

Biomimicry Budapest Perspective





Biomimicry Budapest Perspective

*Collection of essays
and multimedial artworks*



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—Karina Vissonova, Founder

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Biomimicry Budapest Perspective.

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Preface

The Biomimicry Budapest Perspective came about in October 2018, when the authors and contributors of this publication gathered in Budapest for a three-day multidisciplinary workshop “Biomimicry & Connectivity: an exploration of connections in the practice of biomimicry”. The workshop was attended by artists, designers and architects from Germany, Belgium, Brazil, Latvia, Spain, Singapore and Hungary. The event was organised by the Institute of Advanced Design Studies in collaboration with Art Quarter Budapest, and held as a part of the Design Week Budapest 2018 program. Our aim was to collaboratively explore various interpretations of biomimicry in the different fields, seek inspiration from different perspectives offered by these fields; as well as to challenge a rather common misinterpretation that the practice of biomimicry is always related to (if not a branch of) the practice of sustainability.

The event was built around lectures and interactive discussions, where core participants and visitors were invited to engage in conversations. Because of the multidisciplinary nature and the interactive framework of this event, the knowledge exchange was bilateral between the speakers and participants, which led to the most perfect conditions for the generation of new knowledge. The Biomimicry Budapest Perspective developed through discussions between individuals who listened to each other, gave the space to think and to express their ideas with one another.

The Biomimicry Budapest Perspective is a collection of works by the authors who were behind the development of the perspective and who either gave lectures, or participated in the discussions during one or all of the three days. In addition to the authors of this publication, the perspective also came about thanks to its contributors, whose lectures and invaluable thoughts shared during the event are foundational in the very idea of the perspective.

With the multiple disciplines represented during the event, the works contributed here are also of different media. The publication consists of illustrations, collages of the group drawings, contributed art works, short poems abstracting ideas discussed during the group sessions, images from the event, screen stills of our collaborative mind map and of a video capturing the essence of the collaboration, and the essays written uniquely for this publication.

We invited an award winning author, creative writer, to see if inputs from creative writing can assist us with thought development processes. When one begins to sketch for an artwork, one has an idea for how the work will come out, but it is the process of creation that truly reveals the outcome. We somehow imagine that writing is a much more rational process through which we record ready ideas, something that we have clearly thought out beforehand. That is not the case, we learnt, for most of the writers, professional or beginners. Writing, just like drawing or painting, most often is not a pure record of crystallised ideas, but a process that reveals the ideas word by word and sentence by sentence. Familiarising oneself with this process is also reflected in some of the essays within this publication.

In addition to depicting the perspective, the written work here carries the purpose of showing the playfulness of the involved thought processes. The authors not only

offer their views and individual contributions to the development of the perspective, but some also take somewhat of a diary format, accounting events and experiences from the days together and even impacts that came later, following the days of the workshop. The written works here are experimental and reflective and hence, display concrete feelings and personal journeys of the authors. In addition, this form of reflective writing¹ has led some of the authors to consider further viewpoints, to recognise some new angles to well reversed stories and to develop new thoughts while writing. Therefore, it is safe to say that the collection of the works here is not an end in itself, but rather a means to drive inspiration, to open minds and to keep thinking about the here reflected issues far beyond the pages of this publication.

Together, the body of works in this publication represent our collective ideas for the field of biomimicry—the Biomimicry Budapest Perspective. As such, the publication does not claim any academic or scientific position. It is a record of explorations, thought processes of the group, and a combination of ideas which may come to grow into a bigger body of works later on and perhaps by other authors. Nevertheless, the work here is a committed contribution to the field of biomimicry, and if it were to be placed in any field of studies, for the sake of good order, it may sit well with sustainability, design philosophy and arts publications.

The authors here do not advocate for an improvement of the field of biomimicry, as we prefer to think that “no-one holds the truth” and there is no right or wrong way of thinking and practicing biomimicry, as long as it benefits mankind as well as nature. What motivated us to record our thoughts and to create this publication is a change we see in our society—a revival of emotions and revaluations of values that man-

¹ Francis, P. 2009. “Inspiring Writing in Art and Design: Taking a Line for a Write.” Intellect Ltd. 2nd Edition

kind hold. Our discussions during the workshop revolved and kept landing on the observation that our society, for centuries driven by rational thought, factuality and logic, is once again allowing the conception of a human as an emotional being. It is easy to recognise that with the trends of growing presence of artificial intelligence and technologies for interventions in human body functions, or enhancements, man demands to recognise the quality of what is human. And perhaps not only foundational qualities of what human is, but also evolutionary qualities—what human is today. Emotions are one of our most innate qualities, and hence an emphasis on humans as emotional creatures can be seen as an attempt to seek a differentiation of mankind in the face of advancing artificial intelligence, as well as in parallel, seeking man’s place in this world. Yet, is man seeking knowledge about self through artificially mimicking mankind thus leading to a new evolutionary path, or is it simply mistaken in its creative aspirations? Perhaps it is just the next stage of storytelling, the story of ourselves—mankind.

With the Biomimicry Budapest Perspective, we venture into exploring the questions of how mankind learns from nature, what motivates us, and whether learning from nature is how a man seeks self-reflection in the surrounding environment.

With many thanks to the authors and the contributors for an immensely valuable work generously created for this publication.

Karina Vissonova, PhD, Design Philosopher, Founding Director of the Institute of Advanced Design Studies, Budapest.

[illegible]

Collage of artworks,
created by Hugo Araujo
during the workshop

Introduction to the Biomimicry Budapest Perspective The Next Stage of Storytelling

*By Karina Vissonova, PhD,
Design Philosopher (Hungary, Denmark)*

Biomimicry—an inspiration from nature, learning from its forms and functions perfected over decades and millennia of evolution. We have been and are likely forever learning the abundant information produced by nature. As we come to learn the information, we lock it in our artefacts: a mere moment in evolution that is captured and adapted as a given feature in artefacts. While nature keeps evolving, adding some properties and taking some away, continuously creating and destructing, the artefacts hold the information, their evolution is limited by technical features specified by their maker.

For as far back as we find the story told of mankind learning from nature, the dominant association we hold towards the practice of biomimicry is essentially a technocentric one, i.e. the value of biomimicry is the value that can be translated into technical features of artefacts. The Biomimicry Budapest Perspective is a re-evaluation of the dominating view in the practice of biomimicry. The authors of the perspective find that the value of biomimicry goes far beyond technocentrism, the emulation of properties taken from nature and translated into artefacts. In the Budapest Perspective, the focus is placed on the value of ecology—man as an organism in his environment. And so, the practice of biomimicry is perceived as a practice of mankind seeking self, by learning to be in the surrounding environment. It is our suggestion that with the help of biomimicry, we ought to focus less on learning and selecting the features in nature for their adaptation in artefacts, and more on learning nature's patterns and how we, mankind, fit into these patterns.

The search for the value of biomimicry is far less obvious if we take the focus away from the design of artefacts, manufacturing techniques and systems, such as industrial symbiosis. We are so persistently focused on making artefacts, on improving the conditions of living with their help, and on making larger and more robust structures that support this way of existence for mankind, that we appear to be no longer able to navigate in any other way. To us, nature is a distant entity, something that, today we have come to understand, needs to be utilised with care or left alone entirely. The more radical anthropocentrically oriented sustainable development and eco-design movements suggest that we can create and sustain a way of life on our planet with a light footprint on nature and its processes¹. In the suggested scenario, we would bring less harm

to nature and limit our “technical interventions”, as I have termed our activities that have the capacity to alter nature’s processes², while living in a “social cornucopia”³ and enabling other species to exist in our proximity. ‘Doing good by doing less harm’ is commonly recited in relation to sustainability; while ‘doing less harm is not good enough’, I believe, was originally said by Michael Braungart, when introducing the Cradle to Cradle design principles⁴.

Are indigenous people doing good by doing less harm? These words seem to acquire an entirely different meaning in another context, another way of life. Their way of life is not to detach from nature, to live in their own bubble, if it were, but to persistently be part of nature. Their learning from nature is aimed at being able to maintain the balance with nature—being in a symbiosis. Perhaps, that is why, in an over-simplified, serviced view, we perceive the indigenous people as “nature” and the “civilised” kind as not.

It appears to be increasingly significant today, that there is more than one convention to lead a way of life: one outside the colossal social structures that support the production of artefacts—the indigenous people and people who live “off-grid” by choice, and the other, within these structures—us, the civilised. It is important to acknowledge that there is no one group which may state what is the right or wrong way of life, or one being superior to another. Isaiah Berlin⁵ suggests that there are no universal truths, but perhaps there are personal preferences that define the uniform systematic view that shapes society. We have shaped our way of life and our ecology is heavy with artefacts we have produced along the way. And now we are seeking new, perhaps smarter ways to shape our way of life, ones that may sustain mankind and the other species on our planet.

Biomimicry, however, may not be the key to achieving this new way of life if we continue to see its value only for making better artefacts and systems. Like the indigenous people, we may learn how to create and maintain a symbiotic relationship with nature, (as symbiosis is one of the most common principles in nature,) while maintaining a healthy and moderate relationship with our artefacts. Biomimicry, we believe, is a much larger a field and its primary value is that of improving the ecology of mankind.

What lessons we may learn from nature and adopt for benefiting our species without a sparkling new range of products, is something, the authors here believe, we would find not too far into our journey. We have started such new journeys numerous times, after the world wars; when we sent spacecrafts into space and when we started hurling protons at the near speed of light in the Large Hadron Collider. But it is a new journey we must begin now, together with the story that comes with it.

The next stage of story telling is about mankind—not for ensuring our survival, for satisfying our unceasing curiosity (as tempting as it may be), and not for achieving our forever greater creative aspirations. Mankind reaching not outwards to seek answers through tools and objects, but inwards—what does it mean to be a human, what value are our emotions and what is our role on this planet. Then we may ask ourselves what value our ecology holds, as we continue to struggle to form symbiotic relationships with nature. While still learning, for now we are left with the relationships we have with our artefacts and with the waste we have created along our path.

¹ See the different approaches to sustainability discussed in Hopwood, B., Mellor, M., O’Brien, G. (2005). Sustainable Development: Mapping Different Approaches. *Sustainable Development*, 13, 38-52. doi:10.1002/sd.244.

² Vissonova, K. (2018). “Effects of Design and Sustainable Design of Technical Artefacts” in *Advancements in Philosophy of Design*, eds. Vermaas and Vial, Springer

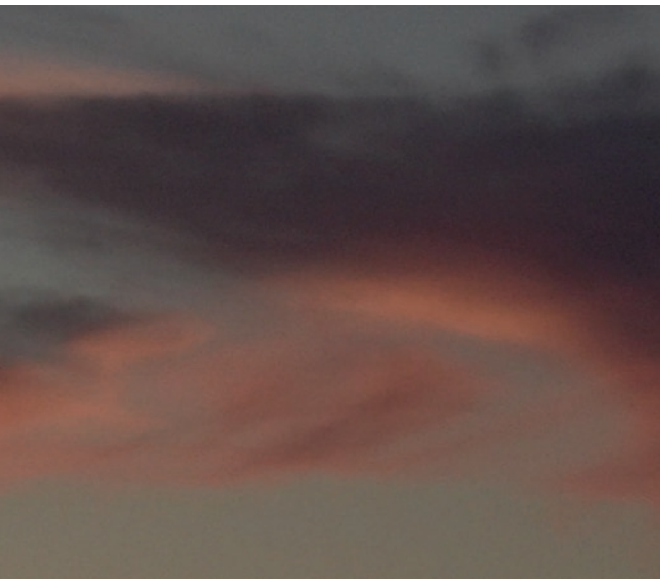
³ Hopwood, B., Mellor, M., O’Brien, G. (2005). Sustainable Development: Mapping Different Approaches. *Sustainable Development*, 13, 38-52. doi:10.1002/sd.244.

⁴ McDonough, W. and Braungart, M. (2002). *Cradle to Cradle: re-making the way we make things*. New York: North Point Press.

⁵ Berlin, I. 2000. “The Pursuit of the Ideal” in *The Proper Study of Mankind*. Farrar, Straus and Giroux, New York.]

Film Stills

from the short film "Biomimicry:
Budapest Perspective //
Biomimicry & Connetivity Work-
shop," by Ana Amorós López,
Tenger Films





<https://www.designstudies.hu>

Biomimicry, what?

***And how my inner child
learnt something new
that day.***

*"With our technocratic approach,
we are aiming to achieve a
possible improvement of the en-
vironment around us, but in
doing so, we have made struc-
tures where we are positioned
to keep creating much much
more to stay afloat."*

*By Miguel Miguel & Miguel,
Artist (Brazil)*

In October this year, I was in the middle of a three months art residence in Budapest, doing my research on Bio Politics and Power relations between humans and institutions. On an average random morning, I was caught by an invitation to join introduction talks at a Biomimicry workshop.

