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THE **CLIMATE** NEEDS
OUR **CHANGE**
WHAT IS THE EARTH ASKING OF US?
ONLINE COLLOQUIUM

May 29th

Bernd Siebenhüner & Stefan Siemer



See [p.3](#)

*Steering Committee
Of the Natural Science/
Mathematics-Astronomy Section*

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Editor's Note

This issue features Ruth Richter's report illustrating the broad range of presentations at the 2020 Autumn Conference held by the Natural Science Section in Dornach last October—the basis of our ongoing Climate Colloquium Series. Thanks to Judith Erb for translation and editing. There are also a couple items in Notes and Commentary auxiliary to this month's colloquium. One is an innovative look at the economics of a biodynamic farm. The other speaks of a spectrum from business-as-usual through sustainability to regenerative culture. There is an announcement of The Nature Institute's new podcast series. Take note of the 2-day online conference organized by the Linnean Society of London, "*Evolution 'on Purpose': Teleonomy in Living Systems.*" Stephen Talbott of The Nature Institute will be one of the presenters. And don't miss the amazing NASA video on [page 8](#), in which the Earth looks like a living creature.

For ease of navigation, we have set up the **Contents subheadings as internal hyperlinks** (without underline) and put "Back to top" links at the bottom of each page.

As always, the *Correspondence* welcomes pilot research reports, comments on current scientific research and news, book and article reviews, letters from readers, reports on meetings and workshops, and announcements. There will be editorial review. **For submissions**, click [here](#). We look forward to hearing from you. Please send **feedback** [here](#).

Blessings,

Barry Lia, Ph.D.
Correspondence Editor



Photo: B. Lia

Climate Colloquium Series

WHAT IS THE EARTH ASKING OF US?

A series of colloquia building upon the October 2020 Natural Science Section conference at the Goetheanum, "The CLIMATE needs our CHANGE."

*For the English-speaking world, we are pleased to offer voice-over interpretation of talks originally given in German at the climate conference held at the Goetheanum in October 2020. The conference program was published in our newsletter [here](#) (pp. 4-9). A narrative report appears [here](#) (pp. 4-8). These talks will interest a **broad audience**, encompassing matters social, pedagogical, economic, psychological, and spiritual, as well as scientific.*

Online Colloquium: Saturday, May 29th (11 am PDT, 8 pm CEST).

Register once [here](#). See schedule [here](#).

Colloquium Preparation:

Both presentation recordings will be available for viewing *beforehand*. A link to the two videos on our YouTube channel will be sent to those who have registered, together with your personal Zoom link for the colloquium. Background material will also be found in the April/May issue (v4.4-5) of our newsletter, [Correspondence](#).

Featured Guests:



Bernd Siebenhüner *After study of political science and economics at the Free University Berlin, conducted research and taught at the Martin Luther University of Halle-Wittenberg, Kennedy School of Government, Harvard University, Potsdam Institute for Climate Impact Research (PIK), and Carl von Ossietzky University in Oldenburg. Here was he appointed professor for Ecological Economics 2007. From 2010 to 2015 was he vice president for scientific innovations and quality management. In numerous BMBF, EU, Volkswagen Foundation, DFG, DAAD and MWK-funded projects, he researches international environmental policy, social learning and transformation processes, transdisciplinarity, ecological economy, sustainability management, social-ecological system interactions, and adaptation to climate change.*

Climate change as a challenge for the economy: transformation instead of growth

The massive use of fossil fuels in the past decades has enabled immense economic growth and material prosperity for large parts of the world population. At the same time, climate change and social inequality have grown just as quickly and put the industrialized growth model into question. In view of these effects, the question increasingly arises as to whether a growing economy can go hand in hand with decarbonization of the economy or whether a solution must come about through post-growth shrinkage.



