

## The Multi-Energy Garden

Jeremy Knowles

I will be the first to admit it – I am not a gardener. In fact, one of the earliest memories I have of even being in a garden is a violent one.

The memory comes from my first childhood, from the garden of the home I grew up in in Hertfordshire in the UK, which was once a working farm many lifetimes before my own but, in my short experience of it, was closer to a farm-themed playground. My mum, whose maiden name is Flowers, by the way, was a successful opera singer during my childhood years, and she would often be away for weeks or even months at a time to sing around the world in great concert halls and opera houses. But in her free time, she was (and still is) a keen gardener. During the 11 years that my family lived on the farm, my mum grew tomatoes and courgettes in our garden, picked apples from the orchard, and kept chickens in a coop at the front of the house for their eggs. My dad, for his part, often went foraging in the fields surrounding our house for wild mushrooms to eat for breakfast, picked sloe berries and red currants with which to make preserves, and collected stinging nettles to incorporate into soups in the winter.

Anyway, back to this memory. Let's add some garden sounds to help the story a little, shall we?

*(Field recording – Hermsdorf)*

Yeh, this is nice.

Outside of her rehearsal times, my mum would often spend her afternoons in the garden and, naturally, when I was a toddler, she would bring me along. I remember being close to her on the tree-shaded lawn at the back of the house on one such afternoon, doing whatever it is that toddlers do at that age, while she cared for her plants and drank Earl Grey tea. My mum went inside the house to fetch something and, so the story goes, gave me clear instructions not to disturb the cup of tea perched on top of the wooden chair that she had been sitting on to rest in-between her gardening tasks.

Can you already see where this story is going?

The tea cup indeed proved too enticing for me. Despite my best efforts to reach it, I succeeded only in knocking it from the chair, which promptly caused it to slide off the seat, fall to the ground, and smash into many shiny, tea-soaked pieces around me. Broken porcelain is awfully sharp and well, just so hard to resist touching at that age, right? You can imagine my mum's surprise to discover her son missing a small yet significant piece of his little finger, upon returning to the garden – the result of a bloody and traumatic action which you would imagine would form a lucid memory for me, even at such a young age. Yet, in truth, this may be one of those second-hand memories. Do you know the kind? A memory that is told to you so many times, and often despite a complete lack of physical evidence, that an imposter image of this memory begins to form, and then solidify, in your mind. Like the crappy CCTV footage of an event – seen from the perspective of a tall, mystery agent who was somehow present at the scene – but not through your own eyes. And this is how I re-live this particular memory. In this way, it feels less like a 'true' recollection of events as they appeared to me, and more like my interpretation of my mum's experience - one that has been told to me throughout my life, no doubt with varying degrees of accuracy. Even today, aged 31, the egg-shaped bump on the little finger of my right hand is a reminder of a memory that isn't my own. A foreign memory. An embedded memory.

A planted, garden memory.

Now, as this memory suggests, and although I do not consider myself a gardener per se, there was certainly a lot of garden-based activities throughout my upbringing. Yet, when I imagine gardening and connect with my past experiences in gardens, it is not the fruits of gardening that immediately spring to mind. Not the picking or harvesting, nor the drying or preserving, or even the eating or slurping of 'things' grown and produced in a garden. Instead, I think of work. I think of digging, dragging, sweating, and, yes, even bleeding. Gardening for me is space management. The tasks I was accustomed to are more akin to that of a landscape architect. Or perhaps a construction worker. The older I got, and the weaker my mum became, my tasks in the garden shifted from teacup-smashing to weed-pulling, and then to cutting, chopping, pushing, and burning. After my family moved from the old farm in Hertfordshire, my gardening experiences were mostly contained to the garden of a little cottage in Wales, which borders fields of sheep on two

sides and, in the spring, is filled with lambs bouncing around on the hills. In the autumn months, after marathon-level efforts to rid the little garden of never-ending, over-grown weeds, my mum and I would light bonfires in the garden using an aluminium burner, and thereby warm our dry, swollen, and cracked hands from a distance.

Perhaps it is these memories, of the garden not as a source of food but, instead, as a source of heat, that directed my research for this project, and prompted me to conceptualise the urban garden as an energy production space. But not one that is organised only for cultivating energy for food to sustain the body – a multi-energy garden.

Let me take you there now.

*(Field recording from Miscanthus field in Moldova)*

The star of the multi-energy garden is Miscanthus. It is a tall, leafy grass known by many names – sometimes *Silver Grass* (owing to the feathery plumes of flowers found in some species, including the one in front of you on the table), sometimes *Elephant Grass* (owing to its tremendous size, which can be up to 4 meters high), and sometimes *Chinaschilf* (owing to its origins in Asia). The recording you're listening to now is taken from a Miscanthus research field, over-looked by a state science and agricultural institute, which is located just a 20-minute drive from the centre of Chişinău. Earlier this week, I met Anatolii Sandu there to discuss his work as a scientific researcher.

