



Mission Design: Fitting the Solution to the Problem

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Artifacts

- are **man-made** tools, that are used to
 - reach **goals**, but that are
 - **not always objects**
-
- A **C2 system** *and* a **(military) mission** are both artifacts

The logic of

Design

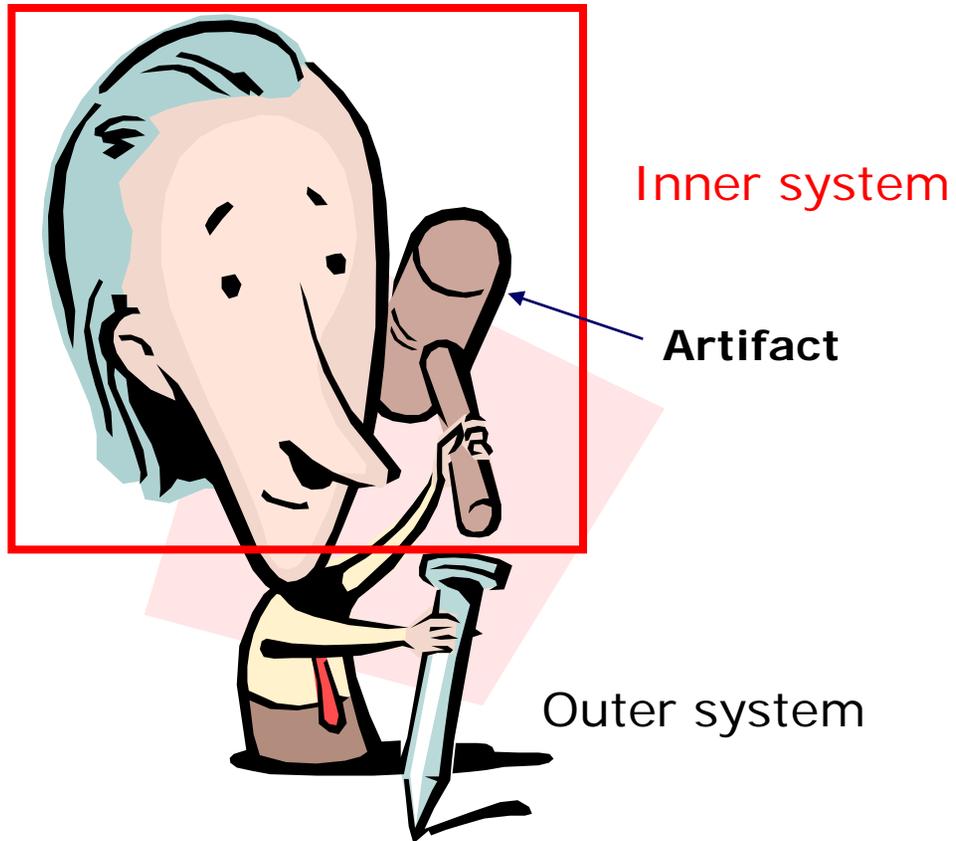
(Brehmer)

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The artifact as an interface