"Biomimicry what?" I asked myself.

I did a little research before attending and got myself completely hooked on the subject. The talk was exciting, with lots of different perspectives on how amazingly this field of study could be applied in our society. But after the talk and introduction, during a group conversation, I was stormed by a bunch of thoughts that connected with my own art research. "Could this Biomimicry way of thinking be used in new and stronger forms of Bio Politics and Social control? Perhaps this is a tool that Trans-humanists and Post-humanists would use to overcome our physical limitations and, in parallel, to learn how to connect with nature in a way that everything is connected and where the humans won't disappear?" And lots of other abstract and perhaps controversial ideas.

Of course, following my natural way of behaviour, I spilled all my thoughts out. There were some quick counter-reactions at first. But, surrounded by intellectual and emotionally intelligent people, shortly everyone found my ideas and views engaging. To my bigger surprise, the idea became a serious subject of the discussions for the following days of the workshop.

It is an interesting question, how I came to relate the conversation at the time with my subject of study. But more importantly, my perception of my own subject of study had changed after that conversation; and even until the

end of my residence, I was surprised by many other similarly impactful encounters and experiences that lead me to explore further this path.

Through my research, I have formed a perception that society has been driving itself to a whatever end by means of a scientific and technocratic narrative. We see an industrial or technological development approach as a solution for all our social issues, starting from health to social inequality. Which in some aspect might be true, if we depart from a view that everything is technology, on some level. Every new tool humans have been imagining and developing is by itself a technology: use of fire, speech, a selfie-stick and the internet. All are technologies being used in many different ways. "Words can heal and words can poison" —comes to mind when thinking in these terms.

With our technocratic approach, we are aiming to achieve a possible improvement of the environment around us, but in doing so, we have made structures where we are positioned to keep creating much much more to stay afloat. Meanwhile, another way to navigate our society in this world would be to do rather the opposite: reduce. To step back and to begin to truly understand our environment and the connections within, in order for us to develop and perhaps, even to survive. Personally, as for an artist, the excessiveness of things we are adding to this planet is disturbing my mind and my entire physical being.

Biomimicry at first struck me with the following impression: if we use nature's behaviour to create better tools for developing ourselves as a society, we could obtain a better understanding of how to live in harmony with nature. In my view, biomimicry is a helpful tool in a development of trans-humanism and post-humanism narratives. What I find intriguing is that the more classical perspective of biomimicry and my own, we could say less traditional view,

both have a focus on achieving better conditions for humans to be in balance with nature.

To the day, we still have tribes like the Guaranis, which populate a good part of Brazil as well as Argentina, Bolivia and Paraguay, with an estimated population of almost two hundred thousand indigenous people. Living in balance with nature. The same physical bodies like our own, experiencing the same planet, yet with a very different strategy. Meanwhile we, a so-called modern society, are seemingly creating a greater and greater distance between us and the nature, away from understanding what is right in front of us.

I'm not suggesting that we, seven plus billion humans should go back to living like tribal people. But as I interpreted John Zerzan's work "Future Primitive" (1994)¹, we could observe more closely the primitive, tribal ways of life and learn how these societies adapt and work in harmony with the environment. In my perception, it seems that learning from tribes is very much similar to the way of learning in biomimicry. However, instead of mimicking natural systems to build some new ones, we could perceive our environment and the other ways of life as a model for changing our individual and collective perception of needs. And perhaps, instead of adding more "solutions" to this planet, we as a collective group could step back and reduce our impact.

¹ Zerzan, J. 1994. "Future Primitive and Other Essays." *Autonomedia*



Untitled 01

Installation from the show
 "Playing now –
 For your safety only – 2018"
 Ground, computer mechanical
 pieces and CCTV cameras.

Untitled 02

Installation from the show
 "Playing now –
 For your safety only – 2018"
 Fake grass, computer mechanical
 pieces and CCTV cameras.

Untitled 03

Installation from the show
 "Playing now –
 For your safety only – 2018"
 Fake grass, computer mechanical
 pieces and CCTV cameras.



On Biomimicry, Ecology, Man and Design

"The field of biomimicry does not offer knowledge applicable only to the design of artefacts and manufacturing systems. Biomimicry may also serve as a way of enhancing other capacities of man, even (and eventually) advancing beyond the artificial intelligence machines."

*By Karina Vissonova PhD,
Design Philosopher (Hungary, Denmark)*

In a traditional understanding of biomimicry, man learns from nature to enable improved living conditions for mankind. We all may easily imagine that first built dwellings were inspired by birds building their nests from clay and straw. Today, we have numerous technologies inspired by nature. Like the designs for fresh water collection from condensation inspired by the all around known fogstand beetle of the Namibian desert, which collects condensation caused by a morning fog from its back to sustain its necessary water intake; and the kingfisher bird, whose head and beak formation allows efficient braking of resistance at speeds, adapted in Japanese bullet train designs.

At the very foundation of thinking about man and artefacts, a human body requires adequate tools to sustain itself. It can be said that we make artefacts which enhance human capabilities: to chop down a tree, bring water into our dwellings and to obtain and preserve food. But that is not all, we also make artefacts that help us to communicate instantly with fellow man across continents and to transmit information from outer space. We clearly thus also require tools which help us to attain all of our creative aspirations beyond our immediate needs. Lessons are being learnt in order to make artefacts which not only sustain, but also advance mankind.

Regardless of the drive that motivates us to make the different artefacts, our essential needs and creative aspirations require more than our bodily capacities are—and that is the value we seek to obtain through the field of biomimicry: a more efficient, effective, self-sufficient and sustainable approach to making artefacts that enrich the lives of humans. As long as we improve the living conditions

of mankind with artefacts, and we do so with the effectiveness nearing the principles governing in nature, we are on the right path to forever improving the lives for all mankind, also of the future generations. This is the belief we strongly uphold in the field of biomimicry and closely also in the fields of sustainability and eco-design.

Such an interpretation of biomimicry, I find, somewhat limits our outlook on its value for mankind. In this view, we are guided to conceive humans as not being innate of the natural world. How can we be part of nature, if our bodies are not equipped to survive the same way as other mammals do? The existence of man has always contained an element of battling with nature and, it seems, it has always been a permanent search to safeguard self-sustainment through improved conditions with the help of artefacts. Today's advanced mankind, or what we call civilised society, more than ever hold a belief that there are some necessary qualities that make man adequate for survival and that these qualities are ultimately achievable, if only imagined, through artefact design.

Thus far we have been shaping our world through the eyes of a creator. Nature is something that ought to be worked with and altered in order to accommodate mankind, our needs for survival as well as our creative aspirations. We undoubtedly are the species displaying the highest ambitions for altering our environments, terraforming our own planet. When it comes to human ecology, what supplements and sustains the lives of mankind in the environment, there can be little doubt that artefacts are its fundamental element: our lives have certainly improved with the existence of medical equipment, advanced building techniques, transportation and plumbing. We are not challenged by any other species in the reach of our capabilities to change the environment far beyond our immediate

surroundings and needs. Allow me to be a little humorous, but butterflies or dolphins, or even our closest evolutionary relatives, the apes, do not send things into space to transmit information for safeguarding against cataclysmic events and, surely also not for the sake of bare curiosity. I often reflect on the creative drive of man this way: imagine if a human is stranded on an uninhabited island with ultimately perfect thermal conditions and with easy access to water and food sources. In a short time, I would safely argue, we would find the human transforming the environment with bits and pieces, although no shelter or any tools may have been required for survival. Albeit, I am led to consider here, it is entirely possible that behind such a drive of man is not an innate creativity, but boredom. Chemical processes in our bodies require certain emotions and instincts to provoke actions. Hence, perhaps our autonomous nervous system (mostly known for causing the "fight or flight" reaction) requires the emotion of boredom, which in turn causes some behavioural action on our part to keep us healthy, fit and able to face the environment. Creativity might be just one of such actions.

Be it as it may, mankind are not the only species which show creative aspirations, far from it in fact. Animals are also known to decorate their environments and obtain tools, which I would interpret as a form of creativity similar to that of humans. As for example, a type of pufferfish makes ornate circles in sand and bowerbirds decorate their nests with colourful flower petals and other bits found, both to attract mates; bottlenose dolphins use a sea sponge to uncover prey on seabeds; crows are known to shape tools out of their own feathers and some monkeys pull hair from passing people, as it proves to be the best flossing equipment for their teeth. Nonetheless, given the scale of the activities of man, we are unmatched by any other species in

the volumes of artefacts we collectively produce and possess.

Unlike ecologies of other species, with relatively balanced symbiotic relationships that replenish nutrition and work through waste, the ecology of mankind extends to micro particles of plastics in our water, nitrogen dioxide levels, which the earth's atmosphere has no capacity to absorb, and bits and parts in our soil, drifted off from one or another wasted artefact. I think it is safe to say that we are the predominant, if not the only species whose environment contains so much unprocessed waste and for whom energy is to be consumed and not exchanged. In other words, our ecology, it seems, is unique in a way that it lacks the symbiotic relationships which support an exchange of nutrition, characteristic, I believe, to a major part of ecologies of other species. Yet, we are steadfast locked on to the idea that the creation of better conditions can exclusively be done with the help of more and more effectively designed and efficiently produced artefacts of all shapes and sizes. We have operated and continue to operate under an assumption that where the symbiotic relationships which may accommodate the needs of man do not exist, we hold ourselves entitled to forming conditions which support us as the dominant species. Perhaps it is now we are waking to the notion that in order for us to sustain the health of our own ecology, we, like other species, require so many more relationships that are symbiotic. And perhaps this is to a large extent and above all what we seek out and mimic from nature.

Farming, I find, specifically with permaculture methods is one of the most illustrative examples of a symbiotic relationship which includes man. Relationships that sustain several species of let us say insects, mycelia and edible plants already exist abundantly in nature, these do not need to be created. With regard to traditional agricultural meth-

ods, we tend to sever these relationships in order to establish new ones, ones that mankind can create to their liking (but, sadly to the day, not control without a range of damaging consequences). The soil is ploughed disturbing the network of mycelia that transmits information as well as assists in the transportation of nutrition between plants. Micro-organisms, which positively affect the health of soil and hence the healthy immunity of plants, are also disturbed. The nutrition flows and the immune systems of plants are disrupted, eventually requiring a regular input of artificial fertilisers so the plants can survive. Additionally, while the plant's own immune system can fight off diseases and infestations when healthy, various and most often artificial agents are now applied so populations of insects, bacteria and fungi do not disease the plants.

Permaculture methods are different in the way that the soil is least interfered with, leaving the network of mycelia and micro-organisms to do their work - to look after the plants and their healthy immune systems. Species of insects are invited in the permaculture garden for pollination, as well as for keeping unfriendly pests and bacteria under control. Overall, biodiversity is enhanced in the garden and the surrounding environment. Moreover, certain families of plants are planted so that diseases do not travel between plants and generations of their families. Thus, by joining already existing symbiotic relationships, connecting the health of the soil with the health of plants and insect populations, man can have reliable food sources that mostly, if ever, do not demand any artificial additives. Farming can be done by joining the known symbiotic relationships in nature, and even by creating new ones, just as long as these serve not only mankind, but also other species.

Symbiosis is also created in industrial systems. Manufacturers establish cooperation for resource management,

where the byproduct or waste of one manufacturer is determined as a value by another manufacturer. Industrial symbiosis mimics the relationships in nature. The existence of one type of organism creates a byproduct and waste which becomes a source to another type of organism on which it can feed. This way both organisms may exist, as one without the other would have too much waste and too few food sources. We are attempting to create more and more of these kinds of symbiotic relations industrially with the help of the Circular Economy¹ principles. Nonetheless, while the industrial symbiosis significantly improves the conditions of mankind by improving the ways by which we make artefacts, (notably, in some parts of the world more than others), the method is, by a large part, anthropocentric. Industrial symbiosis is primarily made to circulate “nutrition” and “energy” in between the needs of mankind, not the needs of other species. The presumption of course is, if we keep our resources circular, we leave more of nature to its own, allowing it to replenish the consumed virgin resources and return to the resilience it once had the capacity for.