Stefan Siemer *Head of Corporate Sustainability of the WELEDA Group since 2018. Studies in applied cultural studies and doctorate in education for sustainable development in Lüneburg and Vienna. Then strategy consultant in the intersection of brand management, communication, and sustainability, from 2009-2018 with his own company for groups, medium-sized companies, NGOs, and public clients. He has three adult sons and lives in Switzerland and Germany.*

Integral climate protection

WELEDA is undergoing an organizational transformation. The IMU's integral competence model is a helpful tool in this regard. Its basic assumptions also have important consequences for a deeper understanding of the climate crisis and for possible solutions. These relationships are briefly outlined and substantiated using the example of the WELEDA climate strategy that is currently being developed.

Look for further announcements from this collaboration of the Natural Science Section of the Anthroposophical Society in America, the Natural Science & Math Group of Great Britain, and the Natural Science Section at the Goetheanum.

Report on the 2020 Autumn Conference of the Natural Science Section at the Goetheanum The CLIMATE needs our CHANGE by Ruth Richter

(Translation from the German with additions in brackets and footnotes by Judith Erb)

The climate crisis can only be resolved through combined contributions from natural science, economics, and social and spiritual science. This was the tenor of the autumn meeting of the Natural Science Section at the Goetheanum bearing the title “The CLIMATE needs our CHANGE.” A wealth of viewpoints brought a spirit of optimism as participants expressed their perspectives, concerns, thoughts, and initiatives to the meeting through a variety of discussion formats.

The contribution by climate activist **Pauline Lutz**, who could only be connected via video message due to a corona case in her circle of friends, matched the mood of the conference: “I don’t like to reassure people so that they believe that things can go on as before. But my hope is too great not to want to share it with you,” she said at the beginning. She then contrasted the slow progress on implementation of the internationally agreed climate targets with the swift action in response to the corona pandemic, which has brought radical positive measures for the climate in a short period of time. We must not return to normal but must apply these lessons from the pandemic to speed up our response to climate disruptions.

Pauline cautioned that the fear of leaving one’s own comfort zone imprisons us in today’s perspective by requiring what seems “economically feasible”. Our future demands that we let go of this fear. With a poem by Rose Ausländer she recommended to the audience: “Throw your fear into the air.” [see p.8]

This touching message also spoke of a utopia. Might such a vision transform our relationship with Earth? Could we move away from the image of the earth as a limited material resource to be exploited and turned into money? Could we move toward the

image of Earth as a living, breathing being with whom humanity participates in a web of dynamic interrelationships? The aim of the conference was to design this picture together. The perspectives were lively and changeable like the image itself. Beginning with the scientific description of the earth as an organism, it turned to the options for action that have already been taken in some areas including pedagogy, agriculture, and economics. From the human situation, it turned to the possibilities for psychological and spiritual transformation of the individual. [We are human beings forming new pictures of our life together with the living earth.]

On the first day of the conference **Meinhard Simon**, marine biologist at the University of Oldenburg, brought the long common history of climate and earth to the room. Through the fine interaction of wind speed, temperature and sea temperature, the climate cools down and warms up again rhythmically at larger intervals. He showed that we are now able to use thousands of precise measurements to map this interplay of different rhythms and the carbonic acid/CO₂ cycle.¹ Impressive graphics showed that the CO₂ content in the atmosphere has increased by leaps and bounds to an extent never seen before. This change parallels the rapid increase in industrialization. The climate crisis holds up before our eyes our own actions as in a mirror.