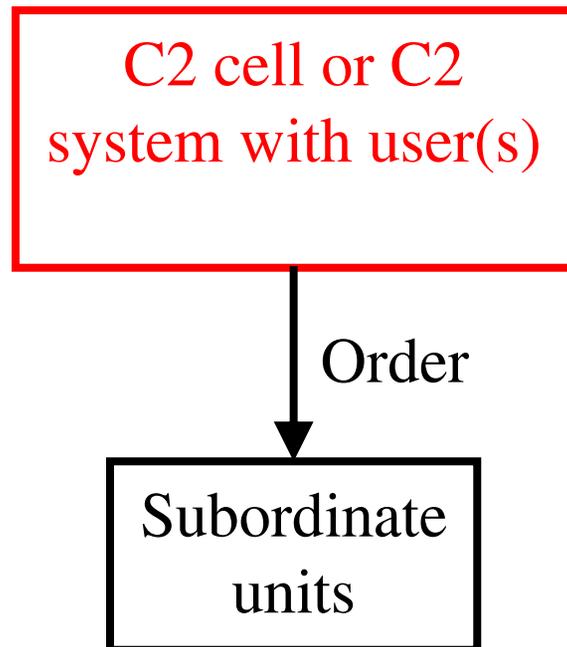


successful application

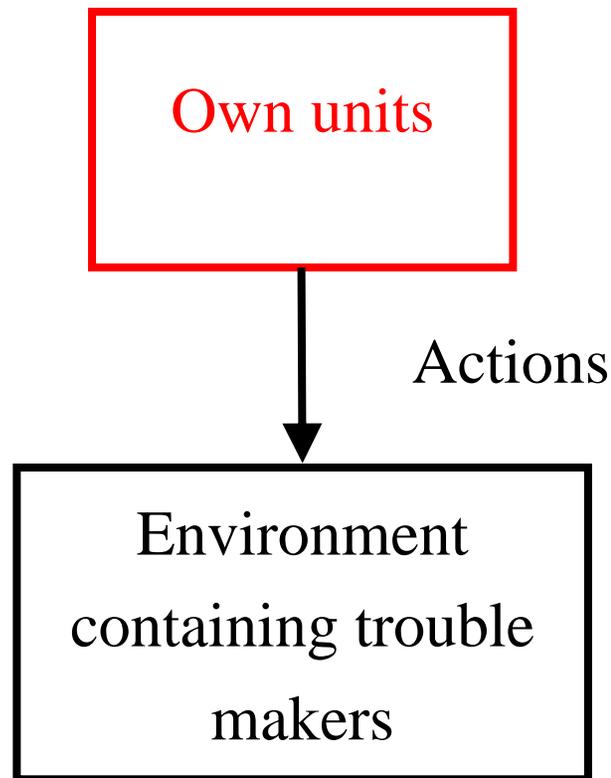
requires:

