

Question 5. Design Thinking and Material Practices:

How are contemporary practices of design and making reshaping ideas of authorship, agency, and materiality in response to shifting technological, ecological, and philosophical paradigms? Consider how approaches such as speculative design, generative systems, or post-digital craft are contributing to these developments.

Essay Title:

Making with Living Systems: Agency, Materiality, and Authorship in Contemporary Biodesign.

Abstract:

Contemporary design practices increasingly engage living biological systems as active participants in processes of making. In these contexts, materials are no longer understood as passive substrates awaiting form, but as dynamic systems whose growth and transformation actively shape what emerges. This shift challenges traditional hylomorphic models of design, where the designer imposes a preconceived idea onto inert matter.

Drawing on Tim Ingold's account of morphogenesis, Jane Bennett's concept of vibrant matter, and Donna Haraway's notion of sympoiesis, this essay examines how contemporary material practices redistribute agency between human and non-human actors. By examining the work of Diana Scherer and Carole Collet, it illustrates how biological materials act as generative systems that actively shape and participate in processes of making.

Rather than eliminating authorship, these practices fundamentally reconfigure it, positioning the designer as a facilitator of conditions rather than the sole originator of form. In doing so, they challenge human-centred models of creativity and reveal a more relational, distributed, and process-oriented understanding of materiality and authorship.

Essay:

Within Western philosophical traditions, matter has often been understood as a passive substance awaiting form through human intention. This assumption is rooted in hylomorphic thought, derived from the Greek *hulē* (matter) and *morphē* (form), in which physical objects are understood as the combination of material substance and the form imposed upon it. In Aristotelian philosophy, form gives shape and purpose to otherwise inert matter, establishing a framework in which agency resides primarily with the maker rather than the material itself (Ainsworth, 2024). This hylomorphic model became deeply embedded in Western art and design, positioning creative agency with the artist or designer while, as Ingold notes (2010, p. 92) materials were rendered passive substrates upon which preconceived ideas were realised, reinforcing their subordinate role in the act of making.

In practice, abstract philosophical matter becomes material: the tangible substances through which making takes place yet still understood within this model as passive carriers of human intention. As Ingold observes, the finished object is therefore understood as the realisation of a preconceived idea, its configuration assumed to remain stable once making is complete (Ingold, 2013, p. 20). Such a view reinforces the assumption that creative agency belongs primarily to the designer, while materials are assigned only a passive role in shaping what emerges.

However, this understanding of making as the imposition of predetermined form onto passive matter has increasingly been challenged within contemporary design discourse. Rather than treating materials as inert substances awaiting control, designers now engage with processes that mobilise, transform, and generate natural systems. In these approaches, material processes become visible within the act of making, and form emerges through interactions between designer, material, and environment. As a result, outcomes are no longer determined solely by the designer but arise through dynamic exchanges between human and non-human agencies.

Contemporary material-led design practices increasingly engage with biological processes, recognising materials not as inert substances but as dynamic systems whose properties

emerge through processes of growth, metabolism, and transformation (Fratzl et al., 2021, p. 4). This shift is reflected in theoretical approaches that reconceptualise making as an interaction between human and non-human forces. Concepts such as morphogenesis (Ingold, 2013, p. 22), Bennett's vibrant matter and "thing-power" (Bennett, 2010, pp. vii, 2), and Haraway's sympoietic "making-with" (Haraway, 2016, p. 58) together recast design as a negotiation between human intention and the capacities of materials themselves. Seen in this light, the designer moves away from imposing predetermined form to facilitating the conditions through which material outcomes emerge.

These developments are especially visible in the work of contemporary designers who engage living systems as generative media. The practices of Diana Scherer and Carole Collet provide two significant examples. Scherer's cultivation of plant root systems demonstrates how biological growth can function as a generative agent within processes of making, while Collet's speculative bio-material research positions design as an experimental engagement with living systems rather than the production of fixed objects.

