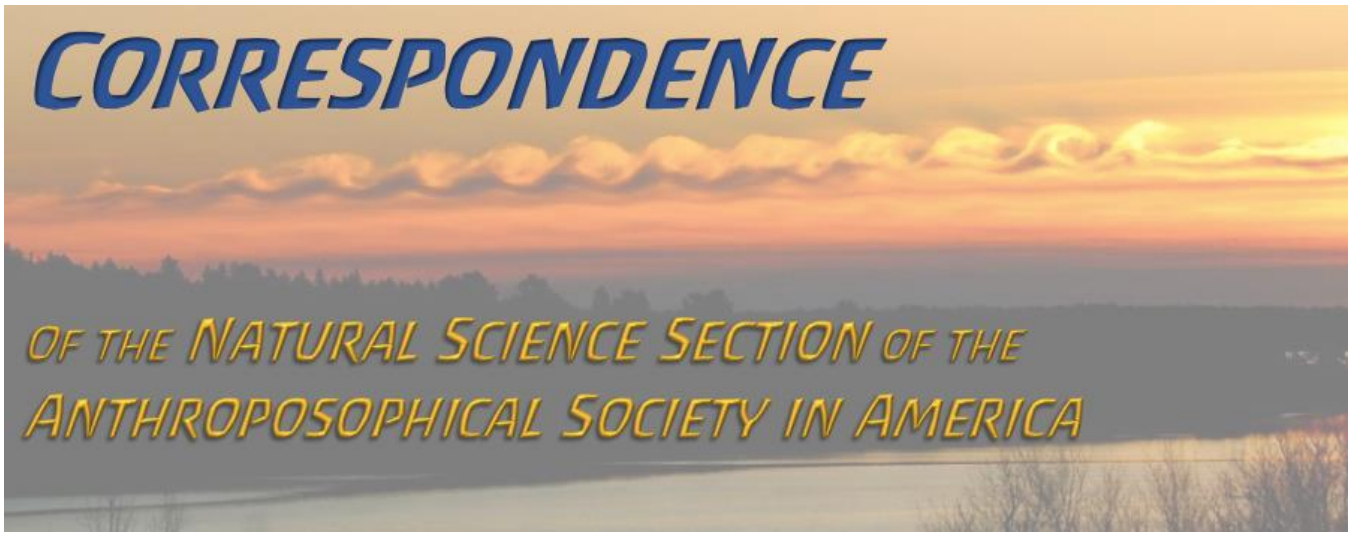

SEPTEMBER-OCTOBER 2019 VOLUME 2 ISSUE 9-10

Contents

Editor's Note

Last issue, John Barnes's review of Charles Eisenstein's *Climate—A New Story* set the tone for our imminent conference, *What is the Earth Asking of Us?* With this issue, attendees have just a few days to review several offerings related to the conference, most of them by conference presenters serving to foreshadow their work with us. There are also some important notes about the venue for attendees (p.4).

As always, our Notes and Commentary section is meant to come from you, our readers, reflecting upon what you are encountering in science and technology. This is your opportunity to share a note on an article or a scientific paper you've just read, or a commentary on something that struck you in a book you are reading. This newsletter is intended for *reader participation.*

We still want to point out the availability of the video archive of each evening's lecture for those who could not attend the "Bridging" conference with Prof. Dr. Peter Heusser in November 2018 (see p.13). These convey a scientifically justified epistemological basis for a spiritual science. *It is possible that Prof. Heusser will visit the States again next May.*

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.

Barry Lia, Ph.D.
Correspondence Editor

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The epistemological foundation of anthroposophy is not only a matter of scientific method. It is important to know that there *is* a scientific basis for a monistic science of spirit/matter and to know *what* that basis is. 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.

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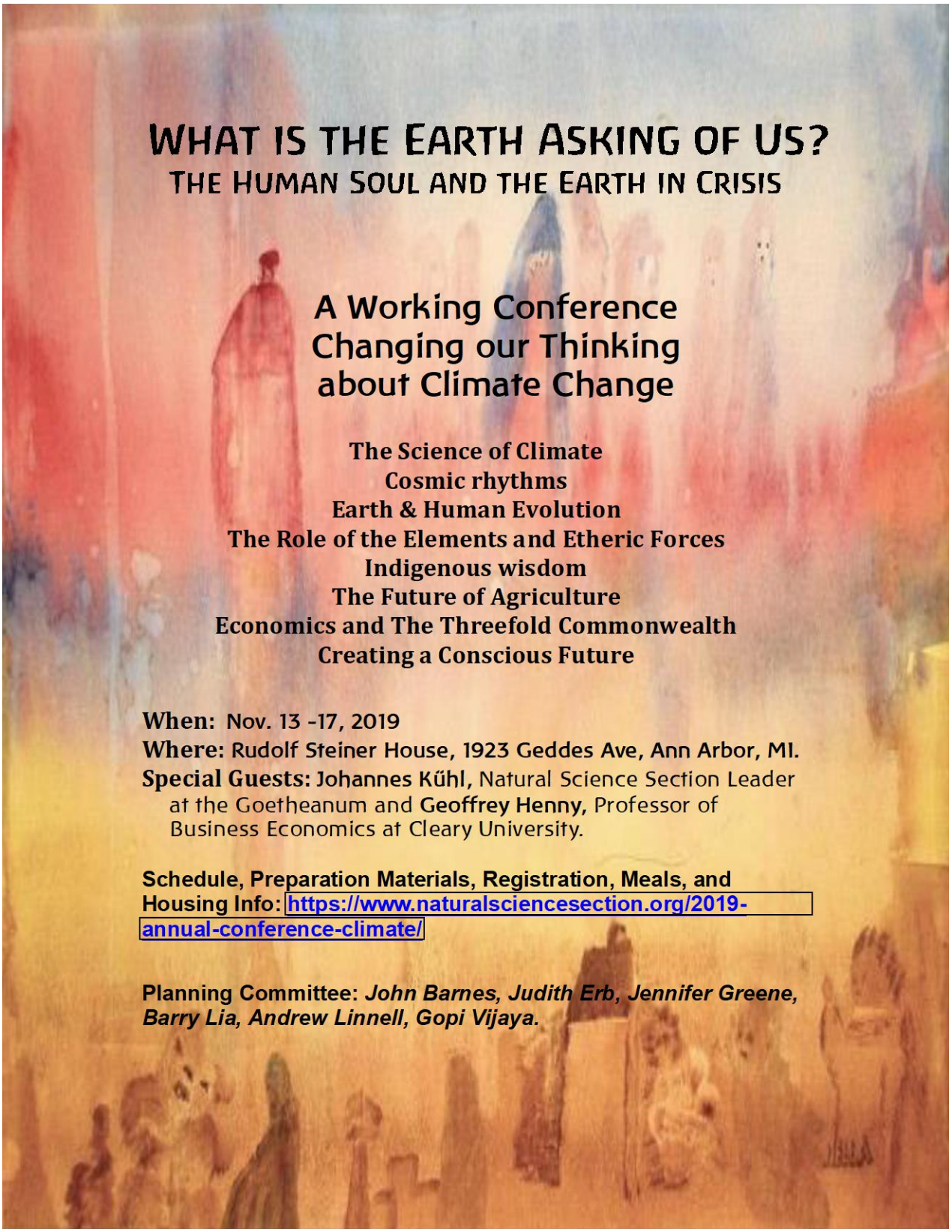

Background Material and Conference information available on our website.

https://www.naturalsciencesection.org/2019-annual-conference-climate/

Conference Preparation

Attendees:

The Conference forecast shows cold temperatures settling in, but no precipitation. We will be on the tail end of an arctic blast 20-30 degrees below average. There may be snow on the ground. Each day will be a mix of clouds and sun with high temperatures just above freezing. At night, it will be well below freezing. Dress appropriately. Outdoor perambulation and conversation are nevertheless recommended after lunch cleanup. The Arboretum is nearby.

If you are staying at Rudolf Steiner House, sheets, blankets, and towels will be provided. You will need soap and shampoo and other toiletries. Please pay in the office on Thursday.

If you are commuting to the conference, please park across Geddes Avenue on Oswego Street, where you may park legally all day. There is some parking at Rudolf Steiner House, but we try to keep spaces open for the staff and for business.

Class members, please remember your Blue Cards.

Notes and Commentary

Editor's note:

All of the offerings in this issue have been solicited in preparation for the conference. Attendees might want to bring a copy of this issue with you (you'll likely be reading it on the plane at this point).

The first is from Judith Erb. The theme of this conference was her inspiration. The second is a version of an article which comes by way of Johannes Kühl from a European Waldorf science teacher, Hans-Ulrich Schmutz. From Natural Science, we then turn to two offerings on "The Dismal Science": Geoffrey Henny grapples with economic science and transition strategies, while Daniel Osmer presents Steiner's threefold concept of money. Lastly, the editor threads together a variety of notes from his desk, turning our gaze away from economic sacrifice and towards applied Goethean science and the centrality of everyday life.

It would also be wonderful, in preparation for the conference, if you would read the Letter, "Understanding of the Spirit; Conscious Experience of Destiny," on page 37 of the *Anthroposophical Leading Thoughts*.

Changing Climate, Changing Science

About the Wednesday Evening Presentation

By Judith Erb

Because the consequences of climate change are so alarming, it is easy to miss the change in human consciousness occurring as human beings grapple with the reality confronting us. Computer programs digest and transform voluminous data from earth-observation satellites, ice core drillings and land, water and air-based sensors, to present us with the statistical summary statements and projections we read about in the news. The complexity contained in the increasingly sophisticated modeling programs represents a different kind of science. Fifty years ago, a simple causal view of reality produced science based on isolation of factors. Experiments were designed to eliminate other potential variables from the experimental setup so that a single cause and effect relationship could be examined. The new science looks instead at the way a multitude of interacting phenomena move, change and affect one another in complex dynamic systems.