Such complex relationships cannot be grasped with linear cause-and-effect thinking. With an integrating consciousness, humanity can recognize that the earth is a being with whom we participate in a reciprocal relationship. This also means that moral impulses must be brought into this relationship, in the sense of the thought expressed by Rudolf Steiner a hundred years ago: mankind is responsible for the

¹ In the version recorded in English, he particularly noted the relatively narrow range of temperature and CO₂ within which humans have evolved. The rise in the mean

temperature on earth is approaching the upper boundary of humanity’s historical physical presence on earth.

development of the earth's history through the pole of the will.²

Susanna Kümmell (Institute for Evolutionary Biology, Witten) described the organismic character of the earth climate with moving clarity. Using examples [such as the sustainability of the carbon cycle through living plants], she illustrated the property of self-regulation typical of living beings. For example, the salinity of the oceans is kept in constant dynamic flow within small deviations. Noting that life and earth have evolved together, she showed photos of iron ores from Greenland, dated 4.3 billion years old, holding visible traces of life and water already in the early days of Earth's history. [Earth has retained its water by homeostatic dynamic equilibria.] Consequently, the average temperature of the earth has always been relatively moderate: water has never been completely frozen and has not completely evaporated. [This has allowed life to be sustained on the earth.] What a contrast to Venus, for example, whose former water surface became so hot that the water evaporated into a dense atmosphere. Today, the temperature on its surface is 460°C!³

Astronomers assume that the radiation intensity of the sun has increased by 30% in the course of the earth's history over billions of years, which is relevant in long periods of time, but which plays no role in today's rapid global warming. Obviously, the earth and its sphere of life could regulate the increasing solar radiation over long periods. As far as we know today, the carbon cycle is very significant in that peat and later coal formed in swamps and CO₂ was bound during the formation of limestone. Today, by burning fossil fuels, humans reverse the regulatory processes of the earth.

Albrecht Schäd, professor at the Free University of Stuttgart, observed that countless factors have to play together if life is to arise. As far as we know, the earth is the only planet in space that harbors life—or

is itself alive. He compared life on earth, which creates its own conditions, with the early development of the human embryo. It begins with the germ first forming the trophoblast, its enveloping nutritive tissue, in the center of which it begins to differentiate. This is how the evolution of life began—in constant interaction with the environment, living beings gradually created their own living conditions. Biogenic rock formations created the nourishing shell in which the beginnings of biological evolution could take shape. It was a living environment on the earth's surface where bacteria and protozoa could evolve, together with the earth herself. Eventually this led to the enrichment of the earth's atmosphere with oxygen through the photosynthetic activity of the cyanobacteria, which over thousands of years created the prerequisite for the emergence of higher living beings.

In his contribution, **Hans-Ulrich Schmutz** showed that the task of the school is to train the intellect to be available for action.⁴ Flexible thinking should be learned instead of mere knowledge content. [He then shared his approach for developing this living thinking with high school students. Throughout his talk he shared the work of his pupils.] They learned and documented the dynamic relationships at work in the movements of the water in the world's oceans by means of drawings. In addition, they learned through astronomical drawings the rhythm of the earth's rotation itself and its rotation around the sun, the movement of the earth's axis, and the rhythm of its elliptical orbit—four rhythms that interlock and affect the earth. This interaction was illustrated graphically by the students with data from ice cores in the Arctic showing the rhythmic course of warm periods and ice ages. With the sudden increase in CO₂ emissions over the last 50 years, this interplay of rhythms has collapsed, their time structure has been disrupted.

leading the children to a reverent natural interest in the earth, while the upper school's task is to train the students to look at earth science using their intellect, but also to transform intellectual thinking into a more mobile thinking. He reminded those present of a statement by Rudolf Steiner that if we do not develop such living thinking, the destruction of the earth will commence during the 5th post-Atlantean period (our time). The destruction will begin with the warmth of the Earth. He ended with the declaration that what we are seeing is not just climate change; it is climate disruption!

² Lecture of 9 Nov 1919 (GA191)

³ CO₂ comprises about 95% of the atmospheres of Venus and Mars and the atmosphere is in chemical equilibrium. Earth, by contrast, has only a small amount of CO₂ in its atmosphere, which is in a dynamic steady state with the plant and animal inhabitants on its surface. We can see from the patterns on Mars surface that once there was water, but now even the atmosphere has grown very thin.