- necessary functionality
- adequate user interface
- skillful user

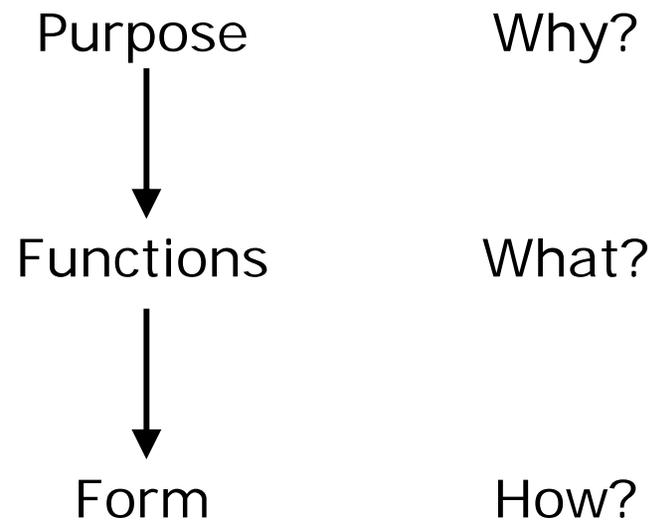
he interface of C2



he interface of a mission

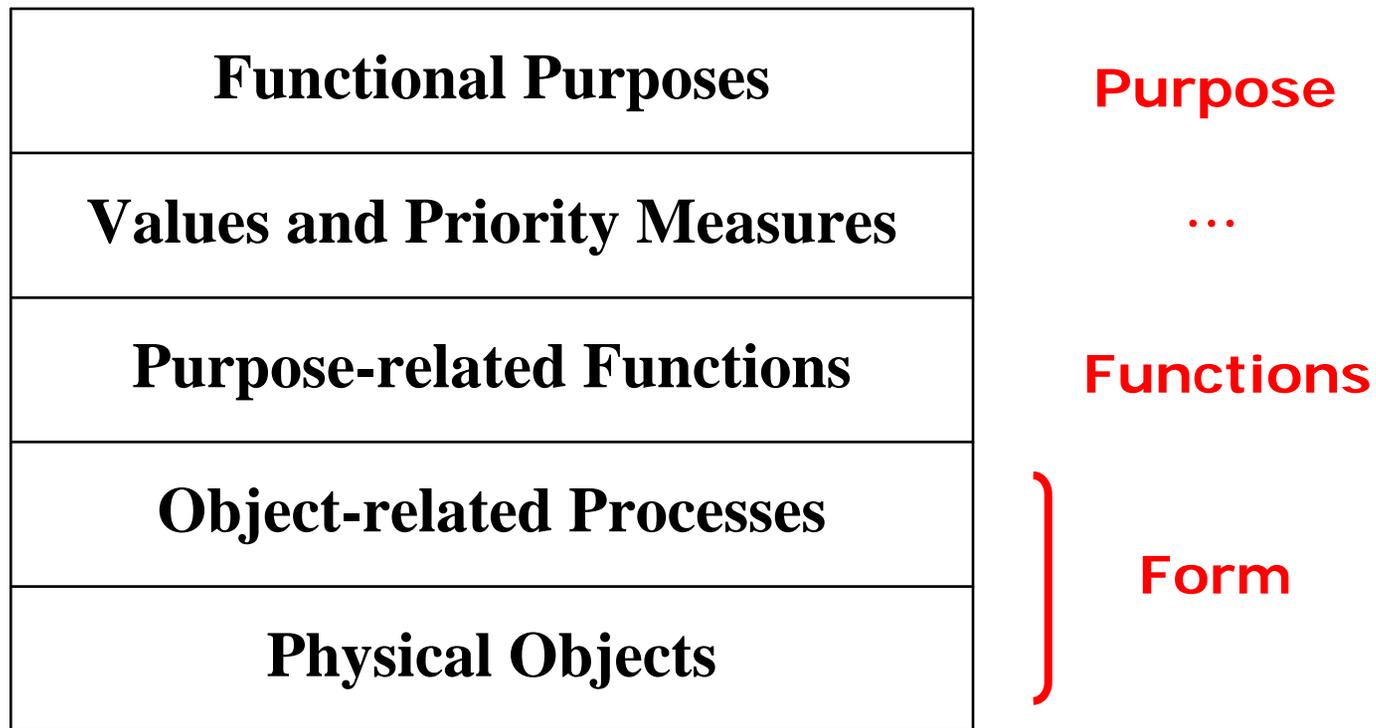


the logic of design



(Brehmer)

the abstraction hierarchy



(Rasmussen)

functional purposes

Goals and constraints

- (Rasmussen, Pejtersen, and Goodstein, 1994)

primary objectives

secondary objectives

constraints by inner system

constraints by outer system

(Naikar, Hopcroft, and Moylan)

Values and priority measures

Realism enters

How to measure performance

What resources are needed

Sort out priorities

Purpose-related functions

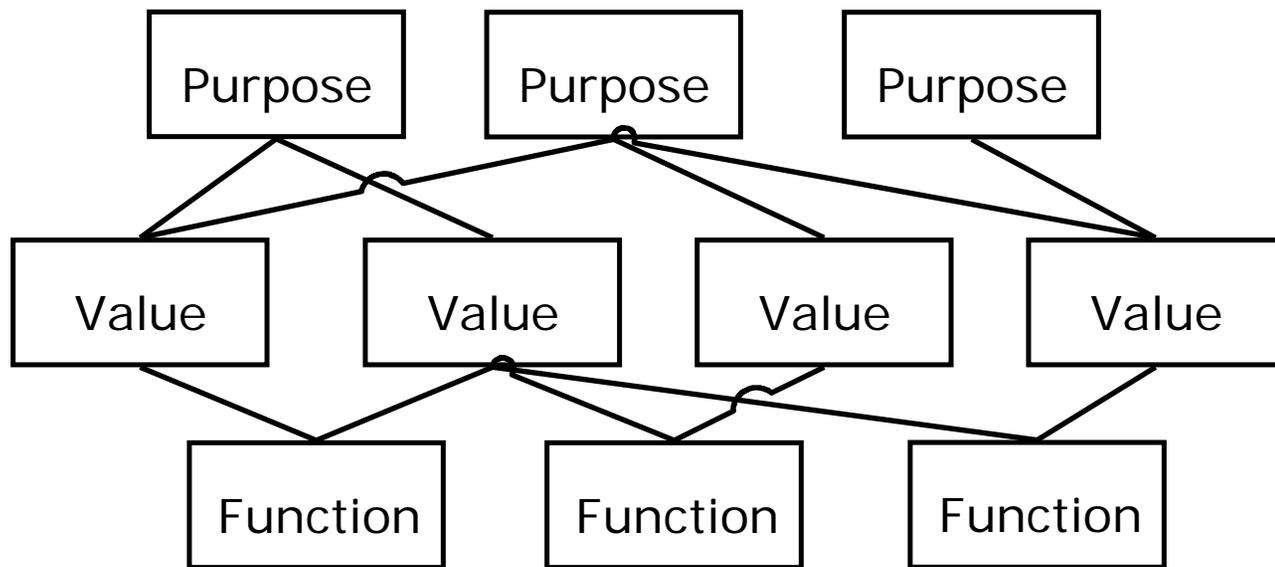
What the system has to be able to do in order
to fulfill the purposes

necessary and sufficient

black-box input-output relations

What, not how

requirements analysis



Design →

Object-related processes

the activities performed by the system

What can be done

how the functions are fulfilled (if they are)

