UNIT – III
UNDERSTANDING THE INTERACTION

Introduction

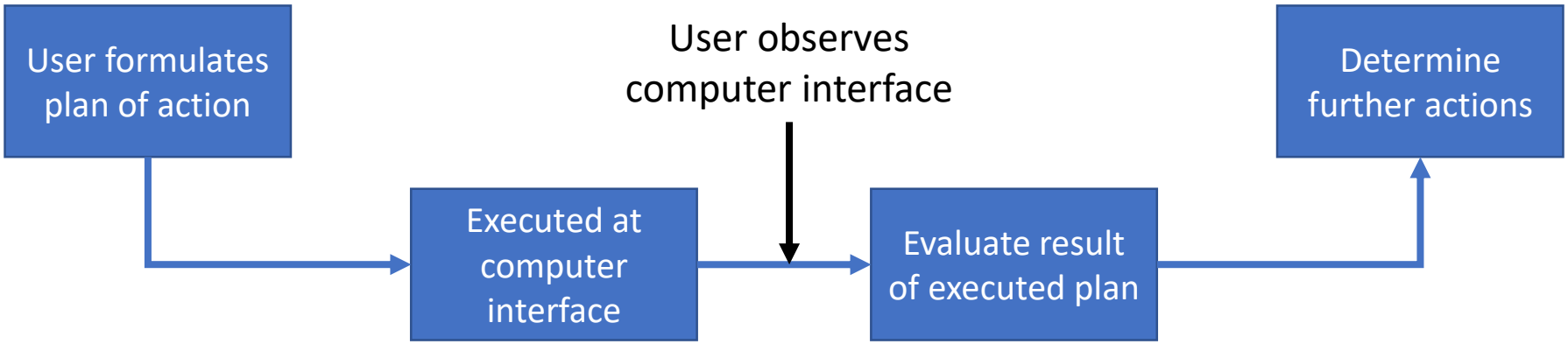
- Interested in how human user uses computer as a tool to perform, simplify or support a task
- In order to do this the user must communicate his requirements to the computer
- There are number of ways in which user can communicate with system
- Communication between user and system is interaction
- We will see some models of interaction that enable us to identify and evaluate components of interaction

Models of Interaction

- Use of models of interaction can help us to understand exactly what is going on in the interaction
- Helps to identify the likely root of difficulties
- Also provide us a framework to compare different interaction styles & to consider interaction problems
- These models describe the interaction in terms of the goals and actions of the user

Execution – Evaluation Cycle

- Norman's model of interaction is perhaps most influential in Human–Computer Interaction
- Because of its closeness to our understanding of the interaction between human user and computer

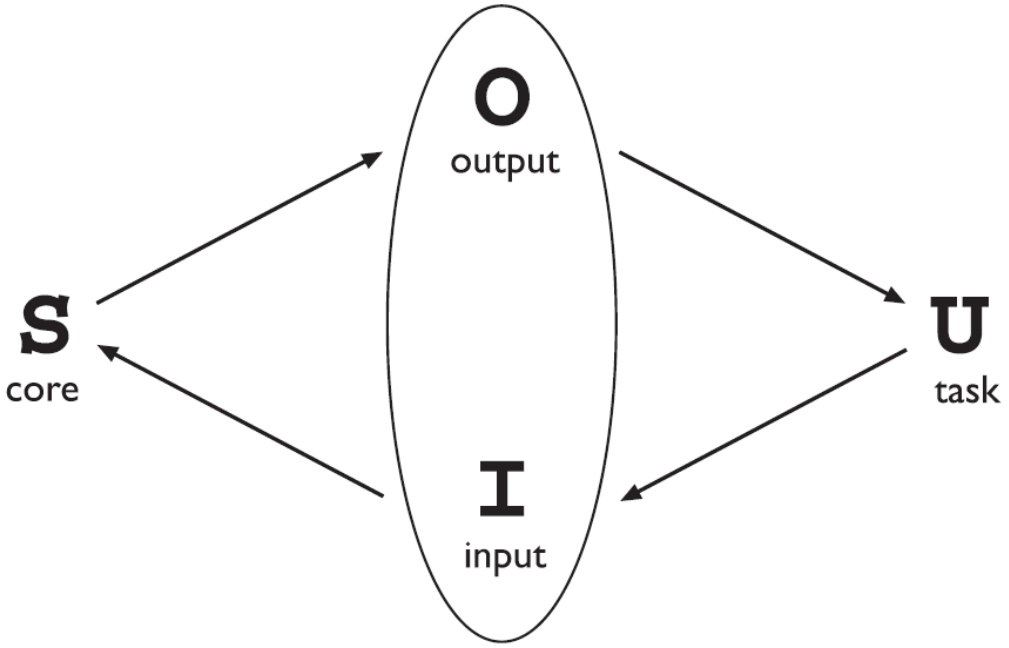


Execution – Evaluation Cycle

- Interactive cycle can be divided into two phases:
  - Execution
  - Evaluation
- These can then be subdivided into further 7 stages:
  1. Establishing the goal.
  2. Forming the intention.
  3. Specifying the action sequence.
  4. Executing the action.
  5. Perceiving the system state.
  6. Interpreting the system state.
  7. Evaluating system state with respect to goals and intentions

