



LIVING TREE FOREST 2022 CASE STUDY

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Introduction

Forest of Imagination is a contemporary art and architecture event co-founded by Dr Penny Hay, House of Imagination and Bath Spa University and Andrew Grant, Grant Associates. Forest of Imagination is funded by Grant Associates, Feilden Clegg Bradley Studios, Bath Spa University and this year with additional funding from the Ragdoll Foundation. For 2022, Forest of Imagination partnered with the Egg Theatre (Theatre Royal Bath) and the American Museum to run events at both venues.

Living Tree Mirror Maze was an installation at the Egg Theatre (17 June – 3 July) designed by Berlin-based artist Andrew Amondson building on The Living Tree Forest (2021). It was co-created with artists and collaborators in Bath. The Mirror Maze was co-created by Mathematician Professor Alf Coles, University of Bristol, and architects Feilden Clegg Bradley Studios. Living Tree Mirror Maze invited visitors and participants to walk through a geometric maze of mirrors into a living forest of sound, light and sensory experiences. The sound installation was created by Cosmo Sheldrake. On the ground floor of the Egg was an installation by designer Matt Leece, a FUNgal network of connecting and communicating tubes to represent the concept of a mycelium network.

Living Forest Mirror Maze aimed to invite enquiry into the natural world and the ecological emergency; and support the agency for action and hope in response to the climate emergency.

Our key research questions were:

- How can we reflect on the nature of responsibility and our responsibility to nature?
- How can we reflect in the forest and hold a mirror up to nature?
- How does the forest and our connection to nature nurture our well being?

House of Imagination liaised with artists to provide a series of creative workshops based on and in Living Tree Mirror Maze, inviting local schools to participate. The visits were coordinated and supported by the Egg team. The installation provided a 'living classroom', an experimental site of learning. Children were invited to 'find and follow their fascinations'; to immerse themselves in self-directed enquiry. It was intended that the installation and the artists' interventions would encourage the children to ask powerful mathematical and ecological questions and elicit their ideas on how they would like to respond to the installation. The artist's workshops provided a variety of creative media through which children could respond, make their ideas visible, and have their voices heard. 16 classes of children visited and over 800 families visited at the weekend.

House of Imagination worked closely with one local primary school before and during Living Tree Mirror Maze; supporting the collaboration of artists, teachers and school, and documenting their experiences. The documentation and analysis forms the basis of the case study and contributes to the narrative of the learning from Living Tree Mirror Maze.





The aims:

- To elicit children's ideas in the process of designing Forest of Imagination
- To develop children's imaginative thinking and creative engagement - To invite children to be good stewards of planet Earth.

This case study aims:

- To capture children's responses, experiences and thoughts to LIVING TREE MIRROR MAZE installation
- To give voice to their reflections on nature and sustainability
- To show how artist provocations and use of materials supported co-enquiry
- To explore the collaboration between artists, teachers and children

Methodology

House of Imagination collaborated with St Andrews Primary School, Bath and liaised with the teachers and Headteacher. All of the classes participated in sessions with different artists during Living Tree Mirror Maze. Sessions with the Reception class, Year 2, Year 5 and Year 6 were observed and documented as part of this case study to give a representative sample across different ages and children. Three artist workshops were documented in addition to one with the Living Tree Mirror Maze co-designers.

The Year 5 children also had a session in school, prior to their experience of Living Tree Mirror Maze, led by the class teacher, which was also observed, with the documenter working alongside the children.

The children's responses, comments, enquiries, dialogue, and processes of making were observed and noted. The researcher and documenter explained to the children in all the sessions that they were interested in what the children noticed, felt or thought about Living Tree Mirror Maze and was writing these down as they felt these were important. Additional observations and reflections were contributed by some of the artists and these are attributed to them.

The observations were written up from each of the sessions and shared with the artists and class teachers. No children's names were recorded or used. Children's remarks, or as close as possible to them, are in quotation marks, to share their experiences, thoughts and feelings in their own words. The documentation of each of the sessions were combed and analysed in order to interpret them and find meaning in them in relation to the key questions and aims.





Contents

The case study covers in the sections below:

- 、 The artists' design and intent for Living Tree Mirror Maze
- 、 The children's ways of enquiring supported by the artists
- 、 An analysis of the children's ways of enquiring
- 、 Children's interpretation, debate, thoughts and theories on a key question posed by Living Tree Mirror Maze
- 、 Collaboration of artists, children and teachers
- 、 Summary and conclusive comments

Artists' design and intent for Living Tree Mirror Maze

Living Tree was described by Andrew as 'a delicately balanced natural sculpture'. Ferns, mosses and plants had been transplanted from a local forest (to which they would return) providing a living forest to explore, go inside and interact with. The Tepee shaped tree had a circular pool of water inside.

Andrew explained the intent behind the concept: 'forest can become somewhere where we will all learn something about ourselves and nature, especially when we reflect upon ourselves in nature ... These mirrors give us the opportunity to reflect upon ourselves, in nature, in the theatre.'

Andrew explained to the children that there were mosses everywhere that they could touch but not pluck or pull; places to play; a pool of water; and some mosses they could pick up. He invited them 'to discover things and to figure out how things worked?'

The question that Andrew proposed to everyone to reflect upon was: What if you could plant a tree to save the world and that tree was you?





Mirror Maze

Alf co-designed 3 mirrored constructions placed in relation to each other and to the Living Tree. These were mirrored outside and inside and had a white line along the inner edge of each. These were a 4-sided square, and a regular pentagon and hexagon with a triangular space in the centre of the 3 constructions.

'The idea is to provoke questions. There are some deep mathematical questions' embedded in the concept of Mirror Maze (Alf Coles).

Alf explained to the children: 'You'll notice that there are 3 kinds of construction, and I'd like you all to go inside each one of them ... I'm really interested in what you might notice? What do you notice is the same or different? Maybe look in particular at the patterns, the floor patterns and how they extend? ... I'm really interested in what questions are provoked for you by going inside the mirrors in relation to the forest?'

Andrew summarised Living Tree Mirror Maze to the children: 'Alf's inspiration was wanting to let you play in the space and have your own questions. It's about self-reflection and self direction, about following your fascinations whether that is in the mirrors or finding a space in the logs; it's about following your own fascinations and finding your own path'.

FUNgal Network

Matt's installation of yellow connecting tubes was designed to represent a mycelium network. The co-designers of Living Tree Mirror Maze explained it to the children. 'They are talking tubes that represent mushrooms and the underground, extensive, network of tubes that bring information and sugars to the trees, referred to as the 'wood-wide-web' (Andrew). 'Scientists have discovered that these networks, that produce mushrooms, are how the trees communicate with each other ... for example, if there is a particular kind of insect, a predator, they will communicate that they need to put out a particular kind of scent to deter them' (Alf).

