How Do People Perform Tasks?

- The Seven Stages of Action Theory -

Recollection

1. The presenter tries to thread film through a projector they've never used before

2. Help arrives, and a discussion starts

3. The organizer appears and asks the audience for help

4. The technician solves the problem

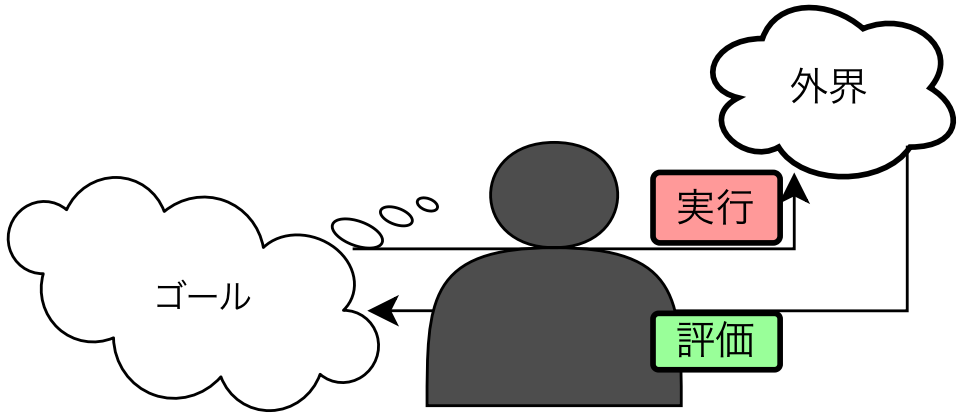
Q. Why is threading film through a projector difficult?

- To understand what happens when people do something, we need to consider the **structure of action**.

Structure of Action

Action = Execution + Evaluation

- Execution = Doing something
- Evaluation = Checking the outcome



Goal = What you want to happen

Execution = Actions performed on the external world

Evaluation = Comparing what actually happened with the goal

Transformation Process of Execution (Goal → World) ①

Is the goal clear?

$$\begin{pmatrix} Let's eat something \\ Maybe I'll get ready \end{pmatrix} \leftarrow Vague goals$$

$$These do not lead directly to action...!$$

To connect to action, transform the goal into a specific **intention**

Transformation Process of Execution (Goal → World) ②

Once you have an intention, you move your body

- Concrete actions = Linking "goal and intention" with "bodily movement"
  - Detailing the action
    - Specify what action to take
  - Performing the action
    - Actually doing it

Summary of Execution (Goal → World) Transformation

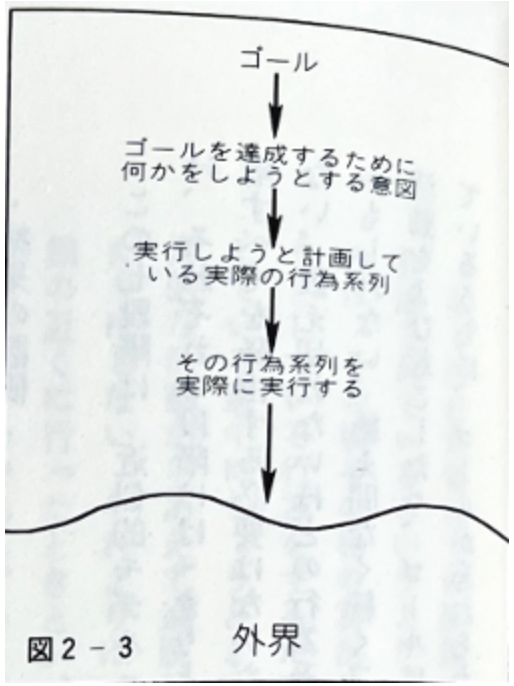
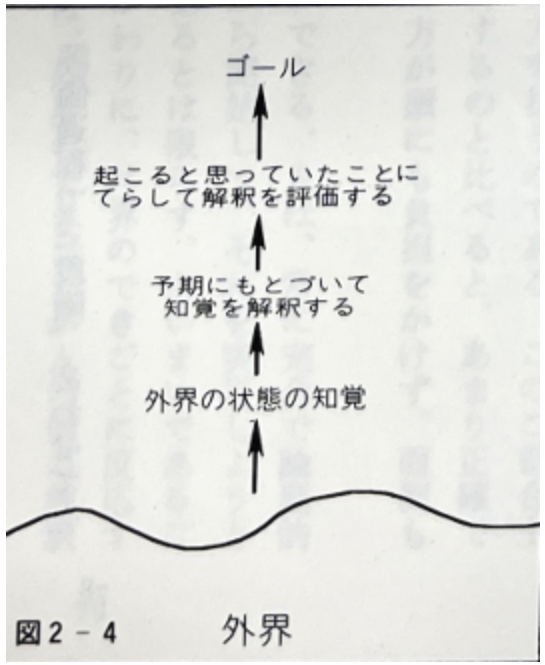


図2－3

Summary of Evaluation (World → Goal) Transformation



Summary of the Seven Stages of Action

Category	Stage Name
Goal	1. Forming the goal
Execution	2. Forming the intention
Execution	3. Specifying the action
Execution	4. Executing the action
Evaluation	5. Perceiving the state of the world
Evaluation	6. Interpreting the state of the world
Evaluation	7. Evaluating the outcome

Concrete Example ~ Elevator ~

You are in a company elevator. Just as the doors are closing, your boss comes running from the other side, clearly wanting to get in.