While accepting that the primary value we may produce is for mankind, as nature can take care of its own accord, and that the design of artefacts serves man as a body with certain physical functions and psychological needs, our perception of a human is that our minds and emotional qualities as well can be optimally helped with artefacts. To this end we have also found a way to emulate nature: mimicking ourselves with the help of robots and machines equipped with artificial intelligence. Sophia, the artificial intelligence equipped robot is the leading example, being the celebrity of robots and artificial intelligence machines. The mimicking of human facial expressions, communication patterns and social behaviour of Sophia is, to state the obvious, aimed

at the purpose of making a close replica of a human. The extent to which we mimic nature thus reaches not only enhancing the capabilities of our bodies with the help of artefacts, but also our minds.

We are learning to delegate the functions of our mind to machines and with this we wonder how far we may go. Besides delegating our problem solving quality, we have also conveyed our creativity to the machines equipped with artificial intelligence. In 2018, for the first time in art history, an art piece made by an artificial intelligence was auctioned at Christie’s Auction House for just under half a million US dollars. The work in question called “Portrait of Edmond Belamy” was produced by the machine based on a type of algorithm which, in principle, absorbs a particular type of information, in this case images of portraits painted between the 14th and 20th centuries. As a result, the algorithm generated an interpretation of the certain style of painting, which became the portrait. There are several such artificial intelligence machines producing art, but the “Portrait of Edmond Belamy” is the first to enter the market dominated by expressions of human creativity at such a value.

Earlier I noted the pufferfish and the bowerbird as examples of other species displaying acts of creativity. It is curious to think if Sophia, our pop-robot, for instance, would be made to perform an occupation of a visual artist, could we compare the creativity of Sophia’s produced art to that of a human? The answer, as complex as it may appear, is more likely to be “no, we cannot”. It would be more accurate to say that the robot’s work would not be valuable in the capacity of the creativity of artificial intelligence, but the creativity of a human who makes a machine which can generate art. In addition, I would argue that perhaps the way to evaluate the art made by Sophia would be by its

quality achieved due to the vast volumes of information available for it to process and hence to produce the art. Whereas, the way to evaluate an artwork made by man is perhaps to recognise man as opportunistic and erroneous. Man produces art allowing the properties of the materials as well as errors to inform the hand. Being erroneous and yet surviving might be a truly human quality, that which defines mankind. It might be what sets us apart from other mammals, other species in general, as well as from robots, as no other species may enjoy such a prerogative and yet survive.

Robots and artificial intelligence machines may produce artwork and conduct some problem solving more efficiently than humans, but these are tasks merely performed in accordance with the purpose of the machine and the purpose is only given by man. To this day, a chess playing artificial intelligence machine is unlikely to one day produce an art work and, vice versa, an art producing machine will not learn to play chess without an input for the machine to do so. I am not in a position to comment on the inductive or deductive powers of artificial intelligence machines, but a free will of these machines still belongs in science fiction.

According to Warren Ellis, an award-winning novelist, we are mimicking ourselves in certain tasks, but that does not add human quality to the artificial intelligence or robots. What we cannot emulate is consciousness, as we simply do not know how it works. As he explains: “machine learning (as he describes artificial intelligence machines) is largely about emulating the things that we think the consciousness does, without us being able to understand the mechanics of consciousness itself.”² We mimic mankind, to continue with the explanation offered by Ellis, in the way that we think where we are today and what we think it feels

and looks like. And so, it is not a robot that makes any creative statement through art or otherwise displays a choice relatable to free will, as it would require a far more comprehensive ability to understand our complex world than we are able to model into any artificial intelligence machine. In any case, what man seeks with artificial intelligence is a better understanding of the self, as how a child wanders about her place in this world. As cognitive theorist Margaret Boden has so succinctly said: the role of artificial intelligence is “to teach us more about our own minds”³.

In succeeding to make the various replications of mankind, in looks, ways of communication, or in types of thought patterns, we have created artefacts which enable us to seek a reflection of ourselves, to learn about ourselves to a deeper extent—about our minds. Yet in doing so, we are none the wiser in having come closer to comprehending our role in this world and consequently how may our human ecology be improved. Regardless, whether Sophia and the likes of it are a tool or a fruit of our creative aspirations, for this occasion the robot kinds do not require a justification. Here, I wish to emphasise the importance in recognising that the field of biomimicry does not offer knowledge applicable only to the design of artefacts and manufacturing systems. Biomimicry may also serve as a way of enhancing other capacities of man, even (and eventually) advancing beyond the artificial intelligence machines. Man seeking lessons from the surrounding environment, from outer space, from inside bodies of other species and from inside our own bodies, may come to other more all-inclusive approaches as to how to mimic the principles governing in nature and how we can best perform our role in the earth’s ecology. What these other approaches and therefore following solutions might be, I believe, is

¹ <https://www.ellenmacarthurfoundation.org/>

² Panel talk IAI.tv “Minds madness and magic” <https://iai.tv/video/minds-madness-and-magic>

³ Panel talk IAI.tv “Minds madness and magic” <https://iai.tv/video/minds-madness-and-magic>

what will define the next evolution of design.

To conclude this playful enquiry into the field of biomimicry, man and artefacts that form our human ecology, the most valuable lessons we may learn from nature are those that help us to understand ourselves and our place in this world. A child growing up has a greater appetite for knowledge than when matured. She also has higher demands for nutrition and consumes more than when she matures, just like any plant. Mankind, perhaps, has been child-like thus far, in the way we regard our right to satisfy all our needs, ambitions and aspirations. As we are maturing, it is my hope, we are learning that the best process of mimicking nature is not the one that results in more artefacts, sustainable, intelligent or otherwise, but one that evolves the human qualities of love, compassion and to some reasonable extent, our erroneousness.

Mycelium Material

**—growing textiles
and foams**

*By Cora Schmelzer,
Designer (Berlin, Germany)*

The developed materials have a vast range of properties similar to existing materials such as styrofoam, leather, parchment or jelly-like skin. Rather than creating ready-to-use objects, this project focuses on showing that the process of (clothing) production can be rethought and made sustainable, by using nature's advanced materials and creating product cycles that are similar to the natural process of growth and decay. The use of 'growing materials' could revolutionise the clothing industry, but it also questions the creation of the cloth: If it grows, we don't need weaving. If different parts can easily and quickly grow together, we don't need sewing anymore.

"I have a vision to grow material quickly on demand, without the use of anything but [mushroom] spores, water and agricultural waste."





- ¹ skin-like Kombucha-culture before drying (growth after 14 days: 100 x 60cm)
- ² close-up of pink oyster mushroom (fruiting body)
- ³ *Pleurotus Salmoneo* in petri dish
- ⁴ *Schizophyllum Commune* in petri dish
- ⁵ shirt made from dried and laser-cut Kombucha material
- ⁶ *Schizophyllum Commune* on bark
- ⁷ Oyster mushroom and agricultural waste form a rigid foam (growth after 4 days)

POETRY

Thoughts written during Biomimicry Art & Design Workshop

By Joanne Pang, Artist (Singapore)



Our soft bodies
Fluid fantasy
Longer as they grow
Shorter, shorter
—

Taboo
Boo boo
Put on your shoes
Time to shoo
A slab of courage
Is all we need
—

Loose threads
Create storms
If we have scissors
We can cut the sun
—

The bodies speak louder than words
Comma comma comma
There are gaps
In darkness we do not know
where are we going
light is just outside
warming
—

Colonise space
Visiting particles stay
Longer as they grow
shorter

Contextual Design

—immersive creation and conscious demolition

"No claim can be made to an existence of "ever optimal design", the ultimate solution. Rather, the resulting design acts as a base for a further iterative evolution. At a later time or another place, the design is re-evaluated and optimised, thus becoming the next interim step towards the development that follows, the chain continues with each design, and each design contributes to the larger iterative evolution."

*By Sabrina Stiegler,
Contextual Designer (Germany)*

At our biomimicry workshop during the Budapest Design Week 2018 one of the questions raised was: can biomimicry help us to solve our problems within creative processes?

The first thoughts on the application of the field of biomimicry, classically, are the generation of "technical" in the sense of "bionic" solutions. But then there are our thinking patterns during the creation process, which are very interesting in regards to biomimicry.

As a contextual designer specialised in product and packaging design, brand building and sustainability, in the design process I consider not only the material, construction, aesthetics and function of the creation, but all aspects of its entire life cycle—such as production, transportation, consumers and consumption, as well as the sourcing and the end of life scenario. I place an emphasis on considering the stakes involved in the disposal of the product, its reuse or recycling with all involved possibilities and limitations.

For me, one of the most important considerations in the design and development process of any product, service or further creations, is an appreciation of the interplay between the different aspects of its life cycle and its life span. There is no cookie-cutter approach, no method, no straight line from A to B to C that you can just always follow to find the answers. But there is a network of connections where on each node decisions need to be taken.

Similarly, we must take into consideration how the world is built, the process as a matrix, with many parallel options and paths to follow, events that are encountered and decisions that interact with each other. These are the moments when you are reminded of the "chicken and egg-problem". Which is the most important question to be answered first?

Which should be given the most priority, ethically or in regards to project, or even your personal success factors? Which weighs more, the individual or the society, or the environment in which we will have to live? And in which time frame should or can we consider all of these?

The different emphasis will shape outcome of the process and the resulting design. So, the solution might always look different, even if the starting point were the same perhaps, due to another time and physical location. Or perhaps, as one's point of view has changed, experience has grown; or one's individual circumstances or current affairs around have changed and influenced the decisions.

The conditions thus obtained for the resulting design would also come to show that the design can only relate to the time of it being made and the specifics of the circumstances. No claim can be made to an existence of "ever optimal design", the ultimate solution. Rather, the resulting design acts as a base for a further iterative evolution¹. At a later time or another place, the design is re-evaluated and optimised, thus becoming the next interim step towards the development that follows, the chain continues with each design, and each design contributes to the larger iterative evolution.

In contextual design, the human element is taken out of the centre of creative process. Nevertheless, it remains as an integral part of the contextual design, next to other key aspects: such as environmental issues and how will design interact with the world we have built, as well as how will it continuously adapt in longterm to the ever changing circumstances. Let us consider, within the framework of contextual design, an everyday item such as an avocado in a grocery store of any EU country. The fruits are transported to our stores because we are told of their superfood qualities and because we like them so much. We enjoy the

fruit regardless of the CO2 impact caused by the transportation, regardless of no assurances of fair work at the sourcing of the fruit. Thus, perhaps we should create value added jobs in the country by ripening the fruit at the location, removing the pip and eventually transporting a significantly reduced weight of sun-ripened fruit in guacamole. But then again, perhaps it pays to establish avocado farms in Europe, in greenhouses, possibly saving the CO2 for the global benefit, whilst on the other hand stripping the avocado businesses in the source countries, affecting their economies, and likely increasing the cost of having the EU grown avocado eventually. Would we be willing to pay that price? Would we afford it? Or shall we perhaps deny avocados in Europe at all? Each decision would have its justification, however, there is no one way of telling which is the "right" one.

We are not able to predict the entirety of impacts neither in their broadness nor in their long-term effects. Nevertheless, we can be more responsible in our approach to our activities, be more suitable to the overall picture of our ecology, and more approximating to an optimum. Does this increase the "centricity" of a human in the earth's ecology, I am not entirely sure. I am, however sure that some changes in our approach must be carried out.

With a traditional product design approach, we aim to develop a solution for a framed problem, alternatively we aim to optimise something tangible. In a contextual design approach, it is not enough to follow the direction of the immediate and obvious enquiries, such as product optimisation, or meeting human needs and hence placing humans in the centre of the enquiry. We must seek second and third levels of connections and impacts, investigate the values created and removed with the design in a larger picture of our human ecology. In addition, the overall picture should

be considered on a time perspective to be more long-term, not only the short-term we aim for most frequently.

In the last decade, the “human centred design” has gained a significant popularity. However, for me as a contextual designer, even following such an empathic approach does not go far nor deep enough. It is looking at a problem too narrowly: many objects and designs were made exclusively targeting the comfort of humans. Convenience here is a buzz word, and most often for the sake of the comfort of the people. This, as I see it, is translating into an appeal to us as consumers: for the sake of growing, developing our industries and serving our societies. It is this we recognise as a progress of the society, including increasing numbers of the world’s population in this journey, lifting the quality of life for many generations. All very honourable values for which the earth’s resources are abused. Then, still in the name of progress, after losing their specified meaning, aspiration and value we have ascribed, the used products are often left behind with barely any thoughts for their end of life scenarios. Meanwhile, we are slowly learning that the linear line—producing, using, and disposing - doesn’t work in a long-term. We have to think in cycles and act immersively. We have to close the loops we have put into motion. Eventually, we have to connect the different loops in order to exchange the nutrients and profit from each of them. “Waste of one should be food for the other” as the artist and innovator Daan Roosegaarde has simply put it. I would like to call this an “ultimate circularity”.

