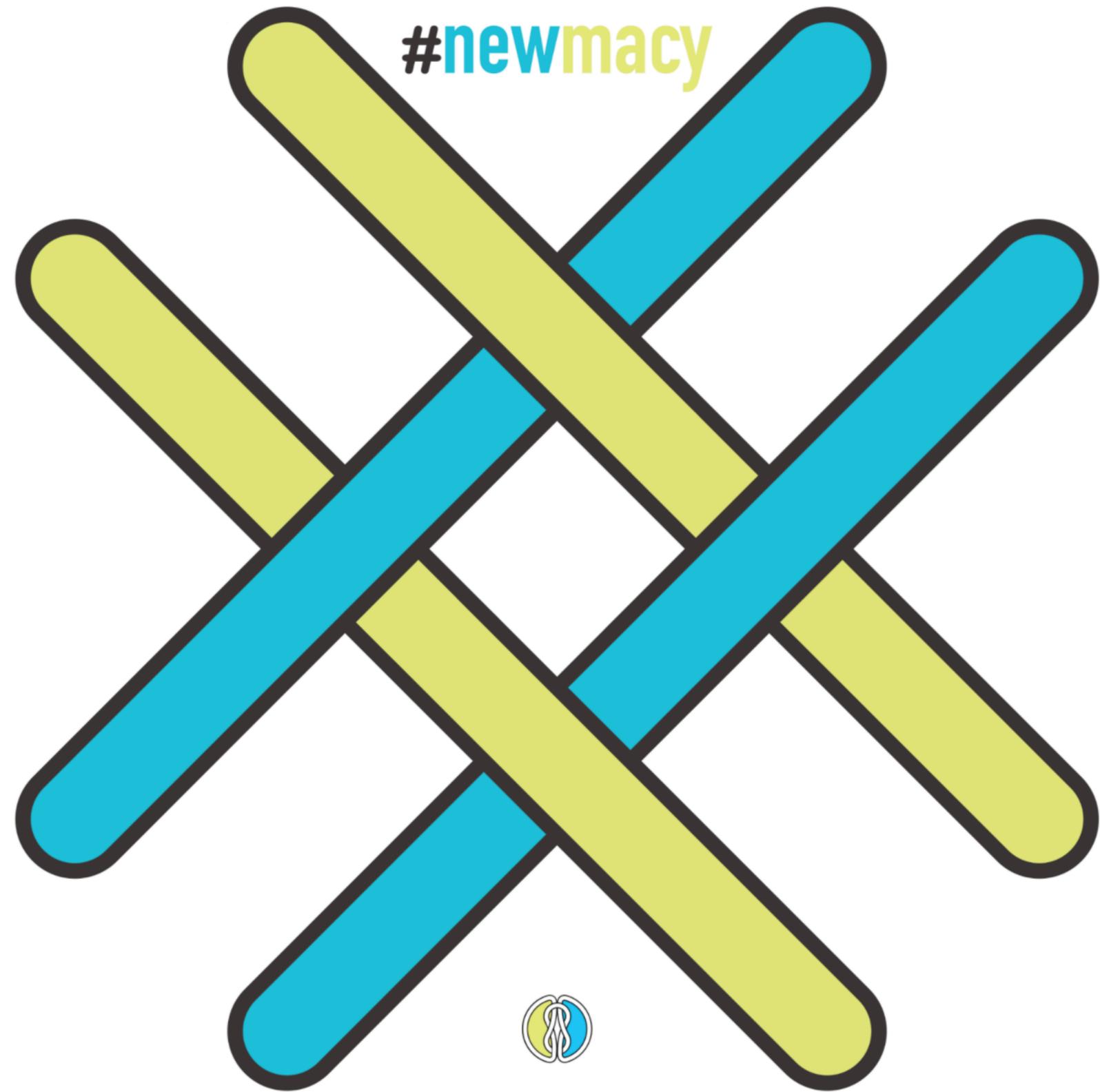american society for cybernetics

#newmacy

#NewMacy Tour
ASC Speaker Series #6
September 21, 2025

Paul Pangaro
President, American Society for Cybernetics
Director, Laboratory for Cybernetics, Carnegie Mellon University
ppangaro@cmu.edu

american society
for cybernetics

#newmacy

#NewMacy Origins

Today's Global Pandemics

Biology
Technology
Racism
Inequality
Economics
Environment
Artificial Intelligence
Wicked Problems

Today's Global Pandemics

Science has failed to tame **Wicked Problems**.
Governance has failed.
Socio-technical systems have failed.
Today's AI has failed.
Engineering has failed.
Psychology has failed…

—Will society fail?