Pick up the grass, if you like. The structure of the stem is similar to bamboo.

Miscanthus is intriguing to me because it appears to solve issues left, right, and centre. For example, Miscanthus is shown to thrive in challenging land conditions, such as stony fields and arid land caused by drought. There is an active EU-funded initiative between Germany, the UK, and Poland right now working to demonstrate exactly this characteristic – that Miscanthus can grow within even the most challenging environments. Yet, not only is it extremely resilient to, let's say, 'naturally' poor soil conditions in cases such as these, but Miscanthus is also capable of restoring soil damaged through human intervention, specifically after the application of hazardous chemical pesticides in agriculture. I spoke with Anatolli about this subject when I met him in his

field. One problem for Moldova, he explained, is that much of the soil across the country was damaged in the Soviet Union by pesticides containing copper. The use of such products in vineyards, especially, was greatly encouraged during the 51 years that Moldova was a Soviet Socialist Republic. This practice has resulted in an abundance of copper-rich soil – once used to grow grapes in order to make wine, but now allows very little to survive and grow (except for *Miscanthus*, it turns out, which acts as a kind of natural filter by extracting the copper).

But, hang on a second. I can hear you wondering why I am even talking about *Miscanthus* in the first place. Isn't this whole monologue supposed to be about the multi-energy garden? Don't you worry, I'm getting to this.

*Miscanthus* is what's known as a biomass energy crop, and it is in *this* way that it fulfils an energy role within the multi-energy garden. Biomass energy is a sustainable energy practice in which plants, instead of fossil fuels extracted from the earth, like coal, oil, and gas, are burned in order to produce heat. It is therefore described as a sustainable energy practice because, unlike these other resources, which are formed over millions of years of decay and pressure deep within the earth, plants such as *Miscanthus* can be harvested up to twice a year and are perennial, meaning that they just grow, and grow, and keep on growing without the need for re-planting. *Miscanthus* also traps and stores carbon, as well as harmful chemicals in the air, as it grows, making it not only a carbon neutral energy solution but also a kind of air purifier. Its roots extend to only 1 meter, and do not disrupt surrounding plants.

It is no wonder, then, that the UK and EU in particular are investing heavily into research and development projects to explore how *Miscanthus* might be used to combat the current global energy crisis. Anatolii is part of this same effort - to understand and share the potential of *Miscanthus*. And, honestly, it's hard not to get excited by the things he says. The boiler he showed me, for example, which is part of the research institute in Chişinău, runs exclusively on *Miscanthus* (actually, it runs on *Miscanthus* pellets, which are on the table in front of you and to me, at least, look like they could also feed goats). The boiler is fully automated, meaning that the pellets, which sit in a car-sized, open-top silo, are fed into the boiler in appropriate quantities relative to demand calculated by an intricate system. The boiler provides stable and reliable heat to the entire research institute, and is roughly half the size of a shipping container (if you can picture it).

The entire production of heat in this case fulfils what Anatolii describes as circular production. Each link in the production chain is integral and connected - from planting, to growing, harvesting, drying, pelleting, and burning. All of this is achieved within a 200m radius, making it a viable and extremely attractive solution for Chişinău owing to its existing district heating system. Converting this system to run on locally-grown Miscanthus is one of Anatolii's core goals. However, politicians in Moldova, so Anatolii explains, are still holding on tightly to the old and destructive energy norms of the past centuries - and thereby furthering Moldova's energy dependency upon the big energy players. Sustainable energy solutions represent too much change, too much work, and too unstable a vision of the future in the eyes of such politicians, who would sooner continue to buy Russian oil and gas than invest in bold, radical solutions.

But when politicians fail to step up and be bold, radical change must come from elsewhere. The multi-energy urban garden is one direction. Grow your food, grow your fuel. Share, discuss, contribute. Be happy, and be independent. As Anatolii liked to remind me, "our power is in belief".

I admire his adventurous spirit and hopeful perspective for the future. It is not a disposition shared by everyone in Moldova, as I have learned in my brief time here, and I can understand why. After all, why should anyone dare to hope when so many optimistic notions of the future have been abandoned? Why vote when those elected to power immediately fail to meet their campaign promises? Why grow, when the very soil beneath your feet rejects growth? It is clear that more collaboration is needed in order to envision common futures for Chişinău and Moldova more broadly. Collaboration across fields of practice, expertise, and, well, just regular fields. Visions for the future may come from reality, as people experience it here, now, today, through their own eyes, or it may come a rogue, unfamiliar perspective, much like the second-hand memory of me cutting my finger with a shard of Earl-Grey, tea-infused porcelain.

A question for you to ponder on, after you take off the headphones and return to the sounds of the walled garden at Casa Zemtsvei: can gardens be detached from gardening? If so, perhaps I fit into *this* category. I am a consumer of gardens. A second-hand gardener.