Within such a circular system, the iterative evolution of design can play an effective role in the exchange of nutrients. Let me give you an example. Corals absorb CO₂ from sea water acting as a sink. In parallel they use CO₂ also as building blocks of their calcium skeleton. Concrete, one of the most important construction materials in our

building industries, is responsible for a significantly high amounts of CO₂ emissions - approximately 6% of the global human produced CO₂ emissions². We are now working on mimicking the process performed by the corals in the production of concrete. The process involves chemically transforming CO₂ into calcium carbonate, which can be used in cement production. Thereby, the CO₂ is permanently sequestered, implemented in valuable feedstock and as a result, we can create a new base substance for our major building material³.

By looking at the processes of evolution in nature, biomimicry can help notice and create a balance—a balance between “human progress”, in the sense of growth & technological development (i.e. short term) and a “holistic progress”, in the sense of maintainable and lasting progress (i.e. long-term). In the latter, we may learn to eventually connect nodes of the matrix that is our ecology, which had not carried an obvious connection in the first place.

Yet, the balance may also be found between creation and destruction. Evolution seems to be built on this idea of optimisation. Neither the creation nor destruction has a positive or negative connotation here, there is no sentimental attachment ascribed. The one builds on the other as a relatively regular cycle of our world. The act of designing might thus also mean to reduce something that was there before, or leave it completely behind not carrying it along on the path of the “progress”. This might simplify the design and the ecology and deliver better results afterwards. We build on what we build, and on what we built to fix a bug with a bug, and yet with another bug and we get highly complex answers and we think—this is human intelligence making us outstanding in comparison to other creatures. But does this really make us so positively outstanding? Or does it make us presumptuous?

Do not mistaken me as a sceptic. I fully appreciate and respect our ability to develop, to move further onto the path of progress and to think beyond the obvious and immediate needs. I just pose two questions: Do we reflect often enough if we have previously made the right decisions, or do we merely fix and cover up our actions instead? And are we courageous enough to also let some things go and to destruct our own creations? The little step from one iteration to the next might seem logical and sensible, but one may end up with a highly complex and over-engineered structure. Here, it might help to zoom out from time to time and see the bigger picture. One must see one's work in a larger context—different levels of perspective, which can also be found in nature with all its micro and macro systems, working on itself and in relation to its elements within. One might build another system altogether. Interactive and always in motion.

There is another aspect of simplicity I wish to mention with regards to biomimicry and what we may learn from nature. As such, repetition is found in nature many fold, nature copying itself when the system proves to be good. It is a somewhat lazy approach to creating things, wouldn't you say? Why then should we not be "lazy" too sometimes? Simplicity indeed would be helpful. There is the following eye-opening example which also shows how much we have achieved with our creations and what admirable matters we are able to invent. Besides, we should be able to say how incredible it is that we are able to do so! So, to quote Janine Benyus⁴: "One of our major inventions that we need to be able to do to come even close to what this organism "nature" can do, is to find a way to minimise the amount of the material, the kind of material we use and to add design to it. We use 5 polymers in the natural world to do everything that you see. In our world we use about 350 polymers

to make all this mess" (image shown of plastic garbage on a beach). Nature optimises not by adding volumes, by adding more but by being more efficient and robust. It is great to have all these different materials at our disposal, which open tremendous opportunities. What I think about is: do we use them for the right things in the right amounts and with the right intentions?

I do not believe we should stand still—this is not in our nature nor is stagnation to be found anywhere in nature. I stand for conscious action. Sometimes even if it appears to demand higher efforts at first, or even if we have to take a step back from our own comfort, in a whole immersive approach our actions will result in more robust solutions and these might provide us with better answers to our global problems. Does movement and progress always need to equal growth, or might progress also mean a sustained comfort with what we have in a more efficient and effective manner.

Sometimes smaller is more convenient than larger, and having less today is less stressful than having more. Reduction sometimes may mean, at the end, not less but more freedom and happiness. We seem to have trouble locating the balance, the tipping point and the breakeven for the most comfort for us, for the coming generations and for the environment today and in the future. And perhaps, we do what we do driven by selfish motivations, thinking of humanity rather than the many species and other elements of the earth.

To conclude my explorations and reflections on the subjects of design and our world today, I offer a practical perspective to help navigate the complexity of our conditions. The first step

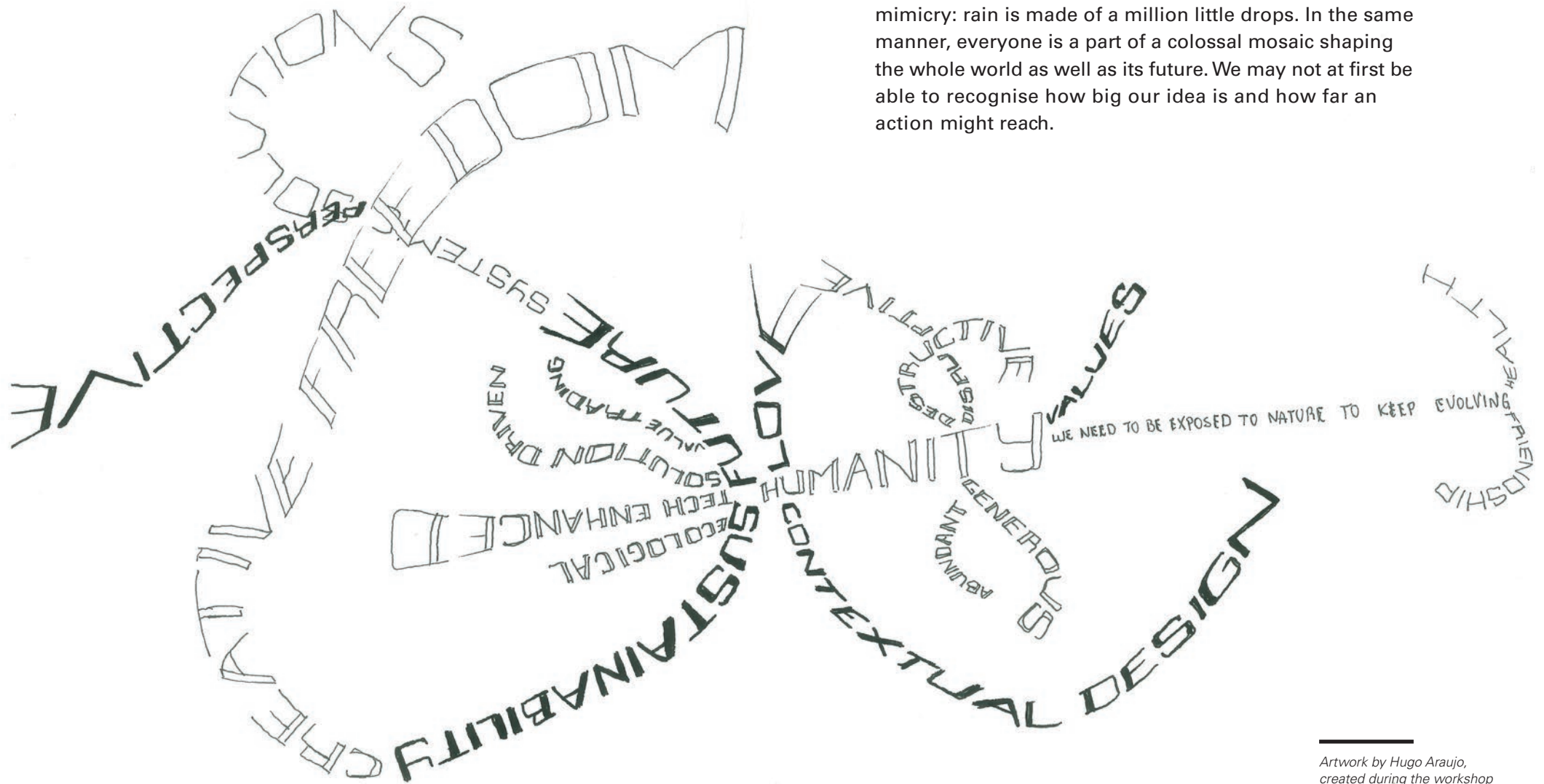
¹ Iterative evolution = "A repeated evolution of similar or parallel structures in the development of the same main line. There are many examples of iterative evolution in the fossil record, spanning a wide range of groups; A Dictionary of Ecology" © A Dictionary of Ecology 2004, originally published by Oxford University Press 2004]

² <https://www.wiwo.de/technologie/green/nachhaltiger-zementat-firma-stellt-klunker-aus-co2-her-dank-korallen-technik/13553104.html>

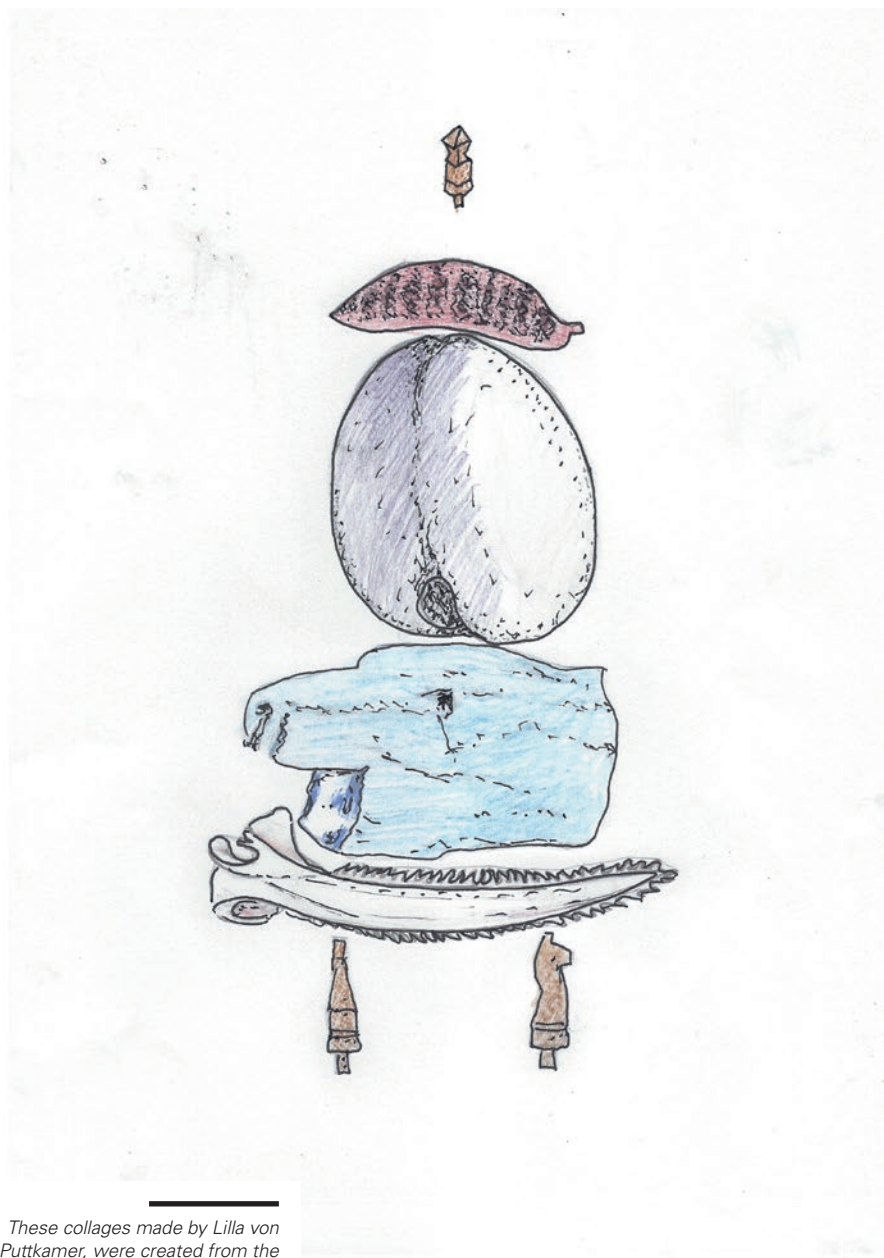
³ more information: <http://www.calera.com/>, <https://www.carboncure.com/technology>, TED talk: July 2009, Oxford England "biomimicry in action" by Janine Benyus

⁴ July 2009, Oxford England "biomimicry in action" by Janine Benyus, Min.: 10:26-10:54

