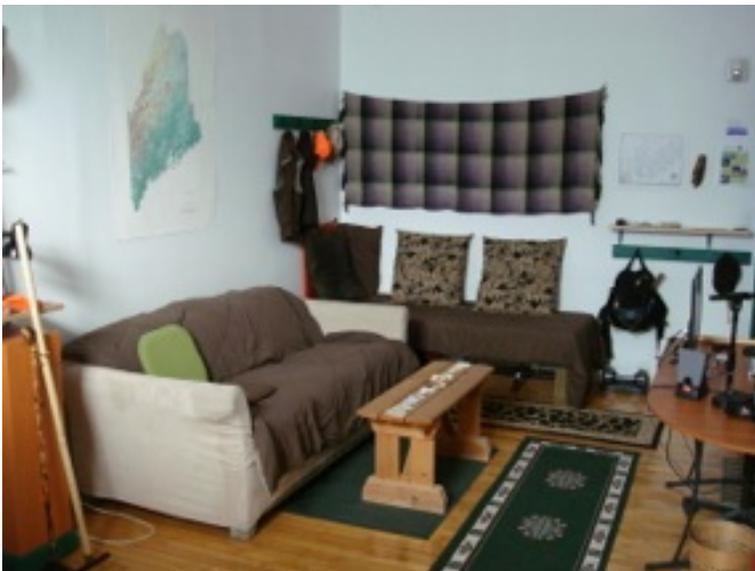


# Conversations & Coffee

Customized conversations, seminars, training & tutoring about complexity sciences, biosciences, geophysiology, climatology, meteorology, adaptability & outdoor skills

“These are the best of times, these are the worst of times,” wrote Charles Dickens. Since we are now experiencing a global **abrupt** climate change event, his words ring even truer today. Therefore, in Ermah Ge’s ongoing efforts to help people understand Earth and nature in awe-inspiring new scientific ways, we introduce a new service - Conversations & Coffee (CC): customized, personal educational conversations, short courses, tutoring, trainings and book discussions for individuals, couples or small groups who seek a new kind of learning experience, whether in lieu of our seminars, to sample our program before enrolling, or in addition to classes (supplementation, clarification and greater depth).

Fortunately, the awe-inspiring new perspectives of nature, Earth, and life - including personal and professional life - offered by our program surpasses the bad news about climate, and are as important for effectively addressing that challenge as gas emissions reduction and mitigation.



Most Conversations & Coffee sessions meet at [Ermah Ge Studio](#), 24 Lincoln St, Studio 112, Rockland ME, a comfortable, aesthetic education space. Most are with Alder Fuller, but may also involve other Ermah Ge associates.

Conversations & Coffee is similar to services offered by physicians, dentists, accountants, attorneys, and other professionals: clients make an appointment, then attend with specific issues, problems, and questions, and - hopefully - find answers and solutions.

But CC is different because **the focus is specifically on education you can use about topics of your choice**. Think of it as a personalized seminar, tutoring session, or training comprising one or more sessions, customized to meet the needs, desires and goals of an individual, couple or small group (up to 4 or 5). With guidance from us, clients tell us what they wish to learn; specific contexts (for example, general interest, or related to a professional project); and how deeply they wish to take their understanding (for example, a cursory overview v an extensive study track to become an expert).

**Any set of topics from any component of Ermah Ge’s Earth Studies Program can be included.** The topics of our program are

relevant to every aspect of daily life, society and nature, thus affect our understanding of literally everything in meaningful, even profound ways. (See below for an extensive list.)

Unless the client(s) already have specific questions or topics in mind, the initial session - most commonly one-half hour - is free, and devoted to discussing the needs and goals of the client(s), identifying topics to be addressed, and designing a plan for conversations. Each plan may include additional information via electronic media. Topics can be as broad or narrow as desired, and include any combination of topics from the complexity sciences, mathematics, biology, climatology, adaptability, or outdoor living skills.

