Faculty of Design

2014

Design methods for systemic design research
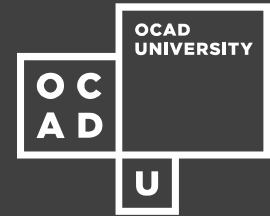
Jones, Peter

Design Methods in Systemic Design Research

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System Theory > Design practice.

- **What we're calling systemic design may be unique in its position to an existing body of theory.**

- **Not that we actually use it in practice.**

- **We use *working* theories every day – don't often refer to system (or social theory) in practice.**

- **"Theoretically-informed," taking a pragmatic turn in design work**

- **More likely to borrow the theory inherent in *methods*.**

Before methods, contexts.

- Systems science has preferred theories for system *description* (explanation), *prediction* (control), & *intervention* (change).

- Contributions of modern design disciplines - industrial, information, service design – are marginal at best.

- "Design" as problem solving, or a process of system design

- Social systems design as a template for design thinking in complex socially-constructed domains.

- Which are (in Anthropocene) nearly everything.

Integrating systems *thinking.*

We tend to adopt system thinking *as method.*
As we did with management practices .

Shortcut theory : Principles > methods

Systemic design methods by intent

Modes

Design or Visual
Cybernetic
Evaluative
Social, Participatory

DESIGN Novel – Future or unknown

GIGAmap

Rich Picture   Modeling

Systemigrams

Simulation

UNDERSTANDING   Soft Systems Methodology   Dialogic Design   PREDICTION

System Dynamics

Team Syntegration

Scenario planning

Boundary Critique / CSH

Developmental Evaluation

Appreciative Inquiry

CHANGE Reform of the known system

10 *Shared* Design Principles

"The primary aim the two systems of thought share today is enabling organized high-leverage action in increasingly complex and systemic problems as design situations."

Design Principle

1. **Idealization**
2. **Appreciating Complexity**
3. **Purpose finding**
4. **Boundary framing**
5. **Requisite variety**
6. **Feedback coordination**
7. **System ordering**
8. **Generative emergence**
9. **Continuous adaptation**
10. **Self-organizing**

Guidance for complex systems design from systems, **cybernetic** & **complexity** principles.

Foundation for practitioners to enhance engagement and evolve better practices.

Elicited from systems theoretic concepts, but no net-new theory.

Elements to form net new frameworks enabling integration of other concepts for specific design contexts.

Jones, P. (2014). *Systemic design principles for complex social systems.* In G. Metcalf (ed.), *Social Systems and Design*, Volume 1 of the Translational Systems Science Series, pp 91-128. Springer Japan.

Design methods associated with principles

Principle	*Design* Methods
1. Idealization	Framing, Iteration, Backcasting
2. Appreciating Complexity	Sensemaking, System sketching
3. Purpose finding	Inquiry (5 Whys), Prototyping
4. Boundary framing	Critical probes, Strange-making
5. Requisite variety	Co-creation, Function analysis
6. Feedback coordination	Modeling, Interactive Testing
7. System ordering	Structuring, Pattern making
8. Generative emergence	Future creation,
9. Continuous adaptation	Multiple reasoning modes
10. Self-organizing	Co-creation, Facilitated design modes

We might also observe *design of*: Time (4), Space (3), Information (3)

(Some) *systemic methods*

Principle	*Systemic* Methods
1. Idealization	Idealized design
2. Appreciating Complexity	Problematique
3. Purpose finding	Function hierarchy
4. Boundary framing	Critical system heuristics
5. Requisite variety	System modeling
6. Feedback coordination	System dynamics
7. System ordering	Process models
8. Generative emergence	Simulation
9. Continuous adaptation	Intervention (leverage points)
10. Self-organizing	Dialogic design