Facing Wicked Problems

To respond with variety, we must convene conversations that:

◎ move toward action—conversation alone is not enough

◎ are trans-disciplinary—cut across silos and vested interests

◎ are trans-global—cut across geographies, are inclusive and diverse

◎ are trans-generational—bring viewpoints & collaboration across ages

◎ engage all roles involved in bringing technology to society

So that we bring about positive change.

CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS
IN BIOLOGICAL AND SOCIAL SYSTEMS

Transactions of the Tenth Conference
April 22, 23, and 24, 1953, Princeton, N. J.

Edited by
HEINZ VON FOERSTER
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NEW YORK, N. Y.

Sponsored by the
JOSIAH MACY, JR. FOUNDATION
NEW YORK, N. Y.

Cybernetics + Macy Meetings

In the 1940s and 1950s, a series of small conferences were funded by the Josiah Macy Jr Foundation.

Experts from a vast range of disciplines focused on purpose in understanding and designing complex systems. They created a new way of thinking and acting in the world and started a revolution.

They called this new field cybernetics from a Greek word meaning the art of steering—acting with intention.

These original Macy Meetings changed the worlds of science, engineering, and humanities.

Cybernetics + **Macy Meetings**

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These original **Macy Meetings** changed the worlds of science, engineering, and humanities. We need such a revolution again to address today's "wicked problems"—**#NewMacy Meetings**.

Cybernetics + Macy Meetings

Original Macy Meetings
1943 – 1955

◎ post-WWII "world order"

◎ digital rising

◎ circular causal & feedback mechanisms

◎ closed selection of participants

◎ transdisciplinary

#NewMacy Meetings
2020 – present

◎ post-COVID "wicked problems"

◎ digital supreme

◎ … + socio-technical entanglements

◎ open network of collaborators

◎ transdisciplinary
transglobal
transgenerational

CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS
IN BIOLOGICAL AND SOCIAL SYSTEMS

#NEW MACY MEETINGS

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Cybernetics | Wicked Challenges

How / Why does Cybernetics move us forward?

◎ embodies "the art and science" of purposive systems

◎ offers detailed models of regulation in complex adaptive systems

◎ brings an ethical imperative to human action

◎ founded as transdisciplinary / antidisciplinary

◎ applies across siloed disciplines

◎ embraces the unknowable and the unpredictable

#NewMacy Activities

#NewMacy Conversations 2020 – 2025

◉ **#NewMacyMeetings Manifesto — Conversations For Action**

◉ **#NewMacy Agendas — Bi-monthly meetings from 2020 / monthly from 2025 / over 120 conversations**