⁴ Dr. Schmutz is describing a Waldorf High School Earth Science class. He described the task of the lower school in

In another segment, agricultural experts, economists, and entrepreneurs considered the relationship between food production and climate. In the estimate of a CGIAR study from 2012, the global share of greenhouse gases due to food production from the field to the plate was put at 33%. But the two experts from the Research Institute for Organic Agriculture (FiBL) showed that it is necessary to differentiate industrial agriculture from regenerative agriculture. In impressive pictures, **Anet Spengler** contrasted a true encounter with the animal with the experience of industrial animal husbandry saying, “With animal husbandry like this, we cannot develop further together with the animal.” This motif of joint development also includes the earth. Many were surprised to learn that grassland accounts for the largest part of agricultural production in terms of area and—with good management—can make a greater contribution to reducing CO₂ in the atmosphere than all forests on earth. Ruminants (cattle, sheep, and goats) are required to realize this potential. They are specialized for this task with their unique ability to digest cellulose. If the use of commercial feed that produces animal fattening is abolished, the keeping of ruminants on grassland could make a moderate contribution to animal protein in the diet of growing humanity. A study on world nutrition showed in variable models that the earth can feed 9 billion people with sustainable agriculture if the consumption of animal protein is reduced to a healthy level and food waste is reduced by 50%.

In his contribution on agriculture, **Paul Mäder** described the so-called DOK (Demeter, Organic, Conventional) experiment which compared the impact of these three agricultural methods near Dornach over a period of 48 years. Photos of the arable soil hosting each of these three methods showed significant differences. After a rainy period, the conventionally farmed soils had been significantly washed away while the biodynamically farmed soil was loose and crumbly with a large water-holding capacity. The conventionally farmed plot lost a ton of humus per hectare per year. After ten years of intensive production the humus was completely used up. In contrast, the adjacent biodynamically farmed plot increased the humus content by 500 kg per hectare per year. The soil increased its value. According to Mäder, the yields and humus-building capacity of biodynamic farming methods can be improved even further through the

adoption of new plowing techniques which move only the top 10 cm. of soil.

Bernd Siebenhüner, who heads the working group for ecological economics at the University of Oldenburg, spoke about the relationship between economics and climate change. He presented data supporting five theses: 1) The climate crisis is real and concerns all people worldwide. 2) The climate crisis is closely linked to economic growth. For example, the USA requires five earths to meet the needs of its population, while India requires only 0.7 earths. 3) It cannot be definitively proven that reduction of CO₂ and growth are mutually exclusive. Many social factors such as adequate education and social justice play a role here. But without consumer self-restraint the growth model will not be compatible with a sustainable use of resources. 4) A reduction in greenhouse gases is achieved by an economy that is not geared toward growth. This is an inversion of thesis #3. There are also many initiatives such as sharing models, economy for the common good, solidarity-based agriculture and, as exemplified in the talks to follow, alternative production companies—here, prosperity is defined not only in monetary terms. From the familiar maximization-of-profit perspective of *Homo oeconomicus*, these models may look idealistic. However, if one assumes a transformation of values in the direction of “a good life,” these initiatives are closer to reality than are the handed down economic models. They can serve as prototypes of future social structures, thereby becoming the fifth thesis for an economics that works through transdisciplinary concrete solutions.

As head of the department for sustainable development at Weleda AG, **Stefan Siemer** addressed the question of sustainability with regard to Weleda. The question is not simply about improving their ecological footprint in comparison with other companies; it is a question of whether, in reality, Weleda creates a better world. Every plastic packaging that is shipped to New Zealand makes the world a bit worse. Will Weleda live up to what it claims itself to be? Even more important than sustainability is the issue of how the company handles capital. Do we know that pension fund investments are made available to companies that stand for fair and sustainable practices as our company does? Or do they go into equity funds that finance companies holding opposing values? But beyond the working environment, does the vision of Weleda permeate the lives of the employees so that

we help them to make socially responsible decisions with their own economic resources? Weleda takes a broad interpretation of corporate responsibility. Sustainable development also includes supporting the employees to make their own contributions in their own circumstances toward improving the environment and the climate. This illustrates an overarching theme of this conference: that the whole is created through acts of individuals.