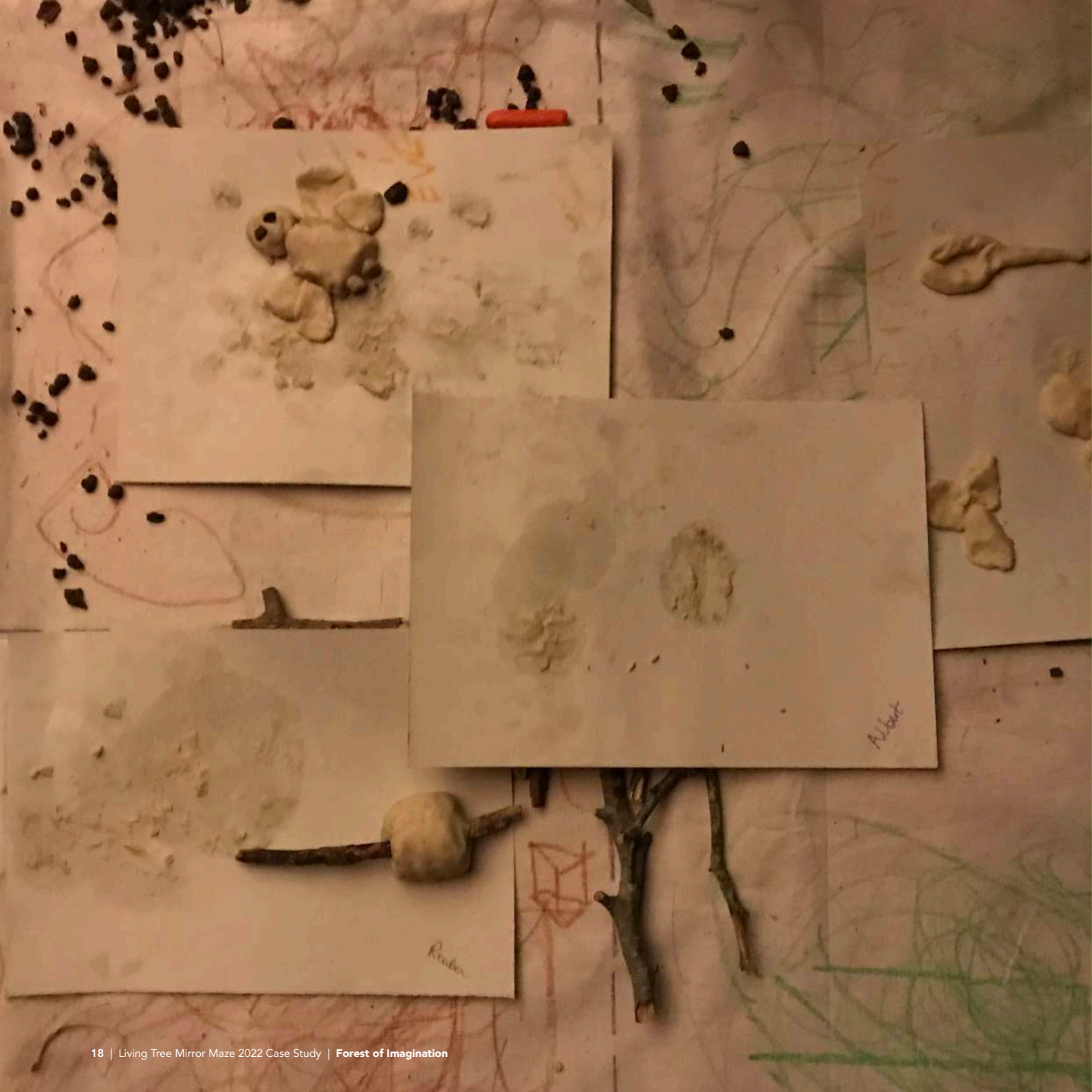
Matt's questions to the children were: 'What would the trees say to each other? What if we could talk through a tree? What would you say if you were a tree?'

The invitation was to explore the talking tube network to find out which mushroom (red mushroom shaped heads) talked to which through the network and to consider the questions.

Soundtrack with bird song

A special sound track was created for the installation, by Cosmo, with recordings of rare birds that are on the extinction list. There was also a song written contained within it for participants to pause and listen to. Andrew was curious to know what the children thought about it? Artists used the soundtrack in different ways throughout the week and for listening and reflection. It added another layer to the atmosphere and experience of the forest.





Ways of enquiring supported by the artists

The following are descriptions of the creative provocations (additional to the above) that artists offered to the children; how they framed them; the materials they provided and a summary of the different languages that children enquired through.

Artists Holly Le Var and Morgane Sha'ban

The Expressions of Nature: mind – ears – hand workshops were co-designed by the artists to immerse the children in reflecting on and making expressions of nature through their mind, ears, and hands. "During Mind, we take the children through a series of meditative exercises resulting with each participant performing an action to go with an adjective. During Ears, students work in pairs to create nature music and sound maps. Using their adjective from the previous theme, one creates a soundscape using provided nature tools, and the other uses mark making to map this on fabric. Finally, during Hands, the participants will translate their drawing into a 3D clay sculpture. At the end, we conduct a Forest Night Time Meditation to take a moment to reflect on the outcomes of the session, and the feelings we are left with." For example, Holly and Morgane invited the children: 'Replicate what you see in your drawing. It can be shapes/animals. Where do you go in your mind, when you're in nature?'

They provided the children with natural materials (twigs with leaves, small sticks, small stones, bark), charcoal, crayons, plasticine and large natural coloured calico on the floor around the forest.

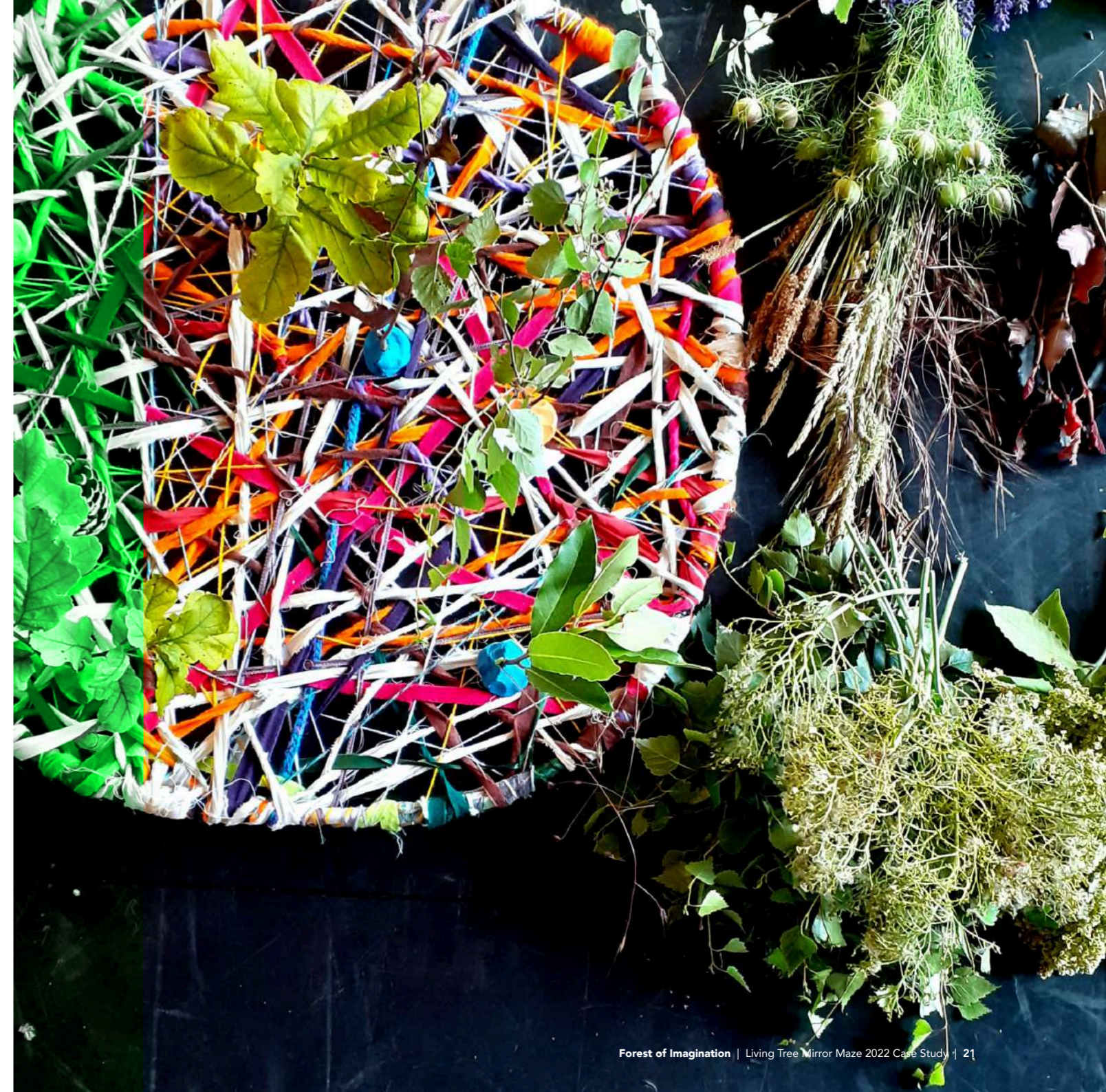
**Artist Clare Day and Tallulah Lloyd-Allum
(Bath Spa student, MA Fine art)**