This essay explores how contemporary design practices involving living biological systems reshape conventional understandings of authorship, agency, and materiality. Drawing on the work of Tim Ingold, Donna Haraway, Jane Bennett, and materials science, it demonstrates that working with living matter redistributes agency between human designers and non-human material systems. In doing so, it positions designers less as authors of form and more as facilitators of the conditions within which biological processes unfold.

Moving beyond hylomorphic understandings of making, contemporary theoretical approaches increasingly reconceptualise matter as active, dynamic, and participatory. Central to this shift is Jane Bennett's concept of vibrant matter, which challenges the assumption that materials are inert or passive. Bennett argues that matter possesses a vitality that enables it to act, respond, and influence outcomes within a given system (Bennett, 2010, p. vii). She describes this as "thing-power", referring to the capacity of material entities to participate in events and shape what emerges (Bennett, 2010, p. 2). From this perspective, agency is not

located solely within human intention but is distributed across both human and non-human actors.

Bennett's argument also unsettles the traditional separation between subject and object. Rather than viewing materials as external to human activity, she suggests that all bodies—human and non-human—exist within dense networks of entangled relations (Bennett, 2010, p. 13). Matter, in this sense, is not static but continually in motion, participating in processes of becoming (Bennett, 2010, p. 55). She further critiques the tendency within language and discourse to frame “material” as something fixed and subordinate to human control, arguing that such representations obscure the active role materials play in shaping processes and outcomes (Bennett, 2010, p. 58). Taken together, these ideas reposition matter as an active participant in the emergence of form rather than a passive substrate awaiting it.

Ingold similarly challenges the hylomorphic model by proposing that making should be understood as a morphogenetic process. Rather than beginning with a fully predetermined form, morphogenesis describes form as arising through ongoing interactions between materials, environmental conditions, and the actions of the maker (Ingold, 2013, p. 25). From this perspective, making is not the execution of an internal plan, but a responsive engagement with materials as they unfold over time, through which form is negotiated rather than imposed.

Developments in materials science further reinforce this reconceptualisation by emphasising the dynamic properties of biological systems. Materials research distinguishes between biological materials, which develop through growth processes within living organisms, and biomaterials, which are engineered to interact with biological systems (Fratzl et al., 2021, p. 4). Biological materials such as plant tissues and fibres evolve through continuous interaction with environmental conditions, meaning their properties are not fixed but develop over time. Biomaterials, while engineered, similarly operate within dynamic systems of interaction rather than existing as static substances.

Seen in this light, the concept of active matter offers further insight into how material systems generate form. Active matter refers to systems composed of individual units that consume

energy and convert it into movement or activity, resulting in collective behaviours that emerge through interaction rather than external control (Fratzl et al., 2021, p. 20). Examples include biological systems such as plant growth, bacterial colonies, and flocking behaviour of birds such as starlings. Here, structure arises through distributed processes rather than centralised design.

Translated into design practice, this understanding reframes making as the shaping of conditions rather than the imposition of form. Designers working with living systems establish environments that guide material processes, yet the forms that arise remain contingent, open-ended, and partially unpredictable. The designer's role shifts from author to facilitator, working alongside material processes rather than controlling them.

A similar redistribution of agency appears in Bruno Latour's Actor-Network Theory, which introduces the concept of the actant to describe both human and non-human participants within networks of interaction (Latour, 2005, p. 65). In this view, materials, tools, and biological systems are not passive objects but entities capable of influencing events. Agency is therefore distributed across a network of relations rather than centred solely in the human subject.

Donna Haraway's concept of sympoiesis, meaning "making-with" (Haraway, 2016, p. 58), extends this understanding by emphasising that creative processes emerge through collaboration between multiple agents rather than singular authorship. Unlike autopoietic systems, which are self-contained, sympoietic systems are inherently relational and interdependent. Applied to design practice, this suggests that making with living materials involves co-production between designers, materials, and environmental conditions.