This relatively new type of analysis requires world-wide cooperation among scientists, volunteer observers, and governmental organizations, all sharing data to be mathematized by highly parallel processing supercomputers. Although the published output from this often takes the form of statistical trends and predictions with error bars, organizations such as The National Oceanic and Atmospheric Administration (NOAA), the Scripps Institution of Oceanography, and the National Aeronautics and Space Administration (NASA) have also produced stunning visual presentations of the data itself, not as graphs, but as animations of the data—giving us a living, changing peek into the life of the earth.

Several of such visual data renderings will be viewed from a phenomenological stance on the opening evening of our up-coming conference, *What is the Earth Asking of Us?* As together we experience the breathing of the earth in the accelerated sequential photos of vegetation expansion and contraction and polar ice melting

and deposition, we will share a consciousness that was impossible in the not too distant past. The earth, once experienced by human beings only in separate individual locations, is clearly seen as a rhythmically changing living being.

Human awareness is emerging that our relationships with other beings—human and non-human—shape the disposition of the earth toward all terrestrial life. We are moving away from the time when humanity's task was to discover and strengthen ourselves as free individuals. Our task is now free and thoughtful cooperation among individuals and nations as we learn what it takes to consciously engage in world creation. We have engaged in unconscious creation for some time. Now we will look for the archetypal forms and polarities emerging from the data toward developing conscious participation in this next phase of human/earth evolution.

From Climate Change to Climate Discontinuity[1]

By Hans-Ulrich Schmutz

Today one usually speaks of climate change. When one speaks of *change*, one generally thinks of a variation in an expected course of events such a new developmental step in an organic process. Can the dramatic climate events we are experiencing today be characterized as "climate change," or does this term only veil the seriousness of the problem? In the following I will attempt to show that climate *discontinuity* (Klima*bruch*) more aptly describes the current crisis in the climate and the life processes of the Earth.

Astronomically-induced variations in climate

Until the beginning of the Anthropocene, variations in climate were determined by rhythms that correlated with cosmic rhythms. According to a proposal before the International Commission on Stratigraphy, the Anthropocene is a new geological epoch that began with industrialization and in which the human being has become an important factor influencing the biological, geological and atmospheric processes of the Earth.

Variations in the rhythmical movements of the solar system gave rise to variations in the sun's irradiation of the Earth that in turn led to periods of warming and Ice Ages.[2] Changes in the intensity of the sun's radiation are connected to rhythms of long duration such as the Platonic year (precession, 25,920 years), the rhythmical variation in the Earth's distance from the sun (110,000 years), variations in the angle of the Earth's axis to the Ecliptic (41,000 years), and variations in the deviation of the Earth's elliptical orbit from a circular orbit (100,000 years). Over a period of the last three million years the combined working of these four great rhythms gave rise to the very slow alternation of warm and cold periods, that is, to the rhythms of the Ice Ages. The overlay of these four great rhythms resulted in a shorter rhythm of ca. 21,000 years, which was incorporated into a longer rhythm of 100,000 years. According to these cosmic influences, a gradual cooling of the earth's atmosphere of about 4° C would be expected, beginning a few centuries ago and leading to the next Ice Age. The last Ice Age ended about 11,000 years ago, and the next period of glaciation would therefore be expected in 10,000 years. This reversal from a warming to a cooling period led to the so-called "Little Ice Age," which began in the Middle Ages and continued until about 1850. However, at this point a warming period began which has increased in intensity and has led to the present crisis.

Research on climate history

A large body of scientific research shows a parallel convergence of temperature changes and changes in the amount of carbon dioxide in the atmosphere and in the water. This has been well demonstrated by an analysis of ice cores from Greenland, the Antarctic, and the Himalayas, so that the climate history of the last 800,000 years has been documented in detail. Amazingly, changes in temperature of a maximum of 10° were accompanied by corresponding variations in atmospheric CO2 of between 180 and 280 ppm (parts per million). High carbon dioxide levels were linked to warm phases. Changes in atmospheric carbon dioxide, but also greenhouse gas methane, correlated with changes in the following life processes on the Earth: the relationship between aquatic and terrestrial plants and animals, powerful volcanic events, and changes in global ocean currents and prevailing winds. These—even the volcanic activity—were all rhythmic processes. Rhythm is the basis of all life.

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[1] A version of this article appeared in *Das Goetheanum* https://dasgoetheanum.com/abo/2019/9/6/vom-klimawandel-zum-klimabruch [John Barnes contributed this translation.]

[2] Tillemanns, A. (2005): Die Erde schwankt im Eiszeittakt; https://www.wissenschaft.de/erde-klima/die-erde-schwankt-im-eiszeittakt/

Anthropogenic discontinuity in climate rhythms

Indisputable measurements show that the atmospheric carbon dioxide content has increased from 280 ppm in 1870 to 315 ppm after World War II, to 410 ppm in 2019. The last time the carbon dioxide content was this high was about 13 million years ago, at a time when cosmic rhythms could not lead to ice ages because carbon dioxide content and global temperatures were too high. A further important fact is the enormous increase in the burning of coal, oil and gas as a result of industrialization. Added to this is the rapid deforestation of tropical rain forests. In 1870, at the beginning of the industrial age, the annual release of carbon dioxide through the burning of coal was still a modest 0.37 billion tons. By the end of World War II, it had increased to 3.7 billion tons, and in 2013 it surpassed 37 billion tons per year. A cosmically induced increase in atmospheric carbon dioxide from 180 ppm to 280 ppm took 10,000 times longer than the increase from 280 ppm to 410ppm in the last 150 years. A time body, or body of formative forces, is active in all life where the speed of living processes such as growth and metabolism are adjusted to an organism's way of life. The powerful human-induced acceleration of the processes described above represent an attack on the integrity of the Earth as a living organism.

The last 2000 years: The transition from regional warmth fluctuations to uniform global warming

Let us take a look at the history of temperature over the last 2000 years. Two comprehensive research reports issued in July of 2019 come to astonishing conclusions.[3],[4] After studying hundreds of climate archives (annual tree rings, layering of ice, sedimentation in lakes and oceans, limestone deposits in caves) 3 researchers came to the following conclusions for the time period from the birth of Christ to the year 2000: until the middle of the 19th century there was a tendency toward declining temperatures that was interrupted by two warming phases, one in Roman times, the other in the Middle Ages. But it is notable that these variations in temperature could only be observed locally in different places and at different times. Short periods of cooling were caused by volcanic eruptions, especially in Indonesia (1808, 1815, 1822, 1831, 1835).

Beginning in 1870 when industrialization first took effect, an increasingly intensive warming trend could be observed on the continents, with the exception of uninhabited Antarctica, and this trend was simultaneous and uniform. Warming of the oceans began later because water warms more slowly, and it tended to occur somewhat more strongly in the Arctic than in the Antarctic oceans.

The fact that, beginning in 1850, the increase of atmospheric carbon dioxide has accelerated and that atmospheric CO2 has since increased by one third is of special importance. The release of carbon dioxide through anthropogenic burning of coal, oil, gas, and wood (deforestation) during the same period is even more obvious. The increase in carbon dioxide in the air and in the oceans can therefore clearly be attributed to human activity.

Until about 1980 the curve of anthropogenic release of carbon dioxide rose more steeply than that representing the measurement of atmospheric carbon dioxide. This can be attributed to the fact that the oceans absorbed up to one third of the released carbon dioxide drawing part of it down into great depths and making part of it available as nourishment to vegetative plankton. But through the acidification of the oceans the conditions for aquatic plant and animal life deteriorated, and the curve of carbon dioxide measurements in the air began to rise more steeply than that of the release of carbon dioxide. Since 1993 the rate of

[3] Neukom R. et al. (2019): No evidence for globally coherent warm and cold periods over the preindustrial Common Era, *Nature*, vol. 571, 25 July 2019, p. 550-554

[4] PACES 2k Consortium (2019): Consistent multidecadal variability in global temperature reconstructions and simulations over the Common Era, *Nature Geoscience* 12, p. 643-648

ocean warming has doubled. In its most recent special report on the oceans and kryosphere (those portions of Earth's surface where water is in frozen, solid form) the IPCC (Intergovernmental Panel on Climate Change) maintains that the sensitive life in the oceans plays a key role in changes in global biodiversity.[5]

Thoughts on the controversy between the community of climate scientists and the climate skeptics

Climate skeptics also recognize that the increase of carbon dioxide in the atmosphere and oceans over the last 200 years can be mainly attributed to human activity.[6] For the most part, the controversy centers around the question of whether carbon dioxide and methane are greenhouse gases and therefore influence climate. Year to year variations in air temperature close to the ground over the last 150 years can be compared with variations in the intensity of solar radiation (which varies slightly in a rhythm of about 11 years), the effects on weather of the four approximately 4-year El Niño cycles, as well as seven strong volcanic eruptions that occurred during that time period.[7] If one correlates these natural climate factors with the variations in temperature, most of the temperature variations of short duration (2 to 5 years) can be explained, but not the accelerating rise in mean temperature of 0.7° since 1870.

Climate skeptics argue that the data from ice cores indicate increases in carbon dioxide after increases in temperature. They therefore see the related climate changes as resulting from variations in solar intensity and not from an increase in carbon dioxide. When related to the fluctuations of past Ice Ages that were influenced by cosmic rhythms, this is a simplified but not incorrect interpretation. But an entirely new situation has arisen in the last 200 years in which the rapid increase in carbon dioxide content is not of natural origin. In 2015, comprehensive measurements in the atmosphere over a period of 10 years proved uncontrovertibly that carbon dioxide is a greenhouse gas.[8] The effects of the gases carbon dioxide, ozone, methane, and water vapor were measured in the southern Great Plains and the north slope of Alaska—two dry regions with little cloud cover. In the measurements taken over 10 years, atmospheric carbon dioxide increased by 2ppm, and the intensity of radiative forcing increased correspondingly.

Because the increase in atmospheric carbon dioxide and the corresponding rise in global temperature cannot be explained by rhythmic events such as variations in solar radiation and volcanic eruptions, they must be mainly attributed to human activity. This is the conclusion of the international scientific community based on the results of many comprehensive studies.[9]

However, the climate skeptics still balk at these insights and persist with their old arguments.