## Who can participate in and benefit from Conversations & Coffee?

Any adult (18+) - individual or small group (5 or less) with any background, interest or goal can schedule sessions. (Sessions for younger people of high school age are possible with parental participation.) For decades, Alder has specialized in helping people understand complex but important ideas in science and mathematics in a way that does not overwhelm, but engages, enlightens and fascinates, regardless of their background. He has the capacity to creatively link ideas in teaching sessions. He enjoys teaching modalities like Conversations & Coffee - in which students determine what topics are to be covered. Such formats allow a freedom of exploration not possible during a class with a specific focus - say, Systems 101 or Climate 101 - when topics have to be covered in a limited time because they are prerequisite to more advanced classes.

Sessions can also be organized for professionals, businesses, institutions, government agencies, nonprofits, churches, schools and colleges. **Every professional field can benefit**, including educators, biologists, chemists, anthropologists, climatologists, medical and mental health professionals, programmers, architects, engineers, resource managers, community organizers, business owners, economists, artists and musicians.

### Example sessions and topics

- business owners or organizational developers learn how the principles of self-organization, emergence and the edge of chaos can improve the success of their business or organization;
- health conscious people learn the biological and chemical fundamentals of energy metabolism, and how it shifts from use of carbohydrates to fats with dietary changes;
- recovering heart patients study cardiovascular anatomy and physiology from a systems view to better understand the edge of chaos behavior of healthy hearts;
- an individual or teacher learns how to understand the Mandelbrot set, how to explore it using free-software, and what it means for our understanding of our universe;
- students get tutoring in chemistry, biology and mathematics for a high school or college class
- individuals and groups seek to understand and prepare for abrupt climate change;
- artists wish to learn about how to apply fractal geometry and nonlinearity to their art most effectively;
- high school teachers, college professors, and homeschool parent learn how (and why) to teach fractal geometry, non-linear dynamics ("chaos theory"), and computational systems, all of which can be introduced to students as early as elementary school if done correctly. (**Note:** We believe that these topics *urgently* need to be integrated into our educational systems so that we can more effectively understand and prepare for the great challenges of the 21st century.)
- natural resource managers increase their knowledge of ecological models - their strengths and limitations - or how abrupt climate change is likely to affect their systems;
- psychologists study neural networks to aid their understanding of brain function;

### What topics can be explored in Conversations & Coffee?

Below is an extensive - *though not exhaustive* - list of potential topics, categorized according to the six major components of Ermah Ge's Earth Studies Program: complexity (system) principles, biology, geophysiology (aka Earth systems science), climatology, adaptability and intelligence. **Please remember: complexity sciences apply to every aspect of nature, life, society and everyday existence.** If you don't see what you're interested in, inquire: it may be available!

#### Complexity (systems) sciences

- concepts and characteristics of system/network dynamics or behavior
- feedback - negative v positive - their distinction and system roles
- nonlinearity, chaos, edge of chaos, tipping points, fractals and fractal dimension, and power laws
- in-depth explorations of the Mandelbrot set and related models
- cellular automata, Turing machines, substitution systems & their relevance to the real world.
- energy, energy gradients (flows, dissipation), equilibrium v non-equilibrium, and self-organization
- the theory of emergence and emergent properties
- science as a way of knowing: critical thinking, processes, distinction from other ways of knowing
- basic math skills: number systems; lines, planes and 3D shapes; equations, graphing, recursion; conceptual explanation of differential equations (calculus) and iterative or recursive equations

- use of rhythms (live percussion) to illustrate the edge of chaos and related concepts; instructions in playing an electronic hand drum, special effects and mixing
- application of systems principles to organizations, companies, corporations and institutions

