**ABSTRACT**

Minimalism in ubiquitous interface design allows computational augmentations to seamlessly coexist with existing artifacts and the constellations of task behaviors surrounding them. Specifically, parsimony and transparency contribute to improved learnability and user acceptance of interfaces.

**BEHAVIORAL CONSTELLATIONS**

are the set of human behaviors specific to an object. These constellations evolve with the object. It is important not to disrupt these constellations since they embody the expectations that users have of the object.

**TRANSPARENCY**

means limiting the impact that the augmentations have on the behavioral constellation.

**PARSIMONY**

supports transparency by precluding context inappropriate metaphors.

**IMPLEMENTATION**

![Diagram of implementation with Projector, Mirror, Camera, and Table setup]

**THE DOMAIN OF GO**

- Independent Study
- Historical Review
- Fuseki and Joseki Study
- Face to Face Play
- Game Recording
- Move Clocks
- Internet Play
- A.I. Play
- 2000 Years of History

**EXPERIMENTAL RESULTS**

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*Table showing results with TUI, GUL, GUI, GUL/GUI columns.*

**REFERENCE**


**HISTORICAL GAME REVIEW**

Appearance of the board while studying an historical game. The red box indicates the last move. The hollow square indicated the next.

**SHOW STUDY (OPENING LIBRARY)**

All the third moves from a database of 10,000 professional games. The hollow circles indicate moves in the database, but the user may place a stone anywhere on the board.

**VARIATIONS**

(Game tree exploration)

While studying a game variation, the user returns to the trunk of the move tree by picking up stones. The system helps the user return to a valid game state by marking invalid moves with a red "X." The three stones marked were after the removed stone.

**DESIGN OVERVIEW**

The design philosophy for ubiquitous computing centered on parsimony and transparency. By indifferently integrating augmentations into existing artifacts, we promote a focus on design in terms of making the visual, functional, interaction experiences of the interfaces themselves. The design is based on the idea that minimalism leads to more transparent interfaces.

**INTERACTION EXAMPLES**