

COMPLEX TIME: *Adaptation, Aging, Arrow of Time*

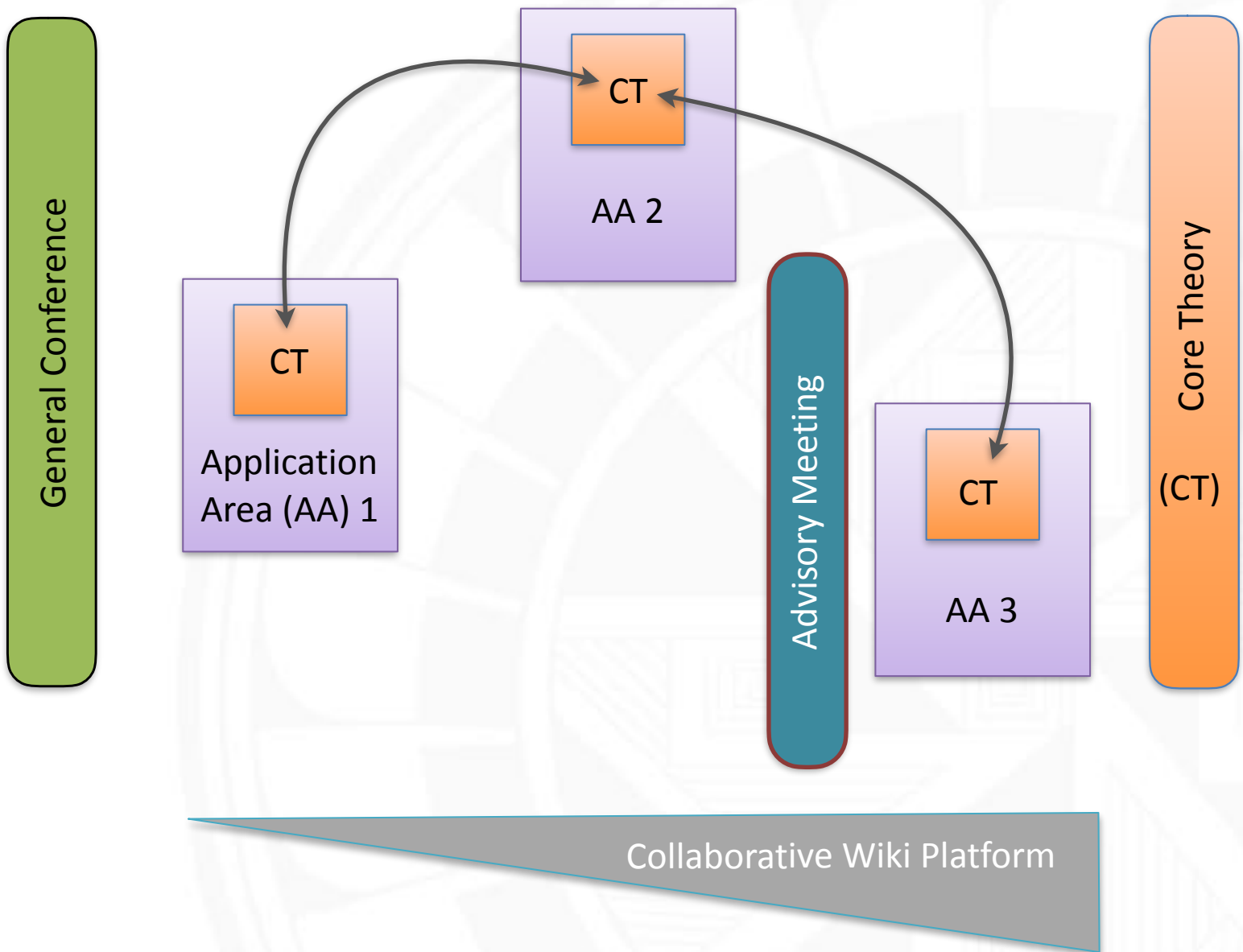
Amy P. Chen
Program Manager

James S. McDonnell Foundation



SANTA FE
INSTITUTE

Program Structure





General Conference

- Provide overview of related fields
- Identify problems for investigation



CT

Application
Area (AA)

Form novel, strong collaborative networks capable of significantly advancing research on core topics:

- Based on phenomena related to AAA with strong supporting empirical data & evidences
- Development &/or application of complexity science framework, models, tools to transform understanding
- Suggestion for intervening & controlling the system to minimize/circumvent loss of structure, order, function

Consolidation of data sets & tools



Core Theory (CT)