For **Beate Oberdorfer** and **Andreas Pook** of Sonett [ecological cleaning products], the aforementioned elements are understood to be the responsibility of a company. With the term “new organic” they describe an organism that comes into life through initiative and impulses from people and becomes effective on earth, as is the case when a company is founded, or a product is developed. Further features that underlie the design of living things offer guidance and orientation to the design of a corporation. Because each situation is new, you need to be constantly ready to look at the present one as it stands, rather than dealing with it out of convenience or efficiency. Out of the tension between maximum agility and stable economic exchange, something new arises. As an example, they described how in the creation of the mistletoe forms of body care products it was asked—reversing the inner attitude towards nature: “What does mistletoe need so that it can fulfill its task on the earth?” A visibly lively manufacturing process was made possible through invention of the fluidic oscillator, which lets summer and winter juices flow together in a rhythmic play of vortices. This endeavor to lead substances into processes and movement lives right up into production, as occurs incessantly in living things.

“Cooling Down” – that’s the name of a role-playing game developed by **Otto Ulrich**. In it, players representing six world regions work together to achieve the goals of the Intergovernmental Panel on Climate Change: to achieve 50% reduction in CO₂ by 2050. Through the game, players practice climate justice and responsibility. Ulrich drew attention to three core competencies that are in demand in the game, but also in the real world:

- Ideas come first. The question of how to finance them comes later.
- Don’t try to solve all the problems at once. Concentrate on one of them.
- And, perhaps most difficult, don’t be conventional.

As a former advisor in the Federal Chancellery, in the German Bundestag, and in the EU Commission in Brussels, he knows what he's talking about.

Ulrich also brought up two controversial topics. He does not believe conversion of transportation to electric vehicles is a realistic possibility, considering that the provision of materials necessary for electricity production and storage have enormous environmental impacts. A substitution of a new form of energy while maintaining the same energy consumption is mathematically impossible. A drastic reduction in energy consumption is necessary. A second topic is the digitalization of society. The price of this virtual approach is that it alienates people from Earth and nature. We also must not forget that these internet technologies, and especially the gigantic search engines, produce 10% of CO₂ emissions and this trend is increasing. Climate protection must also mean bringing new societal models.

A transformation of consciousness and global relationships, these are the guiding ideas **Stefan Ruf** developed in his contribution as steppingstones on the path to ending the climate crisis. He traced the development of humanity and human consciousness since the beginnings of the Neolithic revolution. Clarification of this provides the key to understanding and addressing the current problem of our divided souls. We still carry remnants of an archaic consciousness when we directly experience nature. Although we experience the beauty, wonder and joy of nature, we bear the burden of the entire evolution of consciousness as we are confronted with the consequences of our social, economic, and political actions. In the time of the consciousness soul lies an unprecedented potential to remove this division. In that we acquire a consciousness of consciousness, we cultivate an “contemplative thinking” which becomes a “spiritual organ” as we come to understand the interaction between inside and outside and develop a Goethean cognitive phenomenology. This atmospheric consciousness, as Ruf calls it, is global—just like the earth’s atmosphere. Within such a consciousness lies the insight that Earth is an organism, the organs of which are living beings and we human beings as well. That means: if we change, the whole also changes.

At the conclusion of the conference, **Johannes Kühl** described the path to our transformation as being exhausting, painful and great – like learning an art, it requires practice, practice, crisis, further practice,

always anew. A lasting change of habits is not achieved through regulations, not even self-imposed. The entrance lies in the transformation of one's own sensitivity: By cultivating thoughts about others and their needs, I nurture within myself a loving interest through which I find pleasure in doing what I consider is responsible and beneficial for the whole. An atmospheric consciousness can arise in the intimate reference to nature in meditation.