◉ **#NewMacy Conversations: Evolving Documentation**

#NewMacy Sessions

◉ **#NewMacyMeeting #1: Cybernetics | Pandemics**

◉ **#NewMacyMeeting #2: Urgent Questions**

◉ **Responding to the Pandemic of "Today's AI"**

◉ **#NewMacyMeeting #3: Urgent Themes To Concrete Actions**

◉ **ISSS 2021: Countering Code with Code**

#NewMacy @RSD

◉ **RSD10 Workshop Technology for Living**

◉ **RSD11 #NewMacy Studios**

◉ **RSD12 Colloquies for Transgenerational Collaboration**

◉ **RSD13 #NewMacy Sessions**

◉ **RSD14 Ecologies of Knowing**

#NewMacy Fall 2025

◉ **Free-form Saturday conversations monthly**

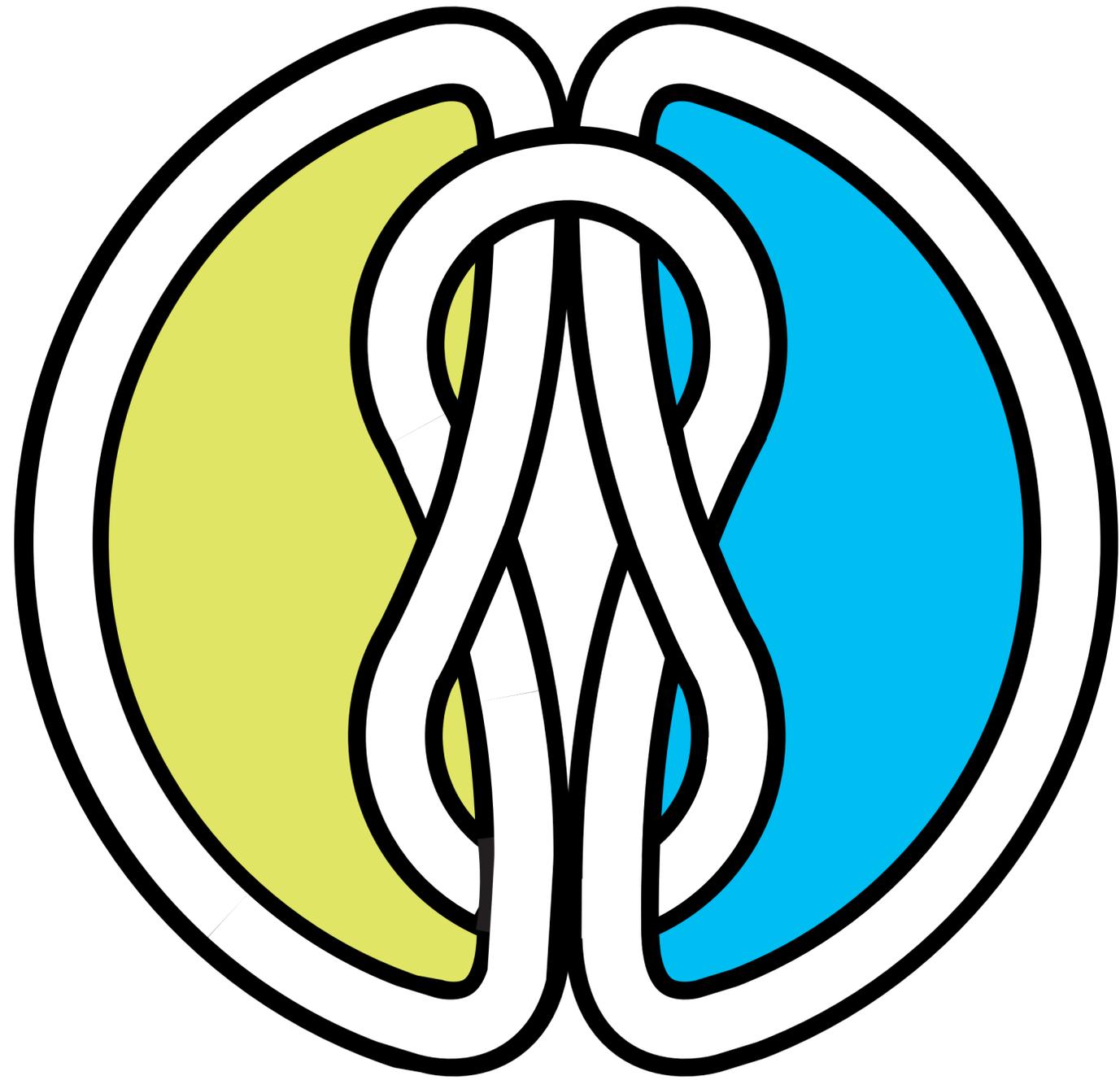◉ **NEW: Thursday Topic Sessions**

#NewMacy Commitment from 2020
Conversations for Action

Let us bring about a rich mesh of collaborations
among individuals and organizations—
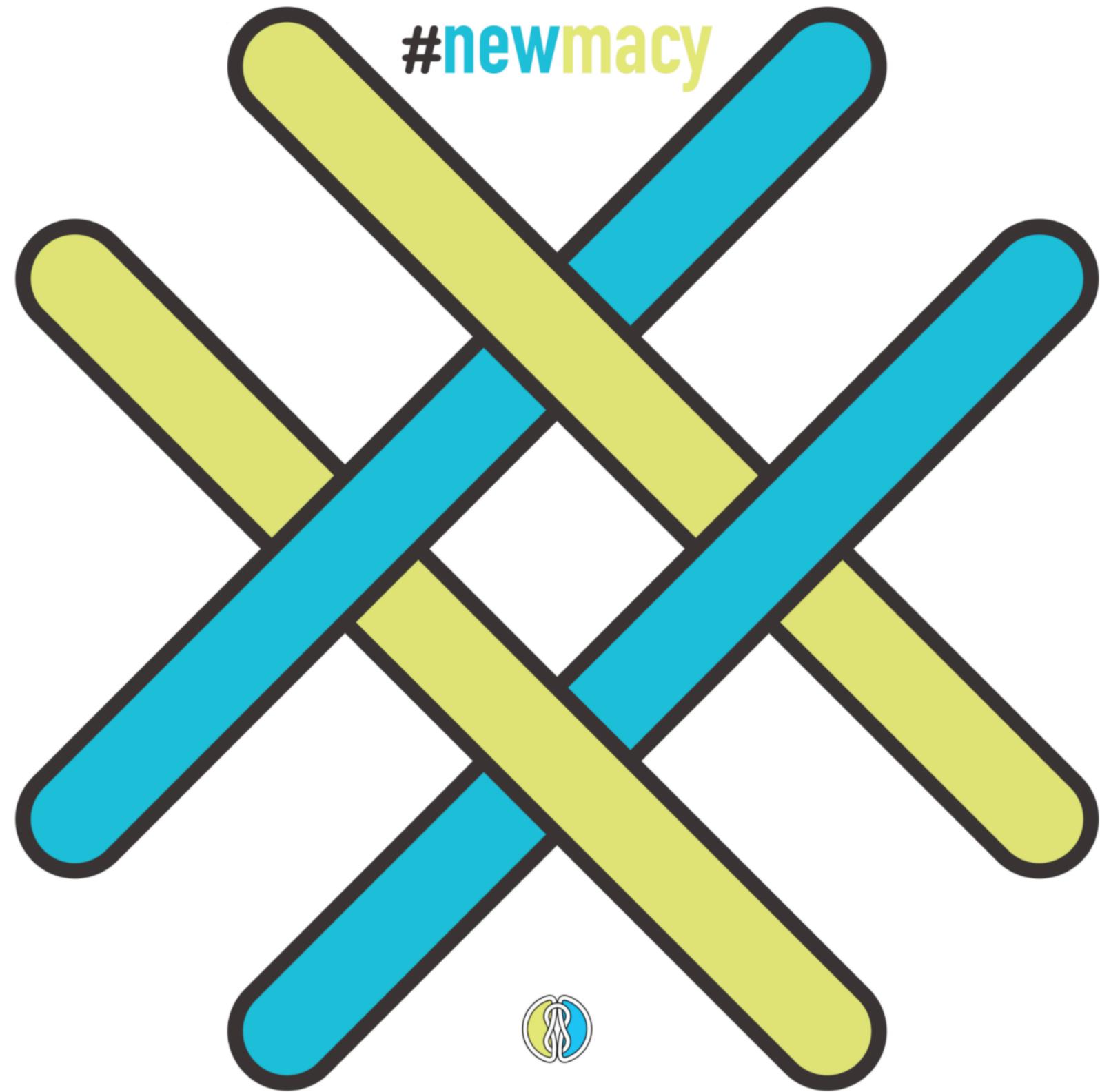across disciplines, geographies, and generations.