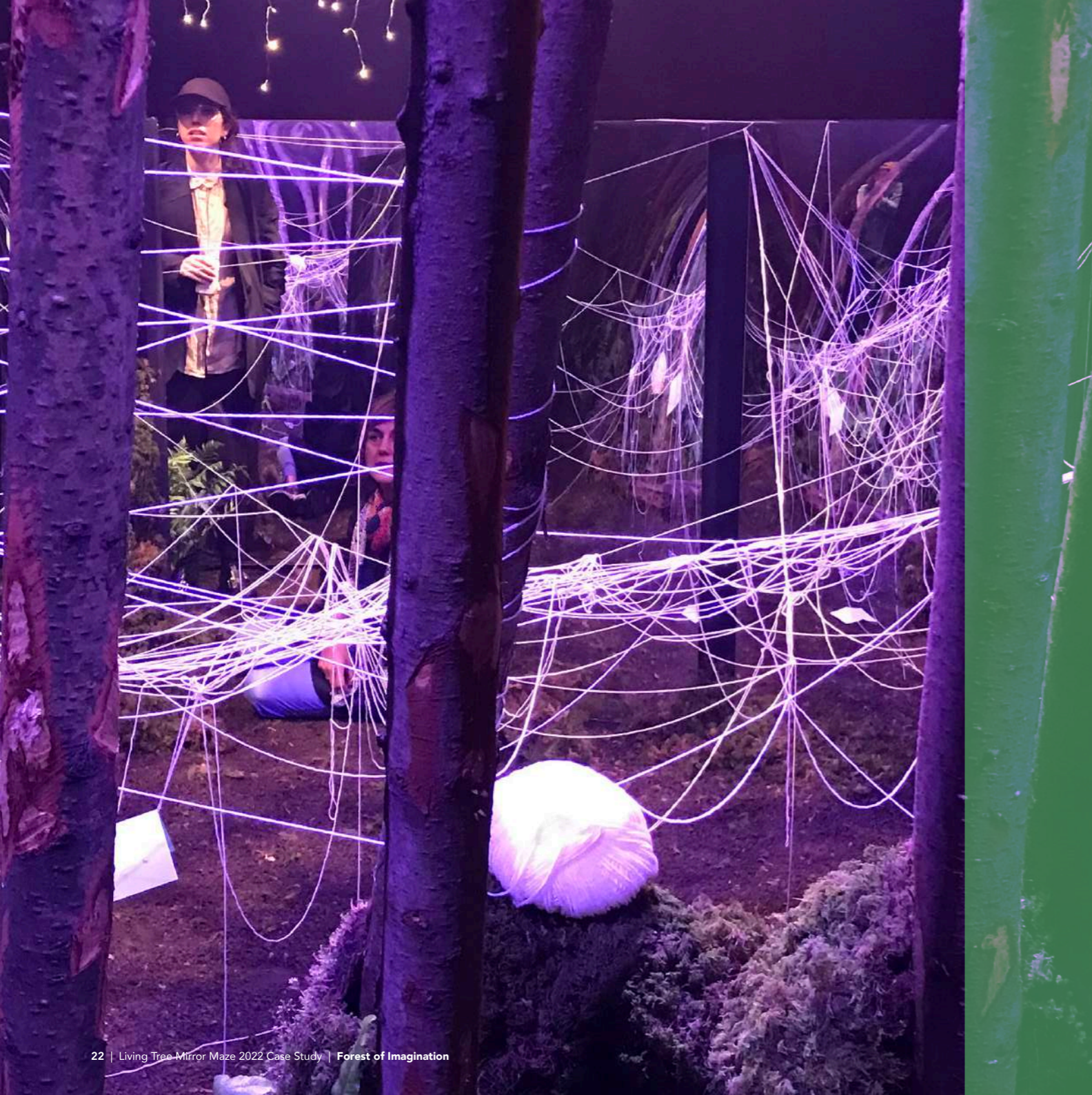
After giving the children time to immerse themselves in Living Tree Mirror Maze, Clare took the children to a large open workshop space above. She invited the children to think about all the things they'd seen, touched, smelt and found in the forest. She explained that she had provided them with things to build or draw a forest with: 'Think about what might be above the ground and what might be underneath.' She invited them to pause and think and to tell the story of the forest.

Clare provided natural materials from her garden including lavender, teasels, fir cones; along with re-purposed ribboned fabric; and a circular frame with woven threads as base structure to work with. The afternoon session was adapted: it "was different in feel as I used the circular woven forest to allow the children to weave their trees into and join the roots together" (Clare's reflections). Joining materials were provided (masking tape, pre-cut

lengths of fabric, plasticine, and lengths of string) which Clare felt had supported collaboration between children. Drawing materials including charcoal and chalk were placed alongside a large white and black papered section of floor: 'the idea was to spark thought of above ground or below ground, also the idea of reflections in the mirror maze'.

Questions on cards were placed in the space for the children and adults as further provocation, for enquiry and as prompts to focused conversation: 'What's the story of the forest?'; 'Who is hiding in the tree?'; 'Do you have a special tree?'; 'What is under the forest?'; 'What are the roots saying to each other?'





Matt Leece, designer

Matt added small hand mirrors (including those with a convex circular centre, and triangular mirrored tubes), coloured gel, and an illuminated magnifier glass to support the children's enquiries in the Living Tree Mirror Maze. He also introduced balls of white wool, attached to the balcony above which they could use to create a mycelium network.

Matt framed the idea of creating the network by explaining that the mossy tree stump he showed them was made up of more than one organism, of lichens and algae. He explained that these creatures survived by working together rather than by being the survival of the fittest; that they can't survive on their own, and how they need each other. He invited the children to think about those connections and to create a mycelium network in the Living Tree Mirror Maze. 'Imagine if you could work with the mycelium network to share data? Imagine if you could talk to the trees?' Matt also invited them to write a reflection on their experience or about the space on small cards; to decide where to attach them to the network; and to look at each other's ideas, to generate more ideas.

Across the Living Tree Mirror Maze sessions, and across the artists, many different 100 languages¹ of children were supported for them to enquire through. These included: drawing, making, writing, sound and music. They supported children's playfulness, and mindfulness; their kinaesthetic and aesthetic enquiries. They engaged children in exploring and expressing their ideas through thinking aloud, sharing, reflecting, and debating their ideas. They enquired through the realms and language of mathematics, science, visual art, natural science and philosophy. They drew upon all these to embrace the questions that Living Tree Mirror Maze posed and to reflect upon questions facing humanity about caring for and the sustainability of the natural world.

Analysis of children's ways of enquiring

Analysis of the documentation of children's responses from the different groups revealed different ways in which the children enquired; their ways of learning and being in Living Tree Mirror Maze. These included the feelings it evoked for them and their relationships with nature; sensory engagement; whole body and kinaesthetic engagement; following their fascinations; imaginative; 'As if ...'; As other; As if in ...; and contagious ideas.

Feelings and relationships with nature

The artists and educators worked alongside the children, their interventions and framing of sessions drawing out children's thoughts on nature; their experience and relationship with it; and their emotional responses to Living Tree Mirror Maze. It captured empathy with nature and their ways of being in nature.

One child described a forest (prior to visiting Living Tree Mirror Maze) as: 'A kingdom of plants, cos' there's loads of different plants and shapes and

sizes.' They described it as: 'Wild; it intertwines; overlaps – so not just like a grid, very natural.' They recalled memories and experiences in wild places or from places of nature within the city including mountains, hills, trees, animals, forests, towers, walks. They imagined wind and a stream running through.

Reflecting in Living Tree Mirror Maze with Holly and Morgane on what nature meant to them one group described: 'In the summer its green, in autumn its brown; 'It's growing'; its 'the natural world'. They mentioned: birds, bird song, trees, leaves, squirrels, life, dirt.