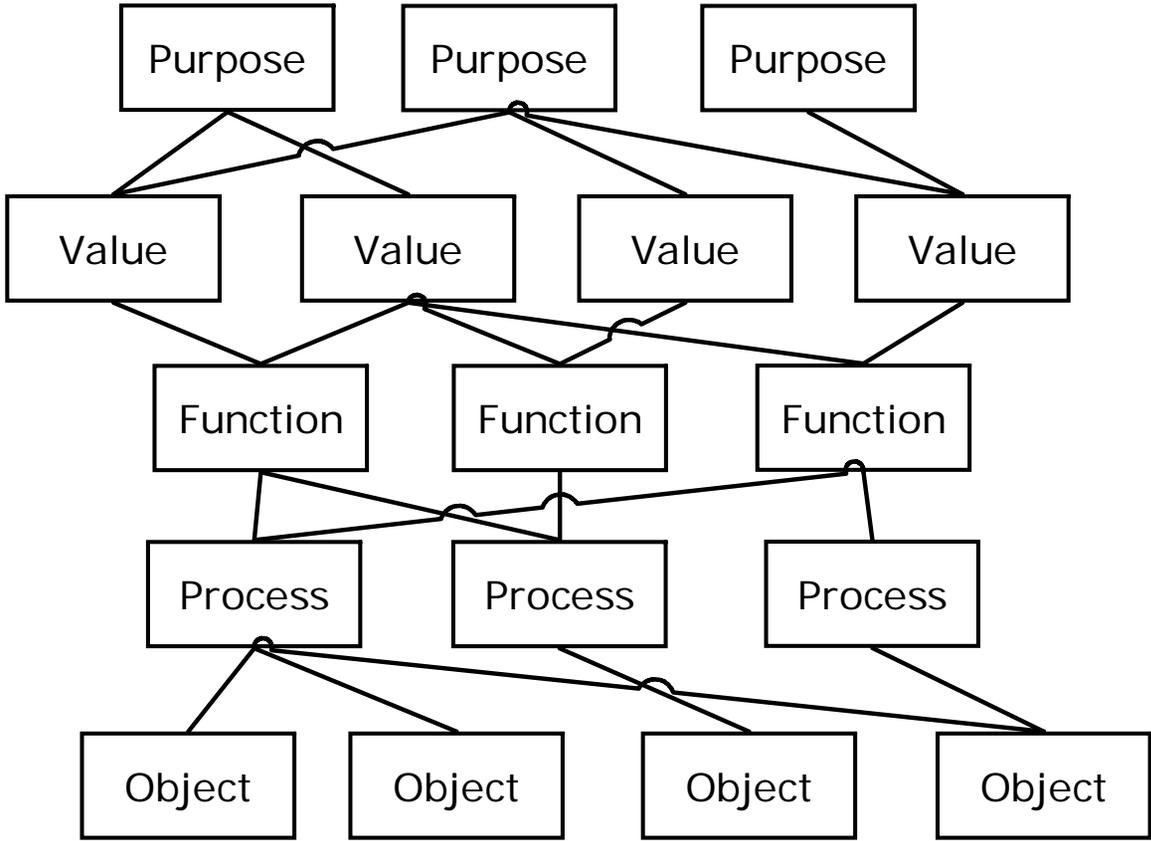
redundancy for flexibility

Physical objects

All components of the system that contribute to the processes

Including personnel and instructions

New design (mission)