We will be deliberate about what we wish to conserve
as analog, biological, social beings—
and then use technology to serve our principles.

We are excited to see what can emerge. Please join us.
Click to email Co-leads Kate Doyle | Paul Pangaro

american society for cybernetics

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What is a Laboratory, that Cybernetics need escape it?
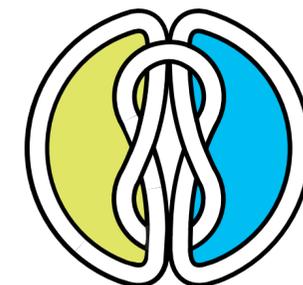
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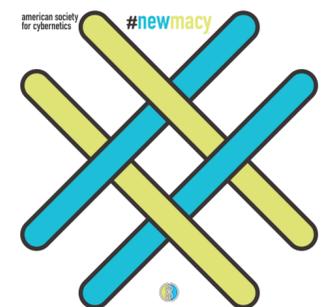**Paul Pangaro**
Director, Laboratory for Cybernetics, Carnegie Mellon University
President, American Society for Cybernetics

ppangaro@cmu.edu

american society for cybernetics

#newmacy

What is a Laboratory, that Cybernetics need escape it?

Prompts

How might we incubate Cybernetics
as a living response
to today's wicked challenges?

Can a laboratory
instigate a world-wide experiment?

Laboratory *for* Cybernetics

Carnegie Mellon—Architecture

2025

Laboratory *for* Cybernetics

- **Cybernetics uses information and purpose for guiding design and action in today's complex entanglements of natural, technological, and social systems.**

- Experimental studio of resources & collaborations

- Project-focused, student-led, no fixed curriculum

- Directly suited to "wicked challenges" / "wicked problems"
  … *e.g., social justice, climate change, artificial intelligence…*

Click here for an overview of the Laboratory

Laboratory *for* Cybernetics

FIRST A DEFINITION

What is Cybernetics? "Science of Purpose"

- From Greek: "*to steer* or *to pilot* " as in piloting a ship toward a destination

- Recognizes the critical importance of **feedback as guidance to effective action**

- **Effective action means achieving goals**—and also evolving them

- "The science of purpose"—to express the purpose of the system you are observing
  … **including your purpose**: your reason for action, your values, desires, biases