Possible system methods in design process
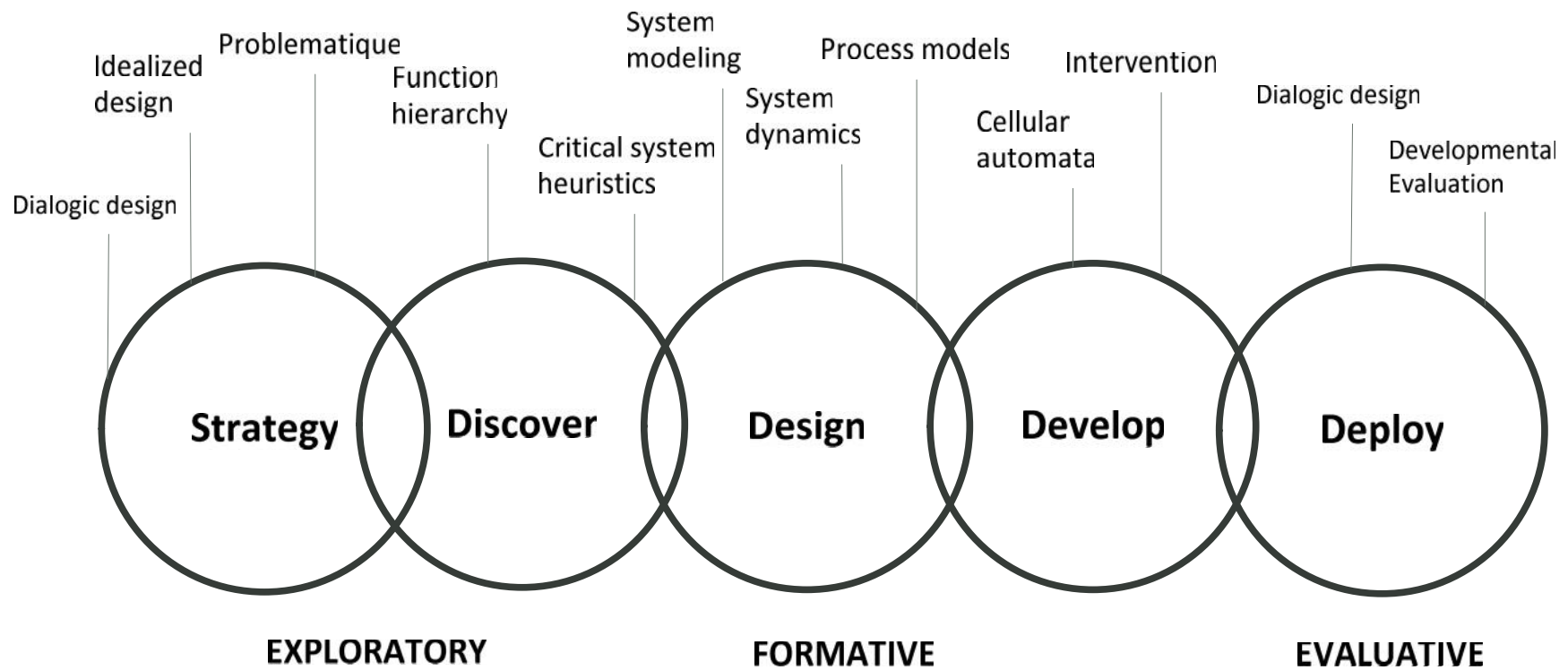