Taken together, these theoretical perspectives on material agency fundamentally challenge the assumption that matter is passive or subordinate to human intention, thereby reframing materials as active participants in processes of making that influence, resist, and transform outcomes. This shift becomes particularly visible when considering living systems such as plant roots.

Plant root systems provide a particularly vivid example of this dynamic. As living biological systems, roots grow and adapt in response to environmental stimuli such as moisture, nutrients, and gravity. Their structure emerges through interactions between internal biological processes and external conditions rather than through direct external control. When incorporated into design practice, root systems therefore function as generative material systems capable of producing complex and unpredictable forms. Designers may establish the conditions for growth, but the resulting forms remain co-produced through ongoing exchanges between human and non-human agencies.

Through this lens, contemporary design practices engaging living biological materials can be understood as operating through generative systems, in which form unfolds through dynamic interaction rather than predetermined design. Here, materials are engaged not as passive resources, but as active participants in the production of form. The role of the designer therefore shifts from that of a sole author to facilitator, establishing the conditions within which material processes develop. Authorship becomes distributed across human designers, biological materials, and the environments in which these systems evolve.

Generative systems offer a way of understanding how form emerges through material interaction, rather than predetermined design. Instead of producing fixed outcomes, they operate through sets of conditions, rules, or behaviours that give rise to form over time. As Temple (2017, p. 1) suggests, generative art is produced through systems that function with a degree of autonomy, with the designer establishing parameters rather than directly determining the form that emerges. In the context of living materials, such systems are inherently biological, unfolding through processes of growth, adaptation, and environmental response.

Within generative art practices, artists and designers therefore work with systems that generate form through internal processes rather than direct control. This challenges conventional models of authorship, as form arises through the interaction of multiple agents rather than a singular creative intention. As Todorovic (2021, p. 1323) argues, generative and bio-art practices frequently engage natural processes as active components in the production of form. Design, from this perspective, is not the direct creation of form, but the orchestration

of a generative system in which form arises through the interaction of human and non-human agents.

Together, these ideas create the theoretical ground for examining contemporary design practices that engage living systems as generative media. By analysing the practices of Diana Scherer and Carole Collet, it becomes possible to see how these conceptual shifts are realised in practice. Their work demonstrates how biological materials function not merely as resources, but as active participants in processes of making, thereby reconfiguring traditional understandings of authorship, agency, and materiality within design.

The practice of Diana Scherer provides a compelling example of how generative systems operate within contemporary bio-design. Her project *Interwoven* explores the capacity of plant root systems to function as active material agents in the production of form. Using digitally fabricated templates, Scherer establishes spatial constraints that guide root growth into structured, textile-like patterns (Zhou et al., 2021, p. 112). Rather than determining the form that emerges, however, these templates act as enabling conditions within which biological processes unfold. Form is therefore not imposed but arises through the interaction between material behaviour and environmental constraint, positioning growth itself as a generative force within the design process.



Figure 1 – *Interwoven* by Diana Scherer (2015)

Central to Scherer's practice is an understanding of roots as responsive and adaptive systems. Plant roots actively respond to environmental stimuli such as gravity, moisture, and physical obstruction, continuously adjusting their direction and form in relation to their surroundings (Zhou et al., 2021, p. 113). Their development is shaped through internal biological processes, including sensory responses and hormonal regulation, enabling them to navigate complex environments. As Scherer observes in *Interwoven*, the body of a plant is "the result of an intimate dialogue with its surroundings and the elements" (Scherer, 2023, p. 63). The forms produced therefore arise through ongoing negotiation between biological behaviour and environmental conditions rather than through direct authorial control. Material does not simply receive form but actively participates in its generation.

This adaptive behaviour becomes particularly evident in the way roots respond to constraints within the growing environment. When encountering barriers, roots twist, coil, and redirect their growth, producing intricate and often unpredictable structures (Zhou et al., 2021, p. 113). Variables such as water availability and growing medium further shape these outcomes, influencing both the rate and direction of development. Scherer deliberately manipulates these conditions—such as maintaining relatively dry soil to encourage root elongation—in order to influence the process without fully determining its course. The resulting forms emerge through a dynamic balance between human intention and material autonomy.

