Mending Cracks

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How do we convey a message that the human and more-than-human are intimately connected? Storytelling has always been a generative way to carve out space for new paradigms and emerging narratives. We are researchers working in science, arts and ethics. Cracks in ceramics, in disciplines, in binaries are the point of departure for our project: Bactohealing. It draws on *kintsugi*, the Japanese technique to fix ceramics with gold.[1] Bactohealing proposes to mend cracks with the help of microorganisms: bacteria and fungi grow a solid bond that mimics 'scar tissue' over the fracture. Simultaneously we open an inquiry around the ethics of synthetic biology. As artists, biotechnologists and ethicists, we bring diverse perspectives to this inquiry, united by a commitment to also honour the spiritual dimensions of these connections. The act of collaborating with microorganisms and materials becomes a ritual of acknowledgment – a recognition of the interdependence of all that is.

This contemplative artistic practice explores themes of fragility, collective identity, and our relationship with the more-than-human world through a meditative journey set in a museum depot. The narrative contemplates ceramics mended through this reimagined kintsugi practice where traditional gold has been replaced with living microorganisms – primarily the mycelium of Ganoderma lucidum, the reishi mushroom. This technique creates organic, dynamic, evolving lines of repair that challenge conventional notions of restoration. Unlike the permanence of gold in traditional kintsugi, these microbial mends operate on radically different temporalities, requiring patience as microorganisms establish themselves over weeks rather than hours, continuing to transform the artifacts long after human intervention ceases.

[1] *Kintsugi* is an ancient Japanese technique that mends cracks in ceramics with the help of urushi lacquer. The finishing is done by gold or silver, which changes the aesthetics of the broken and repaired object. Instead of hiding the history of damage, *kintsugi* emphasizes the crack following the principles of Wabi Sabi, embracing imperfection and impermanence.

These living repairs follow autonomous biological timelines – growing, changing, and dying – serving as metaphors for transience while encouraging humility in the face of natural cycles. Their maintenance demands acknowledging microorganisms as partners with independent trajectories, while the resulting ephemeral pieces function simultaneously as healing artifacts demonstrating how damage becomes transformation. This challenges the commodity-driven art markets through their resistance to permanent collection, and as ethical statements against the environmental impacts of "permanent" art materials.

The work documents the daily rituals of care these living repairs demand: careful monitoring of humidity levels, light conditions and temperature, and protection from competing organisms to avoid contamination. These adapted laboratory protocols bridge techniques like art conservation, microbiology and synthetic biology. As we observe the mold establishing itself on broken surfaces, philosophical discussions emerge about the agency of abstract life forms, foundations of care ethics, shared responsibility, and the nature of working with living entities. The work highlights the moral complexities of domesticating microorganisms for human purposes and questions where such relationships fall on the spectrum from exploitation to collaboration.

Our work examines how microbial collaboration challenges anthropocentric views and prompts us to recognize interdependence across species boundaries. It guides us through tensions that develop between traditional values of achieving perfection through conservation and restoration versus embracing the unpredictability of working with living materials that resist complete human control. The work ultimately suggests that navigating our complex future requires not only diverse human perspectives but recognizing the authorship of more-than-human co-creators. We need to adopt new protocols of care, evaluate ethics of relationship, and practice patience with outcomes that cannot be fully anticipated or controlled.