Open health data in public service
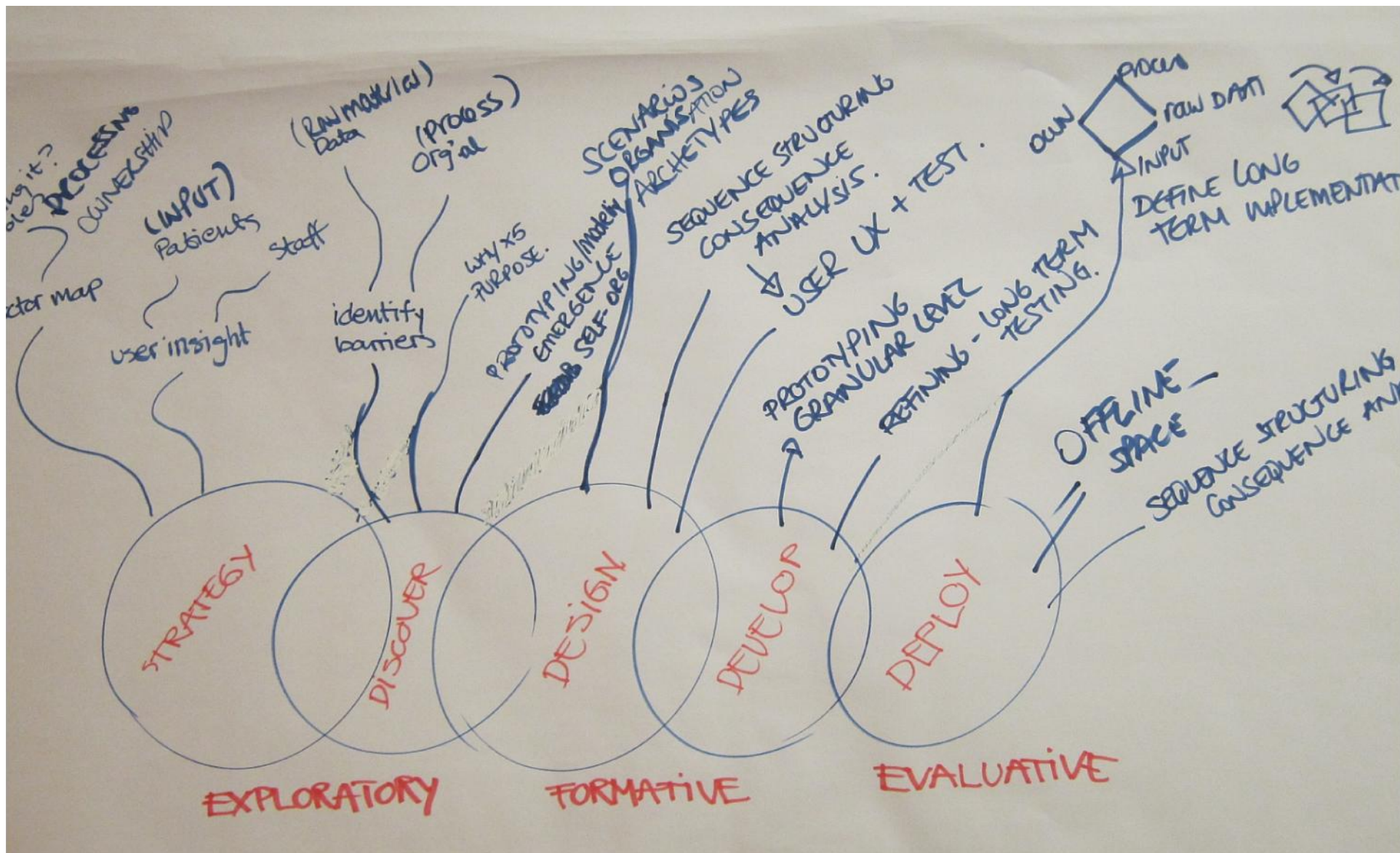