On entering the Living Tree Mirror Maze there was astonishment: 'Wow, I can't believe this'. There were looks of amazement and gazing around the whole space. Reflecting on their experience of it they described how it made them feel: amazed, calm, enchanted, magic, welcoming, warm, sleepy, summer, home, ecstatic, happy, energetic, frightened, free, damp, beautiful, good, loving, lovely, excited, thankful. There was smiling and laughter.

In a group discussion of the children and adults one child explained: 'It was like the opposite of quick and energetic. I didn't see any one running around, everyone was just looking around.'





Different spaces within Living Tree Mirror Maze evoked different responses and a range of feelings within them. One of the artists, Morgane noticed some groups wanted to party inside the mirror constructions whilst others wanted to be alone in the space, finding it calming. "When going into the enclosed mirror spaces, some children were overwhelmed, some incredibly excited, some sceptical and even frightened." Prior to the experience of Living Tree Mirror Maze, when one class were looking at the videos of possible mirror mazes and experimenting with creating their own on a small scale, some commented on how the images were creepy or scary but also exciting.

For one child the lights evoked memories of Hong Kong: 'at night you see all the lights. Every night you can see the city.'

Looking down on it from the balcony: 'It looks really magical from up here, looking down on everything'. They compared the perspectives: 'Down there you can experience it, up here it looks really calming.'

Living Tree Mirror Maze created an immersive and absorbing space: 'I could sit here for hours' [overheard from inside the Mirrors on a day for families]. Working with natural materials within Living Tree Mirror Maze, one child explained: 'I was in my own bubble'.

Children described the soundtrack as calm and relaxed; the song of the birds was 'relaxed and slow but kind of a sad tune on it'. One child commented on how 'the calm music and the forest' really linked. One girl thought that the birds on the soundtrack made it feel mysterious. Another said that the birds made you feel loved and sculpted a heart.

Their comments indicated that the misting (sometimes described by them as steam or fog) added to the overall effect, giving it a 'magical' and 'special' atmosphere. One of the artists noticed that the children were 'contemplative' around the water. The children's feelings and the thoughts evoked were often expressed with an aesthetic quality. Clare and Tallulah recorded some of these in their sessions: 'It feels like I'm in a dream, in a cloud'; 'If you put this in (the cork into the pool of water) it looks strangely beautiful'; 'It feels like the rocks are giving millions of hugs (referring to the cork sticking to her fingers). There were also references to 'making the moon', making 'Mother Nature' [see below] and 'Can the Tree heel You!' that perhaps have an elemental or spiritual sensibility about them. Some related their thoughts on nature to themselves, endowing nature with qualities they valued or with human characteristics: 'branches all connect to each other like friends'; 'If you talk to it will it answer you?'; 'Trees can grow arms'; 'Can you speak to the trees like on the first floor?'



The cards they left in Living Tree Mirror Maze were like gifts to it and to others entering the space: 'Nature is stunning'. There were lots of drawings of forests, trees and flowers, one which looked like the forest at night with lights above and a moon.

Sensory

All ages of children were observed enquiring through the senses; through touch, smell, hearing, and vision. Even before entering the space one girl who had visited Living Tree Mirror Maze before recognised its distinctive smell: 'I can smell it already'. It was one of the first things children remarked upon: 'All the smoke, like something smoking'. A few children disliked the smell, asking what it was and 'It smells like meat'. The children gazed around the space and installation, a visual spectacle, of light, dark, green, coloured lights and reflections. They looked upwards and pointed to the lights and when they began to explore they noticed and were playful with light, reflection, bouncing light, and noticing how they could catch the lights in the mirrors. One of their first responses was to touch the forest floor with their fingers (covered with

small pieces of dark cork) and pick it up to feel it. They felt the plants, mosses, touched and stroked the mosses and ferns covering the Living Tree and examined the logs and the pool of water with their fingers and hands.

One child walked through the mist with hands and arms raised as if feeling the water in the air. When weaving the web of wool to create a mycelium network in LIVING TREE MIRROR MAZE one child said they liked the texture. They noticed, and listened to the 'music' and the 'birds' asking: 'What's that bird noise?'

Whole body and kinaesthetic engagement
Children across the age groups used physical engagement, through their whole body as a way of enquiring in Living Tree Mirror Maze.

In the mirror maze constructions many children responded by jumping, dancing, spinning around and watching their reflections. Children seemed to like the feel of the surface of the floor in the forest and tried sliding across it: 'It's making me skate'. They walked and ran along the paths; and some responded by walking slowly and quietly, or creeping around the forest.





Games of chasing and hide and seek developed in the space. Children wanted to be locked inside the mirror constructions and one group said they were having a party. One group of boys, were under the spot lights that were streaming down through the misted air. They were moving as if in slow motion action, falling slowly to the floor: 'I'm not dead'. Later they explained they were playing at being in a movie. Several of the younger children were observed playfully making themselves into animals or scary creatures through their body, postures and movements; making scary faces and holding their hands up like claws; or making scary faces or creature-like actions in front of the mirrors.

A group of girls sitting in a circle, used the soil from the forest floor to mark their faces. One of the adults alongside commented: 'almost being part of nature'. The girls later explained they were 'camouflaging' themselves.

Matt's idea of weaving a mycelium network in the Living Tree Mirror Maze was quickly taken up by the children and adults who together wound and wove the wool around the whole space, around and through the tree, around and through the mirror maze making a network of interwoven threads. They wound it around the pillars, around each other, clambering over and under the threads, and throwing the ball to each other over the network. 'I got stuck on the string' [clambering over it]. It seemed to physically connect the children to the Living Tree Mirror Maze and to each other: 'If you were tangled in the string and someone pulled it you could feel it.'

These examples show how children enquired in Living Tree Mirror Maze kinaesthetically; consciously feeling it, experiencing it, and enquiring into it through their movements; being in it with their whole body, their playful physical games and acting; connecting to it by marking themselves with the earth or connecting themselves to it through the mycelia network. There was a sense of freedom and excitement expressed through their whole body engagement.

Following fascinations

All the artists gave the children time to enquire in their own way and invited them to 'find and follow their fascinations'.

The children were curious and asked questions: 'Is it real plants?'; 'Did you plant them?'; 'Why is there soil everywhere?'. 'How are they real moss? 'Feels so real!' 'Why is there a real living fly in the forest' [Michael, Mathematics PHD student]. They explored and made close observations sharing their discoveries with the adults alongside them: 'I found an orange little spider'; another girl asking her if it was alive? One of the children found a living tiny snail in the ferns and later was looking closely at the ground and in the ferns, maybe looking for more living creatures? One child observed: 'It looked sparkly but it was soil'. Many of the children seemed immersed in observing nature close up and using magnifiers and smaller mirrors to focus in at a micro level. Others were excited to find mushrooms, sharing their discoveries with the adults; or making further searches 'Where are those berries?'

Their ways of enquiring and learning included experimenting, discovering and hypothesising in the Mirror Maze, the FUNgal Network, and with mirrors and light, and in Living Tree.

In the FUNgal Network several children initially followed the tubes with a finger in the air to see visually where they connected to. 'I'm trying to follow a tube.' 'This one goes over there', pointing to both ends of an entangled tube [Michael, Mathematics PHD student]. Some followed the tubes around the room, to find where they connected to, and discovered that some of them went to the floors above and below. They spoke into the talking heads, calling out and trying to communicate with others: 'Can you hear? Say something' 'I heard a hey.' After a short time some of the children became engaged in testing out which tubes connected, through working collaboratively to speak and to listen using different talking mushroom heads. One of the children speculated on how the tubes might work: 'I was kind of thinking about air', 'pushing things to air' perhaps referring to how sound travels through air.





Pathways also seemed to fascinate the children as they followed the spiral path, round and into the centre of the Living Tree and found different routes into it: 'I'm in the middle'. In discussion with Andrew about how Living Tree was constructed one child hypothesised: 'I think what happens is that where the moss is at the bottom there might be something really hard all around that keeps them together, and then at the top they are bolted together.'