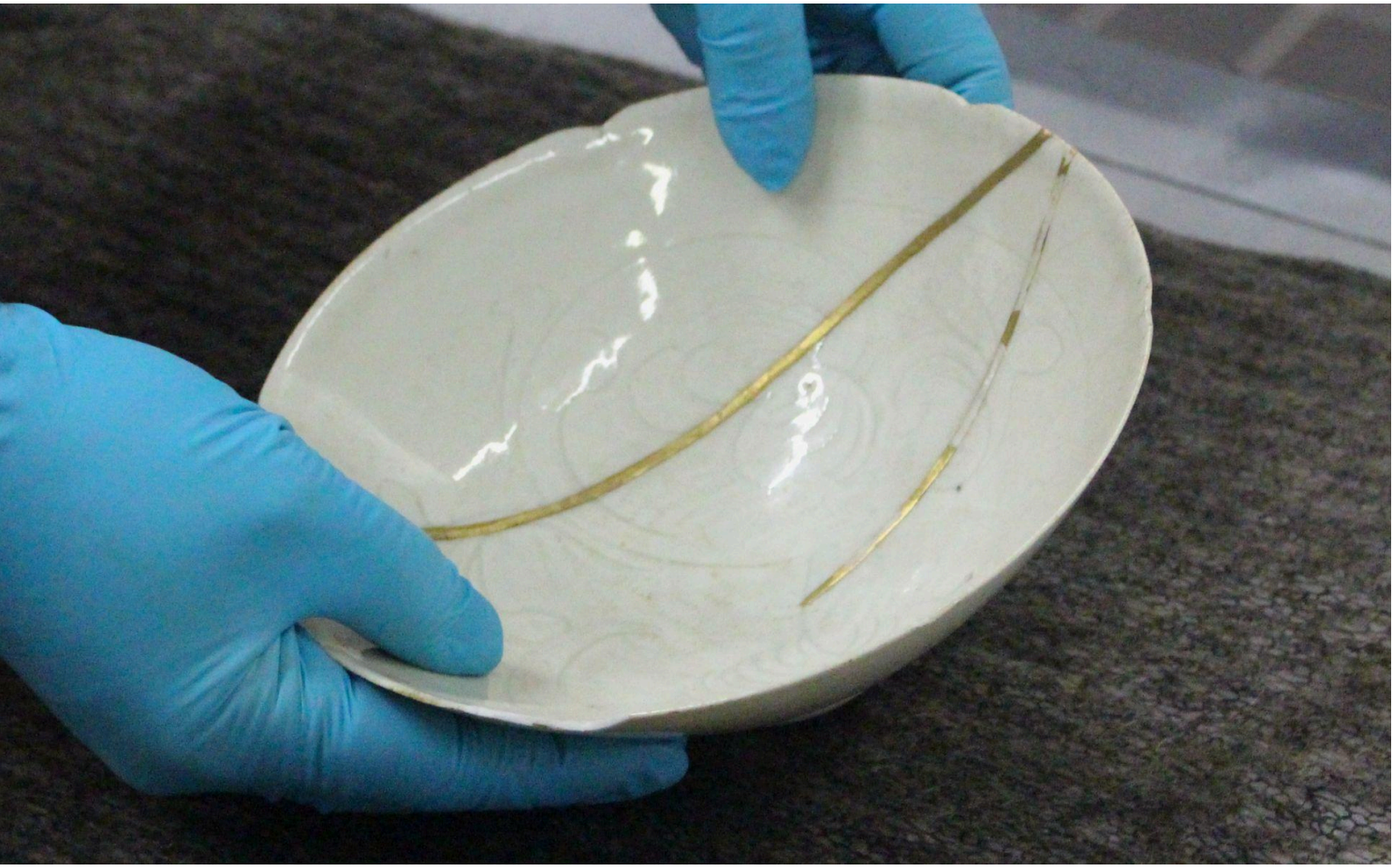

Figure 1: *Kintsugi* + Blue gloves.

The museum has a depot. Temperature and humidity are kept at constant levels. We look at a collection of broken pieces mended with the ancient Japanese technique of kintsugi. *The lines where once the cracks were, shimmer in gold.*

Figure 2: Shards.

You move to the next room. A messy place. It is the place where people's actions and materials mingle. You know you resemble these shards, just like them, you carry your personal and shared history and memory. Not one shard knows all of the disciplines, secrets, and specialisms.

Figure 3. Big mold.

You sensed it before, but you behaved as if it was not so. Your senses do not lie. "We are not alone here." Your thoughts mingle with the smell of a mold.