Design methods for management cybernetics
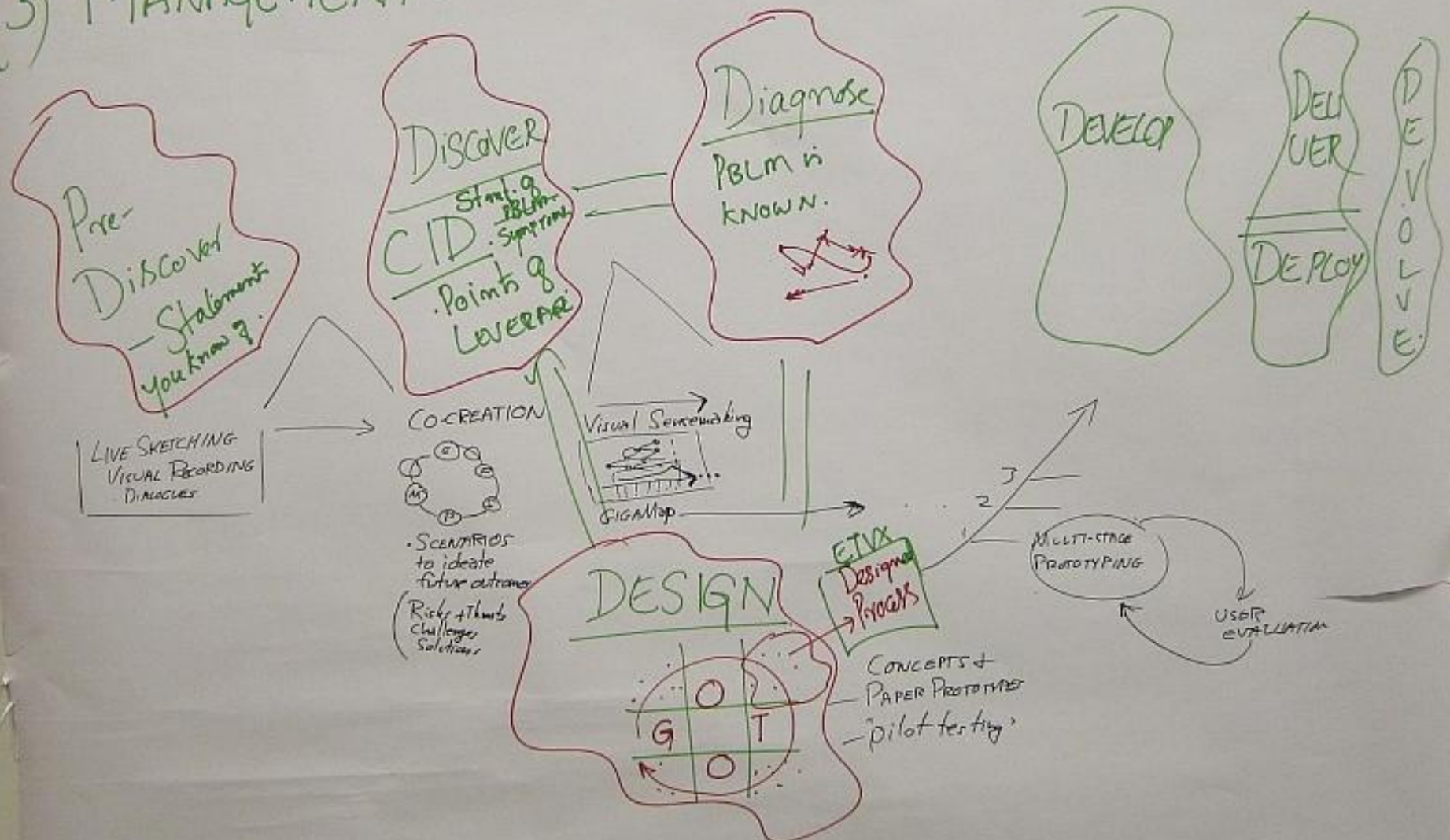