Alf had added large round glass mirrors that the children could use to support their enquiries about reflection. These were taken up by many of the children who experimented with how the mirrors both caught reflected light, such as the spot lights, and could be used to bounce reflected light around the room and through the mist. Two of the children followed the circular reflection of light as it landed on the tree, the ceiling and the walls. One child told the group: 'I made a moon with it'. Another two children experimented together, each with a circular mirror and noticed multiple circular reflections of light. They tried out the lit magnifying glass to look close up to a reflection inside the mirror. Another child put a red gel over their face and then looked at their reflection in the mirror.

They flexed mirrored card in one session, from convex to concave and noticed how their image changed from 'fat' to 'thin'.

One example shows the process of enquiry of two children as it flowed from one idea to the next. They were being playful with a circular mirror which was misted with 'raindrops'. The reflections of the blue lights above were caught by the water droplets on the mirror: 'Blue raindrops.' They noticed that the rain drops changed colour when the lights above turned red. Their experimenting continued inside one of the mirror constructions where they started drawing: 'Let me try something'. They bent the paper (they had drawn on) into a convex shape, held it up to the mirrored wall and looked at their drawing. They experimented with bending the paper in and out from curved to flat. They seemed astonished when they noticed they could see the back of the drawing/paper in the reflection in front of them which was reflecting what was behind them.

Imaginative

In the classroom prior to the experience several of the children when considering the idea of Forest associated words such as magical and enchanted with it; and one girl said Forest of Imagination reminded her of Alice in Wonderland. They drew metaphorical drawings from their imaginations which for them represented the idea of risk, danger and survival.

For one group of children (4-5 years old) Living Tree Mirror Maze evoked talk, exploration and the construction of narratives around fairies and creatures. They showed the adults 'fairy doors' they had found; a niche in the wall and in nooks and crannies around the logs. They told Morgane: 'we saw purple sparkle over there, we think its fairies.' They picked up cork from the forest floor and threw it in the pool: 'I'm making wishes', 'I wish for a Unicorn'. Several of the children in this group also seemed to be immersed in narratives as if they were animals or scary creatures [see whole body and kinaesthetic above]. In the mirror maze they referred to finding 'magic doors'.

Living Tree Mirror Maze was able to take the children into the world of their imaginations, connect to fairy tales, to mythical creatures and into the realms of fantasy.





As if ...

In Holly and Morgane's workshops, groups of children were invited to work in pairs to explore the sounds of nature 'as musician' and to listen and draw the sounds of nature 'as artist' in response to the sounds their partner was making. The children were immersed in making sounds and with mark-making 'as if' musician and artist, many focused on experimenting with the potential and affordances of the materials.

Morgane and Holly also invited the children to make with their hands 'as sculptors'.

This example shows the process of one of the children enquiring as if a sculptor. She made a flattened circle with the playdough and poked marks in it with her finger. She appeared to be making patterns. 'I see a tree'. She explained to her teacher, that at school there is a tree with a pattern on it [in the bark]. She carried on mark making: 'This is Mother Nature' and proudly showed it to artist Holly. She then found pieces of cork from the forest floor and placed them in the depressions she'd made for the eyes. 'What can I use for the mouth?' [to her friend who was working alongside her]. She looked for

some straighter natural material that she could use. 'I'm going to call her Mother Nature'. She added pieces for the ears and then tiny pieces of moss (from the floor around her) for a 'crown'. In conversation with her, her teacher commented: 'Mother Nature makes me think it might be a girl?'. The sculptor considered this and replied: 'Girls and boys can both be like nature.' Sharing what she'd made with the whole group she explained: 'Going into my mind I made Mother Nature and it was really realistic.'

In Clare's workshops when she invited the children to tell the story of forest through their drawing and making she framed it as: 'because we are all artists'. It also seemed that one group [see example above] were responding to the installation in a dramatic way 'as if' actors.

The children seemed to readily see themselves as an artist, a musician, or a sculptor and to use this as a way to enquire into Living Tree Mirror Maze through the materials, different 100 languages and different sensibilities.

As other ...

Many of the children jumped and danced in front of the mirrors, watching their reflections. For example: one child stood inside the square mirror construction facing one of the sides. He stood still looking at the image in front of him. He put up a hand to touch his reflection. He then looked from left to right at his other reflections, turning slowly to see them. He then turned rapidly from centre to left, and centre to right, as if to catch the reflection or catch it out. Was he playing with the reflection, and with the idea of the reflection being other to him? On coming out of the mirror he said: 'There's only 1 of us but it's like there are a 100 of us. It's like an army in there.' He made reference to his multiple reflections as an us; '1 of us' and '100 of us'. It gives a sense of feeling connected and disconnected to his reflection at the same time.

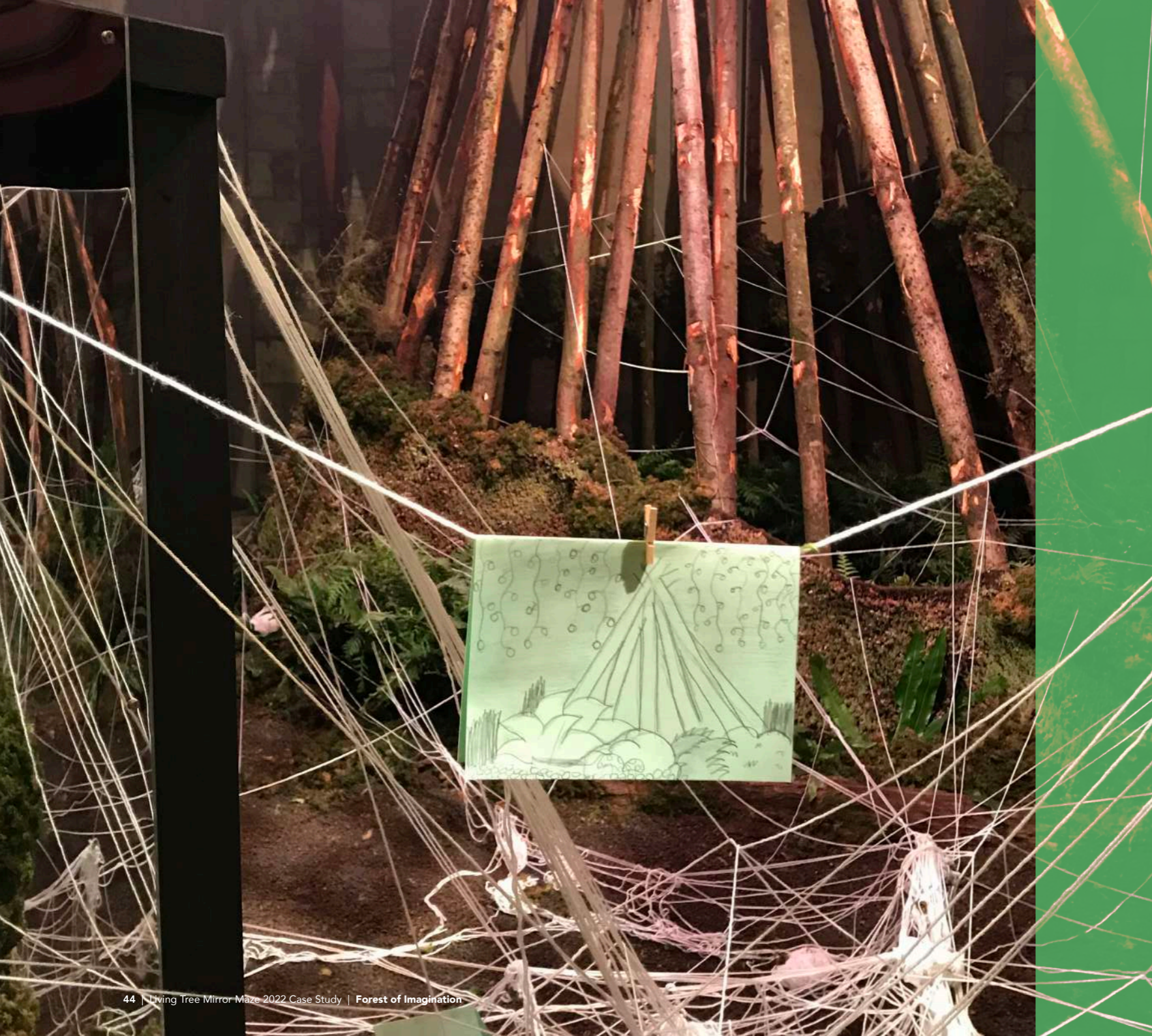
Inside the square mirror, two boys were marching side by side. '50 more me's.' They could see two lines of figures marching side by side, behind their reflections. I wondered if they were making the reflections of themselves jump, dance, march? Were they playing at making their reflections carry out their actions, as if their reflections were other than themselves like puppets that they

had control over? Several children made similar observations and gave us some insight into their way of enquiring: 'It was like an army. They copied whatever you did.'