The importance of the rate of change

The remarkable thing about these changes is not the quantities of substance that have been measured, but the span of time in which these changes have occurred. The burning of fossil fuels such as coal, oil and gas has occurred 10,000 times more rapidly than the geological process in which carbon compounds have separated out from the cycle of life and been deposited in deep layers of the Earth. Consequently, atmospheric carbon dioxide has

[5] https://www.ipcc.ch/site/assets/uploads/sites/3/2019/09/SROCC_SPM_HeadlineStatements.pdf

[6] Schoenwiese, C. D. und Walter A. (2009): *Neue statistische Abschätzung zur anthropogenen und natürlichen Steuerung des Globalklimas*; Deutsche Meteorologische Gesellschaft, Heft 01, 2009, http://www.dmg-ev.de/

[7] Buchal C. und Schoenwiese C. D. (2011): *Klima, die Erde und ihre Atmosphäre im Wandel der Zeiten*; Helmholtz Gemeinschaft Deutscher Forschungszentren, http://www.klima_2011-heraeus.pdf/

[8] Feldmann D. R. et al. (2015): Observational determination of surface radiative forcing by CO2 from 2000 to 2010, *Nature*, vol. 519, March 2015

[9] https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf

increased. As already mentioned, this increase is occurring far more rapidly than those natural processes that resulted from cosmic rhythms in the past, so that the life of the Earth is unable to handle this abrupt change. The mass extinction of plants and animals recently documented by the United Nations dramatically confirms that life on Earth is under attack.

What are we facing? Impulses from the cosmos have been greatly diminished or rendered ineffective by the modern, consumption-oriented way of life of an ever-larger part of humanity. For the [cosmically induced] change in temperature on the Earth has not only been reversed (warming instead of cooling), but this has occurred thousands of times more rapidly than would have been possible through solar rhythms—possibly so rapidly that the self-healing forces of the Earth have been overwhelmed. Today it is therefore more fitting to speak of climate discontinuity instead of climate change.

In 1923 Rudolf Steiner described poignantly how modern human beings, who have connected themselves with the Earth in a particular way by developing dead, intellectual thinking, can affect how the Earth changes. In this regard it is decisive whether they continue to maintain an intellectual mindset or begin to enliven their thinking.

> "And indeed, if human beings do not enliven their thinking, if they continue with their intellectual, dead thinking, they must destroy the Earth. This destruction (*Zerbrechen*, literally "breaking up"), however, begins with the thinnest element, with warmth. And in the Fifth Post Atlantean Epoch they will only have the opportunity, by further continuing to develop merely intellectual thoughts, to ruin the warmth atmosphere of the Earth. Then comes the Sixth Post Atlantean Epoch. If by then humanity has not converted from intellectualism to Imagination, then the ruination not only of the warmth atmosphere but of the air would begin, and human beings would poison the atmosphere with their intellectualistic thoughts. And the poisoned air would work back upon the earth and ruin vegetative life. And in the Seventh Post Atlantean Epoch human beings would have the opportunity to spoil the water, and their excretions—if they were the results of purely intellectual thoughts—would flow into the general watery element of the Earth. And the mineral element of the Earth would then be deformed out of the fluid element. Human beings do indeed have the opportunity to break up the Earth if they do not enliven their thoughts and in so doing return to the cosmos what they have received from it."[10]

What can we do?

Amazingly, in recent months the youthful climate activists have understood the dramatic state of affairs and have seen through the hypocrisy of politicians' statements. The so-called "Paris Agreement," as a result of the last climate conference of December 2015, has become almost irrelevant due to the delaying of necessary actions. Climate activists are vigorously questioning and changing their way of life. They are beginning to take action.

The creative power of climate activists worldwide has largely been inspired by the consistent work the youthful Greta Thunberg. What the young people are calling for today is in line with the latest findings and warnings of concerned researchers. In particular, the IPCC Special Report on Climate Change and Land Systems published in August of this year shows that global warming has greatly increased due to 6 the exploitation of soils by industrial agriculture.[11] At least 25% of the carbon

[10] Steiner R. (1923): Die Impulsierung des weltgeschichtlichen Geschehens durch geistige Mächte, Vortrag vom 23. März 1923, Seite 122, GA 222, Dornach (1966)

[11] https://www.ipcc.ch/site/assets/uploads/2019/08/3.-Summary-of-Headline-Statements.pdf

dioxide, methane, and nitrogen compounds entering the atmosphere are due to the use of artificial fertilizers, forest clearance, monoculture, food destruction, and rapidly increasing meat production.

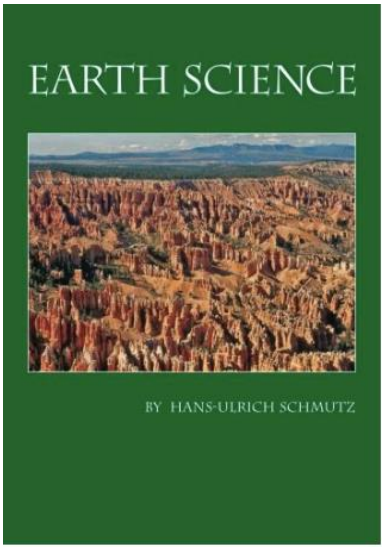
Because most adults, politicians, and business leaders have not taken the scientific research seriously, young people have now become active in a steadily growing movement. Their motives are not the egotistic exploitation of natural resources but concern for the future of the refreshing life on earth. Out of these motives, they have begun to act in a variety of ways.

What can we adults do? If we can use our power of thought to gain insight into the meaning of the rhythmic processes on Earth, the relationship between Earth and cosmos, and the vital importance of the speed of events, then vigorous action can emerge in harmony with these insights. More and more people should take up a science of rhythms and of the working of etheric forces in life.

For example, giving up air travel can become easier when one realizes that slowness is a prerequisite for deepening one's inner connection with the Earth and with people in other parts of the world. Even when traveling, attending to the rhythms of time and space is important. If such insights lead to many actions that reduce our so-called ecological footprint and diminish the production of carbon dioxide, then the gap between adults and adolescents that has become so apparent today can be overcome.

Do Waldorf schools have a special task?

In the upper grades, practicing the formation of judgment on the basis of a deepened phenomenological approach to many world encounters can stimulate living, moving concepts of rhythm, metamorphosis, life forces and development. Exam-oriented learning of finished content leads to the paralysis of willpower and ultimately to lack of interest in the world. In their preparation, teachers would have to work through and enliven the legitimate results of science and thus transform the materialistic world view into a realistic view of life.



The Waldorf high school curriculum offers opportunities to gradually practice judgment in relation to different areas of the world.[12] In the 9th grade the emphasis is on the development of causal-logical thinking, for example in the study of machines in physics or the study of earthquakes and volcanism in geography. This can be expanded in the 10th grade through the practice of mobility in thinking where one has to consider a subject from many different points of view. An appropriate theme is the flow equilibrium in the currents of the Earth's oceans and in the movements of the atmosphere. In the 11th grade, insight into causal and reciprocal relationships as well as the concept of rhythm can be developed in the study of cellular biology and astronomy. Living thinking becomes intentional. The signature of the final year [12th grade] is the grasp of archetypal ideas, which leads to pure thinking. An appropriate theme is the study of evolution in biology, Earth science, and anthropology. Projective geometry also provides practice in this kind of active thinking. In this way students develop the tools they need to exercise appropriate judgment vis-à-vis the four aspects of the world: the mineral, plant, and animal kingdoms, and human cultural life.

[12] Schmutz, H. U. (2011): *Earth Science for Waldorf-Schools,* AWSNA Publications, The Association of Waldorf Schools of North America, Ghent NY

The Impact of Economics on Climate and the Idea of the Commons

by Geoffrey Henny
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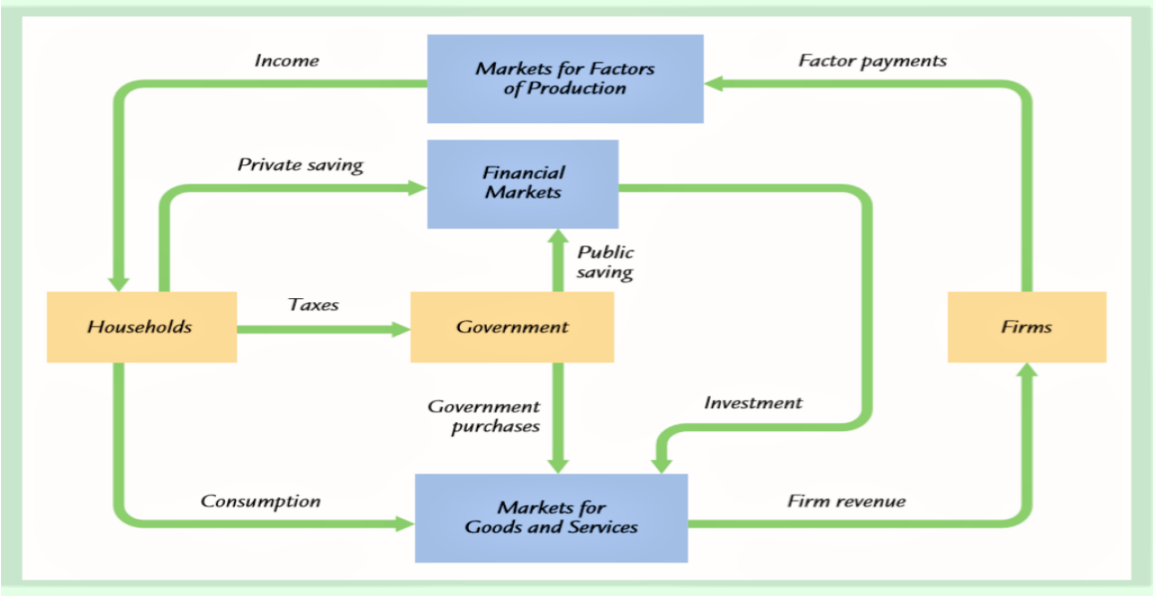
ghenny@my.cleary.edu Ann Arbor, MI 11/2/2019

The Neo-capitalist Economy and Climate Change

The scientific community has firmly established that through their Economic Activities (defined conventionally as the production, consumption and exchange of goods and services) human beings are driving a significant element of the observed Climate Change and related Environmental Destruction that is threatening much of life on planet earth at this time[13]

This being so, it is important to consider what can be done about it. In addressing this question—as we will hear from other conference presenters—what we are really asking is: What needs to change in the way our economies operate in order to ensure that the increase in average global temperature stays below 1.5–2.0 degrees Centigrade compared to preindustrial times?

