Design Environments

An Historical Overview

AI in Design

Software Architecture

Evolving Artifacts

Theory and mechanisms for computer supported design

AI and Design

Strong vs Weak AI
An HCI perspective aims to augment human intelligence

Role Distribution
Delegation of responsibilities

Design Media
Trading off between Tradition and Transcendence

Research Approach
Theory, System Building, Evaluation

Critiquing - the LISPcritic

Critiquing systems should be domain-oriented
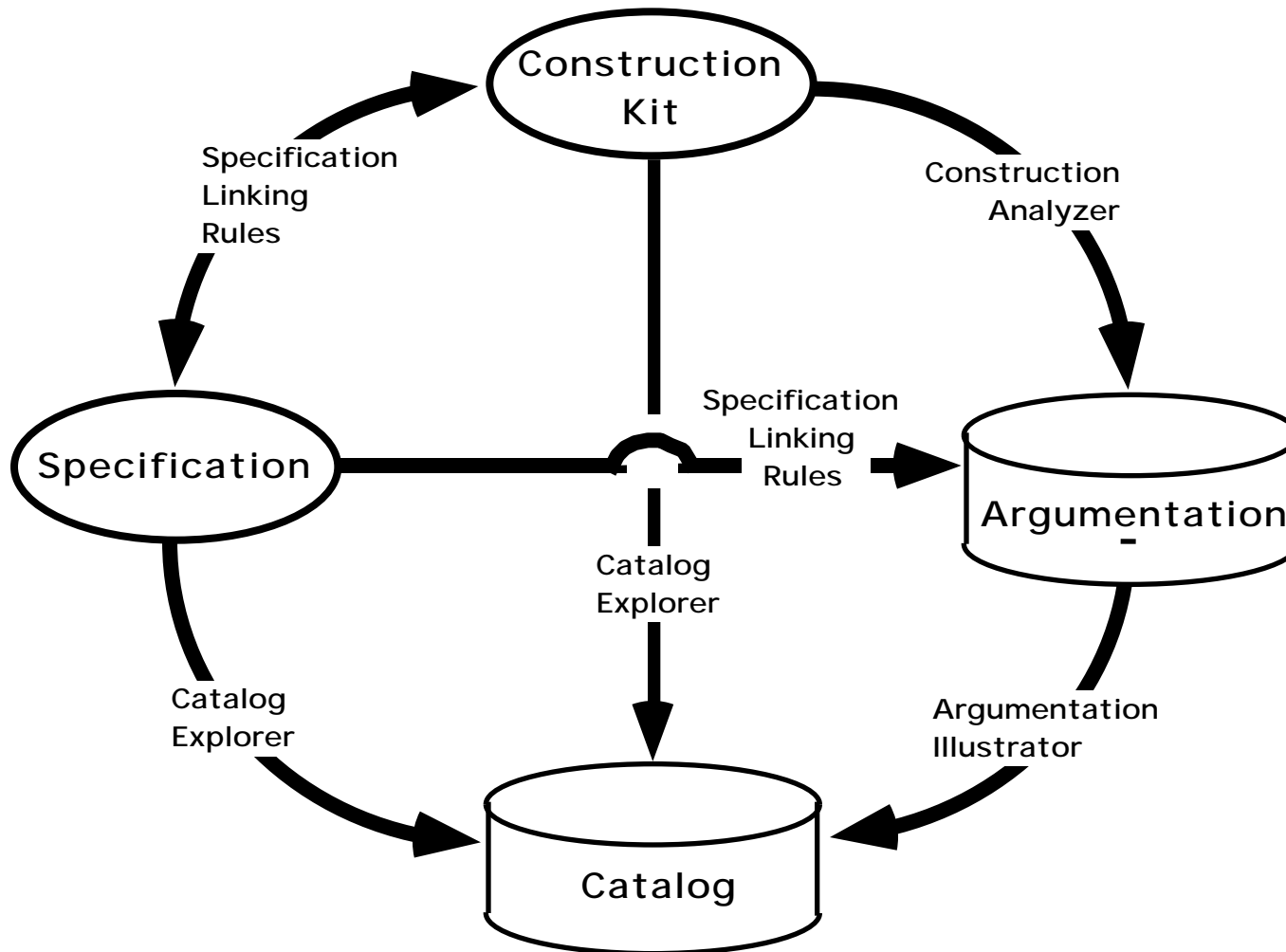
Software Architecture
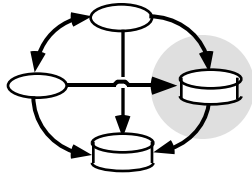
Architecture and Theory Co-Evolve

Domain Independent vs Domain-Oriented

Domains

Kitchen, Planning, Software Development, Watershed Management, Voice Dialog, Lunar Habitat, . . .