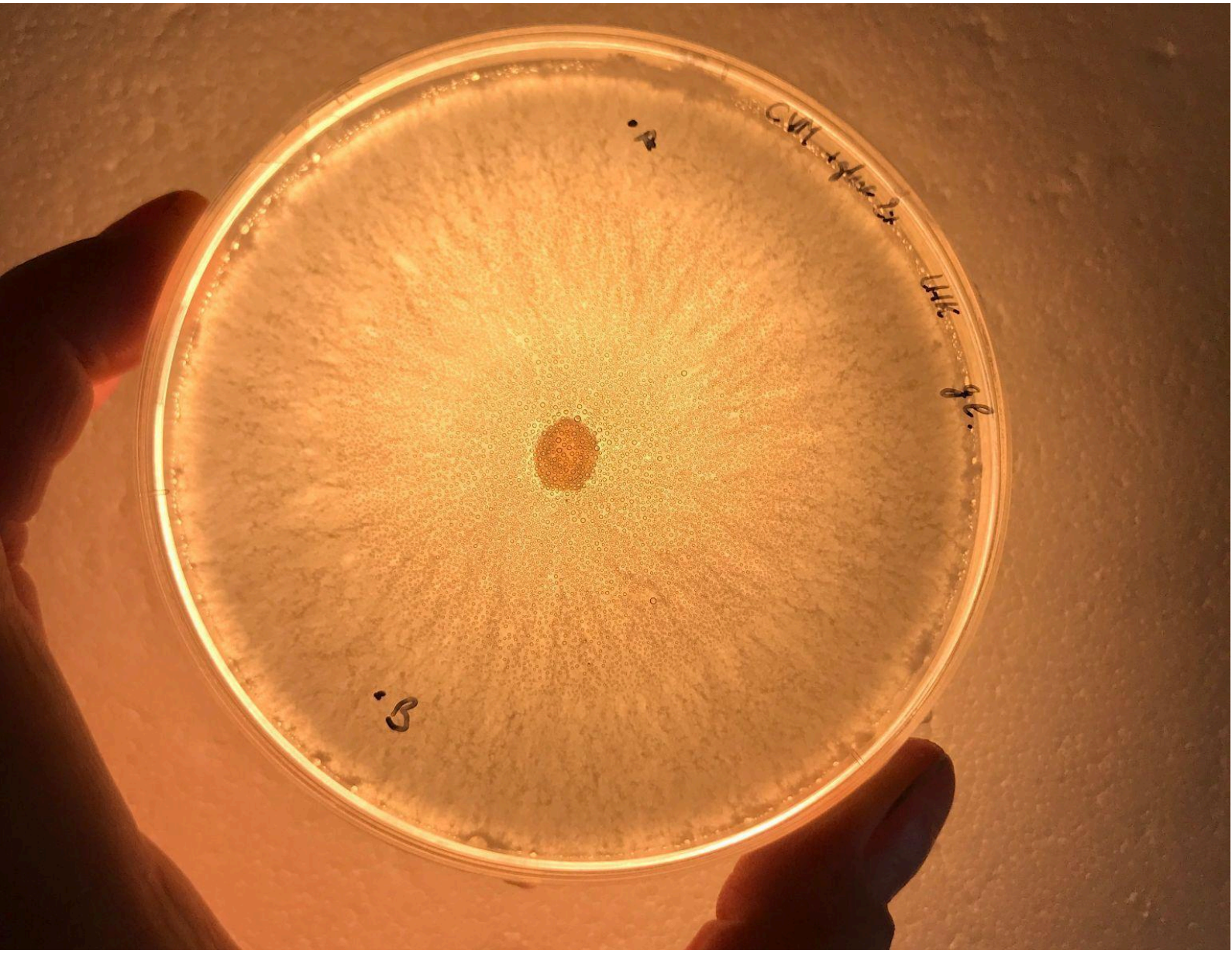

Figure 4. Petridish.

Some of you are critical: "Look at this mold." Customs of the old world require you to clean it up, but you know that the intruders here are you. How do we know how it will behave? What does it need? What happens when it grows? If we do not control it, it might control us. Some of you say: "We should name the mold. Naming it is a start to get to know it." One of you knows the mold. "It is Ganoderma lucidum*, the reishi mushroom."*

Figure 5. Broken egg.

A discussion arises. Some of you claim that materials have lives of their own. They grow, they crack, they age, they help you in preparing your meal or packing your luggage, they make you smarter than you really are.

Figure 6. Green gloves.

One of you feels you are running out of time. You answer: "How can we run out of time? What does time mean when all of us are together? We are plural and ephemeral." You notice your boundaries are unclear, you cross categories and time lines. Customs, culture and memory have their imprint on you. You have lost sense of where you begin or end as you and the mold are entangled in mending cracks.

Figure 7. Electron microscope.

Some of you will flourish in living with the unknown. Some of you will suffer, but you know it is only the idea that makes you suffer. You will come to understand that some of your fellow travelers are invisible. That will make you believe there are more of those in the shade – out of sight, out of perception, like the hyphae of Ganoderma with its companions. Most of you agree to stay for a bit longer in this room. To think about what needs your care, and how you will care.

about the authors

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Is a Phd researcher in philosophy working on a project that explores the potential of aesthetic practices to heal modern relations to surroundings. She is interested in feminist arts-based research methods, ecofeminism and posthumanist philosophy. Alongside her research she publishes poetry and is an editor of the magazine for culture and critique Rekto:Verso. She is involved in Metrodora and the Centre for Ethics.

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Nele Buyst, Christina Stadlbauer and Varsha Paleri are part of the **Compost Collective**, a research group at the Department of Philosophy of the University of Antwerp and an interdisciplinary collective with an emphasis on (bio)ethics.

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