Through this process, root systems operate as generative material systems, producing forms that cannot be fully predetermined. While the designer establishes the parameters of growth, the resulting structure arises through the autonomous behaviour of the biological material. As Scherer explains, the roots "weave themselves" through their search for nutrients and water, producing outcomes that exceed direct human control (Scherer, 2019, p. 142). As noted by Caston (2020, p. 52), these subtle interventions reveal and redirect otherwise hidden root dynamics, bringing biological processes into the visible domain. The work therefore functions as a form of co-production in which both human and non-human agencies actively contribute to the formation of the artefact.

From a theoretical perspective, Scherer's practice can be understood through Ingold's concept of morphogenesis, in which form arises through processes of growth and interaction

rather than the execution of a predetermined plan (Ingold, 2013, p. 25). The work also reflects Bennett's notion of vibrant matter, as the roots demonstrate a form of material agency, actively shaping what emerges through their capacity to respond and adapt (Bennett, 2010, p. vii). Rather than functioning as passive substrates, the roots participate in the production of form as active contributors, challenging the assumption that creative agency resides solely within the human designer.

This redistribution of agency further aligns with Latour's concept of the actant, in which both human and non-human entities participate within networks of interaction (Latour, 2005, p. 65). In Scherer's work, the designer, the biological material, and the environmental conditions each operate as actants, collectively shaping the resulting form. Haraway's notion of sympoiesis, or "making-with," is similarly evident, as the work emerges through a collaborative process between human intention and biological systems rather than through singular authorship (Haraway, 2016, p. 58). However, while Scherer relinquishes a degree of control, the process remains contingent upon human-designed conditions, suggesting that material agency operates within, rather than entirely beyond, frameworks of human facilitation.

In this sense, Scherer's practice exemplifies design as the cultivation of a generative system. The designer does not directly produce form but establishes the conditions through which material processes unfold. Form emerges through the interaction of human and non-human agents, and authorship becomes distributed across these relationships. This challenges traditional models of design grounded in control and intentionality, instead proposing a more relational, process-oriented understanding of making in which materials are recognised as active participants in the production of form.

The practice of Carole Collet extends the idea of generative systems into a more speculative and research-led territory. Rather than working directly with grown material in controlled environments, Collet develops design propositions that imagine how biological systems might operate as future modes of production. Her projects explore plant-based manufacturing systems in which living organisms generate materials, products, and infrastructures. In projects such as *BioLace*, plants become sites of production, proposing a shift away from

industrial manufacture towards systems in which materials are cultivated through biological processes (Collet, 2012, p. 8). This speculative approach is clearly embodied in *Strawberry Noir*, a project in which Collet imagines a genetically designed strawberry plant, capable of producing both edible fruit and lace-like root structures. Here, the plant is conceived not simply as a natural organism, but as a living site of manufacture, collapsing distinctions between organism, material and product (Myers, 2015, p. 63). Design is no longer centred on the direct making of form, but on creating conditions within which living systems can generate it.



Figure 2 – *Biolace: Strawberry Noir* by Carole Collet (2012)

Central to Collet's practice is the concept of design as a living system rather than a fixed object. Instead of producing finished artefacts, she constructs speculative models that ask how biological processes such as growth, adaptation, and self-organisation might shape future material practices. Form is not predetermined but unfolds through the interaction between biological behaviour and environmental conditions. In this sense, design becomes a mode of

inquiry: an exploration of how living systems behave, respond, and produce within emergent ecological conditions.

Where Diana Scherer works through direct material collaboration with root growth, Collet operates at the scale of ecological systems and future infrastructures. Her practice expands the role of the designer from facilitator of a single biological process to cultivator of wider networks in which plants function as distributed sites of production. This shift opens design beyond the individual artefact and towards broader questions of how humans, materials, and environments might coexist with alternative systems of making.