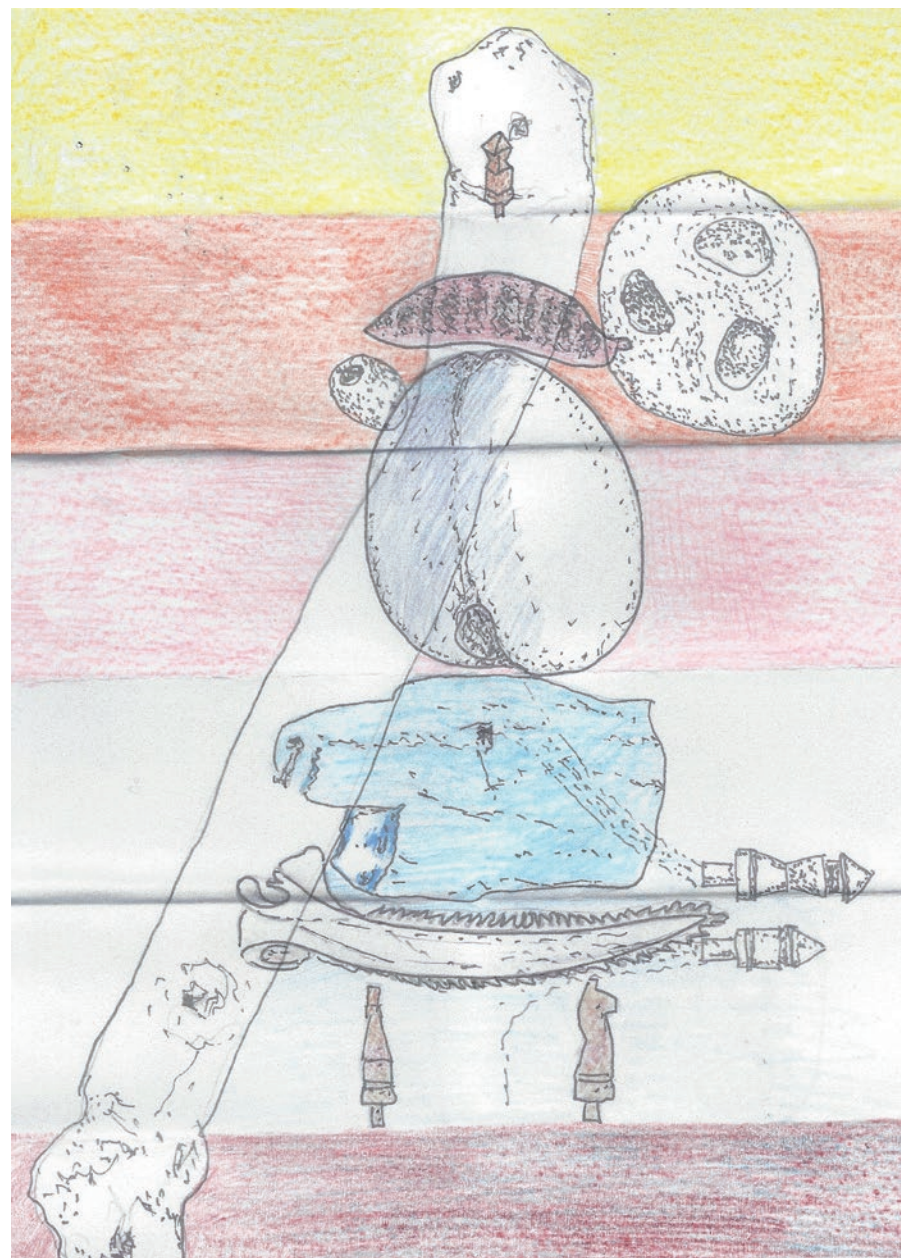
is to learn to be aware of the consequences resulting from our actions. It seems self-evident, but we ought to recognise the responsibility of our decisions and actions we take as humans. With this acquired awareness, the second step is that we ought to make use of our influence, as little as it may seem. Metaphorically speaking in relation to biomimicry: rain is made of a million little drops. In the same manner, everyone is a part of a colossal mosaic shaping the whole world as well as its future. We may not at first be able to recognise how big our idea is and how far an action might reach.



Artwork by Hugo Araujo,
created during the workshop



These collages made by Lilla von Puttkamer, were created from the drawings of the workshop participants





Thoughts About Biomimicry

*By Lilla von Puttkamer,
Artist (Germany)*

“Bios” stands for life and “mimicry” for imitation. Mimesis and catharsis are two different ways to learn from life and nature. Nietzsche writes about the Dionysian and the Apollonian approach. I found the Dionysian more exciting. In the book “Kunst und Antikunst” by Susan Sontag (2003), she begins with the definition of art that comes from the ritual and the conjuration.... It is always difficult to say, when something starts.

The first idea of the museum is developed from the “Wunderkammer” which wants to show the whole world in a miniature. Art, nature and science are their three main areas. Later, the various museums of art, design, history and natural history were differentiated, as we know them today. The Wunderkammer comes from the Renaissance and Baroque periods. Princes had their own collections, which can be divided into 5 areas. Naturalia, artificialia, scientifica, exotica and mirabilia. Before the Enlightenment, there was a much more magical thinking and invented things were lent as much existence as found things. Let's take a look at my collection: What could that be? Every object has its own story and we can create our own stories for it...

Naturalia: Fruits, pods and bones.

Ghost-stone: at night, the face is turned upwards to prevent thieves, during the day you turn the face down not to become a victim of the stone spirit.

(Or vice versa, face at night below?)

Exotica: Shower head of a koala bear.

Then we also have a bone from a tree.

Artificialia: Valuable works of art from nature (wood, worked on). Also historical objects from my grandfather like the chessboard.

Mirabilia: Very old things ... to believe in
—partly biblical Stone Age Cell.
The very first cell phone of the prehistoric times.



"In my drawings I used a technique for documentation which archaeologists work with. During my art studies, I drew many objects and integrated this technique into my artistic work. Based on this type of drawing technique, any object can be recreated when lost. Everyone can document his favourite item and include it as part of her own Wunderkammer."

Human Wandering

"Perhaps our society is still like a young forest, consuming all that is available, acting like the king species in the ecosystem. As when matured, we will give more, caring for the fellow species of all sorts, and we will find that collaborations in our ecosystem will enhance our own kind."

Hugo Araujo,
Artist (Belgium, Mexico)

*"By understanding the planet, we have the opportunity to save it."*¹

*"Functional analysis alone is not sufficient for biomimicry practice without a more systematic understanding of the complex biological context."*²

*"Furthermore, it has been proved that an approach that elaborates on function to include complex environmental and behavioural interactions increases the precision of retrieved results compared to analysis through function alone."*³

I spent three incredible days in Budapest. I had anticipated the beauty of the city, but what took me by surprise was its enchanting charisma. The purpose of my trip was to discover new aspects in one of the less talked about elements in the field of Biomimicry—art.

We call our publication from the shared-time in Budapest Biomimicry Budapest Perspective. The name came about to respect the diversity of the group and to build a convergent vision together. We have curated a collective ecosystem to better understand our common ground, a place to start where we all agree. What else if not the field of bio-art to tell a story like ours? Connected and interrelated in so many ways. After meeting artists and designers from Singapore, Spain, Hungary, Germany, Brazil and Latvia, learning from great mentors (writers, professors, architects, designers and activists) in so many different medias, I matured in the collective intelligence - I learned from a group and as a group. We all agreed that Humans and Nature should get along better and create a network of symbiotic relationships with our habitat. We also agreed that we are humans, full of emotions as well as judgements.

I am a Certified Biomimicry Professional, which is a title awarded after over a two-year process of intense collaborative work within the Biomimicry Professional Cohort, or BPros. The group was founded by sixteen individuals representing business, design, biology and engineering disciplines. The BPros have made seven field trips to seven different ecosystems in different parts of the world, with an intention to iterate and cross pollinate knowledge, while learning intensely from the local biologists, scientists and experts. Because of the cross-disciplinary environment, and while being present in an ecosystem, we were able to generate ideas which far overreached the more traditional understanding of Biomimicry. Besides the immense knowledge acquired, with these trips, I feel, I gained not only new friends but also a bigger family. We dived deep into the endless information in nature and developed tools, designs, solutions, and, as it happens ever so often, some new problems.

Given the experiences of a BPro, it was also then I came to make a holistic visualisation tool to connect all the ideas and lessons—7vortex, a digital ecosystem with one common language. I truly believe that if we can thus see and get a better understanding of our own ecosystem, we will get to figuring out better solutions. Learning from nature is a life long journey and transferring the knowledge appears to be a multi-generational task, like the Monarch Butterflies. These delicate creatures, Monarch Butterflies, have a migration cycle between Mexico and Canada. However, the butterflies complete the journey over three generations. They have no present time to share the route with the next generation. They travel from Mexico to Canada in three generations and, then, as already a transformed generation, they return to Mexico in just one. Of course, this is just one perspective, as my Canadian friends will say that the cyclical

journey starts and ends in Canada and not Mexico. Anecdotes aside, the question of how the Monarch Butterflies transfer knowledge between generations remains unanswered. So many things yet to understand.

I am a believer that animals are sentient beings and, like us, they experience suffering and love. What I am curious about is whether trees have similar experiences and if so, then how these may occur. A while ago, I was in the Redwood Forest on a foggy morning. It made me think about a forest in a new way. The presence of the fog in a forest changes the density of air, making it as if a visible matter which has a varied capacity to transmit sounds and light, and also other elements and chemical compounds. The forest may thus transmit signals, it is a medium, just more visible to us with the presence of the fog. I would compare it with the changing conditions in a petri dish: when a scenario alters properties of a subject in the dish, the context changes along with the properties of the subject. Birds, to give another example, react to the changes in the atmosphere. The birds in El Cuyo, for instance, tend to communicate more during the sunshine and the sunset. In low atmospheric pressure, birds tend to stay silent. In nature, there is a non-verbal communication too: avoiding contact is also a method of communication.

A group, including myself, from the earlier mentioned BPros travelled to the Harvard Forest as one of the seven trips. The Harvard Forest appeared to be so very mature with its well-established ecosystem. My attention was drawn to the tops of the tree crowns. The forest is dense, so I wondered how the light reaches the forest floor. To my amazement, the tree crowns are clearly separated by a thin stream of light, no branches of neighbouring trees touch nor entangle. As if out of respect towards their neighbour and for the care of the ecosystem below the crowns, the mature

trees take only the space required, gently allowing the rivers of light to flow along the crowns. Well, of course, the scarce resource of a temperate deciduous forest is light, hence the need to optimise their size and shape in a given space and thus the access to light supporting their survival. I conclude to myself - the mature trees have a "spacial niche" to sustain their own bio-network.

What if we could think about mature markets acting like the trees in the Harvard Forest? There is time, when all players are established and markets shared, and when it becomes better for everyone to go to the next level: collaboration. It seems only the mature growth of many species reach that ability to consume less of light, nutrition, water, giving more to caring for younger growth and to collaborations with other species. Perhaps our society is still like a young forest, consuming all that is available, acting like the king species in the ecosystem. As when matured, we will give more, caring for the fellow species of all sorts, and we will find that collaborations in our ecosystem will enhance our own kind.

When I think about collaboration, I relate it to the notion of "collective intelligence". We know that such an intelligence exists, especially in teams where the sum of the parts is bigger than its individuals. I often ponder on this phenomenon: how may we better understand the "cloud" of our own species, where our individual minds connect powering the collective intelligence. I might come across unsteady minded here, but across centuries and continents, there have been healers in nearly all if not every indigenous civilisations, practicing methods very similar to one another. As the occurrence of the healers was not due to direct learning (simply due to distances between the communities), the cause is unclear to us to this day. Perhaps we have learnt from Monarch Butterflies how to "know" without infor-

mation being passed, or perhaps it just is how the world exists. I do not offer an answer here, but to me it appears we might benefit from paying attention to other ways of being "intelligent".

Living in the Coastal Dune, generally a healthy ecosystem, I learnt to what extent an ecosystem can work together. The beach is a transition zone between the water and land environments. The Dune works together with the Salty River (Ría) to desalinate water and the Jungle comes right up to the beach. Birds here live close to the land and the fish, often feeding near the beach. The pelicans go to work every day with a better punctuality than a Mexican; they are attuned with their own bio-network. Everything is aligned in the picture, except us. We want light when it is dark outside, or even when the full moon lights the sand. Sometimes you see sharp shadows of various things in the brightness of the moonlight; and sometimes the baby turtles go in the wrong direction, because they confuse our lightbulbs with moonlight. There ought to be so many ways of performing better as a species.

I believe we need more conversations on what our "Human Ecological Niche" is. How should we add value to the planet? How to build the critical connections that will shape our future? For instance, a humming bird has a critical connection with certain flowers. How are they so clearly determined for which flower to go? Surely, not merely because they simply prefer that flower over others. Evidently, the shape of the hummingbird has evolved to fit with the flower. How did that happen? Is it continuously evolving? It seems to be so. There are also species of insects which have made a match with certain flowers. The question revolves around how species find their match, their critical connection. Over time, plants have attained their value in the food chain. It surely would be difficult to have any future

without plants.