As if In ...

One of the parent helpers overheard one of the children say: 'I'm lost in the dimension of the forest' This seemed to sum up that sense created by the Living Tree Mirror Maze; of losing oneself in the forest all around, the feeling of space it created, of the forest going on for ever, and being able to immerse oneself and lose oneself in the forest. Another child in conversation with Morgane told her: 'It's an infinite dimension' which perhaps links the mathematical and scientific concepts together. Is there also an influence from their knowledge and experience of computer games and science fiction and the terminology used? Did any of the children feel as if they were in inside a virtual reality of forest or a different dimension? There is an ambiguity and sense of intrigue about some of the language children used, for example one child commenting when exploring the mirror and water: 'a hole into darkness'. The description could be seen as scientific, poetic, or from science fiction. These expressions of ideas as if in, perhaps leave more questions than answers.





Contagious ideas

Matt's idea of inviting and exchanging ideas through their cards on a mycelia network was taken up by several of the children: 'That's such a lovely drawing' [to each other]. One of the children went around to adults and children asking them to add something to her card, collecting their ideas, and drawings. Several of the cards invited others to respond. One card on the web invited people to add something 'Please draw or scribble something on here. Thank you.' There were other examples of contagious ideas that spread through groups such as parties; hide and seek games; locking each other in; bouncing light around the room; and taking up others openly expressed idea of 'experimenting' and wanting to carry out their own. Groups of children formed together in the sessions; children coalescing around shared fascinations, sharing ways of enquiring, exchanging or developing ideas together, debating ideas as a group or class; and learning as a group.

Children's interpretation, debate, thoughts and theories on a key question

Andrew's question:

What if you could plant a tree that could save the world? What if that tree was you?

In school prior to their experience in the egg the Year 5 children debated Andrews question together to co-construct an interpretation of it:

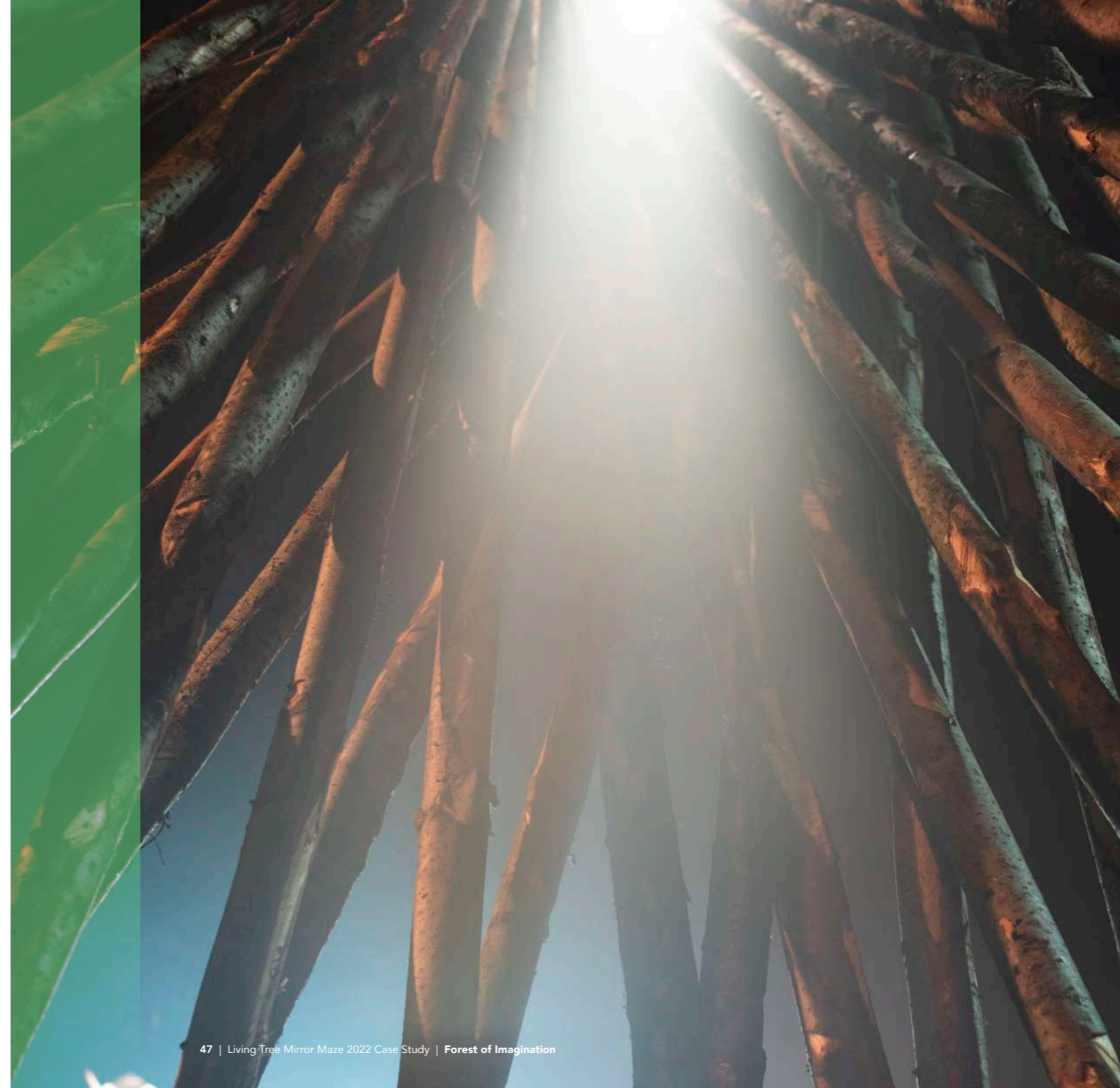
'When it says if you could plant a tree and could save the world and that tree is you – I think what it means is when it grows and if we plant trees we can actually save the world.'

'Is it like climate change?'

'How could you plant a tree and that tree be you?'

'It's a metaphor.'

'Think of a tree as an idea, and imagine if the tree was talking. Imagine if you plant a tree that can save the world. Imagine if you could plant an idea that can save the world, plant it in the ground so that everyone can experience it. Plant an idea, maybe an amazing idea that could save the world.'





In the egg the children explained their thoughts further with Andrew:

‘You have a choice. You have a choice to use your time, your abilities to build a better space.’

‘To understand, if you have an idea, maybe it’s a seed that you plant, then that idea grows and it grows, like a tree and it can change the world.’

‘I kind of think like when you plant a tree what does that tree symbolise? Does it symbolise a forest, or does it symbolise just this lone tree. And I thought about what if it was me .. and you could show, just that you can change the world, you don’t need a whole country, you don’t need a whole continent, ... you can change the world. ‘Connecting one with nature. You’re not just sitting on your own staring at a screen, you’re out and you’re like how humans should have been.’

The children in dialogue with Andrew made the connection between these ideas and questions to a book they had been reading called *What you do with an idea*; about having an idea that you have faith in, and that the idea can branch and spread. They recalled the very last words of the book: ‘you can change the world’ and connected it to Andrews question. One boy suggested that if someone had said they were going to build a forest inside, that they would think it would never happen, but he was reminded of another book they were reading called ‘Never ignore the possible’.