### **Living systems: cells, organisms and ecosystems using system principles**

- basic biological chemistry (easy to understand, conceptual and visual)
  - atoms, molecules, chemical bonds, and macromolecules
  - kinds of biomolecules: carbohydrates, lipids, amino acids and proteins, and nucleic acids
  - enzymes and co-enzymes
- the four known forces, with focus on the electromagnetic force and spectrum (that powers life)
- taxonomy: the categories of life (domains, kingdoms, phyla, classes ... genus, species), and the debate about which taxonomy is best: 3 domains or 5 kingdoms
- cells
  - types (bacterial v non-bacterial)
  - structure: membranes and organelles, including motility; how cells divide
  - DNA, RNA and protein synthesis
  - energy metabolism: citric acid cycle, electron transport system and chemiosmosis
  - the concept of autopoiesis (self-making), a key to understanding life
  - the complex role of RNA's in metabolism that makes genetic engineering dangerous
- a definition of life w/ system principles not found in any contemporary, mainstream biology text
- symbiosis: ecological interactions involving sustained physical contact between species
- healthy physiology at the edge of chaos: hearts, hormones and other systems
- neural networks, brains and mind
- immunology: new views of the immune system and it's relationship to mind
- emergent properties in social insects: termites, ants, bees and wasps
- development of biological shapes: how does shape happen, and what role do genes really play?
- evolution
  - the contemporary model (still relevant but insufficient) natural selection, genetic variation
  - the fatal flaws of neo-Darwinism and Intelligent Design
  - new processes of evolution from complexity science: self-organization and symbiogenesis
  - the origins of life on Earth: four models (including RNA world and auto-catalytic set theory)
- ecosystems: structure; dynamics, evolution, succession; energy flow and matter cycling
- ecosystems, landscapes and biomes: what's the difference and why does it matter?

### **Geophysiology: the science of our living planet**

- the concept of and evidence for Gaia
- Earth's atmosphere, oceans and rocks
- Daisyworld: one of the most powerful and important ecological models in history
- Gaia's metabolism: complex global cycles of C, N, P, S, O, Ca, etc.
- history of Earth and Gaia: the first 4.5 billion years

### **Climate change: understanding, mitigating and preparing for it**

- abrupt climate change explained in terms of complexity sciences and geophysiology
- global heating and climate change as a planetary disease
- paleoclimate climate over 65 million years, focusing on the ice ages (3 - 4 million years)
- a history of climate change research: successes and failures that led to misunderstanding
- models
  - the concept, type and goals of models
  - global computer models (used by IPCC) v Daisyworld (Lovelock and Kump)
  - modeling limitations: past, present and future (the relevance of system principles)
- dealing with climate change deniers; common fallacies and misinformation
- meteorology: how will climate change affect weather in your area? [Ed Hummel]

## **Adaptability: the art of surfing the edge of chaos**

### **Personal**

- outdoor living skills aka bushcraft
- motivations
  - getting in touch with nature in a fun and engaging way!
  - disaster preparedness
  - what communities and our species can learn about preparedness from bushcraft and primitive living skills
- equipment and tools for shelter, sleep, knives, axes, cooking, water, medicine
- dietary recommendations: the value of paleo- and ketogenic diets
- safety, focusing on blade use, fire building, lightning, camp and shelter, animals
- conservation of resources: making most efficient use of resources during scarcity

### **Community**

- What every community needs to consider when preparing for abrupt climate change:
  - what we're preparing for, and why it's very likely different from media projections
  - shelter, water, food, energy, health care, mental health, transportation and security
  - the importance and relevance of permaculture
- Organizing groups and communities for maximal efficiency using system principles
- Dealing with fear, despair and denial [Carmine Leo, Ermah Ge associate]
- Facilitating the emergence of new world views and cultural maps rooted in system sciences and geophysiology to replace the obsolete views of nature, Earth and life promoted by the mechanistic sciences [**Note: we believe that this is the most important goal of our Earth Studies Program.**]

### **Intelligence**

- neural networks, brains and minds
- the nature of intelligence in organisms
- the concept of natural intelligence (v intelligent design): Given that nature invented features like photosynthesis and life, is it inherently intelligent - even if **not** conscious or sentient?
- Emotional Intelligence and Emotional Literacy - customized programs available for individuals and groups, including corporate leadership teams [Carmine Leo, Ermah Ge associate]. Advanced education, training and practical application of specific skill sets involving emotional perception, expression, management and control - intended to enhance intra- and interpersonal relationships in: communication; innovation; more effective decision-making; cooperation, collaboration & motivation; stress and conflict management; leadership development and effectiveness; group dynamics; community-building; and attentive mindfulness & presence

### **Books that can serve as texts for discussion (all or selected parts)**

A list of books that serve as texts for our Earth Studies Program. Any of these can serve as reading material for conversations during a CC series. Think of it as a personalized reading seminar for one person or a small group.