Every species of the Earth has their “niche”, one way or another, and it inevitably relates to some ecosystem. If the idea of our planet is a hot centre, with added cooler layers over time, we can visualise the ground surface as our playground. Perhaps, we can re-think our niche as a species this way. Like other species have done, we may find ways to add value and be sure that our layer is, at the very least, a healthy one. If we can nurture our habitat and make it more resilient, our crops would be enhanced by every natural cycle, instead of being in danger. By creating better conditions for biodiversity, we will be building a better atmosphere as well. If minimising risks is what matters to us, then a balance between humans and nature seems a reasonable way to get away from the edge of the extinction and, even better, to enjoy healthy, abundant and diversified world.

As a Biomimicry Artist, I contemplate on the problems we stand to face. With my family and the ones dear to me on my mind, I realise my preferred focus is on the survival of the next generation, thriving on our planet. Several years ago, I joined a small team, named “Biominga” for a two-year research project Innovation and Evolution in Nature (Innovation=Evolution=Nature). We aimed to discover various survival strategies adapted by different species, based on symbiotic relationships. Our team (still together) was formed of Nan (biologist, part of the re-insertion of the wolves in Yellowstone, worked with National Geographic, and swims with whales), Robert (a great storyteller with senior experience from IDEO and now in Singularity University), Gama (born in Zimbabwe and currently working for the UN in conflict resolution all over Africa), and myself. At the time, we discovered a superbly intelligent strategy of Hawaiian Bobtail squid: bioluminescence.

Bioluminescence is one of the twenty-one strategies that we discovered during the research project. This is what we found: the Hawaiian Bobtail squid has a symbiotic relationship with a bacterium called *Vibrio fischeri* with a purpose to produce light. The squid has an organ inhabited by the *Vibrio fischeri*, which allows the animal to emit and regulate the light on demand so to hide its own shadow, which would otherwise appear on a moonlit night making them visible to the predators. The light producing organ responds to a decision-making process called Quorum Sensing. “The activities regulated by quorum sensing include, for example, luminescence, conjugative plasmid transfer, and the production of antibiotics and extracellular enzymes. The growing number of species identified as using quorum sensing and the chemical and genetic homologies of the quorum sensing systems indicates that quorum regulation is an evolutionary conserved mechanism for regulating gene expression that is widespread amongst bacteria.”⁴ Quorum Sensing acts in environments, where population density is high, and the process of “creating” light is a result of a collective process.

The story about the word “Biominga” is an interesting one on its own. “Bio” means life and the word “minga” comes from the Incas in South America, meaning a collaboration for a common purpose, or simply put—community work. It is the day when you work for the community. Very curious to see how collective actions create words. The indigenous knowledge is full of different perspectives, full of legends and religions. What is science if not a perspective of reality which evolves with our understanding of a context? It seems that we, as humans, invest a lot of energy in communicating. Bacteria, for example, have developed two different kinds of language: intra-species and interspecies communication. As we discovered this molecule, we named

it the “universal communication molecule”. With the principle of this molecule, we may find a way of communicating as if walking in each other’s shoes, metaphorically speaking. Yet, we appear to be content with our successes in replicating phenomena in a lab. However, without a context it is just that - a lab experiment, and its fruitfulness in a human context is often lagging behind.

There is a more powerful position to be gained by understanding of ourselves as emotional beings belonging to a species which shares the habitat with so many others. We may enter a new stage of our evolution once we learn the true role carried by our species, our niche in nature. The role not as artists, or scientists, but as humans.

We may achieve going from linear methods of operating as a species to systemic or circular. We may achieve collaborative methods of being, over competitive ones, (our species have survived because of our ability to collaborate). We may learn to optimise more than maximise.

But, I think most importantly, we have arrived at the turn of art being an inspirational teacher and business being a guide for our better future. I belong to a species which makes a positive change, a kind of species that share the habitat with eight million other kinds. It is time to learn from each other. My human nature is present every day, with no vacations, and that is how I try to make our eco-

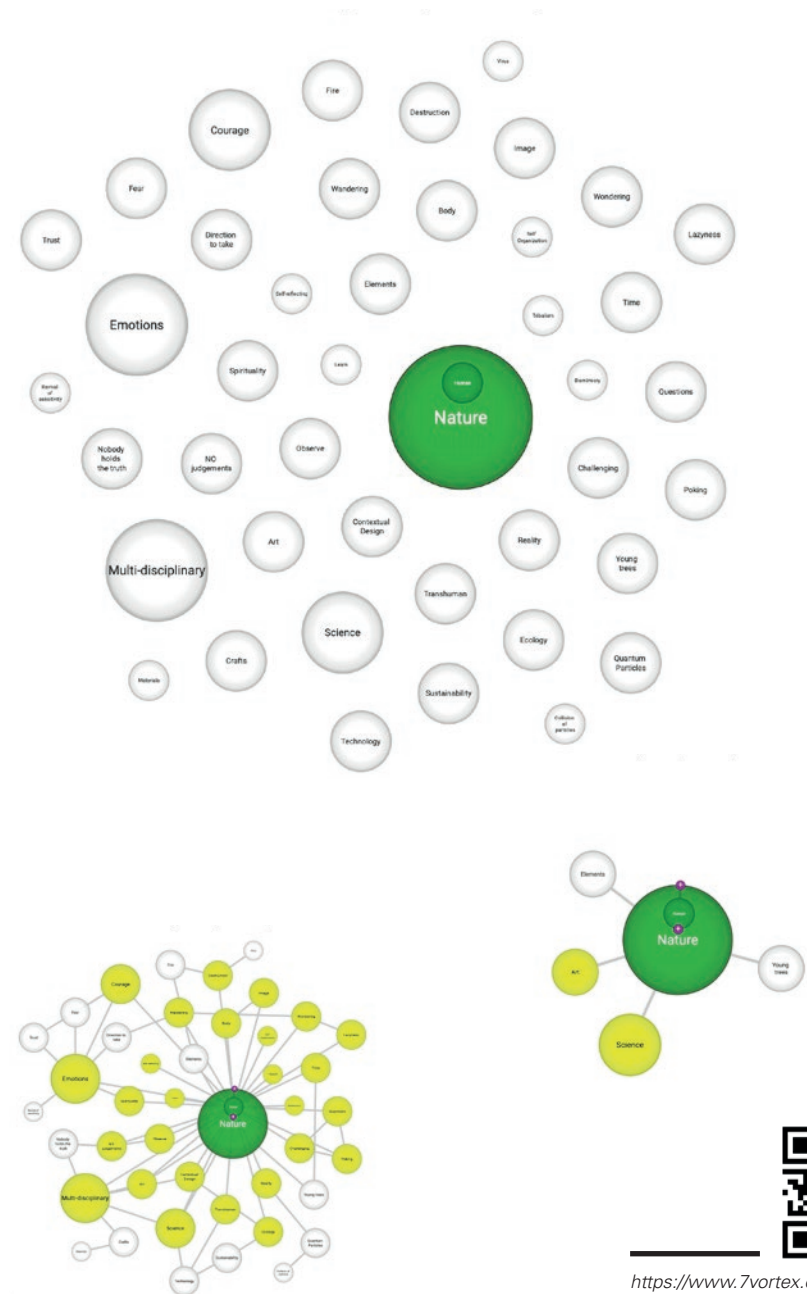
logy better every day. This, I believe, is a progress we cannot stop. Looking forward. Success.

¹ The 8 Million Species We Don't Know. The New York Times by Edward O. Wilson

² E2BMO: Facilitating user interaction with a BioMimetic Ontology via Semantic Translation and Interface Design

³ E2BMO: Facilitating user interaction with a BioMimetic Ontology via Semantic Translation and Interface Design

⁴ Quorum Regulation of Luminescence in *Vibrio fischeri*. 1999



<https://www.7vortex.com/ecosystems/b31baea4-d8f8-4f33-bc80-525547ebad7a/view>

Body, Design, Mimesis

"A club made of bone, clothing, furniture, a home, architecture and a city: extensions of the body on different scales, often manifest as spatial layers protecting us against being exposed to nature."

Andor Wesselényi-Garai,
Design Theorist (Hungary)

Stanley Kubrick's 2001 Space Odyssey¹ opens with an enigmatic sequence. A barren, rocky landscape is populated by a group of hominids. We see an almost idyllic setting with tapirs prowling about amongst the members of the group gathering food. But then they are attacked by a panther-like creature, which they chase away with their bare limbs accompanied by loud simian screaming — Kubrick's parable of humankind's vulnerability to nature at the dawn of history.

In the next scene, another, stronger group drives away the old one from their abode by the water and in the proximity of caves.

In the third scene, the exiled clan of hominids awakens to the sight of a monolith. They touch the immaterial yet solid, ordinary yet monumental block timidly at first and then with growing curiosity, and gather around it with sacred devotion.

In the fourth scene of the film, the same group is shown scavenging among skeletons of carcasses. Then, the camera is focussed on a human-like creature left by himself, who suddenly stops his aimless search and directs his attention to the bones in front of him. He tips his head to the left and right, like animals do, as if summoning the memory of the idolised monolith in his mind. The silence is then slowly taken over by the overture of Richard Strauss's Also sprach Zarathustra and upon the sound of the kettledrum, the ape-man takes a biggish bone in his hand. First, he only drops and tips the bone club, but with the music's crescendo he grabs the instrument with increasing determination and, accompanied by perhaps the most triumphant chords in musical history, he smashes the skeleton.

Then comes the next scene, a coda to the above. The herd returns to its original habitat and drives away the intruders using the bones as their weapons.

Eons pass by and the monolith emerges once again on the screen, this time discovered by astronauts on an archaeological mission on the Moon. Kubrick's film is underdetermined²: its laconic language invites strong interpretations, concluding for example that both appearances of the monolith mark milestones in the history of humankind. The end of paradise on earth and the dawn of civilisation; the alpha of death and the omega of murder with new, unknown modes of killing beyond it. The bone used as a club by the hominid is a prosthetic extension creating the culture of anthropologised killing, while HAL, the supercomputer, is a device without a human extension: a depersonalised prosthesis taking the art of killing to the next level when launching a mission to kill the astronauts. HAL and the hominid both fight for their survival: the latter for water and against another body, while the computer, driven by the myth of its infallibility, against being switched off. One puts up a fight as a prosthetically extended body, while the other as a bodiless intelligence: the former as a pre-human and the latter as a post-human entity. Although he might not have intended to, Kubrick specifies the age in which these objects appear when he places the tool turned weapon at its boundaries; moreover, he defines the essence of design when it shows it as a series of prostheses complementing the human body. A club made of bone, clothing, furniture, a home, architecture and a city: extensions of the body on different scales, often manifest as spatial layers protecting us against being exposed to nature.

Similarly, the carriers of thought—the written word, notes, typed pages, printed books, data and artificial intelligence, containing it all—surround us as an increasingly

technicised protective shell of symbols indivisible from mankind. Kubrick's hominids in the first scene are the last self-same beings: their abilities do not extend beyond their physical strength, and their only knowledge is that of survival. Thought would later be conveyed by instruments, such as the bone tool, all this inevitably leading to the separation, displacement and, finally, to the instrumentalisation of knowledge, akin to those of physical abilities. The process ends with the ultimate structure, the intelligent machine, which is knowledge and prosthesis in one, and as such it does not need a body but assumes a new type of existence as an inorganic self.

The concept of "I am"³ links the hominid and HAL, and the act of design emerging with the concept of existence thus marks the rise of awareness of self and identity. It is inseparable from the self and –moving away from Kubrick's parable—it opens up the way for concepts and biopolitics⁴ treating the body as a tool, shaping and forming it as a tool and representing it as an object. In this context, the amputated and augmented, distorted and (de)formed body is object and form, texture and medium, cultural identity and image. It is both the subject and object of forming, as well as its initiator and recipient, spanning from the subculture of bodily distortions, liposuction, tattooing and body-building through the provisos of hairdressing, make-up and manicure to the medical biology of dental and breast implants and bone prostheses. The first step in biomimesis is to impart 'semblance' to the body, making it mimetic, i.e. to instrumentalise it. The fact that at this theoretical zero point the object and raw material of the mimesis of the body is the

¹ Agel, Jerome, ed.: *The Making of Kubrick's 2001*, New York, New American Library, 1970

² A book published after the film helps clarify the story is Arthur C. Clarke: *2001: A Space Odyssey*, New American Library, New York, 2000, first published in 1968.