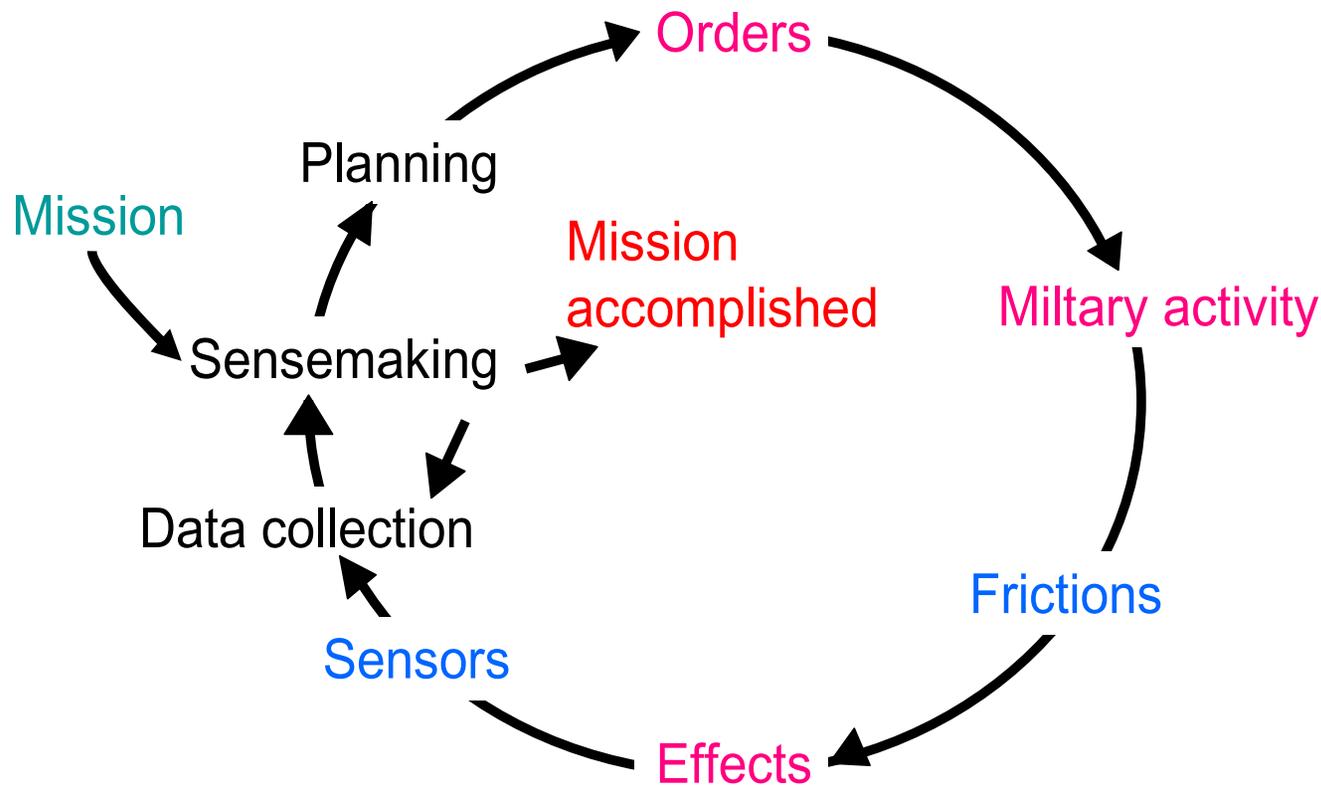


Existing system (mission)

Descriptive (Reverse engineering)