To respond to this challenge, we start by observing that the current economic systems that make up the global economy are perhaps best described as *Neo-capitalist*. That term can be understood to mean that almost all economies today are a partnership between the private sector and government in order to organize Economic Activities represented by the following simplified (for analytical purposes) model/story used by most of the Economics profession (see diagram 1).[14]



This model/story is often called the "Circular Flow" model. It states that the Economy is an ever-growing and prosperity-producing flow of resources, wants, and goods between utility-maximizing Household players and profit-maximizing Firm players facilitated by money (or a medium of exchange). Households are assumed to own Factors of Production: Land (resources), Labor, Capital (equipment and technology) and Managerial/Entrepreneurial Talent. Firms make Products and Services with those Factors of Production. These are exchanged or bought and sold via Factor and Product/Service markets—characterized by more or less competition—whose access to and provision of resources is mostly dictated by Households and Firms. This

[13] https://www.thebalance.com/economic-impact-of-climate-change-3305682
[14] https://ilearnthis.com/a/circular-flow-diagram/

exchange is determined by specialization and the division of labor, trade, mutually negotiated prices, the existing means and wants of the players, and what their costs are. Such interactions are assumed to produce a so-called "Equilibrium" intersection between Supply and Demand. Households pay firms in the Product Markets and Firms pay Households in the Factor Markets, thereby ensuring both players have the means and the incentive to continue to trade with each other.

This whole process is mediated by the Government which—in return for taxes, premiums, and fees from both Households and Firms—is tasked to assure the integrity of the Product and Factor markets through the protection of private property and the provision of a legal, health, and security framework. This framework is supposed to provide reasonable transaction honesty, safety, and economic well-being to enable necessary investments and confidence. In this model, the Environment and also Culture—in which the Economy and the Government are embedded—are called "Externalities" (factors exogenous or outside the model/story or system) that can be managed by pricing mechanisms and regulations as needed.

This model assumes humans are largely rational, independent, and competing decision makers pursuing their own selfish interests—mainly focused on accumulating material wealth (*Homo economicus*). Their decisions are largely based on weighing the costs (including opportunity costs) and benefits of every action they take, always opting for the one that provides the largest net benefit. In so doing they are judged to create collective prosperity (despite ups and downs over time) via "an Invisible Hand" (or in more modern terms, 'Network Effects"). Prosperity is generally equated with ever rising material growth over time.

This current Neo-capitalist model of economic reality only counts monetized market transactions as relevant and valuable.

Challenges to the Neo-capitalist Economy and its Economics

With recent interconnected crises in the global Economy—such as the global financial meltdown of 2008/2009, the political tension created by dramatically rising disparities in Income and Wealth, and the increasing evidence of existentially-threatening Climate Change—a re-examination of current Economics and the operations of the Neo-capitalist Economy is taking place. This is exemplified, among other things, by the emergence of (and Nobel prizes awarded in) fields like Behavioral, Environmental and Managerial Economics to try and explain what has gone wrong and how to put it right.

This re-examination is also exemplified by all the critiques of the Neo-capitalist Economy that have surfaced over the years. These point to the inadequate understanding of how the current Financial Sector dominates economic activity and drives destructive misallocations in the Economy. They also point to how incentives built into the Neo-capitalist Economy have led to the increasing loss of competition in many sectors, growing dominance of the private sector over government (crony capitalism and regulatory capture) and its extensive use of fossil fuels, pesticides, chemical fertilizers, agro-industrial farming, mass throw-away consumption, as well as cradle to grave production. These practices have denatured or destroyed vast land and sea areas across the globe, eliminated a large amount of biodiversity, caused incredibly destructive quantities of deforestation, and generated so much greenhouse gas emission that we are in the climate and living space predicament that we are in. That predicament is summarized in the reality that we are on track at the moment—if large remedial efforts are not made very soon—to produce average global temperature increases of 3 degrees Centigrade or more, with truly catastrophic consequences in the next few decades for sea level rises, droughts, fires, food shortages, mass human migration due to climate, the emergence of many new communicable diseases, and resource wars. All of this could bring humanity and much of the rest of nature to extinction within a few decades.

A recent report to the Australian Government, *Disaster Alley: Climate Change, Conflict, Risk*,[15] looked at current human-induced climate change as a result of the Neo-capitalist Economy. It drew frightening new conclusions about the challenge we now face:

- The world now faces existential climate-change risks which may result in "outright chaos" and an end to human civilization as we know it.

[15] docs.wixstatic.com/ugd/148cb0_1d614b99bd734626a0deba96f8d843d4.pdf

- These risks are either not understood or willfully ignored across the public and private sectors, with very few exceptions.
- It is essential to now strongly advocate a global climate emergency response, and to build a national leadership group outside conventional politics to design and implement emergency de-carbonization.

A recent, powerful, and controversial paper[16] written by Professor Jem Bendell[17] of the University of Cumbria, UK anticipates near-term societal collapse due to Climate Change. The following sentence in the abstract makes the point: *"The purpose of this conceptual paper is to provide readers with an opportunity to reassess their work and life in the face of an inevitable near-term social collapse due to climate change."*

In my presentation I will be taking a careful look at the re-examination of our current Economy and Economic Science—especially in relation to its Climate Change and Environmental consequences, as well as efforts to deal with them. In so doing I will explore alternatives to the current Neo-capitalist Economy/Economics and its Model/Story. In particular I will be most interested in discussing the emerging visions of how we achieve an "Environmentally Sustainable" and more "Just" Economy embodied in such movements as the "Sharing Economy," "Green Economy," and "Economy for the Common Good." This will include looking at such concepts as the "Commons" and "Commonwealth," "Donut Economics," "The Circular Economy," "The Solidarity Economy," "Spiritual Economics," and the explanations as well as the solutions to our current challenges they offer. These movements ultimately all seek different ways to return us to a sense of community with each other.

I will also include a brief outline of the three different strategies so far adopted to try and deal with Climate Change: globally-agreed "Sustainable Development Targets,"[18] technology innovation (see table below), and economic incentives (such as Cap and Trade and "Green New Deal" type initiatives)[19], and legal approaches (including lawsuits against major energy companies) to try and punish perpetrators of what is increasingly called "Ecoside" (the destruction of life-sustaining ecosystems)[20]. A fourth potential future strategy will also be explored which imagines a World War II-type mobilization of major countries in the world[21] to mandate and implement "Cradle-to-Cradle" "Circular Economy" production and consumption systems that eliminate waste and most CO2 emissions (in contradistinction to the Circular Flow Model above). This last strategy is thought by some to be our only real hope of avoiding human extinction.

RANK	SOLUTION	SECTOR	REDUCED CO2
1	**Refrigeration**	Materials	89.74 GT
2	**Wind Turbines (Onshore)**	Energy	84.60 GT
3	**Reduced Food Waste**	Food	70.53 GT
4	**Plant-Rich Diet**	Food	66.11 GT
5	**Tropical Forests**	Land Use	61.23 GT
6	**Educating Girls**	Women and Girls	59.60 GT
7	**Family Planning**	Women and Girls	59.60 GT
8	**Solar Farms**	Energy	36.90 GT
9	**Silvopasture**	Food	31.19 GT
10	**Rooftop Solar**	Energy	24.60 GT
11	**Regenerative Agriculture**	Food	23.15 GT
12	**Temperate Forest**	Land Use	22.61 GT
13	**Peatlands**	Land Use	21.57 GT
14	**Tropical Staple Tree Crops**	Food	20.19 GT
15	**Afforestation**	Land Use	18.06 GT
16	**Conservation Agriculture**	Food	17.35 GT
17	**Tree Intercropping**	Food	17.20 GT
18	**Geothermal**	Energy	16.60 GT
19	**Managed Grazing**	Food	16.34 GT
20	**Nuclear**	Energy	16.09 GT

From Drawdown *by Paul Hawken: Innovations underway that could reduce CO2 Emissions*

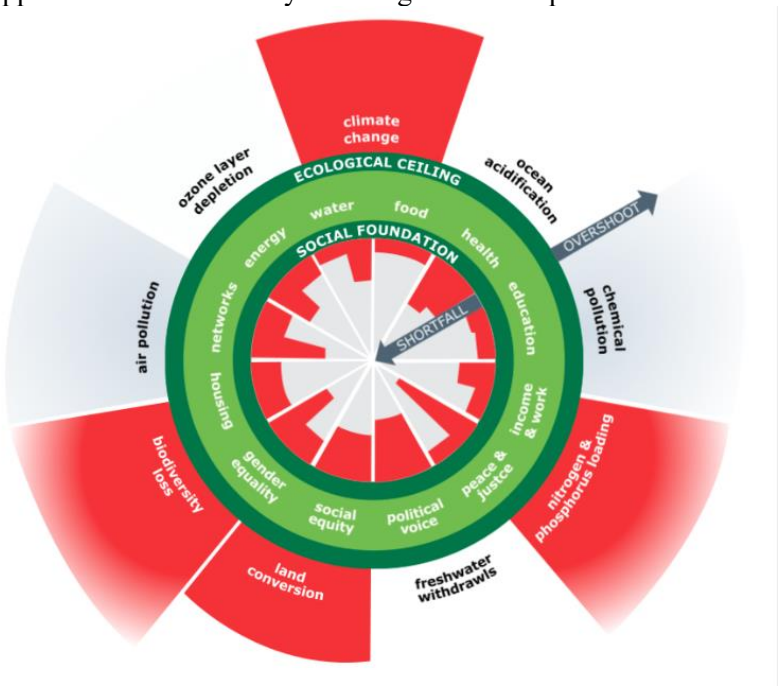
[16] http://www.lifeworth.com/deepadaptation.pdf. Debated by Jeremy Lent here: https://mahb.stanford.edu/blog/actions-create-future-response-jem-bendell/
[17] http://www.jembendell.com/
[18] https://www.un.org/sustainabledevelopment/
[19] https://www.nytimes.com/2019/02/21/climate/green-new-deal-questions-answers.html
[20] https://eradicatingecocide.com/, and https://www.stopecocide.earth/
[21] https://thehill.com/hilltv/rising/451497-climate-scientist-michael-mann-calls-for-world-war-type-mobilization-to-combat

In this endeavor I will rely on my own worldview/experience,[22] and the work of such visionaries as Kate Raworth,[23] the Ellen McArthur Foundation,[24] Christian Wahl,[25] Jan Martin Bang,[26] Paul Hawken,[27] David Bollier,[28] Charles Eisenstein,[29] Christian Felber,[30] Naomi Klein, George Monbiot, Bill McKibben, [31] and others.