Interaction Framework

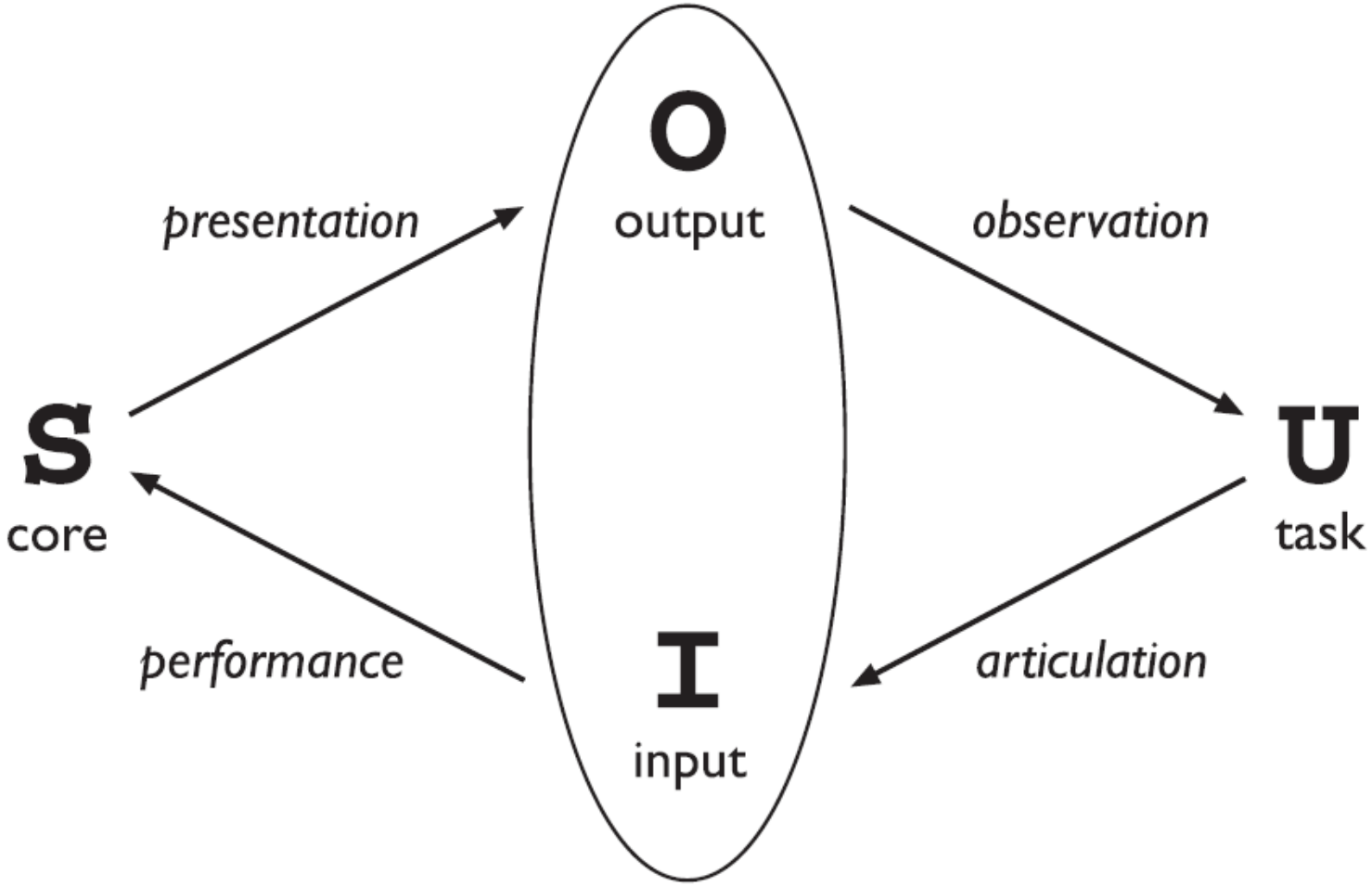
- Attempts more realistic description of interaction by including system explicitly
- Breaks it into four main components



Interaction Framework

- Nodes represent four major components in an interactive system – *System*, *User*, *Input* and *Output*
- Each component has its own language
- In addition to *User*'s task language and *System*'s core language, there are languages for both *Input* and *Output* components
- *Input* and *Output* together form the *Interface*
- As interface sits between *User* and *System*, there are four steps in interactive cycle
- Presented to judge overall usability of an entire interactive system

Interaction Framework



Ergonomics

- Study of physical characteristics of interaction
  - How the controls are designed
  - Physical environment in which interaction takes place
  - Layout and physical qualities of the screen
- Primary focus is on user performance and how the interface enhances or detracts from this
- It is a large and established field which is closely related to but distinct from HCI

Ergonomics

- We will briefly look at
  - Arrangement of Controls and Displays
  - Physical Environment
  - Health Issues
  - Use Of Color
- Intended only to give an indication of types of issues and problems addressed by ergonomics

Interaction Styles

- Command Line Interface
- Menus
- Natural Language
- Question/Answer and Query Dialog
- Form-fills and Spreadsheets
- WIMP (**W**indows, **I**cons, **M**enus, **P**ointers)
- Point and Click
- Three-Dimensional Interfaces

WIMP Interface

- Four key features of WIMP interface:
  - Windows
  - Icons
  - Menus
  - Pointers
- Some additional interaction objects and techniques commonly used in WIMP interfaces
  - Buttons
  - Toolbars
  - Palettes
  - Dialog Boxes

WIMP Interface

Paradigms of Interactions

- Time sharing
- Video display units
- Programming toolkits
- Personal computing
- The metaphor
- Direct manipulation
- Language versus action
- Window systems and the WIMP interface

Paradigms of Interactions

- Hypertext
- Multi-modality
- Computer-supported cooperative work
- The world wide web
- Agent-based interfaces
- Ubiquitous computing
- Sensor-based and context-aware interaction