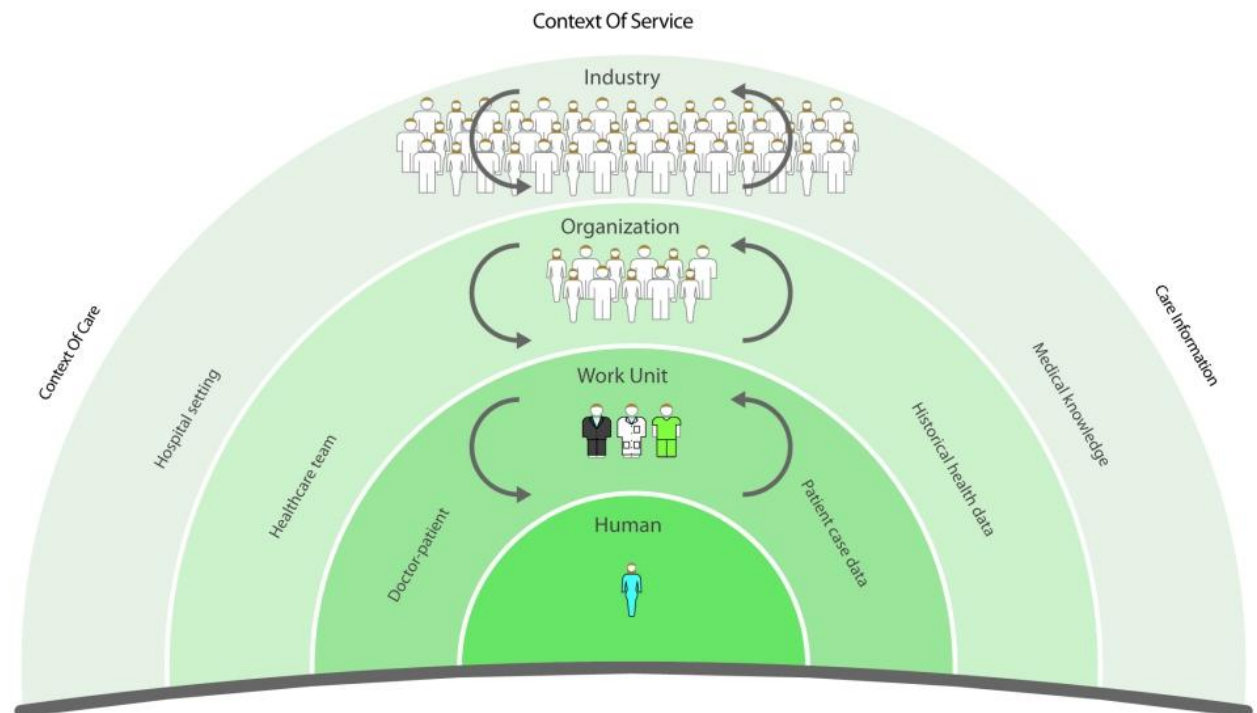# Design / Systems pairs