The teacher, Tristan, asked one child who had had an idea about ‘nature being in the palm of this hand’ (in the previous classroom session, see below) to share his current thoughts with Andrew and the group? The boy referred to his metaphorical drawing of it. He talked about ‘being responsible to nature, because lots of people are cutting down trees’. He explained that even if one person helps it can mean a lot, then this idea goes onto another person and another. If we keep encouraging it, to help it, it can get a lot better.’

Matt invited another group of children to write their reflections on nature and sustainability, provoked by *Living Tree Mirror Maze*, which included: ‘We need more nature inside’. The children also posed their own questions: ‘How can we survive?’; ‘How can we incorporate nature into our homes?’

Living Tree Mirror Maze; the questions it posed; the children’s enquiries of it; and the reflections and dialogue of the children, teachers and artists as a result of it; elicited the children’s thoughts on climate change, sustainability and positive actions for change. Together it allowed the children to explore the key questions posed by *Living Tree Mirror Maze* and to ‘Imagine if ...’ (Sir Ken Robinson Foundation).

Collaboration of artists, children and teachers

The Year 5 class were invited to consider the ideas of a Living Tree and Mirror Maze a week before their visit to the installation. The idea being to document the session and share their thoughts and ideas with the artists designing it, to allow for an exchange and collaboration of ideas and bring in an element of co-design. The teacher worked with the artist's sketchbook of ideas for the design, and collaborated with the artists to co-lead the session at the egg.

Collaboration and co-design of artists and children

In school prior to their experience in Living Tree Mirror Maze the children imagined what Living Tree Mirror Maze might be like: 'When I think of Forest of imagination I think of one tree with lots of trees in the background. But one tree is large and you can focus in on the one tree. There's lots of animals, and a hole in the trunk with an owl in it.'

Tristan framed the enquiry for the children with core questions of Forest of Imagination: How can we reflect on the nature of responsibility and our responsibility to nature? How can we reflect in the forest and hold a mirror up to nature?

How does the forest and our connection to nature nurture our well-being? They explored these through drawing, playfulness and experimenting with mirrors, and through dialogue as a group.





One key idea that emerged was to do with water and its connection to mirrors and reflections. 'Imagine if there was lots of rivers, like mirrors.' This seemed to intrigue them. They played with the idea of 'mirrors for rivers' and 'rivers like mirrors'. One girl explored the concept with mirrors in the sink, then drew a complex design of water cascading down a series of mirrors, into mirror boxes and onto a mirror on the floor.

They talked about light too: from the sun, linked to reflection and shadows. One child's drawing included the sun, shadows, a river; another child suggesting 'Maybe use some red or yellow to show the sun's reflecting light on it.'

Looking at Alf's website images and videos of possible mirror mazes they commented: 'Looks like you're falling into a black hole, into infinity'. They speculated: 'You only really need one mirror to project off, that bounces off another and another and another'.

Two girls experimented with placing 3 mirrors, vertically in a triangle with another square mirror with convex central round section at the base. They placed a pencil vertically inside it to see its' image or multiple images. They repeated it with 4 mirrors in a square and convex mirror on the base, with 2 pencils inside which they moved around. They then slotted a concave mirror down one side watching the visual effects: 'How can some mirrors and 2 pencils look so weird and creepy'. They shared what they had discovered with their peers: 'endless passage ways'; 'how many pencils can you see?'; 'a passage way, it goes on for ever and ever'. The images of mirror mazes also sparked conversations and drawings about how to get in or out? The references to openings, doors to open, and spaces to get inside also seemed to connect to their ideas about a Living Tree, natural spaces and forests.

There was quite a lot of references to wildness and abandoned houses that were reclaimed by nature. 'It's an abandoned house. A house with lots of bricks and the door is like broken and there's vines growing up it. They're growing everywhere and it's a wild mess, and there's mushrooms and butterflies. Inside there is an owl and a bird.' She had talked earlier about Forest of Imagination reminding her of Alice in Wonderland. She had written words on her drawing: curiosity; contrast ('I think of 2 very different ideas coming together'); reflections, the mirrors; tranquillity; change ('from the perfect town to being abandoned'); distortion. She had written 'distortion' but said 'disorientation': both seemed relevant to her. There were also mirrors on the table and 'distortion' may well have formed some of the conversation and experimentation with the child alongside who was drawing and distorting a pumpkin shape.

They considered Andrew's question: What if you could plant a tree that could save the world? What if that tree was you? One boy drew a hand with the environment held within the palm of his hand. 'I'm thinking it's kind of to do with the environment. Controlling like how we react to it. It's in the palm of our hands. So, like we have to be careful. We can control it if it's in the palm of our hands. We're responsible.' Talking about responsibility: 'we live in a society, we all have to help, it's quite hard to explain, but we all have to take part.'

They were intrigued, fascinated and really interested to see if they would see any of their ideas in the Living Tree Mirror Maze.

At Living Tree Mirror Maze, on meeting Andrew and Alf they were quick to ask: 'Are there any rivers running through?' (Michael's notes). Andrew responded with an invitation: 'not yet, but maybe next year if you want to work on it. There is a little bit of water that you can get moving. I saw that question earlier from when you talked and it's a great idea to have water running through it, like a little river.'





Someone asked if they would see any of their ideas in the forest; Andrew posed the question back to them: 'I'd be curious to see if you saw any of your ideas. When you go up there see if you see any of your ideas.' He explained that he and Alf were testing ideas for themselves, trying their ideas out, seeing how it worked, and they were curious to know what it made the children think and how it made them feel? Andrew's responses to the children explained the idea of an on-going exchange of ideas between the artist and the children, of reciprocity, co-enquiring alongside each other and the idea of LIVING TREE MIRROR MAZE evolving and being co-created through their collaboration.

On entering the Living Tree the children discovered the small pool of water. Alf had added a circular mirror of similar size. During the development of this year's Living Tree, Andrew had been thinking about the idea of introducing water and as the children had talked a lot about water, mirrors and reflection his idea had been developed in relation to the children's ideas and the small pool had been added whilst building the installation.

Exploring the ferns, tree stumps and mosses, they noticed a hole under one of the logs and looked inside it. Did the children notice any similarity to or synchronicity with their ideas about openings or doorways in the forest? Andrew also shared his own experience with the children telling them that when he was a similar age to them he had a hollow tree that was his special place that he could go inside. He had realised when he was building the Living Tree that he was making a safe space, that felt good, that smelt good, like his childhood hollow tree. The idea of den building in nature is one that might be familiar to some of the children, especially as they participate in Forest School.

Tristan reminded them of a conversation they had that morning before arriving at the egg about overgrowing nature, and whether that is a good thing or a bad thing? He asked if they had any further thoughts on that, having been in the forest: is this a forest where nature has taken over? They seemed to see this as a positive. The girl who had drawn the abandoned house referred back to her drawing: 'It's kind of like what I was describing except it doesn't have the house. It's like the mirror maze and the moss is growing round the mirror maze. I think that's a good thing because it looks a lot nicer. My idea was an overgrown kind of place and I think if you were in the city it would be like calm. When you're with nature around everywhere it looks quite calm and soothing in a way.'

The children also asked Andrew about the design and construction of Living Tree Mirror Maze: 'How long did it take you to do?'; 'What inspired you the most'; 'Why did you choose the fog'; 'Are the lights meant to be stars'; and 'What made you think of doing these kind of mirrors and how do you think it links to this [Living Tree Forest]'; 'What was the inspiration for the mirror rooms'?

The children who attached their ideas on Living Tree Mirror Maze via the mycelium network also offered up some Ideas for the future: 'Maybe you could add bare trees'; 'More plants'; 'I think adding fog would be cool'.