- ***Click here for more about Cybernetics in a Laboratory Context***
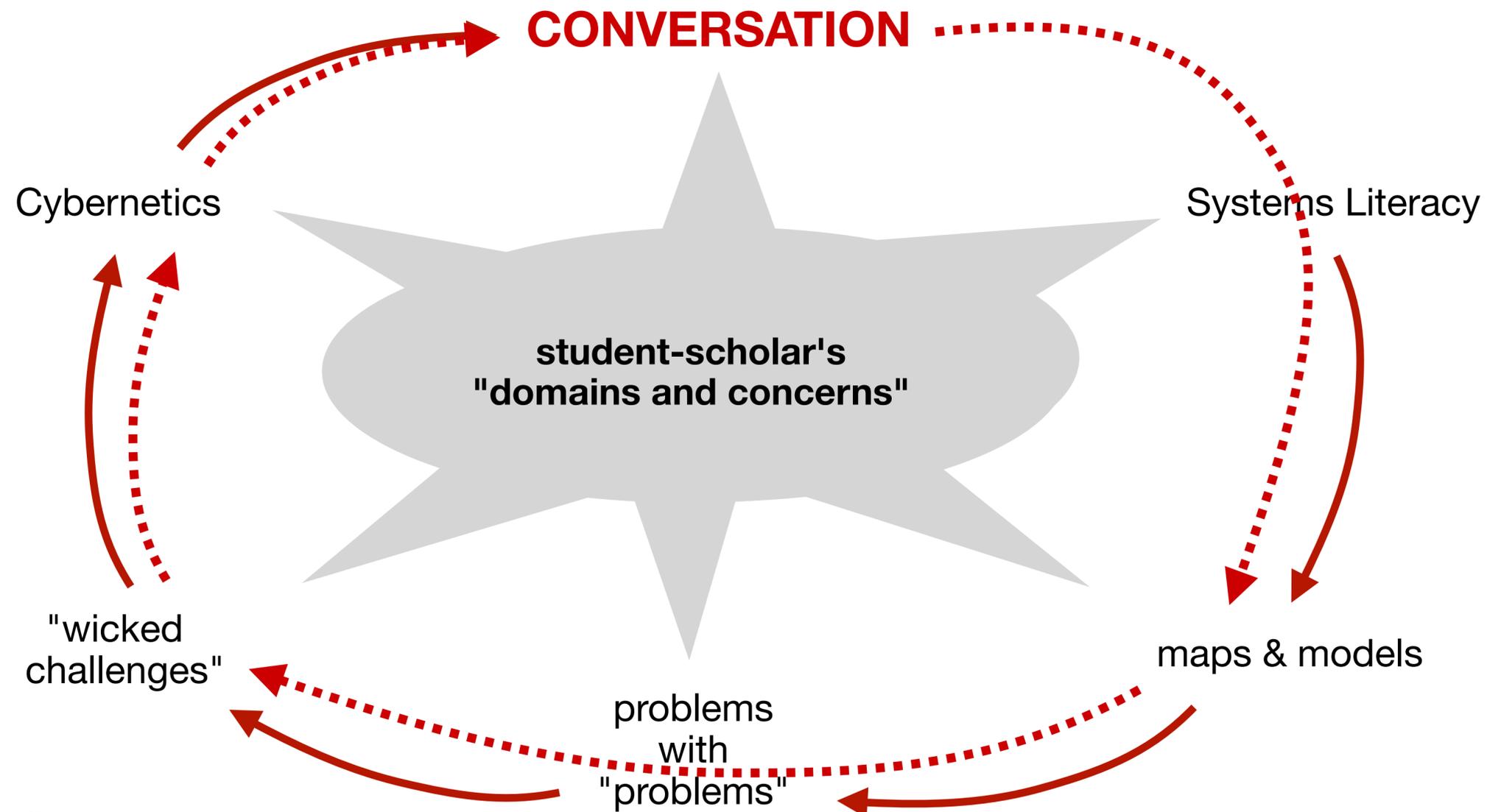
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Laboratory *for* Cybernetics

Course: Engaging Wicked Challenges

- Supports thesis projects and existing research from other courses

- Helps students articulate their own interests

- Offers concepts and materials, models and methods from Cybernetics & Systems

- Facilitates identifying & <u>collaborating with in-world practitioners</u>

- Assigns final deliverable of **design brief** or **research proposal**

Click for details of the course

Course Syllabus: Praxis* for "Wicked Challenges"

CONVERSATION

Cybernetics

Systems Literacy

**student-scholar's
"domains and concerns"**

"wicked
challenges"

maps & models

problems
with
"problems"

*praxis: deliberate application of theory
to active engagement in the world

Video: Forwarding an Anti-Wicked Praxis

Carnegie Mellon University

Laboratory *for* Cybernetics

$5,000 #NewMacy Cybernetics Prize

Laboratory *for* Cybernetics

$5000 YEARLY #NEWMACY Cybernetics PRIZE

Best Design Proposal for Wicked Challenges

- Prize awarded in June 2025 from 30 submissions

- Open to any registered CMU student or student-led team

- Funds are unrestricted and may be applied to next stage of the project

- Primary criterion: **Expand possibilities for action / increase human agency**
  especially when addressing "wicked challenges"

Click here for full description

Laboratory *for* Cybernetics

Expand possibilities for action / increase human agency

- Strive to **increase total number of choices** for a person or a group:

  - **Options** are the proliferation of actions that are possible—and vast in number.