D4.0 Policy /
Dialogic Design

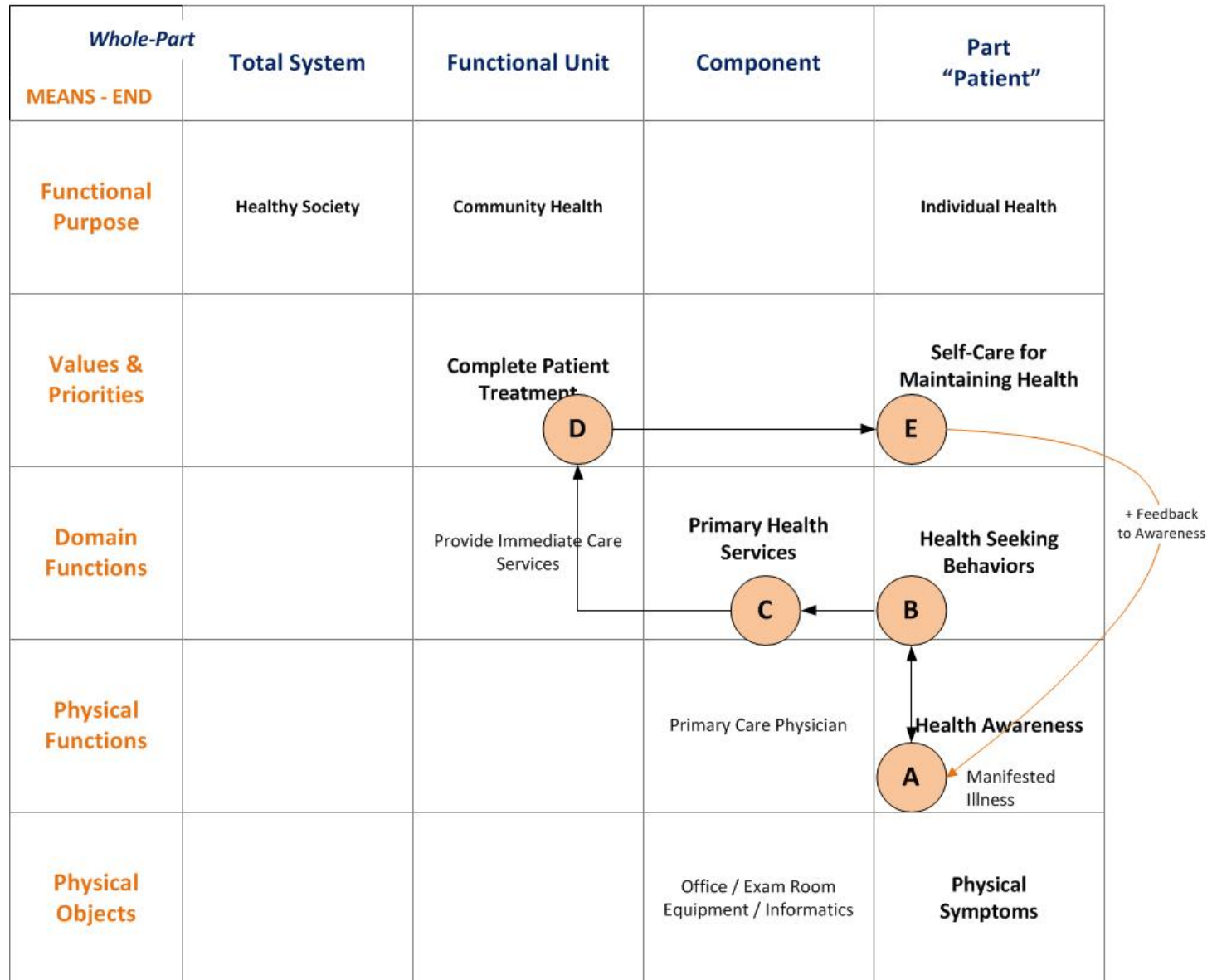**D3.0 Org Process /**
Social Systems, Panarchy