The Multifaceted Architecture

Argumentation

ISSUE 133:

133: What should the location of the refrigerator be?

    ANSWER:

    Near the entrance to the kitchen.

        ARGUMENTS:

        If there is frequent snacking, then locating the refrigerator near the entrance will decrease traffic conflict between the persons getting snacks from the refrigerator and those preparing meals or doing cleanup.

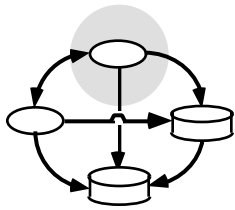   ARGUMENTS:

            This will only be a problem when there is more than one person in the household at a time.
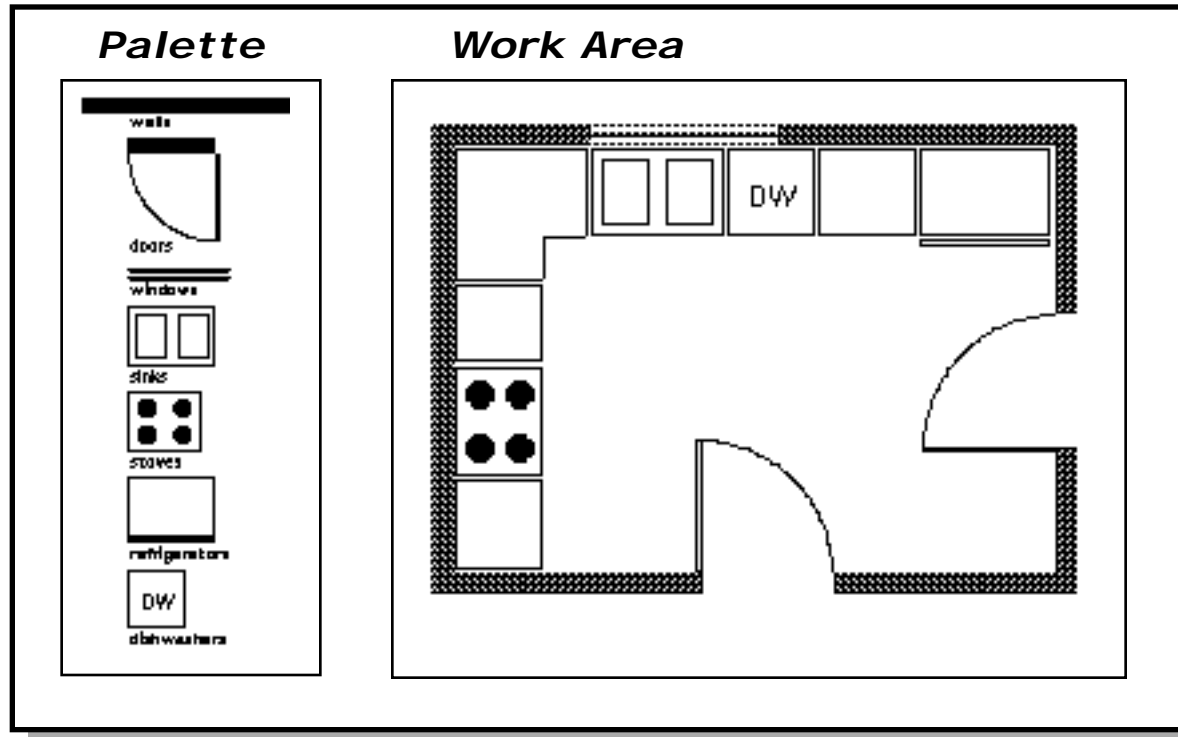
            This might also be a problem if members of the household don't eat meals together.
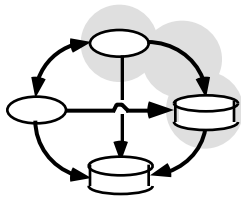
    Close to the service entrance
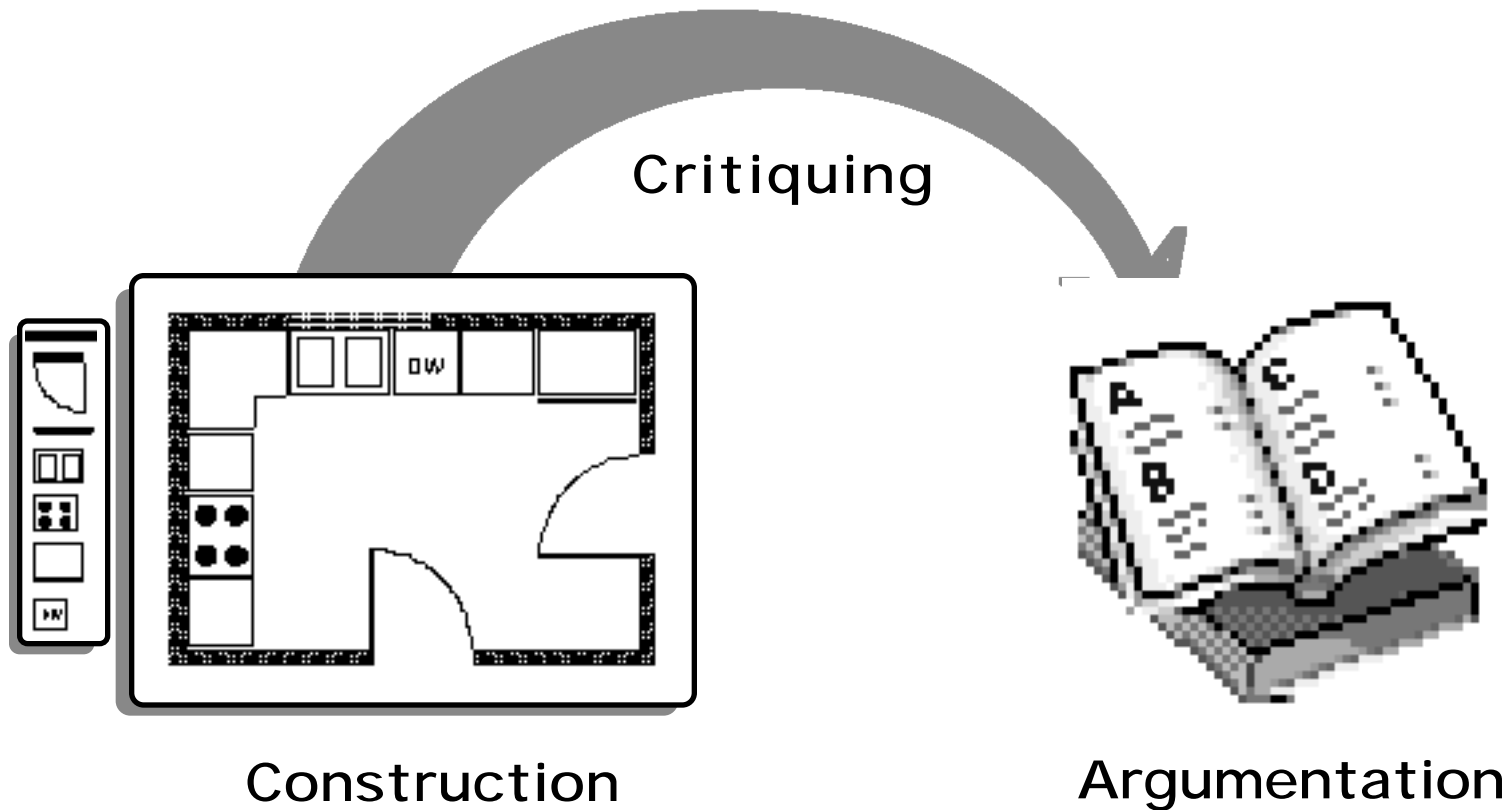
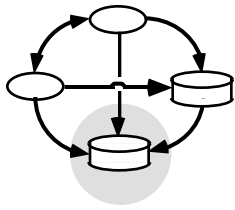*Argumentation Must Serve Design*