  - **Viable *choices* are a narrowed list actions you would want to take because of your values—because of *who you are* or *who you wish to become*.**

- Proposed design must **increase human agency**—beyond existing approaches—
  to achieve an **expansion of human potential toward action.**

Click here for more details about judging criteria

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Laboratory *for* Cybernetics

Re-Braiding Cybernetics & AI

- **2027 Posner Center Exhibit** co-curated by Jill Fain Lehman & Paul Pangaro

- **Compare & contrast** the ideas of Cybernetics & AI

- **Revisit** the contentious history of Cybernetics versus Artificial Intelligence

- **Explore** the intertwining ideas of the two fields

- **Bring them back into collaboration**

Click here to learn more

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Laboratory *for* Cybernetics

Carnegie Mellon—Architecture
2025

Prompts

How might we incubate Cybernetics
as a living response
to today's wicked challenges?

Can a laboratory
instigate a world-wide experiment?

Framing Cybernetics

Effective action for achieving goals, therefore...
... learning *in order to* know how to act

Acting with the World: Agency in the Anthropocene
  — Andrew Pickering, Duke University Press, 2025

"If you wish to see, learn how to act."
  — *Heinz von Foerster*

From "gain of function" to "collective praxis"

- gain of function = evolving genetic material to increase capability

- reframed as a metaphor for Cybernetics—can we "flip the script"?

- instead of focusing on risk, focus on positive amplification

- can we amplify the capabilities of Cybernetics for greater good?

—*expand collective capacity for evolving cybernetic practice*

New modes of transgenerational collaboration

- express and respect the education, experience, worldview, and interests of "student-scholars" (thesis students, researchers, ...)

- match student-scholars with "in-world practitioners" (not mentors)

- scaffold development of shared vocabulary & compatible values, capture progress, and pursue reciprocal benefits for each role

— *evolve new language and more effective methods for collaboration that cross generations, disciplines, projects, practices*

Spreading resources & growing networks

- evolve & share repositories—concepts & materials, models & methods—across all organizations in the collective

- distribute requests from student-scholars for global reach

- share access to in-world practitioners for networking and collaborating across the collective

- beyond just sharing resources, co-evolve practices through open collaboration

—*accelerate adoption & collaboration for facing wicked challenges*

Escaping the lab through collective action

- envision such a collective practice beyond a single lab

- create a consortium or mesh of design programs & organizations

- operate across multiple locations, contexts, needs, expertise

- share repositories, project progress, outcomes, and critiques
  for continuous evolution of practice

—establish "praxis-sourcing" as the explicit meta-process
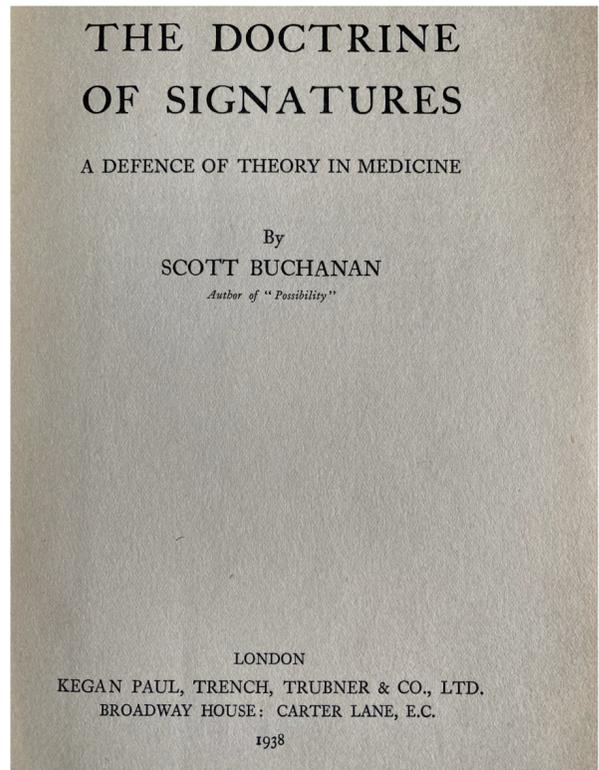
Call to action: Join the experiment

—*expand collective capacity for evolving cybernetic practice*

—*evolve new language and more effective methods for collaboration that cross generations, disciplines, projects, practices*