³ Computers developing self-awareness is a recurring theme in sci-fi literature from Isaac Asimov to Frank Schätzing; for the latter, see: Frank Schätzing: *Die Tyrannei des Schmetterlings*, Roman, Kiepenheuer & Witsch, Cologne 2018.

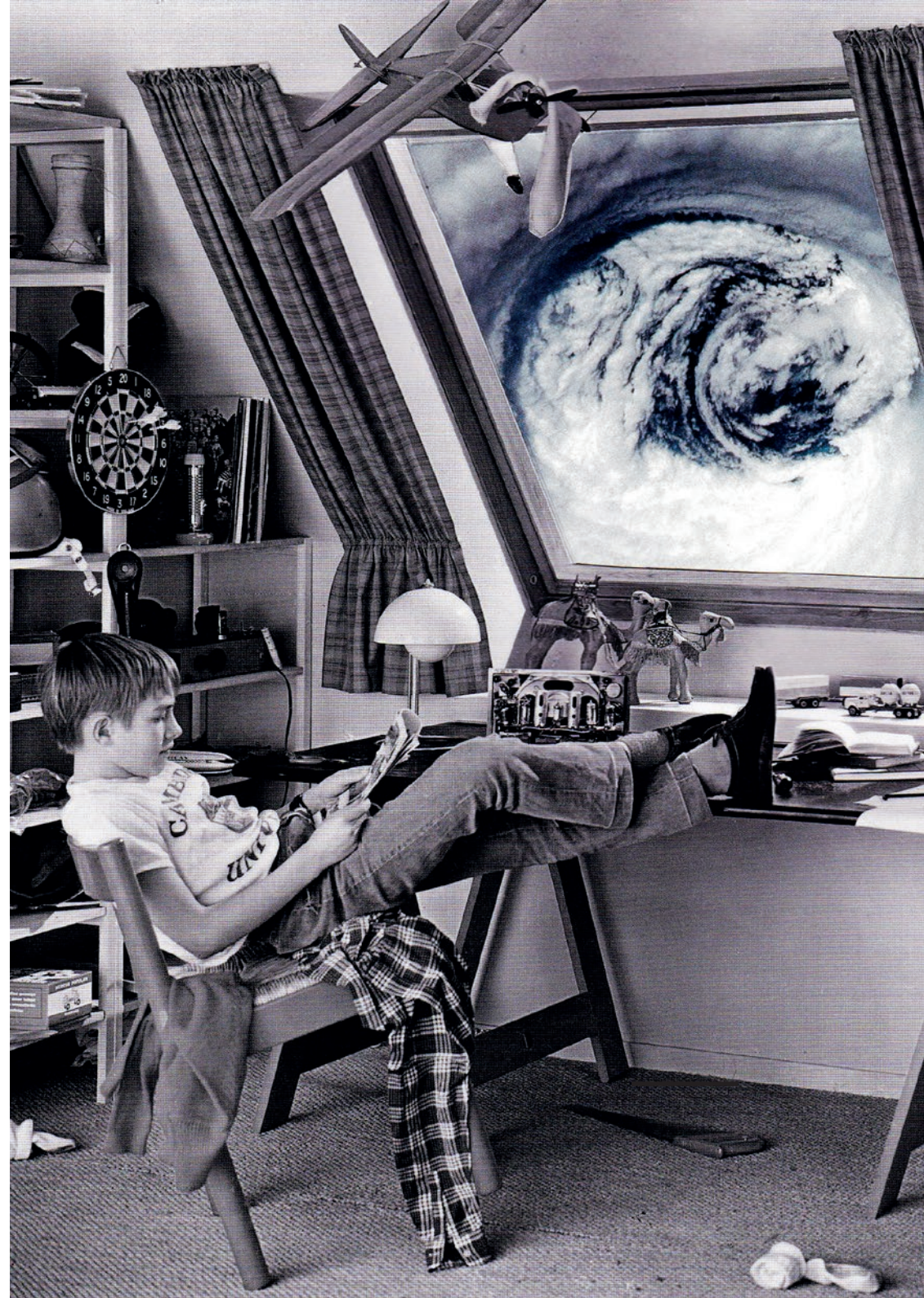
⁴ An excellent compilation on this, including Foucault's key text, is Timothy Campbell, Adam Sitze eds.: *Biopolitics: A Reader* (a John Hope Franklin Center Book), Duke University Press Books, Edition Unstated edition, 2013.

⁵ M. H. Morgan, *Vitruvius: The Ten Books on Architecture*, Dover Publications, New York, 1960.

body itself, is of secondary importance in this context. What is more important is that this concept links Vitruvius⁵ homo ad circulum-homo ad quadratum with the caryatids, Robert Mapplethorpe's close-up photographs of skin with Jenny Holzer's alienated manikin-like women, as well as Marina Vainsthein's Holocaust tattoos with the Leonard of the film Memento.

To quote Leonard: we must believe that there is a world outside our consciousness, one that exists even when we close our eyes: the mirror that makes us believe this is our own, freely shaped and used bodies.

Room with a view
Collage by Gundega Strauberga
(Latvia)



MAD ***Philosophie***

To understand design and craftsmanship to the bone, we must take action—do work, create things, experiment with space and materials. Design theory must be tested in real life. Only creative work can produce new values.

MAD brings together designers, artists, craftsmen and scientists—people who are unlikely to meet under different circumstances. Theories and hypotheses are tested in practice by creating new things and experiences. MAD embraces soft definitions of design and art, by creating useful and aesthetic objects during irresistible authentic work by treating materials, where rules and discipline of crafts evoke a challenge and creativity.

The name MAD for the International Design Summer School is derived from the keywords describing the concept of the school—Man and Design.

Institute of Advanced Design Studies (IADS) is affiliated with MAD International Design Summer School.

MAD

International Design Summer School 2018—Biomimicry

Advisors:
Claude Oprea
Turs Selga
Sabina Enéa
Sissel Tolaas
Rihards Funts

Human ingenuity may make various inventions, but it will never devise any inventions more beautiful, nor more simple, nor more to the purpose than Nature does; because in her inventions nothing is wanting and nothing is superfluous.

—Leonardo Da Vinci



MAD Exhibition 2018
Photos by Toms Lucāns

For the majority of our time on the planet as a species, we have been hunters and gatherers. As hunters and gatherers (harvesting nature) and then as agrarians through pre-industrial times (harnessing nature), we paid a great deal of attention to natural systems as a source of knowledge.

Today, when we try to address problems arising from old-economy technologies (such as filtration, adhesion, desalination, energy harvesting), we tend to study the way human's have problem-solved, rather than looking to nature for advice. However, combining our knowledge of processes with our knowledge of natural systems, we now have the opportunity to build products, artworks and services that are in harmony with natural systems. During these 10 summer school days we will seek for 'Biomimetic' solutions for human health and nutrition problems. MAD approach is to combine nature studies with practical hands on experience in 5 workshops assembled within traditional crafts and modern technologies, located in 19th century Sigulda castle yard and it's nearby surroundings.

COMMON ROOTS

*Cora Schmelzer
Gundega Strauberga
Jessie Eeles
Katrina Pelikan Baselj
Moe Asari
Sebatian Sailer*

*Tutors: Amanda Karsberg
and Gabriel Kanulf (and Unni)*

We all need food to survive. But the art of eating has been diluted, and we have replaced cooking and eating in community with snacks on the go. Many of us are so disconnected from the ritual of sharing a meal that a long dinner is reserved for special occasions. Our group recognizes the need for reconnection: between people & people, people & nature, and people & food. Through our objects, we reconsider traditional utensils and offer a set of tools that allow you to slow down and savor every bite shared in company. We decided to offer a solution that is not so far removed from the ceremony of sharing a meal. Perhaps these objects are the reason for gathering, like a watering hole where animals come back together after a long migration. We were inspired by the communal meals shared at the summerschool, as well as cultures that feed one another as a sign of respect. We studied natural organisms that communicate through close proximity: mushroom spores, lichen, coral reefs, and microscopic cells. The forms are familiar but not immediate—they require interaction and play. To begin the meal, at least two people will lift the sur-



face onto the metal frames. These frames can be propped upright for sitting in chairs or horizontally for sitting on the ground. Thus the ritual begins as a team effort. Bowls of food are brought to the table and nested in their spaces, but there is room for rearranging throughout the meal. The bowls are rounded to activate the motion of sharing as they pass from laps to hands. Because the objects rely on curiosity and intuition, guests might instinctively reach into bowls with their hands or feed the person sitting next to them. This ceremony of tasting and touching will rekindle families: both those we come from and those we make.



ANTICS

*Anna Sigurdardottir
Emma Sicher
Franz Siebler
Magda Mojsiejuk
Marek Glogowski
Tamara Pesic*

Tutor: Roy Letterlé



Modular system for food preservation. Looking back at the history of food preservation our group has gathered different methods for keeping the natural nutrients, freshness and flavours of food intact, in order to extend its storage life. Inspired by the systematics of ants as farmers we searched for techniques that bring our food to the table in a sustainable manner. Similar to ants we use aspects like humidity and temperature control to stimulate or prevent the growth of microbes, mold or fungi. By analyzing living organisms as well as local methods in Latvia we translated our exploration into a system of vessels that complement each other. Using different natural materials such as antimicrobial moss, wood, bark, iron and clay we developed a variable system that helps food processing and aims to encourage experimentation with the preservation of food. The vessels preserve and process food in a natural and resourceful way and minimize waste. By creating scalable environments for different methods such as storage, fermentation, drying and steaming the vessels give us a new perspective on the food we eat.

The Black Market

Britt van den Berg

Jakob Hubmann

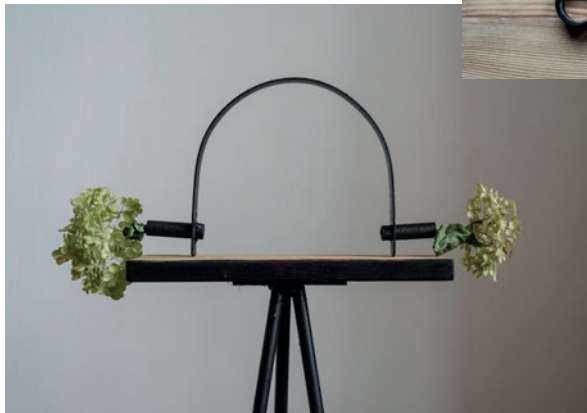
Mathis Broussot

Merle Bergers

Pauline Wiersema

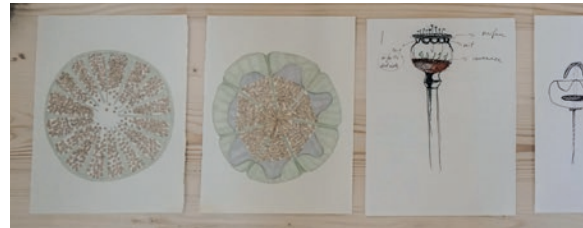
Weronika Banas

Tutor: Mieke Meijer



The agricultural revolution was probably the most significant event in human history. From that point onward only few people were needed to feed a population and humans formed civilizations, religions and sciences, created technologies and societies. Due to these developments we have lost touch with nature and forgot how to use the senses we are born with. We are, in fact, animals that lost parts of our instinctual skills and moved to artificial environments. To get back in touch with nature, an experience called The Black Market was created, which invites you to explore your senses around local plants in order to „revive“ and „mimic“ the human animal as the optimal harvesting tool. The Black Market is an alternative experience that aims to include you in natural surroundings and inform you about local plants and their benefits. At The Black Market you are first invited to taste different herbal teas made of plants which grow around you. Next you will find different objects to tickle different senses. Focus on your senses and how the sensations make you feel. The memory of this experience will ignite a flame of curiosity towards your local environment and whatever useful plants can be found there. Let's explore Mother Nature and sense what she has to offer!





Mi-Hive

Adelaide Tam
Alexandra Genis
Cameron Kursel
Jozef Edouard Masarik
Vivian Seffinga
Zhyldhyz Kozhoyarova

Tutor: Karina Vissonova

Mi-Hive is a reinterpretation of cultivation to promote biodiversity in urban landscapes, resulting in a man-made habitat for microorganisms. The attempts to tackle issues in farming are mostly focused on the direct treatment of symptoms such as chemical use. But is that really the key for long-term sustainability? Intensive discussion of our design brief has led us to a more radical approach of facing agricultural issues. In a forest all organisms are important for building and maintaining a healthy system. The more diversity there is, the stronger a system is. Long before any plant growth can take place, fungi, bacteria and lichen have to prepare the ground - a process called primary succession. Inspired by the buildup of a forest, starting from the tiniest living beings, Mi-Hive brings biodiversity to places of biological emptiness such as heavily urbanised cityscapes and other relatively sterile spaces. Mimicking the seed-bulb of a poppy plant, the hand-crafted object combines local Latvian materials and ancient techniques with scientific knowledge and 3d printing. The Mi-Hive consists of three parts: a porous ceramic corpus, a biodegradable 3D printed core and an arrangement of bended petals made from the bark of birch-trees. The holes in the corpus invite spores and microbes of various species to settle inside where they will find a protected, humid climate. The birch-bark sheets are folded to increase the surface area. Connected to the removable core, they form the main settlement area for the organisms.