Construction

Palette   Work Area

walls
doors
windows
sinks
stoves
refrigerators
DW
dishwashers

Construction Kits do not, in themselves, ensure a good artifact.

Integration

Critiquing

Construction

Argumentation

Integration produces a synnergistic effect
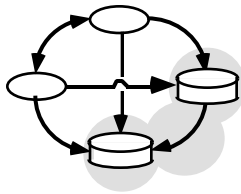
Catalog

Reuse and case-based reasoning require computational support
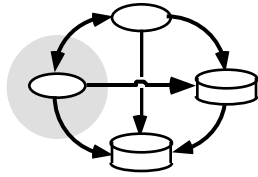
Specification


```
+ Size of family?
    •Seven or More
    •One
    •Two
    •Three
    •Four to Six

- How many cooks usually use the
  kitchen at once?
        •two
        •one
        [answer suggested because size-of-f
        •three or more

+ Is the primary cook right-handed or
  left-handed?
        •Right handed
        •Left handed
        •Switchable
```

Specification Increases Shared Context

Argumentation Illustrator

The Multifaceted Architecture

Construction Kit

Specification
Linking
Rules

Construction
Analyzer

Specification

Specification
Linking
Rules

Argumentation

Catalog
Explorer

Catalog
Explorer

Argumentation
Illustrator

Catalog