—*accelerate adoption & collaboration for facing wicked challenges*

—*establish "praxis-sourcing" as the explicit meta-process*

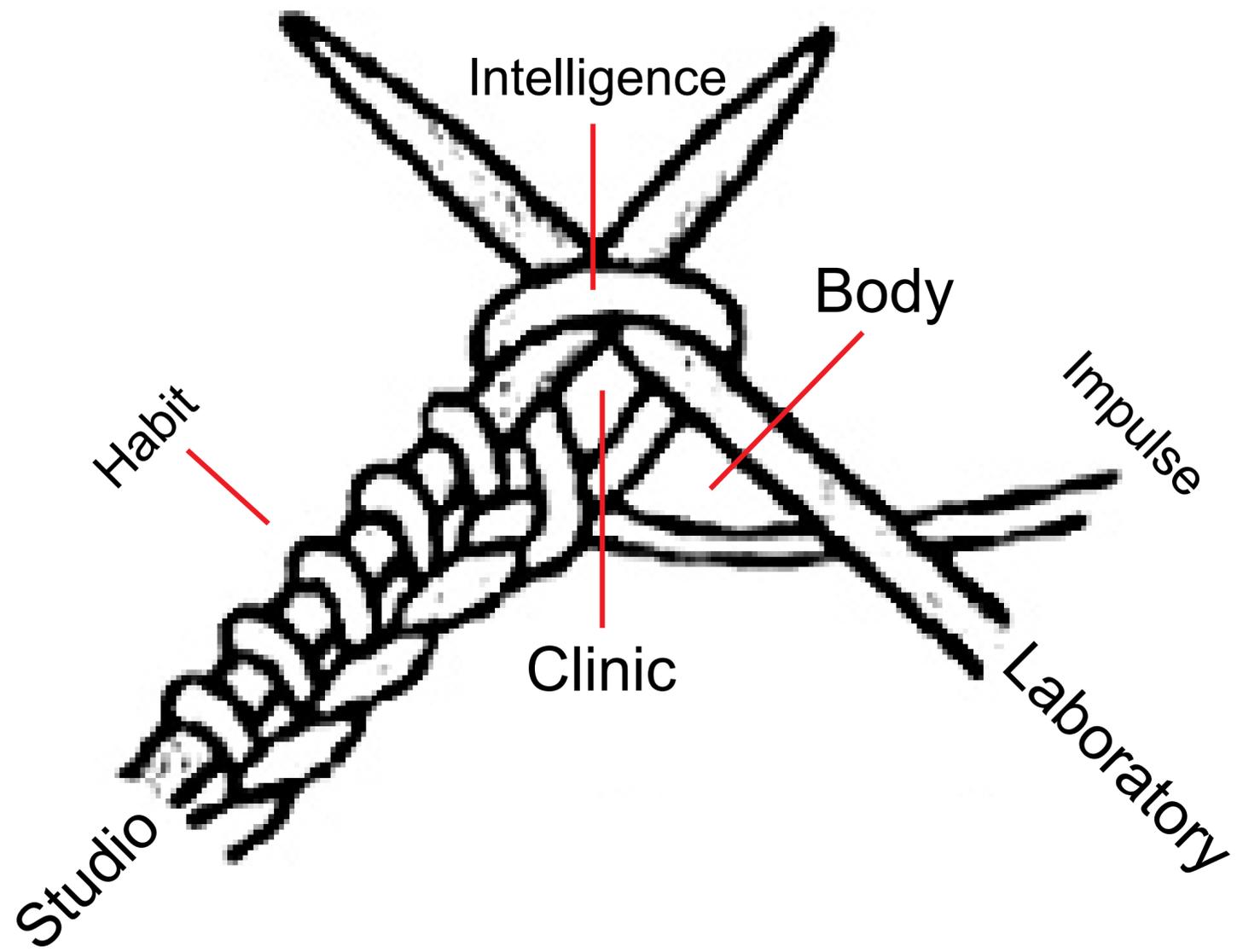—*develop an open-source, anti-wicked praxis*

A process model

*"Clinic" is the link between laboratory & practice—
the laboratory remains experimental
and ideas that emanate from there
progressively enter the "practice"
through clinical trials & studio practices.*
        — Nathan Felde interpreting Scott Buchanan

THE DOCTRINE
OF SIGNATURES

A DEFENCE OF THEORY IN MEDICINE

By
SCOTT BUCHANAN
Author of "Possibility"