Collaboration of artists and teachers

The artists, teacher and Dr Penny Hay (Director of House of Imagination, Reader and Research Fellow, Bath Spa University) liaised and collaborated before and during the session in school and at the egg. The teacher was an integral part, acting as a conduit for the flow of conversation and exchange of ideas with the children. With his knowledge of the children, understanding of pedagogy and the culture of enquiry the children were familiar with in his classroom he was able to frame the session, the questions, and co-construct a dialogue with them. Tristan often reminded the children of previous conversations; revisited their ideas and reintroduced them into the conversation. The type of phrasing Tristan used was particularly relevant for example: 'I'm curious as to whether your one word, now that you've been in the Forest, is still the same or whether you would change your word?'; 'Was there anything in particular that anyone was drawn to in the forest? Anything that you were particularly curious about or made you think of a question you have? Any little surprises you had?' He was able to ask the children good questions relevant to their experience, understandings and enquiries.

The pre-session meant that the teacher and children could develop a sustained co-enquiry enquiry and continuity of dialogue. For example Tristan reminded the children they had been having lots of discussions in school about feeling separate to nature rather than part of it and asked them if Living Tree Mirror Maze made them feel part of nature or still separate from nature?

In revisiting and reflecting upon Living Tree Mirror Maze with Tristan and Andrew they also noticed a synchronicity of learning with their curriculum; books they were reading; the assembly they were preparing; and the geometry they were learning in class. It provided a network of connected ideas, thoughts and enquiries which coalesced for the children from different aspects of their curriculum and learning experiences.

Combining the pre-session in school, the collaboration with the artists and the children's enquiries in Living Tree Mirror Maze resulted in sustained co-enquiry, greater collaboration and co-design. It also seemed to provide the teacher with a greater sense of connection to and understanding of Living Tree Mirror Maze, the intent of the artists, the key questions it posed and its potential for learning.

Summary and conclusive comments

Living Forest Mirror Maze sought to invite enquiry and elicit the children's thoughts and feelings.

The case study aimed to show glimpses into their experience of it and to illuminate these so that we could better understand them. It documented the children's immersive learning experience in this 'living classroom' and the nature of this experimental site of learning. The sessions with all the artists and co-designers supported the children's imaginative thinking, creative engagement and co-enquiry; and the case study shows how the artist provocations and use of materials supported this.

The analysis shows us the different ways in which these children engaged in self-directed enquiry: through the sensory nature of Living Tree Mirror Maze; their kinaesthetic ways of learning; and the how they enquired through their imagination; imagining 'What if ' and 'As if'. It shows how the children enquired in the companionship of other children, and with artists and teachers as co-enquirers alongside them.

The children immersed themselves in the world and 'dimension' of forest and mirror maze. They interacted and enquired in the mirror mazes and the mathematical questions it posed.

Living Tree Mirror Maze set out to explore key research questions:

- How can we reflect on the nature of responsibility and our responsibility to nature?
- How can we reflect in the forest and hold a mirror up to nature?
- How does the forest and our connection to nature nurture our wellbeing?
- Children across the age ranges and sessions showed their understanding and love of nature.

The children shared through the various interventions how Living Tree Mirror Maze and nature made them feel; the sense of calm and relaxation it brought and allowed them to describe the sense of wellbeing it gave them. The natural world and ecology formed the basis of the co-enquiry of the children, teachers and artists in all sessions and gave voice to the children's reflections on nature and sustainability. Living Tree Mirror Maze invited them to be good stewards of planet Earth. They shared their ideas about re-wilding cities, bringing nature into homes and how this would make them better places to live.

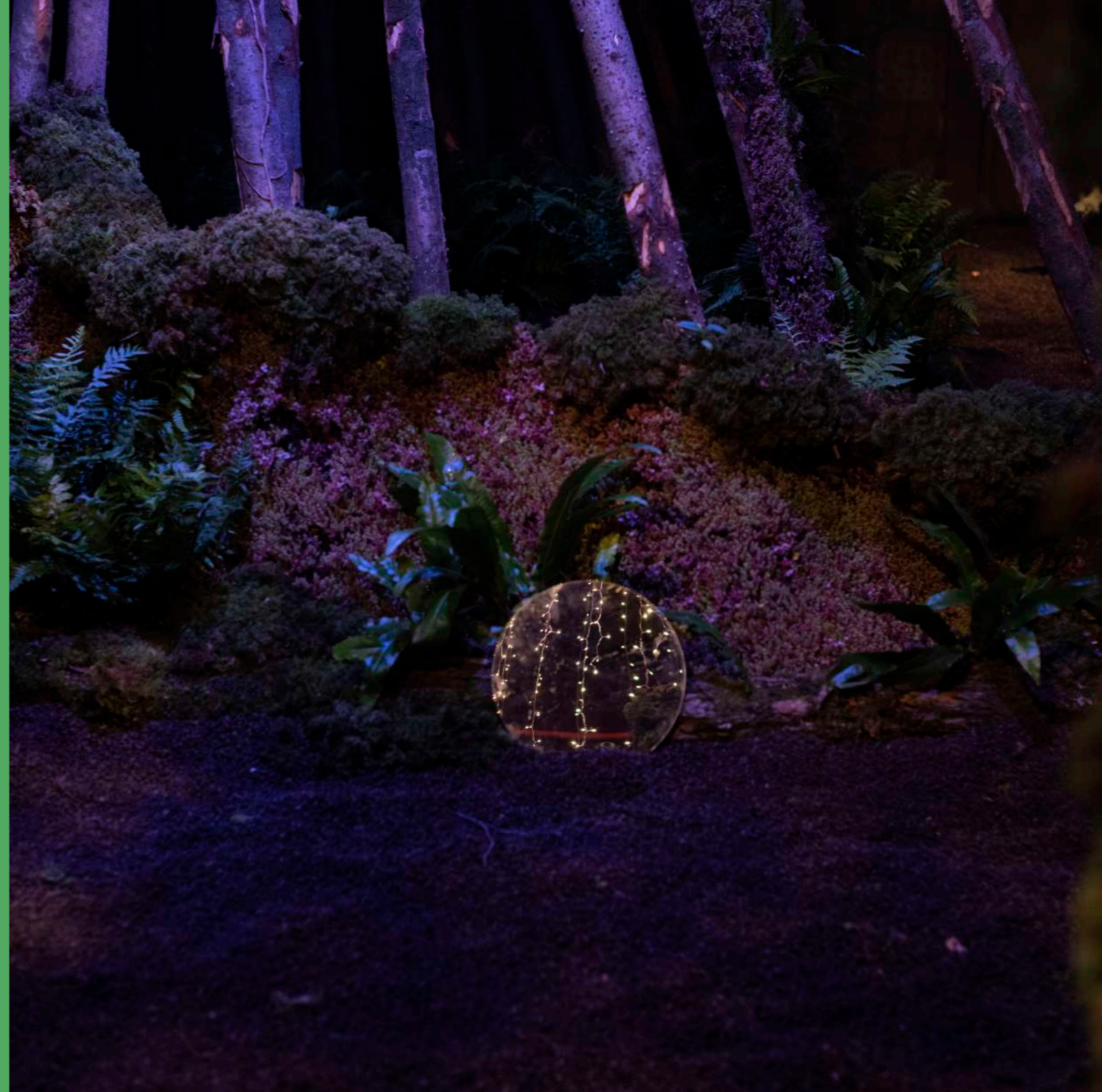
The two sessions with the Year 5 class were particularly illuminating in terms of the ecological emergency; eliciting the children's ideas through their enquiries of Living Tree Mirror Maze, through drawing and dialogue. The children shared their powerful ideas about nature and how to take responsibility; the seeding and growth of ideas; and how individual contributions could help to save the planet. They gave an insight into the children's sense of agency for action and their hope in response to the climate emergency.

The pre-session in school and the collaboration during Living Tree Mirror Maze between the Year 5 children, their teacher, House of Imagination, and Andrew and Alf as co-designers and artists provided an effective exchange and dialogue between all the participants in a democratic and authentic way where everyone's ideas were valued. It involved the children as co-participants, co-enquirers in the on-going research, development and co-design of Living Tree Mirror Maze.

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