on the bench, and suddenly, the turning back and forth, the angle of the wooden tool and the delicate movements were in total harmony, there was no fragmentation in my movements, I was one with the rod and with the glass. And all of a sudden, there was a completely even piece of glass on the tip of the rod. I went back to the oven in order to heat up the glass again, and I started to blow air into it gently, while permanently turning the rod.

And I could see how perfectly even the glass was and how symmetrical the bubble growing inside was. Everything was so neatly in the center. I heated it up again, and I sat on the bench to make the neck. I was turning the rod on the bench, and I was pressing the tool at a perfect angle and with the perfect pressure, so the neck started to grow. I repeated this step a couple of times, feeling an increasing joy, trust and inspiration. Everything was in equilibrium, in harmony without the slightest tension, without the slightest fear of losing it or failing. The object was in the center, the symbol of life was the priority.

This was an ethereal dance around a new life, a dance inviting this new life onto this planet, which creates the form in which it can be born. Here, accompanied by the soft and beautiful melody of the universe, everything was moving together in perfect harmony to serve life. Here was joy and beauty and all the light of the world was concentrated in this form, so that life can be born. Here everything was protected for eternity.