Behind such a discussion will be the omnipresence of my understanding of Rudolf Steiner's prescient and powerful "Threefolding" indications. This will be partially filtered through the insights of the Anthroposophist co-founder of Emerson College, Michael Spence, and his excellent book on Threefolding, *After Capitalism,*[32] which I will interpret in the hopes that my interpretation will be the basis for a fruitful discussion and debate in the latter part of the Conference.

Images for Reflection

The solutions I will be exploring can be summarized in the following six images, which I place here without comment to whet your appetite and to stimulate your thoughts in anticipation of the talk.



(Kate Raworth)

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[22] I currently am in the process of creating an Ecovillage test bed at Cleary University www.cleary in collaboration with Livingston County to model different distributed alternative economic development options https://ecovillage.org/?s=Geoffrey+Henny . Before working at Cleary, I was the Director of Biomedical Technology Transfer at the University of Michigan, VP of an AI and Expert System company (Triada), International Director of a chemicals company (Diversified Chemical Technologies), CEO of a venture-funded robotics and automation company (Universal Machine Intelligence), General Director of Aid and Development Programs for the World Council of Churches in Bangladesh, and a member of the leadership team in charge of Shell International Petroleum's Far Eastern Liquefied Natural Gas (LNG) projects.

[23] https://www.kateraworth.com/

[24] https://www.ellenmacarthurfoundation.org/

[25] https://www.amazon.com/Designing-Regenerative-Cultures-Daniel-Wahl-ebook/dp/B07NDJS87V/ref=sr_1_2

[26] https://www.amazon.com/Permaculture-Students-Theory-Practice-Ecovillage/dp/1782501673/ref=sr_1_4

[27] https://www.drawdown.org/

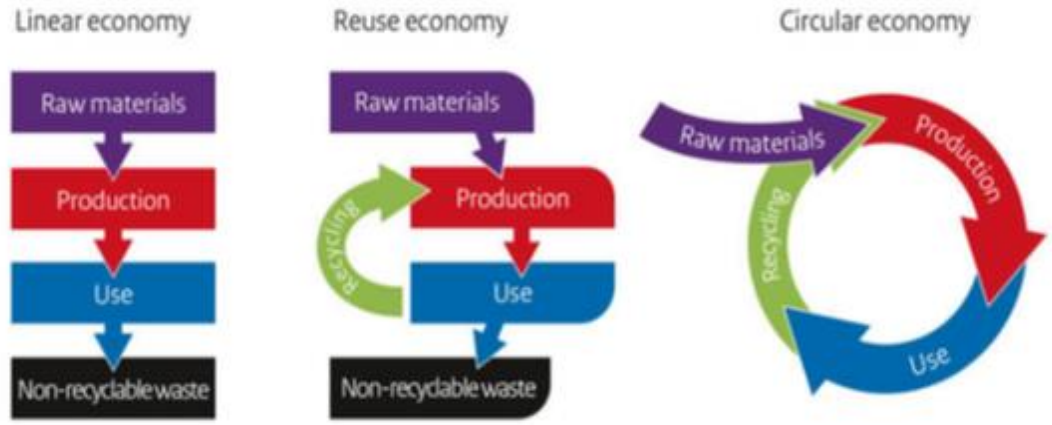
[28] https://www.amazon.com/Free-Fair-Alive-Insurgent-Commons/dp/0865719217/ref=sr_1_1

[29] https://charleseisenstein.org/

[30] https://www.ecogood.org/en/

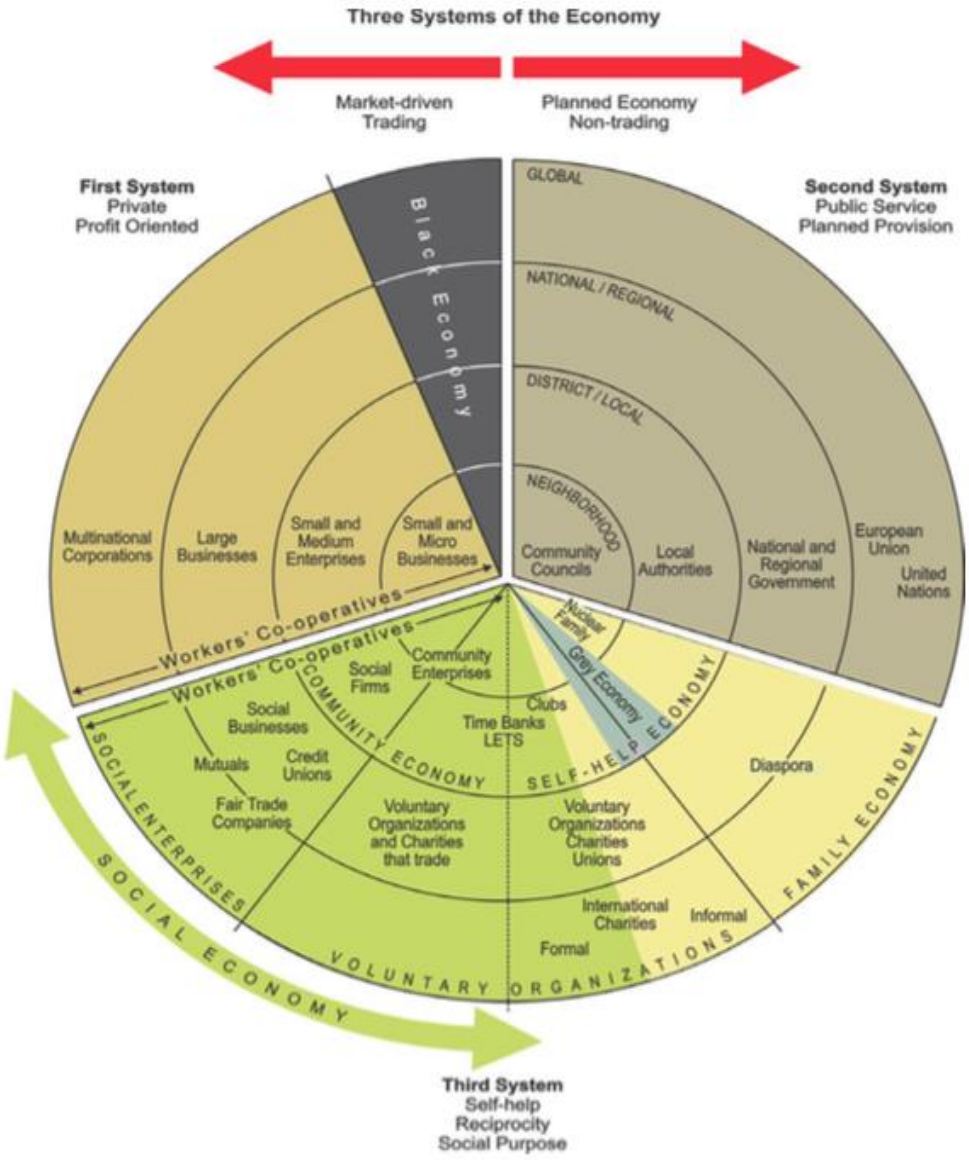
[31] http://www.350.org/

[32] https://www.amazon.com/After-Capitalism-Michael-Spence-ebook/dp/B01DPFANWQ/ref=sr_1_1

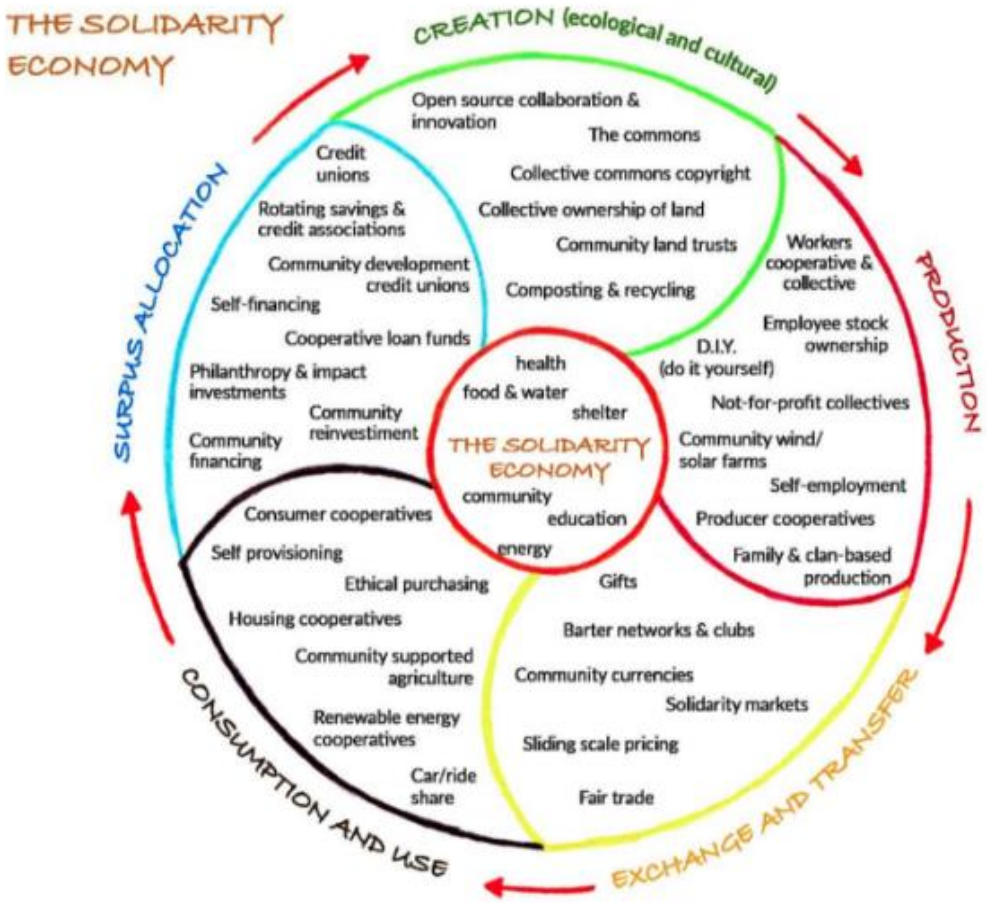


https://www.government.nl/topics/circular-economy/from-a-linear-to-a-circular-economy