Collet's work is closely aligned with developments in bio-design, where living organisms are no longer treated as passive resources, but as active participants in shaping form. As Karana et al. (2020, p. 37) argue, bio-design brings biology and design together to imagine new modes of production in which living systems act as material agents. Within these systems, the designer guides growth processes and establishes the conditions under which form may arise, without determining it entirely. Living materials respond dynamically to internal and environmental changes, meaning that outcomes remain open-ended and partially unpredictable (Karana et al., 2020, p. 39). Design is therefore repositioned as the cultivation of generative systems rather than the manufacture of fixed results.

A strong ecological thread runs through Collet's practice, challenging industrial models of extraction and control. Her projects imagine plants as living factories producing materials through ecological processes rather than resource-intensive manufacturing systems (Collet, 2021, p. 1331). By proposing systems in which materials are grown instead of manufactured, she aligns design with more ecologically attuned ways of making. Biological systems are understood not simply as raw matter, but as active agents within networks of production, reshaping conventional ideas of authorship and agency.

This position is reinforced in Collet's own writing on future bio-materiality, where she describes a shift from designing with inert matter to working with "animate living entities" such as mycelium, yeast, and bacteria (Collet, 2021, p. 1331). In this context, design becomes a process of bio-fabrication, where the designer intervenes not by imposing form directly, but

by shaping the circumstances within which biological systems develop. Collet further identifies different ways of engaging with nature — including “nature as model”, “nature as co-worker”, and “nature as a hackable system” (Collet, 2021, p. 1334) — revealing how biological agency increasingly enters the design process as collaborator rather than substrate.

From a theoretical perspective, Collet’s practice deepens many of the ideas explored earlier in this essay. Like Scherer, her work reflects Ingold’s understanding of morphogenesis, in which form arises through process rather than predetermined design, and Bennett’s notion of vibrant matter, where materials possess their own active capacities. Yet Collet extends these ideas into speculative design futures, using generative systems not only as a method of making, but as a way of reimagining how humans might live and produce alongside biological systems. In doing so, her practice expands generative design beyond material experimentation, into wider ecological and cultural contexts.

The practices explored in this essay reveal a profound shift in contemporary design, in which materials are no longer understood as passive resources but as active participants in processes of making. Across both Scherer’s materially grounded work and Collet’s speculative systems, design operates through the creation of conditions that allow biological processes to unfold. In these contexts, form is not predetermined but emerges through interaction, making generative systems an essential framework for understanding contemporary bio-design.

This shift has important implications for authorship. Traditional models of design place the human maker at the centre of creative agency, responsible for determining both form and outcome. Yet, when working with living systems, authorship becomes less singular and more distributed, unfolding across relationships between designer, material, and environment. As Sarantou et al. (2025, p. 1) suggest, engaging with non-human visibility reframes nature as a site of creative encounter, where meaning and form emerge through interactions with entities whose processes remain only partially accessible to human understanding. In this sense, authorship becomes something negotiated rather than possessed.

Working with living systems also unsettles familiar ideas of intentionality and control. As Jacobs et al. (2023, p. 52) argue, bio-art occupies a liminal space between art and science, where experimental approaches replace purely outcome-driven design. Within this space, living materials actively shape the development of the work, often leading to results that diverge from initial expectations. Form is therefore not imposed but negotiated, and unpredictability becomes integral rather than incidental. What emerges is a mode of making that values openness, contingency, and responsiveness over precision and repeatability.

The agency of biological materials is especially visible in the way living systems continue to develop beyond the point of direct human intervention. As Jacobs et al. (2023, p. 61) note, once the artist's direct involvement ends, biological materials may continue to grow and transform, extending the process of making beyond the temporal limits of human action. This introduces a different sense of time into design, where the work remains in a state of becoming rather than settling into a fixed final form. Making, in this sense, is no longer a completed act but an ongoing negotiation with living processes.