### **Complexity**

- *Into the Cool: Energy Flow, Thermodynamics & Life* –Eric Schneider & Dorion Sagan
- *Nexus: Small Worlds & the Groundbreaking Theory of Networks* – Mark Buchanan
- *Signs of Life: How Complexity Pervades Biology* – Michael Sole & Brian Goodwin
- *How Nature Works: The Science of Self-Organized Criticality* – Per Bak
- *Chaos Under Control: The Art & Science of Complexity* - Michael Peak & David Frame
- *Chaos & Fractals: New Frontiers of Science* – Heinz-Otto Peitgen et al
- *A New Kind of Science* – Stephen Wolfram
- *The Emergence of Everything: How the World Became Complex* – Harold Morowitz
- *Surfing the Edge of Chaos: The Laws of Nature & the New Laws of Business* – Richard T Pascale et al
- *Exploring Complexity: An Introduction* (Chapter 1 only) – Ilya Prigogine

## Biosciences

- *Early Life: Evolution of the Pre-Cambrian Earth (2e)* – Lynn Margulis & Michael Dolan
- *Slanted Truths: Essays on Gaia, Symbiosis & Evolution* – L. Margulis & Dorion Sagan,
- *What is Life?* - Lynn Margulis & Dorion Sagan
- *What is Sex?* - Lynn Margulis & Dorion Sagan
- *Acquiring Genomes: A Theory of the Evolution of Species* – Lynn Margulis & Dorion Sagan
- *Symbiotic Planet: A New View of Life* – Lynn Margulis
- *The Way of the Cell: Molecules, Organisms & the Order of Life* – Franklin Harold
- *Tending Adams Garden: Evolving the Cognitive Immune Self* – Irun Cohen

## Geophysiology

- *Animate Earth: Science, Intuition & Gaia* – Stephen Harding
- *Gaia: The Practical Science of Planetary Medicine* – James Lovelock
- *The Revenge of Gaia: Earth's Climate Crisis & the Fate of Humanity* – James Lovelock

## Climate

- *The End of the Long Summer: Why We Must Remake Civilization to Survive on a Volatile Earth* – Dianne Dumanoski
- *With Speed & Violence: Why Scientists Fear Tipping Points in Climate Change* – Fred Pearce
- *The Discovery of Global Warming* (selected chapters on the web page) – Spencer Weart

## Adaptability

- *The End of the Long Summer: Why We Must Remake Civilization to Survive on a Volatile Earth* – Dianne Dumanoski
- *Everyday Survival: Why Smart People Do Stupid Things* – Laurence Gonzales
- *The Abstract Wild* – Jack Turner
- *Bushcraft: Outdoors Skills & Wilderness Survival* – Mors Kochanski
- *Gaia's Garden: A Guide to Home Scale Permaculture* – Toby Hemenwa
- *Darwin's Unfinished Business: The Self-Organizing Intelligence of Nature* - Simon G. Powell

## Costs

We are pricing CC at rates commiserate with the quality and - which again, is not offered in such a thorough, integrated and accessible fashion anywhere else in the United States. **We are offering special introductory offers, so please read this section carefully.**

- Our standard rate for conversations & coffee with Alder for the remainder of 2014 is \$50/hour for individuals and small groups (i.e., up to 5 people for \$50/hour *total, not per person*).
- However, we are offering **special introductory summer rates: \$25/hour through September 5, 2014.**
- **A free evaluation session** is available (when necessary) to determine and clarify client needs and goals, determine relevant topics, and structure a plan.
- **Your satisfaction is guaranteed.**
- Shareholders with an active account (positive balance) in Ermah Ge's Community Supported Education Program (CSE) can charge CC fees to their share account and get **15% off!**
- Some barter and payment-in-kind is possible. Please inquire.
- For rates with other Ermah Ge associates, and for consultations and training for corporations, organizations and institutions, please inquire.