(David Bollier)



https://thenextsystem.org/



(Daniel Wahl)

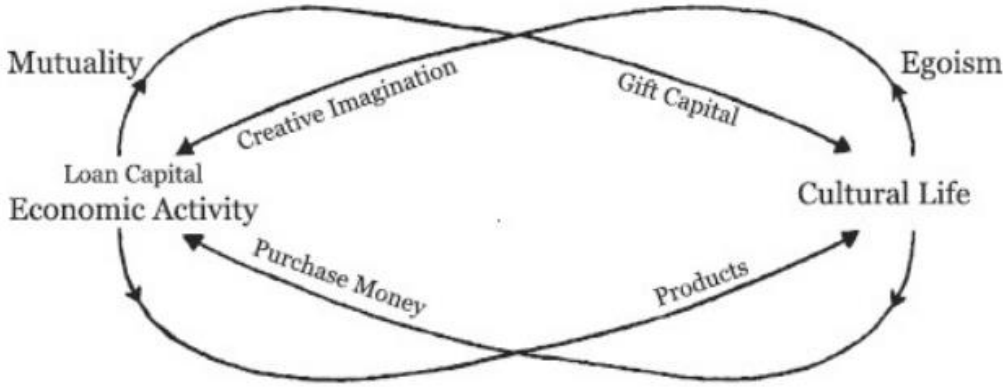


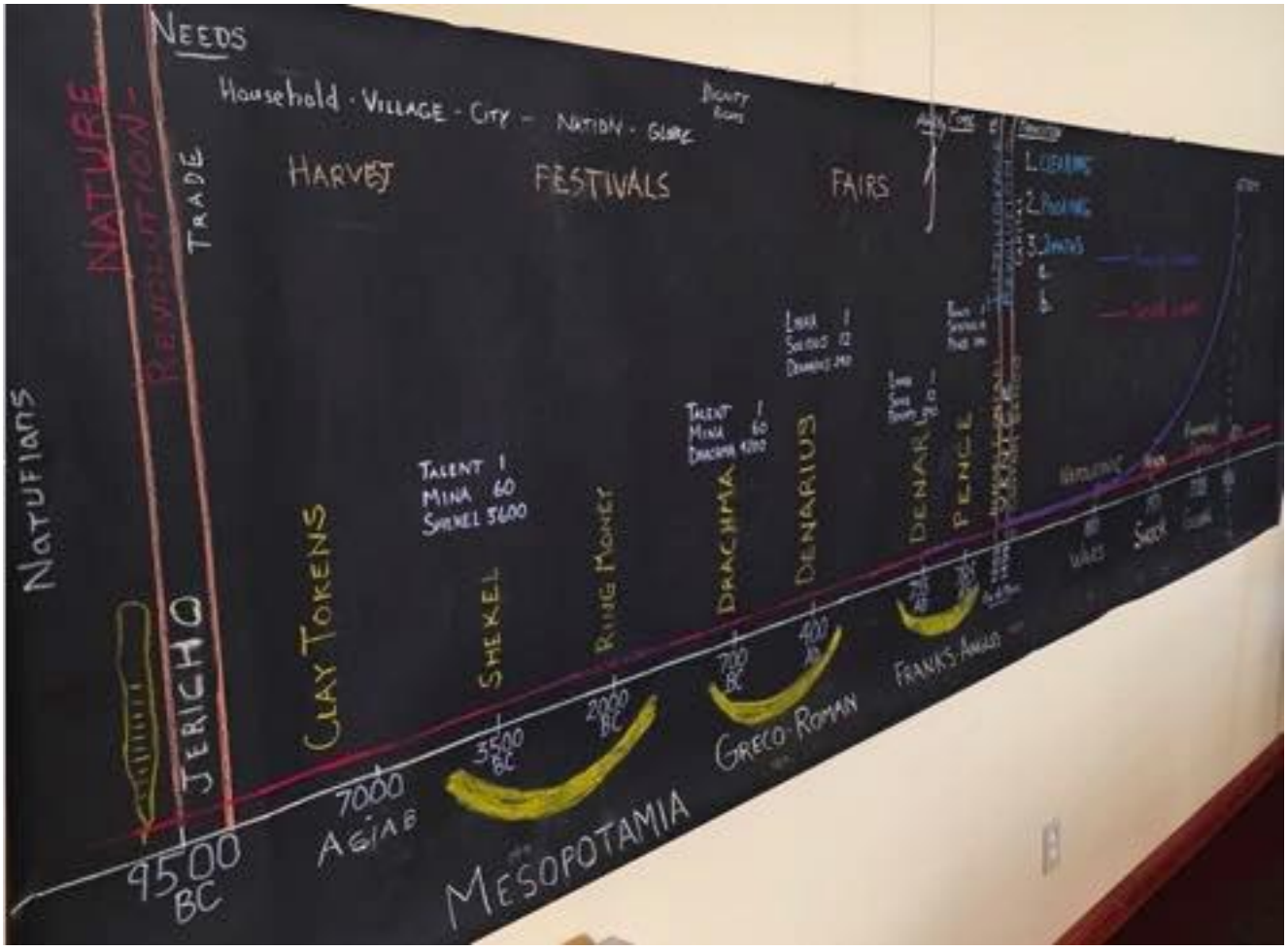
Figure 1: Recripocal Flow of Economic and Cultural Life

(Michael Spence)

Recognizing the Threefold Nature of Economic Life

World history through economics

by Daniel Osmer



Last year, Daniel Osmer presented part of his ongoing research to the Economics Group of the Anthroposophical Society in a series of three sessions. He also made three public presentations during the year that utilized a large *world-history-through-economics* timeline image using a process which combined a) a story-telling timeline of world history reflecting the development of the individual human being and b) concurrent social life alongside that of economics and money. With practical exercises in T-account single- and double-entry bookkeeping, he showed how it is possible to recognize the evolution of both the threefold nature of economic life and of the human being.

On the timeline, a first 'time of transition' and a fulcrum point of history, he calls the Nature Revolution. This refers to the approximate time when settlements saw human beings meeting each other's needs through *trade*

for the first time—the exchange of value[33]—trade of the items of Nature that had been modified. Jericho, approximately 11,500 years ago, is used as the characteristic representative city considered one of the first permanent inland settlements. In this process, money emerged as payment used for immediate exchange of the items. Rudolf Steiner identifies this type of money as ***purchase*** *money,* what in conventional economics is called the 'means of exchange'. Thus, money came about through this new activity of trade between human beings and is related to the nature pole of the value creation continuum described by Rudolf Steiner.[34] [2]

On the right side of the timeline, a second 'time of transition' is labelled, the Creative Intelligence Revolution—loosely known as the Renaissance—referring to the time when individuals emancipated themselves from a dictated existence, which resulted in an explosion of creativity, initiative, and invention. This supercharged progress in human development established the possibility for an emerging kind of money that had accumulated from centuries of trade that could be made available for future and enduring projects. Steiner referred to this as ***loan*** *money,* what in conventional economics is called a 'store of value'.

Beyond the needs of loan money, value can be passed on for developing the capacities of individuals and culture generally. Steiner referred to this as **gift** money, which can be seen as related to the 'unit of account' in conventional terms. About all this, i.e. differentiated money, Steiner says, *"We have had payment and loan. The third thing is gift. Payment, loan and gift – this is a real trinity of concepts, essential to a healthy economy."*[35]

So, in the last session Osmer considered how economic values created by mutual trade circulate through the three domains of society—economic life, the life of rights between us, and the cultural life. The three kinds of money[36] make it possible to perceive these 'invisible' values changing as they circulate between the three distinct domains of:

- the trade of goods & services [economic life & purchase money]
- investment in productive enterprise [rights life & loan money]
- renewal of culture and education [cultural life & gift money]

As a result, there is a perpetual exchange going on in the economic process between.

- rights & commodities (human labor-nature)
- faculties & commodities (intelligence-nature)
- faculties & rights (intelligence-human labor) [5]

The task will be to identify real life examples of these three domains of exchange in daily life and examine in more detail the nature of 'gift money'.

(*Daniel can be contacted at daniel@economicbuzzcafe.com for more information about his other teaching materials.*)

[33] Rudolf Steiner 1922 *World-Economy*, Rudolf Steiner Press, London 1972, Lecture 2: "The Economic Process" July 25, 1922: "The economic process takes its course in the activity of buying and selling, essentially, that is, in the exchange of values.

[34] *ibid*. Lecture Three: "Here we have Nature on the one side. It is transformed by human Labor. Thus we get the transformed products of Nature, and this is one point at which values are created. On the other side we have Labor itself. It, in its turn, is modified by the human spirit (human creative intelligence), and there arises the other kind of value. Value 1, Value 2."

[35] *ibid.* Lecture Six.

[36] *ibid.* Lecture Eight, "Mutually incommensurable things are exchanged for each other in the economic process." (It is three kinds of money that makes this possible).