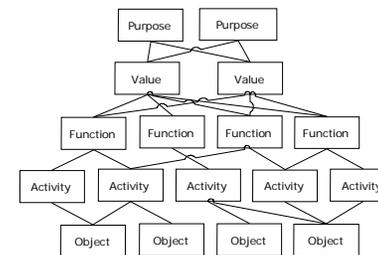
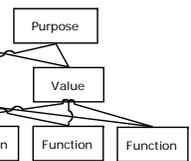
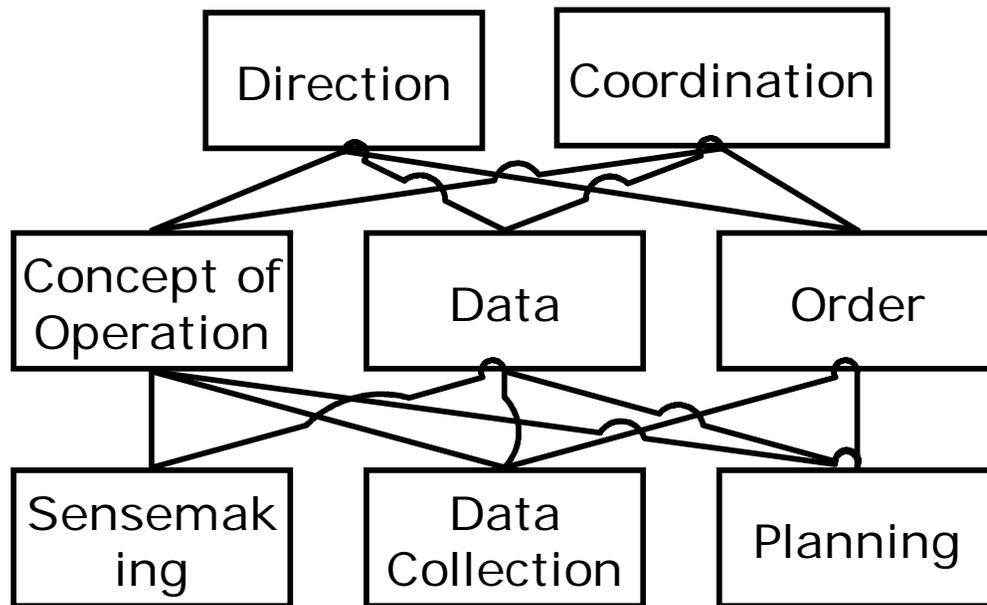


The C2 system and the mission system

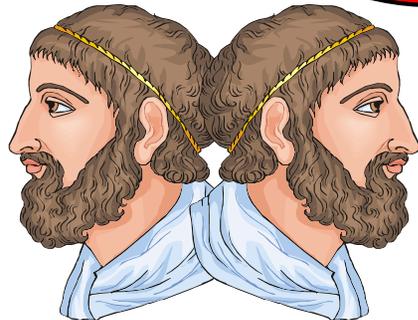
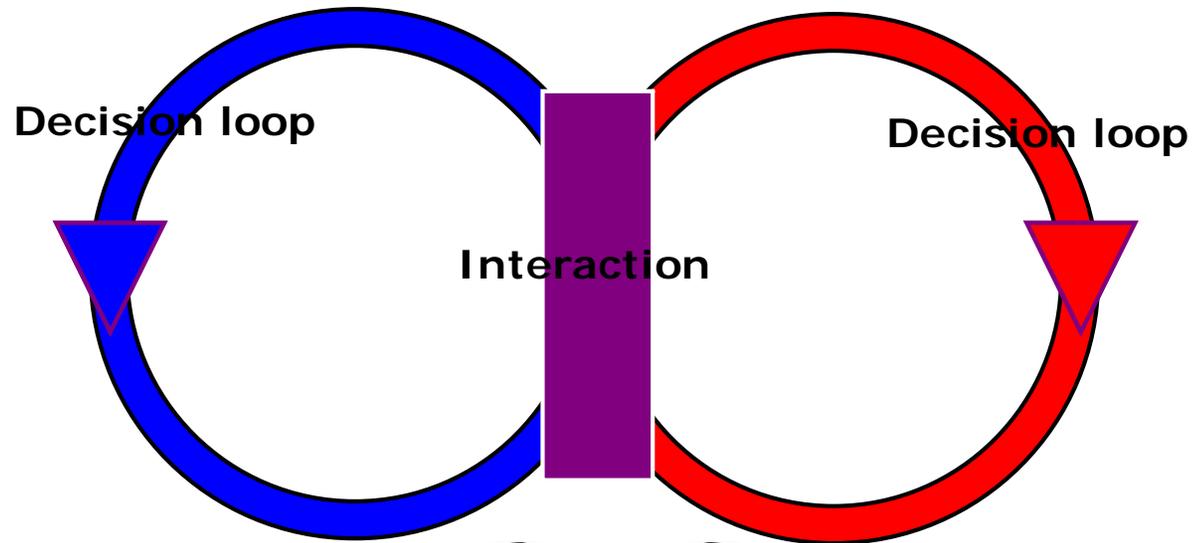