The Origin and Implication of Time in Adaptive Systems

June 18-20, 2018

Organizers: Jessica Flack, Sean Carroll, David Krakauer, Jim Hartle

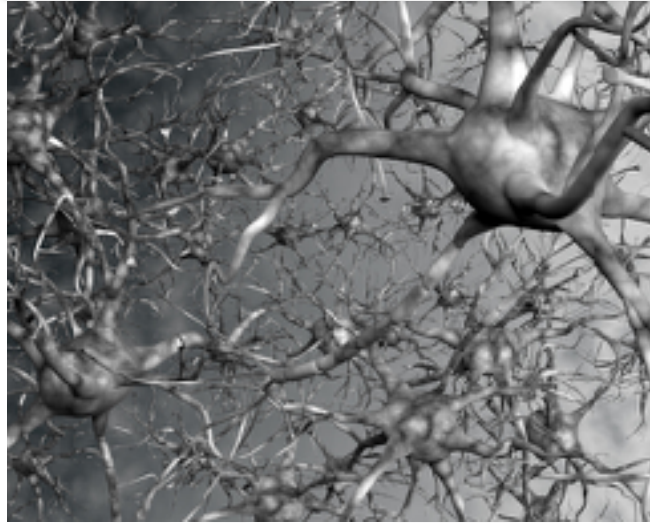
- Fundamentals of time in physical system
 - Arrow of time and cosmology
 - Directional memory & causality \leftrightarrow time asymmetry
- Origins & construction of timescales in adaptive systems
 - Nested & hierarchical timescale
 - Limits to adaptation & longevity
- Exploitation & control of time scales
 - Role of physical time scale in complex systems
 - Exploitation of periodic information
 - Catalysis in aging phenomena
- Role of information processing & perception
 - time detection principle \leftrightarrow discounting

Participants: Christopher Jarzynski, Jessica Canton, Jennifer Dunne, Doug Erwin, Jenann Ismael, Malcom Maclver, Dan Schrag, David Wallace, Lin Chao, Coleen Murphy, Eric Smith, Geoffrey West

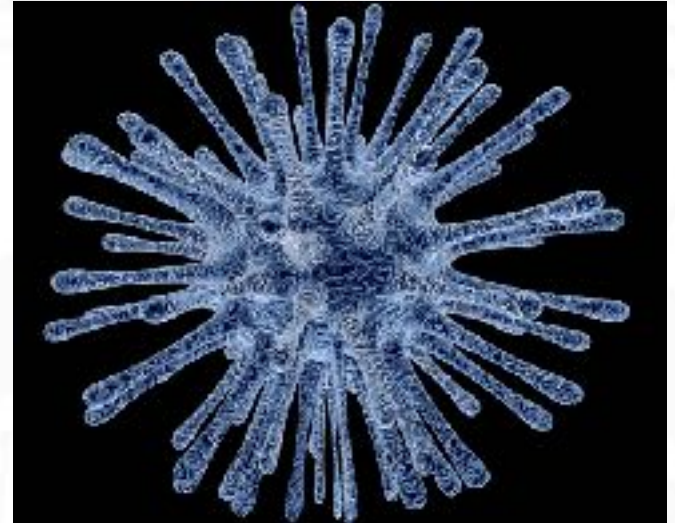
Planned

Application
Area (AA)

Aging Brain



Infectious Diseases



Population & Environment



Human Aging



In progress..

Application
Area (AA)

Sleep



Civilization Decline



Ecological Irreversibility



Sociality & Aging





History, Big History, Metahistory Paperback – April 15, 2017

by [David C. Krakauer](#) (Author), [John Gaddis](#) (Author), [Kenneth Pomeranz](#) (Author)

★★★★☆ 1 customer review

See all 4 formats and editions

Kindle
\$2.99

Hardcover
from \$20.28

Paperback
\$9.95 ✓prime

Read with Our **Free App**

4 Used from \$21.83
12 New from \$20.28

1 New from \$9.95

What is history anyway? Most people would say it's what happened in the past, but how does the past extend? To the first written sources? To what other forms of evidence reveal literate civilizations? What does that term mean—an empire, a nation, a city, a village, a lonely hermit somewhere? Why stop with people: shouldn't history also comprise the environments in which they exist, and if so on what scale and how far back? And as long as we're headed in that direction, why stop with the earth and the solar system? Why not go all the way back to time itself? There's obviously no consensus on how to answer these questions, but even asking

Collaborative MediaWiki Platform

Santa Fe Institute Collaboration Platform

A hub for continuity & synthesis across program:

- Continued collaboration beyond time spent in meeting
- Linkage of Application Areas
- References, data, code sharing

<https://centre.santafe.edu/complextime>