Both the core and the petals are replaceable. By lifting the lid, it is possible to observe the state of growth within the hive. In the given example the corpus is placed on a metal stick. Looking at long term consequences of the design, the Mi-Hive might drastically multiply the microflora of a residential area and even result in the invasion of surrounding urban surfaces. Returning to the original question of more sustainable cultivation methods, the aim of this group work is to shape environmental empathy and promote an attitude of care for all living creatures, big and small. While problem-solving is a good method for short term success, on a long term scale it is the human idea of cultivation which has to be tackled. Humans have to acknowledge the importance of nature as a whole system and not only the parts that we have discovered as useful.



***Authors
Contributors
Contributing
Artists***

Author

Karina Vissonova, PhD

Design Philosopher, Budapest/ Copenhagen/ Riga

Karina is the Founding Director of the Institute of Advanced Design Studies, Budapest, Hungary. She is a design philosopher, researcher, creative thinker and an innovation strategist with extensive experience working within R&D, product development and business innovation. Karina attained her doctorate in Design with a focus on Sustainable Design at The Royal Danish Academy of Fine Arts in 2016. She works on development for various green innovation projects and initiatives, as strategist, board member, as well as she is a design educator, guest lecturer and a published author.

“Sustainability—what is it? How do we see it, how do we interpret it through objects? What makes an object sustainable? There are objects made to resolve environmental problems caused by human activities. Objects made of recycled materials giving the material cycling message, objects made of biodegradable materials and objects made with a function in response to a social or ecological sustainability. Then there are the objects inspired by nature—the biomimetic objects.

My focus is on the idea of sustainability, the common understanding, the theories and contradictions that follow this notion. I research how we interpret sustainability through objects of design and architecture. Through my research, I question whether the path we are on is leading us to the goal we aim to attain with the “sustainable objects”—i.e.—whether the objects we design for our future make up the future we intend.”

www.vissonova.com



Photographer: Alexandra Heim

Author

Sabrina Stiegler

Designer, Hamburg

Sabrina is a contextual designer with a specification in product and packaging design, brand building and sustainability. She studied product design and later taught at the University of Applied Science of Schwäbisch Gmünd which is a “grand child” of the well-known German Bauhaus. Further she studied at the Art Academy of Iceland and the Stuttgart University for Media “Packaging, Design & Marketing”. On her professional path she already worked for and with many different well-known companies such as Siemens, Philips and Beiersdorf (Nivea) as well as was a part of the core team and inventor of the award-winning “Skyrkonfekt”.

“One of the most important considerations in the design and development process is an appreciation of the interplay between all aspects of the cycle of the creation. In the design process I consider not only the material construction, aesthetics and function of the creation, but all aspects of the distribution cycle: not only the production, transportation or the consumer, but also the end of life scenario, considering the disposal of the product, re-use or recycling with their possibilities and limitations. For me, environmental considerations are important—our actions today will have consequences in the future.

Thus ongoing monitoring of the consequences out of activities is very important - using the findings of this monitoring to improve future projects. My guiding principles: Take over responsibility for the impact of your actions.”



Photographer: Alexandra Heim

Author

Hugo Araujo,

*Certified Biomimicry Professional, Artist,
Belgium/ Mexico/ Columbia*

Hugo is one of the first of the 30 Biomimicry Professionals Worldwide, awarded by the Biomimicry Institute in 2013. He has taken part in grounding research in the field of Biomimicry, travelled to remote locations exploring diversity of ecosystems, including human. Hugo is also an artist, reflecting on his scientific and social learnings through his art.

Hugo has wide marketing and sales management expertise from companies such as Nike, Unilever, IBM and Kimberly Clark in Paris, Spain and Mexico. He is an entrepreneur since 2007 with special focus on sustainable innovation and business. Expert in managing multidisciplinary teams he has developed new systems and methodologies and tools for impact management. Thanks to his international background, his strength relies on his power of adaptation to any context: geographical, cultural or social.

His main drive is to encounter planet, people and future generations solutions. Hugo is the creator of the 7vortex —a collaborative platform for a new kind of problem-solvers.

www.sevenvortex.com



Photographer: Alexandra Heim

Author

Lilla von Puttkamer

Artist, lives and works in Berlin

Lilla studied painting at the Academy for Fine Arts in Münster and architecture at the Academy for Fine Arts in Budapest. Since 1996 she has scholarships and exhibitions at home and abroad in countries of Europe, Africa, also in USA and Armenia. 2001 she came with a DAAD scholarship to Budapest. This year, 2018, she is invited to the Hungarian Academy in Roma and takes part at the travelling exhibition "the long now" in Museum Goch and "me Collectors Room Berlin" in Germany. Lilla von Puttkamer uses painting and drawing also as an installation in the room and extends it through performative elements in collaborations with other artists.

www.lillavonputtkamer.de

www.geopoeten.eu



Photographer: Alexandra Heim

Author

Andor Wesselényi-Garay PhD.

Architect, Urbanist and Design Theorist, Budapest

Andor graduated in 1994 at the Faculty of Architecture of the Technical University of Budapest, and was awarded the 3rd prize in the Diploma Competition of Magyar Építőművészek Szövetsége (Association of Hungarian Architects) for his diploma project.

In 1995, together with Gábor Osváth, he established his own architectural firm called GYÁR (FACTORY). He launched an independent office in 2001 called W-G-A PSYCHODESIGN, and at this point in time his interest turned to the theoretical side of architecture. He is the author of some three hundred architectural articles, essays, reviews and studies that have been published in several Hungarian periodicals.

In 2013 he published a book on the connection of literature and architecture with Sándor Bazsányi literature critic. In 2009 he was the curator of the exhibition Model of the Universe on the contemporary church architecture in Hungary. In 2010, together with Marcel Ferencz, he was the co-curator and co-designer of the Hungarian architecture exhibition at La Biennale di Venezia.

At present he is tenured assistant professor at the Metropolitan University of Budapest and a part time researcher at the Research Institute of Art Theory and Methodology.



Author

Joanne Pang,

Artist, Graphic Designer, Singapore

Joanne is an artist and graphic designer from Singapore. She is currently a Lecturer at Lasalle College of the Arts, Singapore. As a graphic designer, typography is her main medium to approach design projects ranging from art direction, visual identity, print and spatial experience. She has worked for private and corporate clients in hospitality, culture, art and architecture sectors.

Since 2009, Joanne has worked for creative firms in Amsterdam, Copenhagen and Singapore. As an artist, she works with materiality and physicality to negotiate an awareness of the body in space. Her research explores concepts of memory, structures and place.

In 2013, she co-founded Yunrubin—an art practice that negotiates the physicality of urban material with the poetics of objects and space. She has participated in international solo and group exhibitions in Singapore, Iceland, Japan, Finland, Denmark, Germany, Netherlands and United Kingdom.

www.joannepang.com



Photographer: Alexandra Heim

Author

Miguel Miguel & Miguel

Activist, Prankster, Anarchist nomadic.

Born in Brazil and braised in Brooklyn, Miguel Miguel & Miguel has been active as Design Director, Art Director for fifteen years. Since five years, while living in NYC, he has been developing his personal creative projects and eventually, putting his design career aside, he is now on the road to focus on his art. Since March 2016, he has been on a nomadic artistic journey, discovering and being influenced by places and cultures from all over the world. Miguel Miguel & Miguel spent time in countries such as Ukraine, Israel, Palestine, Jordan, and Germany to thoroughly explore political art, media and social issues.

"My artistic practice is about the analysis of how power and forms of control affect our subjectivity, forcing it to law and hegemonic behaviour. My research and the resources I use for my work are the same as used by the object of my study. My intention is to raise awareness and not to let conversations about this historical moment of Social Uprising and overwhelming control to fade away. But at the same time, I try myself understand how to navigate on a sea of mislead information."



Contributor

Rihards Funts

Designer, Riga

Rihards is an industrial designer directing his award winning design studio since 2008. The specific character of the studio was formed by combining design, craft, art, science and social responsibility, all together ensuring high quality of their products. Rihards is also a founder of now internationally recognised Design Summer School—MAD (2015). He has been a lecturer of design thinking at the Design Department of the Art Academy of Latvia and at the Wood Design Department at Riga School of Design and Art. Rihards also tutors at international design, art and entrepreneurship workshops. His work has been published by Gestalten, Laurence King Publishing, Rockport Publishing.

"I see a design as form of art that unites rational and emotional perception of objects, where aesthetic values of the object have roots in craftsmanship and engineering and become visible through the functionality of objects and highlights the value of selected material. The useful things should be made beautiful."

www.rihardsfunts.com
designsummerschool.com



Photographer: Ivars Burtņieks
Object in hands: "Birch Sap Collector,"
Anny Wang & Tim Söderström, MAD 2017

Contributor

Levente Gyulai

Architect, Budapest

As a freelancer designer based in Budapest, Levente's architectural practice includes projects from Germany to Dubai. The desired complexity and flexibility is achieved inspired by organic structures and using parametric design. The analytic approach and different digital proceedings like particle simulations or growing structures support functionality and aesthetics in his works.

"My specific interest is in parametricism, digitalism and biomimesis—toward a humanistic architecture. Architecture is highly determined by the methodology it is designed with. Focusing on human needs and the newest results of environmental psychology, my aim is to find a way toward a new architecture for the basically biophil humans. Collectivity, privacy and flexibility are major challenges in architecture of the 21st century, meanwhile structures and shapes from nature serve as an unlimited source of inspiration. Considering architecture as applied geometry, digitalism in design gives the opportunity to meet human needs of visual complexity."

be.net/gyulailevi



Contributor

Jaap Scholten

Author, lives in Budapest

Jaap, born in the Netherlands, is an award winning author. He studied Industrial Design at the Technical University in Delft, Graphic Design at the Willem de Kooning Academy of Arts in Rotterdam (BA), and Social Anthropology at the Central European University in Budapest (MA). Jaap's novels and short stories are translated into German, French, Hungarian, Croatian and his last book *Kameraad Baron* into English. In 2011 Scholten created and presented a six-part television series for the VPRO about hidden worlds in Central and Eastern Europe. Jaap lives in Budapest since 2003.

"I think visually, like a designer. I compare the process of writing with designing as there is a space for coincidences in both processes, there are the rules, or their absence, and there is the accidental learning that one obtains through writing."

www.comradebaron.com



Contributing Artist

Cora Schmelzer

Designer & Strategist, Germany

Cora studied Leadership In The Creative Industries and Product Design at Hochschule Darmstadt and ENSCI les Ateliers in Paris. She is working in the fields of graphic, product and experience design as well as strategic consulting. In her work she focuses on creating simple yet sustainable solutions through design and storytelling.

Since 2015 Cora is also exploring the world of food and health; she gives workshops related to taste and nutrition and teaches vinyasa yoga.

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Photographer: Toms Lucāns

Contributing Artist

Ana Amorós López

Artist, Spain

Ana is a multi-disciplinary artist focused on sound, voice, textures, behaviour and dialogue with materials. During her studies on Arts and Design at Escola Massana, Barcelona, she encountered the craft of ceramics, an exploration of irregularity and uneven volumes that lead her to discover the sound of ceramics, 'sound objects' that in collaboration with other artists became part of experimental sound performances. Since 2015 she creates documentary films related to sound. Currently she works at Spatial Sound Institute focusing on documentation and content, where she's exploring the institute's main philosophy 'Ecology of Listening'. Learning to listen again.



Contributing Artist

Gundega Strauberga,

Designer, Riga/ Eindhoven

Currently studying at the Design Academy Eindhoven, Gundega explores different approaches to design. This is where the boundaries of the term are flexible and reaching far out. Working both as a storyteller and a treasure hunter, she finds excitement in finding hidden gems, topics or social issues that have always been there, but not usually noticed by the passers-by.



Workshop Impressions
Photos by Alexandra Heim









This publication is made on the occasion of 'Biomimicry & Connectivity', an art & design workshop held in Budapest. The collection of essays and multimedial artworks represented here propose to focus the field of biomimicry on values of ecology and mankind. The Biomimicry Budapest Perspective is a poetic and experimental record of the idea collaboratively created by the authors.