Such material behaviour resonates strongly with broader developments in new materialist thought. As Li et al. (2025, p. 990) argue, agency can be understood as a "dynamism of forces" emerging through interactions between multiple actors, rather than residing in any one entity alone. Within this framework, both human and non-human participants contribute to the shaping of outcomes, reinforcing the idea that making is co-constructed. These exchanges are not always predictable or fully legible, but unfold through embodied, material encounters that shape both process and understanding (Li et al., 2025, p. 1006).

Interdisciplinary research further reinforces this move towards process-oriented making. In textile-based tissue engineering, for example, materials function as scaffolds that guide biological development, shaping how cells attach, align, and grow within structured environments (Congdon et al., 2020, p. 137). Here, materials do far more than support form: they actively influence biological processes, demonstrating how design can operate through enabling conditions rather than imposed outcomes. This convergence of craft and science highlights design as a mediator between systems, facilitating interactions that give rise to new material possibilities.

At the same time, these developments invite important ethical reflection. If materials are understood as active participants rather than passive matter, then the relationship between designer and material becomes one of collaboration rather than domination. As Lyndon (2024, p. 12) suggests, recognising the agency of nature encourages more reciprocal and responsible approaches to design, in which human intervention is situated within broader ecological systems. This calls for more careful negotiation between intention and material autonomy, challenging deeply rooted anthropocentric assumptions about making.

Taken together, these perspectives suggest that contemporary bio-design practices are not simply expanding the palette of materials available to designers but transforming the nature of design itself. By engaging living systems as generative agents, designers move away from models of control towards practices that are relational, process-driven, and open-ended. In this context, generative systems offer more than a method of production: they provide a way of understanding design as a shared process of becoming, shaped through the evolving interplay of human and non-human agencies.

Contemporary bio-design practices reveal that working with living systems fundamentally alters how design is understood. Through the practices of Diana Scherer and Carole Collet, this essay has shown that generative systems redistribute agency across human, biological, and environmental actors, challenging conventional models in which designers impose form upon passive matter. Instead, design emerges as a relational practice in which form unfolds through interaction, responsiveness, and negotiation.

By positioning living materials as active collaborators rather than inert resources, these practices reframe authorship as shared and contingent rather than singular and controlled. In doing so, they point towards a more ecologically attuned understanding of making, in which designers cultivate the conditions for emergence rather than dictate fixed outcomes. Contemporary design, therefore, becomes less an act of control than a practice of making-with — grounded in co-production, material vitality, and the evolving agency of living systems.

References:

Ainsworth, T. (2024) "Form vs. Matter", *The Stanford Encyclopaedia of Philosophy*.

Available at: <https://plato.stanford.edu/archives/fall2024/entries/form-matter/>

(Accessed: 16 Mar 2026).

Bennett, J. (2010) *Vibrant matter a political ecology of things*. Durham: Duke University Press.

Caston, L. (2020) "GRASSROOTS: Diana Scherer's exercises in root system domestication," *Selvedge (London)*, 1 January, p. 52.

Available at: <https://reader-exacteditions-com.uwtsd.idm.oclc.org/issues/87602/spread/55>

(Accessed: 5 April 2026)

Congdon, A., Di Silvio, L. and Collet, C. (2020) 'Tissue engineered textiles: craft's place in the laboratory', in Townsend, K., Solomon, R. and Briggs-Goode, A. (eds.) *Crafting Anatomies: Archives, Dialogues, Fabrications*. London: Bloomsbury Visual Arts.

Collet, C. (2021) 'Designing our future bio-materiality', *AI & Society*, 36, pp. 1331–1342.

Collet, C. (2012) 'BioLace: an exploration of the potential of synthetic biology and living technology for future textiles', *Studies in Material Thinking*, 7(2), pp. 1–12.

Available at:

https://materialthinking.aut.ac.nz/sites/default/files/papers/SMT_V7_P2_Collet.pdf

(Accessed: 10 April 2026).