Mobilize inner transformational forces—we can take that into our own hands. This message was encouraging for the motivation of the participants to address in their lives the split between rational insight into the need for change and the short-term urge to maximize their own well-being—with the global awareness that what suffering I inflict upon another person, I inflict upon myself.

You are here, still

Julia K. Stein, translation

Throw your fear
into the air

Soon
your time is over
soon
heaven grows
under the grass
your dreams fall
into nowhere

Still
the carnation smells sweetly
the thrush sings
still you may love
give words away
you are here, still

Be what you are
Give what you have

Noch bist du da

Rose Ausländer

Wirf deine Angst
in die Luft

Bald
ist deine Zeit um
bald
wächst der Himmel
unter dem Gras
fallen deine Träume
ins Nirgends

Noch
duftet die Nelke
singt die Drossel
noch darfst du lieben
Worte verschenken
noch bist du da

Sei was du bist
Gib was du hast

From our [Facebook Page](#)

[Earth looks like a living creature in this amazing NASA video](#)

Click on image.



The Earth - A Living Creature (The Amazing NASA Video) 1080p

Notes and Commentary

In the flyer above you may read the abstracts for the presentations by Drs. Siebenhüner and Siemer for this month's online climate colloquium. You will find a narrative description of their presentations at the 2020 Autumn Conference in Ruth Richter's report above [starting at the top of the right-hand column on [p.6](#)]. And, of course, you will have viewed the recordings, which are only available to those who register.⁵

Ruth Richter's report above gives a useful overview, illustrating the broad and comprehensive scope of perspectives given at the 2020 Autumn Conference concerning what climate change is asking of us. It would have been ideal, if this overview had been available at the outset of our colloquium series. This project is indeed a work in progress. We are learning as we go. Nevertheless, we hope that the archive of recordings we are building will be of service even after the colloquium series is completed. They might perhaps serve as core thematic material for teachers to build upon. We shall see.

As auxiliary material for this month's colloquium, the editor has collected two notes:

Note (Barry Lia):

My good friends Henning Sehmsdorf and Elizabeth Simpson live on S&S Homestead Farm on Lopez Island of the San Juan archipelago in the Salish Sea of the state of Washington. The presentations by Siebenhüner and Siemer treat of rather more macroeconomic matters at the corporate scale. In the essay cited below, Henning deals at the very microeconomic homestead scale. The homestead meets the biodynamic ideal of the farm "individuality," relying as much as possible on its own natural and human resources. It is an ideal case study for illustrating some fundamental aspects of economy, especially as relates to economic, human, and ecological health. In "farming for health," rather than money, the goal is eco-nomics, rather than ego-nomics. Some concepts to ponder in the essay: the distinction between oikonomia and krematistiké, economics as stewardship, labor of the homesteader as profit rather than expense, "eudaemonia" and righteous living, cash-equivalent on-farm income and expense, and a creative associative economic arrangement.

<http://www.sshomestead.org/wp-content/uploads/26.-Farming-for-Health.pdf>

Small-Scale, Self-Sufficient Farming for Health

By Henning K. Sehmsdorf, S&S Homestead Press, 2021

"My topic will be the economics of a small, homestead-scale farm. Ours is a biodynamic farm, and I want to explain how its economics are defined in the context of biodynamics. Fundamental to biodynamic economics is the idea that while the farm organism is bounded in that it provides for most needed inputs independent of the market, it is open to the cosmos. The farm is conceived as a microcosm

that exists in the larger, macrocosmic context. The cosmic perspective on biodynamic agriculture means that farming expresses what 20th century Protestant theologian Paul Tillich called "ultimate concern." In other words, for biodynamic farmers agriculture is an inherently spiritual, sacred task, and economics have a larger significance than the material bottom line."