D2.0 Practice & Information /
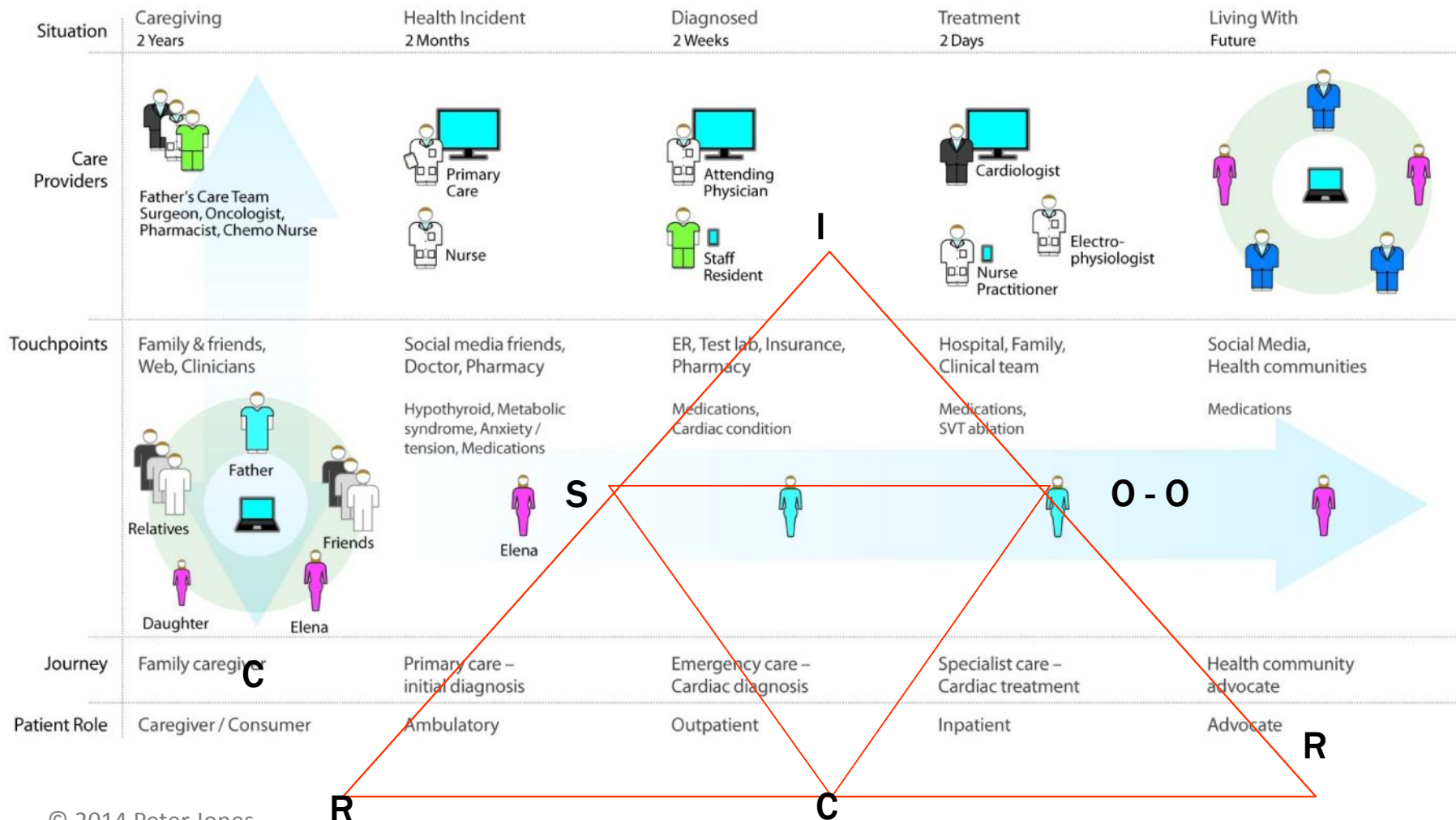**Service Systems**

D1.0-2.0 Product, Comm /
Activity Systems

Service System Design / As Work Domain Analysis

What are the Functions of Primary Care in the Healthcare System?

Whole-Part / MEANS - END	Total System	Functional Unit	Component	Part "Patient"
Functional Purpose	Healthy Society	Community Health		Individual Health
Values & Priorities		Complete Patient Treatment **D**		Self-Care for Maintaining Health **E**
Domain Functions		Provide Immediate Care Services	Primary Health Services **C**	Health Seeking Behaviors **B**
Physical Functions			Primary Care Physician	Health Awareness **A** Manifested Illness
Physical Objects			Office / Exam Room Equipment / Informatics	Physical Symptoms

+ Feedback to Awareness

Activity Systems Analysis / as Service Journey

Compatible philosophies, different generations.