Fratzl, P., Friedman, M., Krauthausen, K. and Schäffner, W. (2021) *Active Materials*. Berlin: De Gruyter.

Available at: [https://research-ebsco-](https://research-ebsco-com.uwtsd.idm.oclc.org/linkprocessor/plink?id=25376a98-1405-3d8f-8165-cae349ac5058)

[com.uwtsd.idm.oclc.org/linkprocessor/plink?id=25376a98-1405-3d8f-8165-cae349ac5058](https://research-ebsco-com.uwtsd.idm.oclc.org/linkprocessor/plink?id=25376a98-1405-3d8f-8165-cae349ac5058)

(Accessed: 9 February 2026).

Clair Tompkins (2006297)

Haraway, D. (2016) *Staying with the trouble making kin in the Chthulucene*. Durham: Duke University Press.

Ingold, T. (2013) *Making: anthropology, archaeology, art and architecture*. Abingdon: Routledge.

Ingold, T. (2010) 'The textility of making', *Cambridge Journal of Economics*, 34, pp. 91-102.

Available at: <http://sed.ucsd.edu/files/2014/05/Ingold-2009-Textility-of-making.pdf>

(Accessed: 10 April 2026).

Jacobs, A., Devleminck, S. and Hannes, K. (2023) 'Co-creatively producing knowledge with other-than-human organisms in a (bio)technology-controlled artistic environment', *Social Inclusion*, 11(3), pp. 51-64.

Karana, E., Barati, B. and Giaccardi, E. (2020) 'Living Artefacts: Conceptualizing Livingness as a Material Quality in Everyday Artefacts', *International Journal of Design*, 14(3), pp. 37-53.

Latour, B. (2005) *Reassembling the social: an introduction to actor-network-theory*. New York: Oxford University Press.

Available at: https://pedropeixotoferreira.wordpress.com/wp-content/uploads/2011/01/latour_2005_reassembling-the-social-an-introduction-to-actor-network-theory_book.pdf

(Accessed: 30 Mar 26).

Li, M., Holstein, J. and Wedekind, V. (2025) 'Vital materiality and its constitution of knowing in craft practice', *Management Learning*, 56(5), pp. 987-1008.

Lyndon, P. M. (2024) 'Asking questions of nature: art as a catalyst for ecological consciousness', *Nature-Based Solutions*, 6, pp. 1-13.

Myers, W. (2015) *Bio art: altered realities*. London: Thames & Hudson.

Sarantou, M., Karpati, A., Miettinen, S. and Pietarinen, H. (2025) 'Editorial: communicating with non-humans: a new visual language', *Frontiers in Communication*, 10., pp. 1-4.

Scherer, D. (2023) *Interwoven – exercises in root domestication*. Prinsenbeek: Jap Sam Books.

Scherer, D. (2019) 'Interview with Diana Scherer: Weaving roots at the interface between art, fashion and science', *Plants, People, Planet*, 1, pp. 142–145.
doi:10.1002/ppp3.48

Temple, M. (2017) 'Generative art for all', *Journal of Innovation and Entrepreneurship*, 6(12), pp. 1-14.

Todorovic, V. (2021) 'Reimagining life (forms) with generative and bio art', *AI & Society*, 36, pp. 1323-1329.

Zhou, J., Barati, B., Wu, J., Scherer, D. and Karana, E. (2021) 'Digital bio-fabrication to realize the potentials of plant roots for product design', *Bio-design and Manufacturing*, 4, pp. 111-122.

Figures:

Figure 1 - Scherer, D. (2015) *Interwoven* [Wheatgrass roots and soil installation]
Available at: <https://dianascherer.nl>
(Accessed: 10 April 2026)

Figure 2 - Collet, C. (2012) *Biolace: Strawberry Noir*
[Strawberry plant and biodegradable paper yarn]
Available at: <http://thisisalive.com/biolace/>
(Accessed: 10 April 2026)