Notes

Note by Barry Lia:

Kate Laffan, "Going green is all about what you gain, not what you give up." *Aeon.co*, posted August 21, 2019.[37]

Laffan decries a recent headline in *The New Republic*, "You will have to make sacrifices to save the planet." We first world people *do* consume more than our share. But must we?

As an environmental psychologist, Laffan makes a crucial distinction between *hedonic* wellbeing, which relates to perceived pleasure, and *eudemonic* wellbeing, which reflects sense of purpose (the good life). Pro-environmental behaviors may not contribute to *hedonic* wellbeing, but they can certainly contribute to life-satisfaction. This flies in the face of pro-environmental behavior as "sacrifice." If such behavior is styled as onerous, then only moral appeals can try change behavior. But there are potential gains of "living not worse but differently." Pro-environmental behaviors can contribute directly to individual *eudemonic* wellbeing, "while at the same time safeguarding the wellbeing of others and of generations to come."

Note by Barry Lia:

Karen Litfin (2010) The Sacred and the Profane in the Ecological Politics of Sacrifice. In Michael Maniates & John M. Meyer (eds), *The Environmental Politics of Sacrifice*, MIT Press (pp. 117-143)

I came across Karen Litfin's work via her chapter in *The Variety of Integral Ecologies*[38] via Robert McDermott's *Steiner and Kindred Spirits.*[39] Litfin points out that the environmental crisis is generally seen as a material phenomenon. Yet if human behavior is rooted in meaning (as the note above suggests), the environmental crisis becomes a crisis of meaning.

Litfin underscores that the root meaning of *sacrifice* is *sacre* (sacred) and *facere* (to make). She points out that outside our modern culture, as it was in the past, true sacrifice is a "gift that enlarges the giver by linking him or her to forces and wider circles of identification beyond his or her ordinary sense of self." (p.119.1)

The prevailing framing currently is materialist and individualist. Litfin suggests that "sacrifice in a postindividualistic world will entail significant differences from earlier forms in terms of how it functions both in material and ideational terms." (p.119.5)

She frames "sacrifice in terms of a holistic ontology rooted in cyclical processes and the reciprocity of gift exchange." She also considers "some possibilities for a scientific grounding of an affirmative perspective on sacrifice, including earth systems science, the universe story, and the positive psychology movement." (p.119.9) "Under such a cosmology of radical interdependence, the emphasis shifts from consumer society's preoccupation with *belongings* to a more deeply satisfying focus on *belonging*." (p.120.6)

"An eloquent expression of a holistic ontology, one that does not revert to what might be perceived by the modern mind as an archaic outlook, is offered by Sri Aurobindo." The quoted passage ends: "The true essence of sacrifice is not self-immolation, it is self-giving; its object is not self-effacement, but self-fulfillment; its method is not self-mortification, but a greater life." (p. 122.1)

Litfin suggests a "developmental trajectory" for sacrifice rooted in interdependence and reciprocity. "One might wonder if there is any relationship between, on the one hand, the dematerialization of sacrifice over time [from physical offerings to attitudes of soul] and, on the other, its relative invisibility in modern societies." (p.124.4) She argues that "Contrary to modernity's embrace of 'possessive individualism,' self-giving seems to be built into the human condition and correlated with psychological maturity." (p.124.6)

Litfin argues "that sacrifice did not vanish under secular modernity, but was only rendered unconscious, invisible, and involuntary because it disappeared from view in high-consumption societies." (p.133.8) [This is reminiscent of the problem of the 'colonization' of everyday life discussed in the Kossoff note below.]

She asks of consumer culture "Are these the values on which we want to ground our lives? And what values are lost or compromised by sacrificing to the 'gods' of material progress and convenience?" (p.135.1) Then "faced with a growing awareness of the previously hidden and largely involuntary sacrifices perpetuated by the global economy, the answer for many will be no. This second group will have begun to articulate an affirmative

[37] https://aeon.co/ideas/going-green-is-all-about-what-you-gain-not-what-you-give-up
[38] https://www.sunypress.edu/p-6390-the-variety-of-integral-ecologi.aspx
[39] https://steiner.presswarehouse.com/Books/BookDetail.aspx?productID=464031

politics of sacrifice by situating themselves within an ontology of interdependence…. What is crucial about this step is that it is not compelled or coerced; rather, it is rooted in a free choice and an ability to apply ethical and pracitical reasoning to one's own life situation. Even if disillusionment sometimes feels painful, even if one is not delighted to have one's eyes opened to what is being sacrificed and to what ends, one can embrace the resulting freedom just as a mature adolescent can move gracefully into the responsibilities that come with adulthood. This is the sense in which individualism can, paradoxically, contribute meaningfully to the unfolding of a holistic ontology. …sacrifice offers the opportunity for that individual to enter into a larger sense of self… it represents a developmental achievement for the individual, who, as a consequence of extending his or her capacities for reason and care, can now choose to enter into a deeper sense of engagement with a participatory universe." (p.135)

"An affirmative politics of sacrifice in an ecologically full world is about seeing the bigger picture, which simultaneously enlarges us. While sacrifice has always been about creating bonds, one consequence of our global economy is that we have unwittingly extended our bonds spatially across the planet and temporally into future generations. …sacrifice also contains an evolutionary impetus. While the politics of sacrifice in an ecologically full world may spell the end of progress as it was defined by consumer society, the evolutionary task before us is to recontextualize progress with a deep appreciation for our lives as threads within a vast tapestry of earthly existence." (p.139)

Note by Barry Lia:

T. Irwin & S. Baxter (2008) The Dynamical View of Natural Form. In CA. Brebbia (ed), *Design and Nature IV: Comparing Design in Nature with Science and Engineering*, WIT Press (pp. 129-138)[40]

I believe I came upon this article through Academia.edu. Turns out Terry Irwin and her husband, Gideon Kossoff (next note), both at Carnegie Mellon University, are active in the Transition Design movement and are schooled in Goethean science through Schumacher College and the Centre for the Study of Natural Design at the University of Dundee. Daniel Wahl, on the faculty at Dundee (see upper figure on p.17 above), contributed an article, "Zarte Empirie": Goethean Science as a Way of Knowing,[41] in the 2005 issue of *Janus Head*, for which Craig Holdrege was guest editor.

Irwin and Baxter's paper "reviews Goethe's concept of 'whole' organisms and their temporal, iterative and dynamic nature and shows how a shift in perception of form can inform a new design process in which ethics and sustainability are embedded." (p.129.7)

"We are increasingly surrounded by forms of our own making… The problem of course, is that our 'artifices' are increasingly threatening the survival of all species of life on the planet." (p.130.6)

"Sociologist George Ritzer has termed the imposition of this mechanistic worldview upon society's infrastructure the *'McDonaldization of Society'...*" (p.131.6)

"Ultimately, all form (both natural and man-made) arises out of the nutrient pool of the earth, and must eventually return. Natural forms always arise and return gracefully. Increasingly human-designed forms do so with great resistance and toxic result." (p.131.8)

"This way of perceiving form is particularly relevant to the design process. In the Goethean method, unity in form is predicated upon an understanding of the dynamic (fluid) absent whole—the temporal entirety of each form's journey from inception to demise." (p.133.6) The authors later critique even Biomimicry for neglecting such a dynamical view.

"[I]f designers were responsible for developing a working understanding of the entire lifecycle processes of a form and learned to envision the process as flowing movement as the Goethean method requires, we suggest that many more ethical and environmental considerations would come to light than in the current predominantly analytical/intellectual process." (p.133.9)

The article concludes, "We believe that the Goethean method can be employed within the traditional design process and has the potential to fundamentally shift designers' relationships to nature and ultimately their worldview. It is only from this 'metalevel' that truly sustainable design solutions will emerge." (p.137.5)

[40] https://www.witpress.com/elibrary/wit-transactions-on-ecology-and-the-environment/114/19261
[41] http://www.janushead.org/8-1/wahl.pdf

Note by Barry Lia:

Gideon Kossoff (2011) *Holism and the Reconstitution of Everyday Life: A Framework for Transition to a Sustainable Society*, Ph.D. thesis, Centre for the Study of Natural Design, University of Dundee.

Gideon Kossoff has posted extracts from his dissertation on Academia.edu. The first I read, "Goethean Science," outlines Goethe's science of wholeness, based largely on Henri Bortoft's interpretation.

The second extract, "Critique of Everyday Life," then draws upon Bortoft's distinction of counterfeit and authentic wholeness. There is a sociological literature of everyday life by which the everyday life theorists reject overarching, 'objective' systems that function to integrate the individual into the whole. On the other hand, they saw a holistic interconnectedness of all aspects of everyday life unfettered by such systems. The former exhibits 'counterfeit' wholeness and the latter 'authentic.' There are echoes of Charles Eisenstein's portrayal of the progressive commodification of all aspects of everyday life. There is a necessary irony in this being an academic work in this specialized literature here critiquing modern day "hyperspecialization of knowledge and expertise through which the theoretical abstractions of philosophy, economics, sociology, science et al. were elevated above actual, lived experience," (p.147.5) In the last section, Kossoff calls for "The redemption of everyday life," confronted as it is "by a capitalistic-bureaucratic-scientistic monolith." (p.152.6) One everyday life theorist spoke of consumers as "unrecognized producers, poets of their own acts, silent discoverers of their own paths in the jungle of functionalist rationality…. trajectories [that] trace out the ruses of other interests and desires that are neither determined nor captured by the systems in which they develop," which microacts demonstrate 'cunning' and 'poaching' activities. "In this way, everyday life might eventually be decolonized." (p.153-4) Kossoff outlines eight recommendations for this decolonization.

These and other insights may be found in his series of excerpts[42] and his further work on Transition Design.