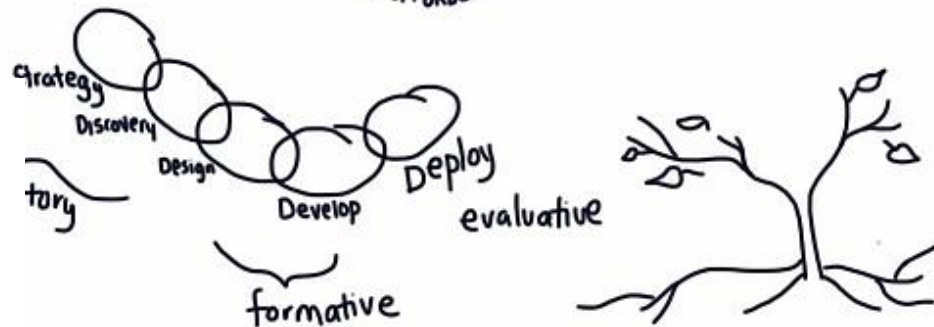|	*First*	*Second*	*Third*	Participatory *Fourth*
Generation:				
Philosophy	**Rational 1960's**	**Pragmatic 1970's**	**Phenomenological 1980's**	*Generative 2000's*
Methods	Movement from craft to standardized methods	Instrumentality, Methods customized to context	Design research and stakeholder methods Design cognition	Generative, empathic & transdisciplinary
Authors & trends	Simon, Fuller Design Science, Planning	Rittel, Jones Wicked problems, Evolution	Schon, Don Norman User-centered & Participatory Design Reflective action	Dubberly, Sanders Generative Design Service Design Systemic design
Systems influences	Sciences, OR Cybernetics	Natural systems System dynamics Systems engineering	System dynamics Social systems Soft systems	Complexity Socio-ecological Dialogic

peter jones

Systems Theory > Design Practice

meta
integrating theory
contexts

Practice

SYSTEMS THEORY STILL THEORY

LOOKING for a WICKED PROBLEM

SOCIAL SYSTEMS is THE SYSTEM We're in

we think of Systems as a method

Methods

fail on their own
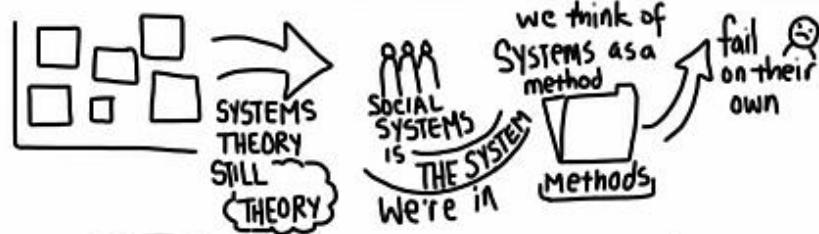
Still want WHAT WORKS without UNDER-standing
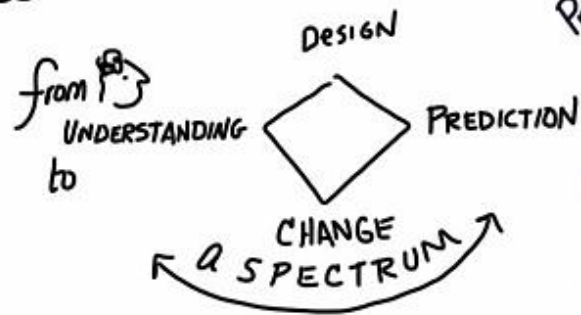
PRINCIPLES
* Idealization → A future state
* APPRECIATING COMPLEXITY
* Purpose FINDING
* BOUNDARY FRAMING
* Requisite Variety
* Feedback coordination
* System Ordering
* Generative Emergence
* CONTINUOUS ADAPTATION
* SELF ORGANIZING

DESIGN

from UNDERSTANDING to PREDICTION

CHANGE a SPECTRUM

DESIGN PRINCIPLES
IDEAL
COMPLEX
FRAMING
VARIETY
FEED BACK
SYSTEM ORDERING

Not New Theory

New FRAMEWORKS

Strategy
Discovery
Design
Develop
Deploy
evaluative

formative

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