Note (Barry Lia):

Daniel C. Wahl, author of Designing Regenerative Cultures, introduces a "framework that puts business as usual, green, sustainable, restorative and regenerative into a spectrum — a journey we now need to commit to so we can swiftly move beyond simply doing no damage and start reversing the damage we have done for far too long to the living Earth we depend on and emerged from. We are participants in life as a planetary process." (He is speaking in English; some slides are translated into Portuguese.)

<https://medium.com/activate-the-future/why-we-need-to-go-beyond-sustainability-a869f8c16dc8>

Why do we need to go beyond sustainability?

Goethe Institute Webinar 1 — Daniel C. Wahl, posted Nov. 29, 2019

⁵ You may note that a couple of the Autumn Conference presenters did not have recordings made. Some of those who were recorded did not want full public access to their recordings. Therefore, the conference recordings will be held in our private YouTube channel, accessible by a link given to all who register.

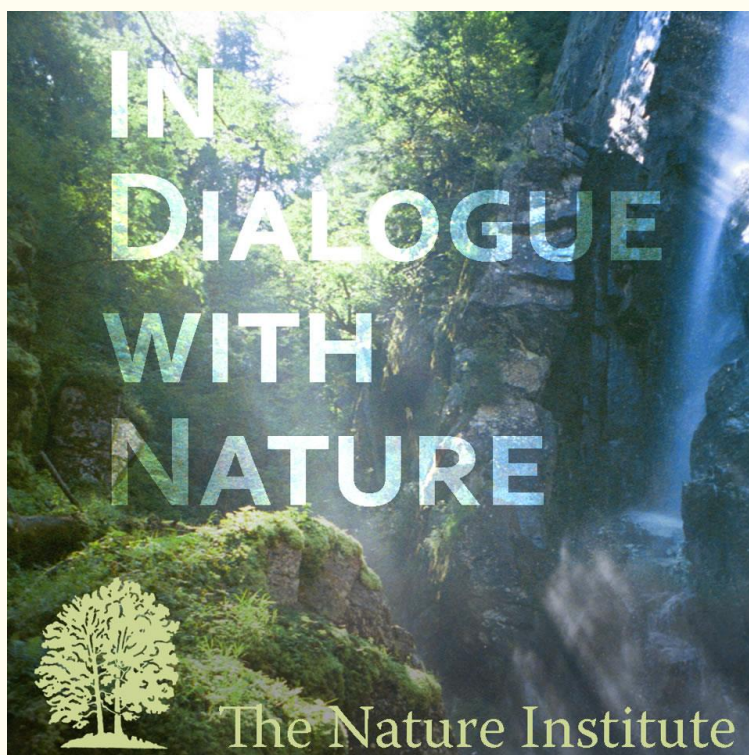
News from The Nature Institute



Dear Friends,

We're excited to offer you a new way to enjoy and share highlights of work at the institute: listen to our just-launched podcast, [In Dialogue With Nature.](#)

Produced and hosted by John Gouldthorpe, a long-time colleague and teacher in our Foundation Year course, the new podcast is intended for a general audience. Our first episode, "Plant," features John in conversation with Craig Holdrege, the institute's director, about a mode of understanding inspired by the life of plants: dynamic and resilient, in intimate connection with their environment.



Future episodes of *In Dialogue With Nature* will feature conversations with our staff and special guests, talks at the institute, and readings of texts from our archives. Our intention is to lead listeners on an exploration of engagement with the natural world and ways of knowing that are whole, enlivening, and experiential.

You can stream the podcast at our website, on [SoundCloud](#), or find it wherever you access podcasts.

With pleasure,
Elaine Khosrova
Outreach & Relations

Save-the-Date — June 29 at 11:00 am (EDT), The Nature Institute's senior researcher, Steve Talbott, is giving an invited presentation at the Linnean Society's virtual two-day [conference on Teleonomy](#). Details below.