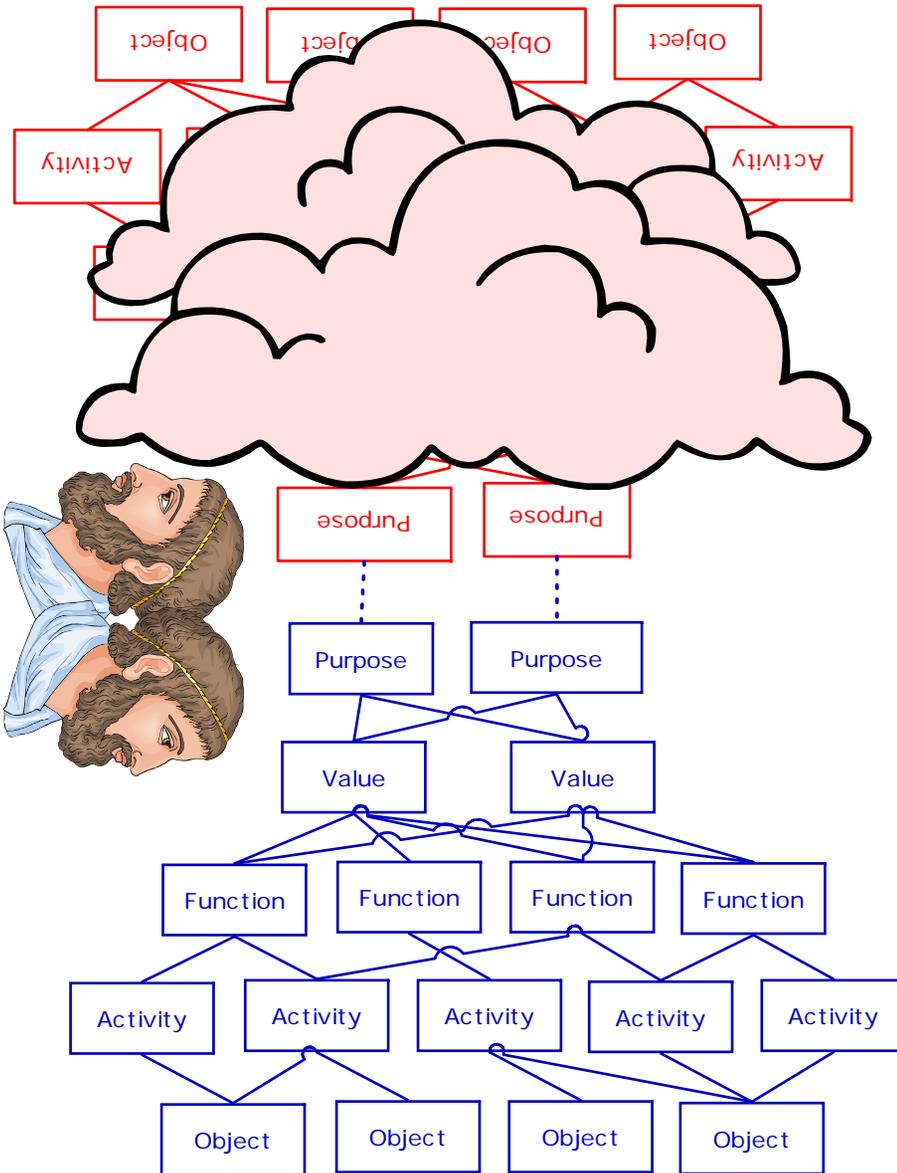
The DOODA loop (Brehmer)