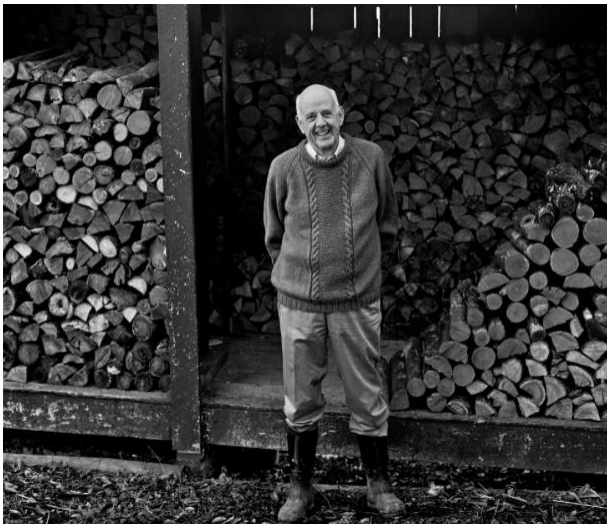
Note by Barry Lia:

"Going Home with Wendell Berry: The writer and farmer on local knowledge, embracing limits, and the exploitation of rural America," interview between Amanda Petrusich and Wendell Berry, *The New Yorker*, July 14, 2019[43]

If you don't know the work of Wendell Berry, I hope that you will acquaint yourself. Biodynamic folks should surely appreciate him. A good start for scientists would be *Life is a Miracle: An Essay against Modern Superstition*,[44] in which he defends ultimate mystery against E.O. Wilson's reductionist project of the *Consilience* of science and religion. Mind you, I am not writing of Thomas Berry, the priest telling *The Universe Story*.

If you do know Wendell Berry's work, you will know that the 'colonization' of rural America by ruling corporate forces is one of his themes. We might say that Berry portrays Kossoff's treatment of the colonization of everyday life above, not from an academic stance, but as a down-to-earth humanist.[45]

Berry's is a divide between the agrarian and the industrial. I would associate this divide with Aristotle's distinction between *oeconomia*, the



Photograph by Guy Mendes

[42] E.g., https://www.academia.edu/6236920/Holism_Needs_and_Everyday_Life

[43] https://www.newyorker.com/culture/the-new-yorker-interview/going-home-with-wendell-berry

[44] Wendell Berry (2000) *Life is a Miracle: An Essay against Modern Superstition*, Counterpoint.

[45] Berry was honored to give the 2012 Jefferson Lecture in the Humanities, established by the National Endowment for the Humanities as the highest honor the federal government confers for distinguished intellectual achievement in the humanities.

egalitarian exchange among known neighbors, which Aristotle considered 'natural,' and *kremetistikè*, we might call today the financial exchange among disinterested parties of our so-called "economy," which Aristotle considered 'un-natural' (likening it even to incest).[46] Before our 'classical Greece,' there was a period in which an egalitarian people (the *demos*) ruled themselves; everyone had equal standing and an equal say, each holding up a hand in the *agora* when decisions were made (*democracy*). That is until rich traders claimed to have more hands.

Against the placelessness of modern life, Berry lives and champions the culture of husbandry and the actual and fundamental home of everyday life, what we may call by the Greek *oecos*. This word *oecos* is the root of 'ecology,' the household of nature. It has been said that we are working toward an 'ecosophy.'

In this interview, Berry remarks, "People speak of 'the environment.' They don't know what they're talking about. 'The environment' refers to no place in particular. We're alive only in some place in particular." Then "If I'm going to talk about the environment, I'll need to start with this river, which is not an abstraction. This is the Kentucky River" [along which his family lives]. Lastly, "We live here, and our stock drinks from the river. 'The environment,' as we call it, is intimately with us. We're in it. It's in us. But also we *are* it, and it *is* us."

Berry speaks of how the Amish have taken "as an economic imperative" the injunction to *love thy neighbor as thyself*. The Gospels, Berry says, "were not a church discovery. I had to carry them into the woods and read them there in order to see my need for them." Elsewhere he says, "Without soul and love, those words that are enabled by religion, then we're reduced to a choiceless biological existence." The interview concludes, "We really have to turn against the selfishness of the individualism that sees everybody as a competitor of everybody else. When we see how destructive that is, and we turn against it, then we have our life's work."

Note by Barry Lia:

Anya Kamenetz, "How to Talk to Kids About Climate Change," National Public Radio, October 24, 2019.[47]

Echoing the first two notes above—this piece speaks of "meaning-focused coping. This is about thinking: how to frame the problem so that we can continue to hope and not collapse into cynicism, apathy or despair." [the three beasts (ed)] We are encouraged to "develop trust that others are working on this problem" and—again like those first two notes above—to "focus on the many benefits of a sustainable future, like more social justice, stronger communities, better health."

One story Kamenetz tells is of a mother who spends as much time as she can with her 6-year-old daughter exploring the outdoors, from forests to gardens. Starting with ants on the sidewalk, she is encouraging her to "look at the bugs and think about what the bugs are doing." This mother is raising her daughter to see nature's web of relationships rather than speaking of ecological damage, because, she says, "I have a rationale around this that it's very hard to defend what you don't love."

Note by Barry Lia:

Dalia Nassar & Margaret M Barbour, "Rooted: What if, rather than mere props in the background of our lives, trees embody the history of all life on Earth?" *Aeon.co*, posted October 16, 2019.[48]

'Nature's web of relationships' is at the root of this thought-provoking article, focused on trees rather than animals and humans. The authors ask "But is it really the case that trees are simply the 'stage setting' for animal activity? …a more apt metaphor would be that animals are the decorations or props on the Earth's complex vegetal life system…" [And we might then ultimately stand trees yet again upon the microbial life system.]

"Thus, while all living beings carry their past with them into their present and future selves, trees embody their history in a way that is far more explicit and with greater detail and visibility than any other living being. …As such, trees call attention to the historicity of life, demanding that we think of life not as static and machine-like, but as dynamic, context-sensitive, and plastic."

"This intimate relation between tree and environment might be most aptly expressed, to borrow from Marder's book *Plant Thinking* (2013)[49], in terms of synecdoche (a part that signifies or expresses a whole): trees

[46] E.g., Chapter 7 in Herman Daly & John Cobb, Jr. (1994) *For the Common Good*, Beacon Press http://www.beacon.org/For-The-Common-Good-Revised-P129.aspx

[47] https://www.npr.org/2019/10/22/772266241/how-to-talk-to-your-kids-about-climate-change

[48] https://aeon.co/essays/what-can-an-embodied-history-of-trees-teach-us-about-life

[49] http://cup.columbia.edu/book/plant-thinking/9780231161251

are a synecdoche for the environment." "An environment—in contrast to surroundings—entails an ongoing, productive relating over time in a particular place. In other words, the very notion of 'environment' depends on and cannot be separated from those who actively participate in the environment, and trees are prime actors in this regard. To recall an example offered above, the Amazon is an expression of the trees that both make it up and regulate its hydrological cycles." This leads to thoughts concerning reciprocal causation and dependency, organismal autonomy, and the "dialogical, responsive and fluid" relationship between organism and environment.

"The embodied history of trees and the tree-environment synecdoche offer important insights that require us to think carefully about our understanding of 'nature' and our self-understanding." These insights are worth reading. The authors close, saying, "What might we learn and how might our behaviour change if we discarded the model of agency founded on mobility, autonomy and sovereignty, and adopted the model that trees offer us: rootedness, relationality, dialogue and responsiveness?"

Note by Barry Lia:

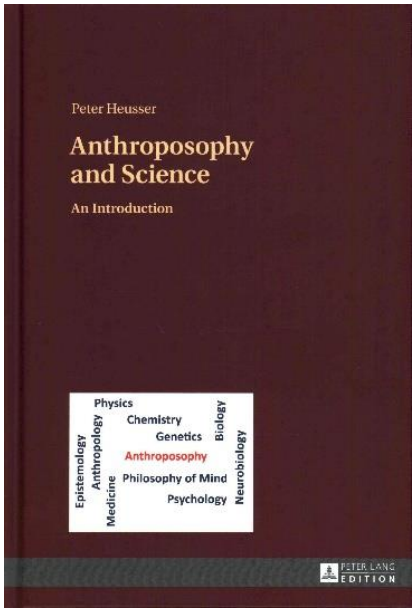
Janet Lia, "Storm break," wet-on-wet watercolor with gouache.[50]

This painting exercise hanging in my wife's studio gave me the impression of a storm overhead breaking into hope for the future.

[50] https://janetlia.com/; https://www.patreon.com/AWEStudio/posts

Video archive of Prof. Dr. Peter Heusser's Public Lectures

BRIDGING
NATURAL SCIENCE
AND
SPIRITUAL SCIENCE



We wish that more of you readers could have joined us for the "Bridging Natural Science and Spiritual Science" conference in Spring Valley in early November 2018.

However, you can still view Prof. Dr. Heusser's Public Lectures archived on our website.

These four lectures stand as a summary of his book, *Anthroposophy and Science: An Introduction*, and will hopefully serve as the basis of regional workshops continuing this work to promote an understanding of Rudolf Steiner's epistemology on a modern, scientific basis.

Lecture 1: ***Is there a place for the spirit in physics and chemistry?***
– On the importance of epistemology for natural science.

Lecture 2: ***Is there a chemical or genetic explanation of life?***
– A closer look on causality and agency in modern biology.

Lecture 3: ***Does the brain cause consciousness?***
– A way out of neurobiology's current doctrine.

Lecture 4: ***From natural science to spiritual science.***
– Rudolf Steiner's contribution to the evolution of science.

Click here to register for video access.

Calendar of Events

November 13-17, 2019: **2019 Natural Science Section Conference: What is the Earth Asking of Us? The Human Soul and the Earth in Crisis** (Rudolf Steiner House, Ann Arbor, MI)
https://www.naturalsciencesection.org/conferences/

November 20-24, 2019: **2019 Biodynamic Association Conference: Cultivating Relationships; Earth, Cosmos, Community** (Lake George, NY)
https://www.biodynamics.com/conference

For Your Health: Three Free Webinars for practitioners, patients and the public, cosponsored by AAMTA and Friends of PAAM

November 13, 2019 **What to do when your child has an earache**
January 15, 2020 **Finding inner rest in an anxious world**
March 11, 2020 **Hints for a healthy diet and balanced digestion**

https://anthroposophicmedicine.org/Patient-Resources

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