Announcements



EVOLUTION 'ON PURPOSE': TELEONOMY IN LIVING SYSTEMS

MONDAY 28TH AND TUESDAY 29TH JUNE 2021

2 DAY **ONLINE** INTERNATIONAL MEETING

ORGANISED BY THE LINNEAN SOCIETY OF LONDON

Living systems exhibit an internal teleology, the full implications of which have not been explored. This meeting will address various aspects of this phenomenon, including its scope and meaning, and its many forms and facets.

Although it is now widely accepted that living systems exhibit an internal teleology, or *teleonomy*, the full implications of this distinctive biological property have yet to be explored. This online conference will seek to address various aspects of this important phenomenon, including the origins and history of the teleonomy concept, its scope and meaning, and its many forms and facets. Possible topics may include: an historical review of teleological thinking; teleology (and entelechy) versus teleonomy in evolutionary theory; the nature of teleonomy (who/what is in control, and how?); agency and teleonomy; semiotics and teleonomy; modeling teleonomic processes; teleonomy in the genome, in epigenesis, in physiology, and in behaviour; teleonomy and natural selection; teleonomy in human evolution; and, especially significant, how teleonomy has influenced the evolutionary process.

PROGRAMME, ABSTRACTS, BIOGRAPHIES [HERE](#)

REGISTRATION [HERE](#)

June 28, 12-4 PM GMT (1-5 BST): 8 half hour presentations

June 28, 5:30-7:30 PM GMT (6:30-8:30 BST): 4 half hour presentations

June 29, 12-4 PM GMT (1-5 BST): 8 half hour presentations

June 29, 5:30-7:30 PM GMT (6:30-8:30 BST): 1 hour, pre-arranged comments; 1 hour, open discussion

Calendar of Events

May 29 *Climate Colloquium series: the CLIMATE needs our CHANGE*, online.

Featured presentations by Bernd Siebenbhüner and Stefan Siemer from the 2020 October conference on climate held at the Goetheanum. Information [here](#). 11:00 PDT, 8:00 CEST

June 28-129 *Evolution ‘on Purpose’: Teleonomy in Living Systems*, online.

Organized by the Linnean Society. Stephen Talbott of The Nature Institute will be a presenter. See [p.11](#).

October 7-10 *Evolving Science 2021*, Goetheanum, Dornach

Look for announcements in future. This will mark the 100th anniversary of the Research Institute at the Goetheanum.



Photo: B. Lia

Please Support Our Work

Please consider making a financial contribution in support of our mission to bring a discerning and unique perspective on developments in science and technology to the Society's membership and out into today's culture.

The epistemological foundation of anthroposophy is not only a matter of scientific method. Having a strong foundation in the scientific basis for a monistic science of spirit-matter is important for a healthy attitude towards conventional science today and to overcome its materialistic bias. This is important for *all* of us working with anthroposophy to further our culture today, be we teachers, farmers, doctors, therapists, artists, entrepreneurs, or anyone seeking to heal the contemporary worldview.

Support for German-to-English translation is especially desired.

**Your donation *of any amount* will help us better serve the Society.
(It is possible to set up recurring monthly donations.)**

To donate, click [here](#) or find a PayPal button on our [website](#).

Or mail check payable to "Natural Science Section" in care of our Treasurer, Barry Lia at:
Anthroposophical Society in America, 1923 Geddes Ave, Ann Arbor, MI 48104

Thank you kindly for your consideration.



Natural Science Section

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Mathematics-Astronomy Section

mas.goetheanum.org/en/mas/

School for Spiritual Science

Anthroposophical Society in America

anthroposophy.org

www.naturalsciencesection.org

Correspondence

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Disclaimer: The opinions expressed are the authors' own and do not necessarily reflect the views of the editor or members of the Natural Science Section of the Anthroposophical Society in America.