Products in mission design

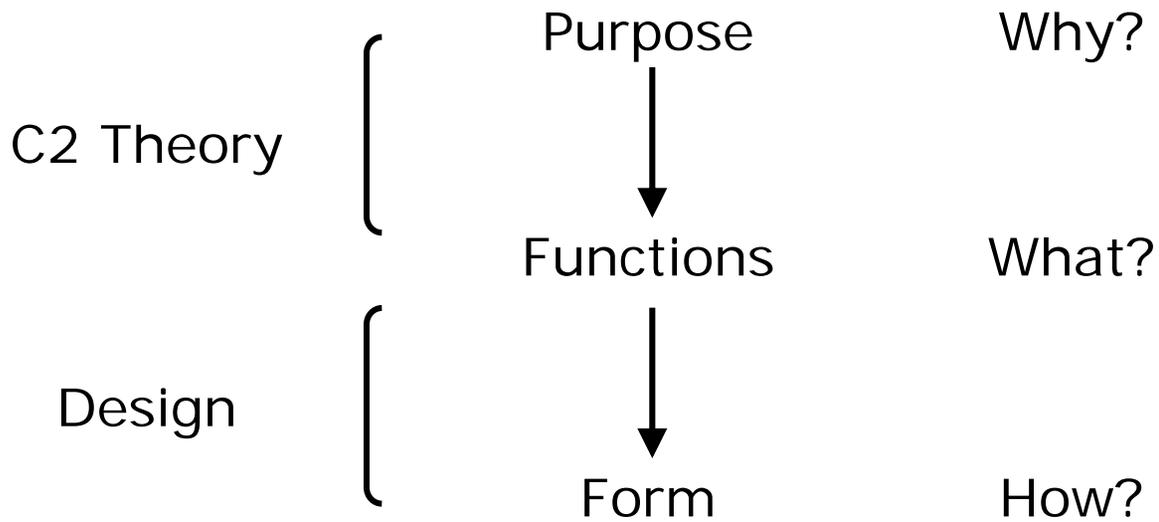


Mind the mind of the other



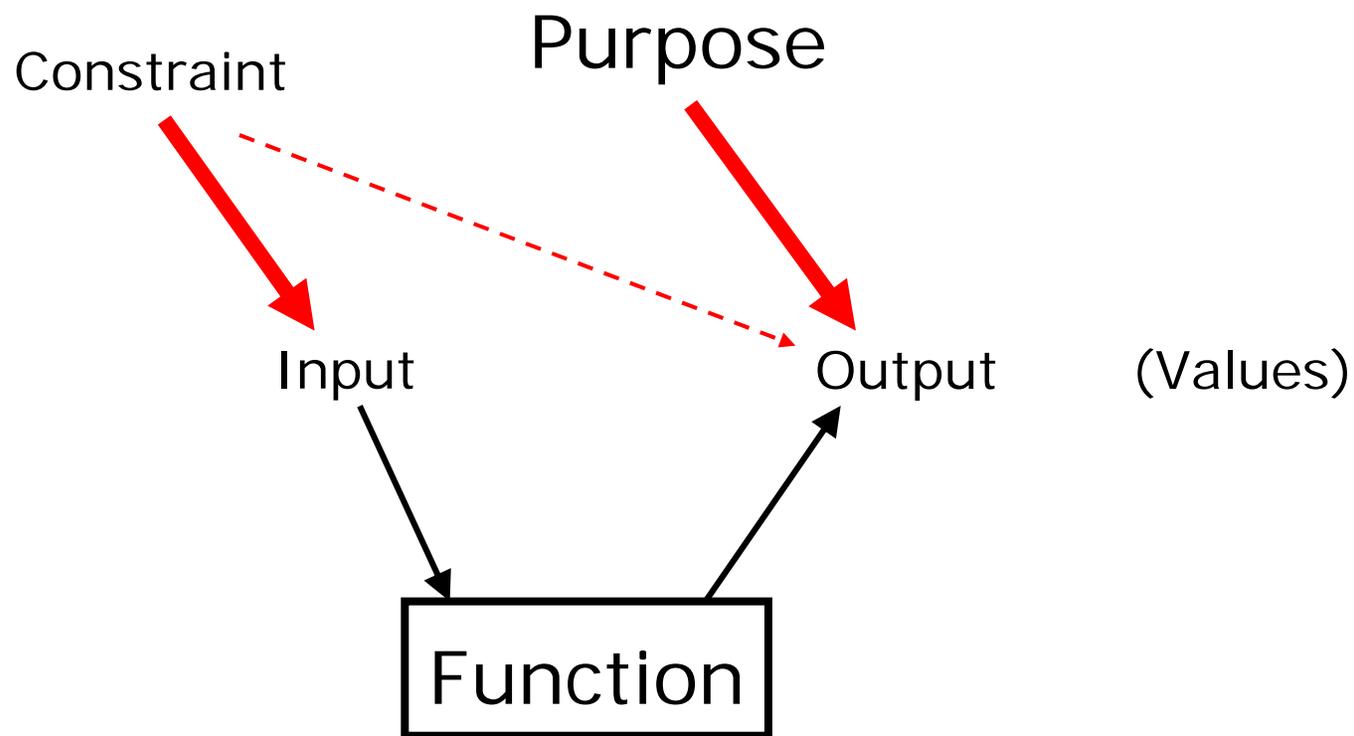


theory and design of C2 systems



(Brehmer)

Demands on a theory of C2



Mission



Thank you for your
attention!

Questions or Comments?