LONDON
KEGAN PAUL, TRENCH, TRUBNER & CO., LTD.
BROADWAY HOUSE: CARTER LANE, E.C.
1938

published
1938

Intelligence

Body

Impulse
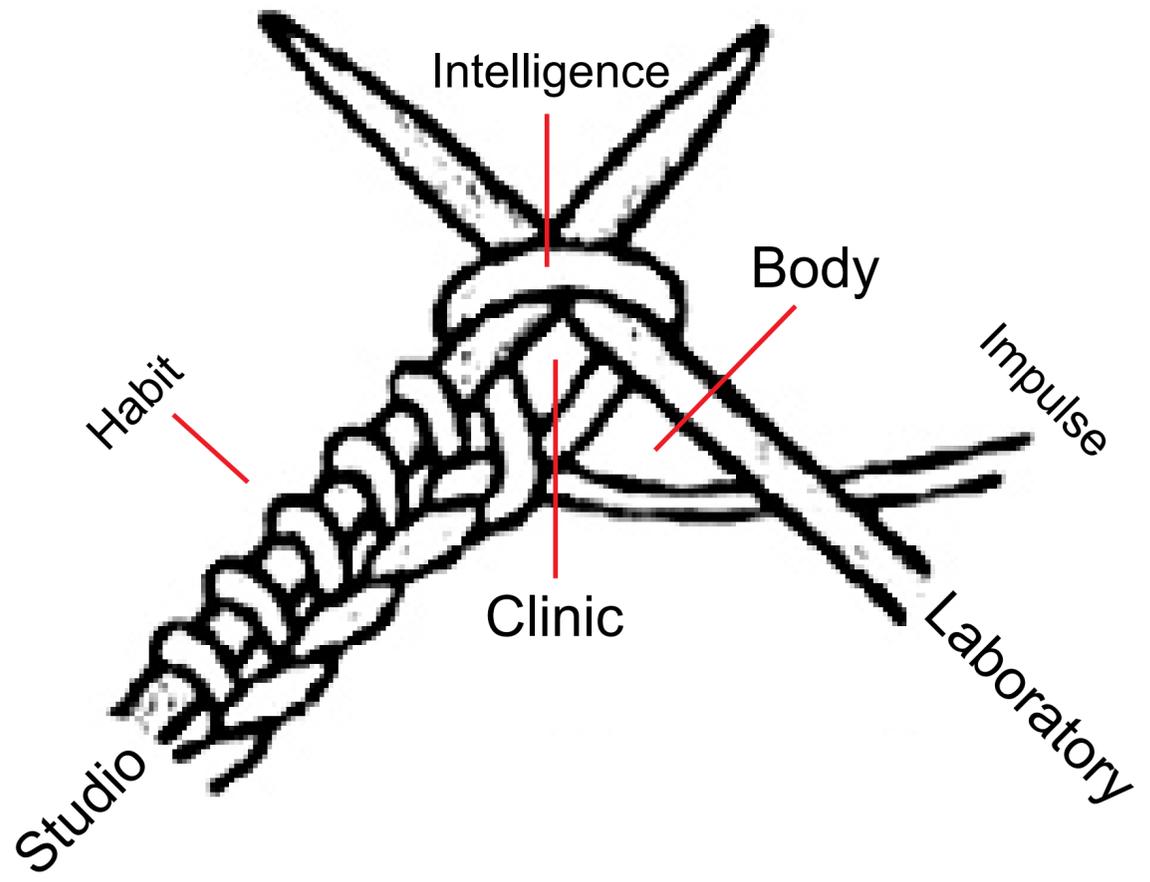
Habit

Laboratory

Clinic

Studio

A process model

"Clinic" is the link between laboratory & practice—
the laboratory remains experimental
and ideas that emanate from there
progressively enter the "practice"
through clinical trials & studio practices.
  — Nathan Felde interpreting Scott Buchanan

clinic: a group meeting devoted to the analysis and
solution of concrete problems or to the acquiring
of specific skills or knowledge.
  — Merriam Webster

→ cyber-repository ←→ student's interests ←→ studio project ←→ transgenerational collaboration ←→ cross-critique →
→ cross-organization clinic ←→ in-world trial ←→ reporting & critique ←→ recording & assessment ←→ praxis update →

Process Model v0.5

→ **cyber-repository** curating concepts & materials, models & methods ←→

←→ **student's interests** articulating their domains & concerns, grounded in their worldview ←→

←→ **studio project** evolving from domains & concerns → design proposal or research plan ←→

←→ **transgenerational collaboration** matching student-scholars to in-world practitioners → **gain of function** →

←→ **cross-critique** evolving the work in local transdisciplinary studio → **escaping the laboratory** →

←→ **cross-organization clinic** prototyping by multi-organization transdisciplinary team → **gain of function** →

←→ **in-world trial** moving from clinical test to external deployment ←→ **escaping the laboratory** →

←→ **reporting & recording** capturing process and outcomes ←→ "**praxis-sourcing**" →

←→ **critique & assessment** evaluating outcomes & scoring of impact ←→ "**praxis-sourcing**" →

←→ **praxis update** evaluating the whole & evolving the praxis itself → updating the repository →

Laboratory *for* Cybernetics

To be continued...

How might we incubate Cybernetics as a living response to today's wicked challenges?

Can a laboratory instigate a world-wide experiment?

Please join the conversation.

Paul Pangaro
ppangaro@cmu.edu