Landscapes of Collectivity in the Life Sciences

Eva Hesse, Metronomic Irregularity I, 1966, Museum Wiesbaden.
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The 29th Annual International Workshop in the History and Philosophy of Science
Sunday-Wednesday, June 14-17, 2015

1st day, Sunday, June 14
Phenomena and Methodological Issues
at Tel Aviv University, Gilman Building, Hall 496

10:15-10:30 Coffee

10:30 Greetings:

Prof. Yoav Henis, Vice-President for Research and Development, Tel Aviv University

Prof. Yosef Schwartz, Head of Cohn Institute for the History and Philosophy of Science and Ideas, Tel Aviv University

Introduction by Members of the Academic Committee

Landscapes of Collectivity – Phenomena (a video session, 90 minutes):

Eshel Ben Jacob – Bacteria;
Scott Gilbert – Symbiosis;
Ehud Meron – Plants;

Iain Couzin – Swarms;
Ofer Feinerman – Ants;
Simone Pika – Birds, Apes;
Hannes Rakoczy – Infants

12:45-14:00 Lunch Break

14:00 Theorizing and Experimenting – Between and Within

Sorin Solomon and **Gur Yaari**
The Fallacy of the Selection of the Fittest

Elisabeth Lloyd
The Logic of Research Questions and Group Functions

Arnon Levy
Causal Order and Varieties of Robustness

15:30-15:45 Coffee Break

15:45 Modeling

Joan Roughgarden
Incentivizing Biological Cooperation: Approaches from the Economic Theory of the Firm

Ehud Meron
Scaling Up Information across Organization Levels and Spatial Scales in Models of Dryland Plant Communities

2nd day, Monday, June 15

Advances in Experimental and Theoretical Understanding of Living Collectives

at Tel Aviv University, Gilman Building, Hall 496

9:00-9:30 Coffee

9:30 Symbiosis

Scott Gilbert
Interspecies Co-development: Building the Organism from Several Sources

Eugene Rosenberg and
Ilana Zilber-Rosenberg
The Hologenome Concept of Evolution: From the First Eukaryote to Man

Collectivity in the Action of Gene Expression Regulatory Molecules

Nir Friedman
Organizing Principles of Interacting T Cell Repertoires

Ido Amit
Shaping the Blood: Lessons from Chromatin and Single Cell RNA-seq. dynamics

Yitzhak Pilpel
Towards Realizing Lamarckism in the Lab

12:00-12:15 Coffee Break

12:15 Rethinking the Immune System

Alfred Tauber
Rethinking Immunity: Moving from the Autonomous Individual to the Ecological Collective

Irun Cohen
Computing the State of the Body: Collective Dialogue in Autoimmunity and Tumor Immunity

13:15-14:15 Lunch Break

14:15 Collective Behavior, Collective Communication

Herbert Levine
Collective Effects May Hold the Key to Understanding Cancer Metastasis

Eshel Ben Jacob
The Wisdom of the Crowd from Bacteria to Cancer

Yael Lubin
Social Spiders: Cooperation among Cannibals

15:45-16:15 Coffee Break

16:15 Collective Motion and Pattern Formation

Ofer Feinerman
Cooperative Load Transport in Ants: Conformism without Conservatism

Iain Couzin
Sensory Networks and Distributed Cognition in Animal Groups

Workshop Discussion
(30-45 minutes)

3rd day, Tuesday, June 16

Human Collectives

at The Van Leer Jerusalem Institute, 43 Jabotinsky St., Jerusalem

9:15-9:30 Coffee

9:30 Greetings:

Prof. Gabriel Motzkin, Director, The Van Leer Jerusalem Institute

Intellectual Biographies

**Eugene Rosenberg,
Joan Roughgarden**

Interviewer: **Oren Harman**

11:1511:30- Coffee Break

11:30 "Collective Intelligence" of Individuals and Its Evolution

Hannes Rakoczy
The Development of Collective Intentionality in Early Childhood

Eva Jablonka and **Oren Bader**
Remembering as a Group: The Evolution of Autobiographical Memory – from Collective to Personal

Ehud Lamm
Putting the "Co" in Community: Codevelopment, Coevolution, Constitution

13:00-14:00 Lunch Break

14:00 Rethinking Communication

Simone Pika
Gestural Communication: Homologies and Analogies

Daniel Dor
Between Experience and Imagination: Language and the Two Levels of Human Collectivity

Discovering Collectivities, Rediscovering the Individual

John Beatty
Collective Epistemology: Scientific Consensus from a Collectivist Perspective

Ayelet Shavit
"Locality," Groups and Epistemic Injustice against Groups and Individuals

4th day, Wednesday, June 17
Future Perspectives: Reshaping or Replacing Methodological Individualism in the Life Sciences
at The Van Leer Jerusalem Institute, 43 Jabotinsky St., Jerusalem

8:45-9:00 Coffee

9:00 Intellectual Biographies

Eshel Ben Jacob
Interviewer: **Oren Harman**

Panel:
Reshaping or Replacing Methodological Individualism?

Participants:
**Scott Gilbert,
Herbert Levine,
Elisabeth Lloyd,
Ehud Lamm**

11:00-11:15 Coffee Break

11:15 General Discussion: Reshaping or Replacing Methodological Individualism?

John Beatty opens the discussion & moderates (2 hours)

Participants

Ido Amit, Weizmann Institute of Science; John Beatty, University of British Columbia, Vancouver; Eshel Ben Jacob, Tel Aviv University; Oren Bader, Tel Aviv University; Irun Cohen, Weizmann Institute of Science; Iain Couzin, Max Planck Institute for Ornithology, and University of Konstanz; Daniel Dor, Tel Aviv University; Ofer Feinerman, Weizmann Institute of Science; Nir Friedman, Weizmann Institute of Science; Scott Gilbert, Swarthmore College; Snait Gissis, Tel Aviv University; Oren Harman, Bar-Ilan University; Eva Jablonka, Tel Aviv University; Ehud Lamm, Tel Aviv University; Herbert Levine, Rice University; Arnon Levy, The Hebrew University of Jerusalem; Elisabeth Lloyd, Indiana University, Bloomington; Yael Lubin, Ben-Gurion University of the Negev; Ehud Meron, Ben-Gurion University of the Negev; Simone Pika, Max Planck Institute for Ornithology; Yitzhak Pilpel, Weizmann Institute of Science; Hannes Rakoczy, Göttingen University; Eugene Rosenberg, Tel Aviv University; Joan Roughgarden, Hawaii University; Ayelet Shavit, Tel Hai College; Sorin Solomon, The Hebrew University of Jerusalem; Alfred Tauber, Boston University; Gur Yaari, Bar-Ilan University; Ilana Zilber-Rosenberg, Tel Aviv University

Admission is free.

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Parking is not available at the Van Leer Jerusalem Institute. (Metered parking is available on the neighboring streets.)

Photographs taken at the workshop will be posted on the Institutes' websites and on social networks.