Concrete Example ~ Elevator 1 ~

1. **Forming the goal**: Want to open the closing elevator doors
2. **Forming the intention**: Want to open the closing elevator doors
3. **Specifying the action**: Plan the detailed steps to press the open button (which finger to use?)
4. **Executing the action**: Press the open button
5. **Perceiving the state of the world**: The door opens
6. **Interpreting the state of the world**: Realize the door opened
7. **Evaluating the outcome**: Glad to have achieved the goal!

Concrete Example ~ Elevator 2 ~

1. **Forming the goal**: Want to open the closing elevator doors
2. **Forming the intention**: Want to open the closing elevator doors
3. **Specifying the action**: Plan the detailed steps to press the open button (which finger to use?)
4. **Executing the action**: Accidentally press the close button
5. **Perceiving the state of the world**: The door closes
6. **Interpreting the state of the world**: Did I press the wrong button?
7. **Evaluating the outcome**: Embarrassed because the goal was not achieved

Supplement

1. Each phase is not completely separated.

- Many actions do not go through all seven stages.

2. Many activities are not completed in a single action.

- Multiple action sequences exist for one activity
- Goals and intentions may arise as sub-goals

Gulfs in Execution and Evaluation

Gulfs (gulf)

- The distance between intentions, interpretations, actual actions, and situations in the mind
- The separation between the state in the mind and the state of the external world
- Reflects one aspect of the distance between psychological representations and the physical components and states of the external world

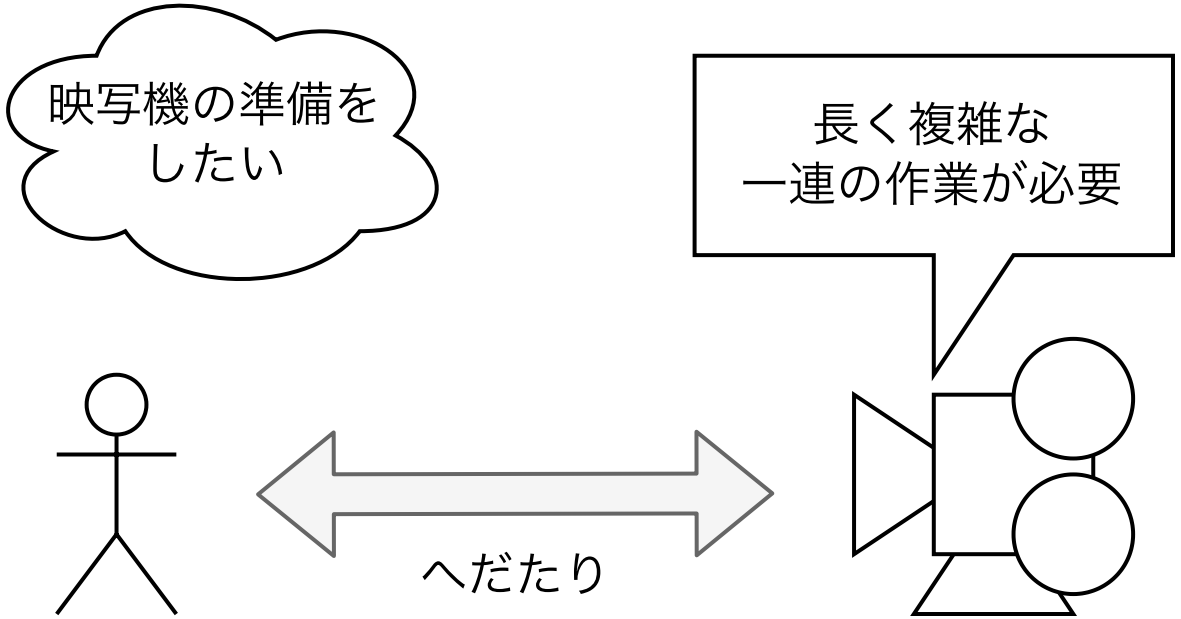
- **The existence of a gulf → Major difficulty for users**

Gulf of Execution

- The difference between the user's intention and the actions allowed by the system
- How intuitively the user can perform actions as intended is one measure of the size of this gulf

Example of Gulf of Execution (Projector)

- It was not at all clear what actions were needed to achieve the intention of "setting up the projector and showing the film"
- On the other hand, projectors with automatic film threading or VCRs (where you just insert the cassette and it plays) can be said to **bridge the gulf**



Gulf of Evaluation

- How much effort is required for the user to interpret the physical state of the system and judge how well their expectations or intentions have been met
- Is the system perceivable and interpretable as it is?

Example of Gulf of Evaluation (Projector)

- When the film is inserted into the projector, it is difficult to judge whether it is wound correctly
- In the case of a VCR, if the cassette is not inserted properly, it will not fit and will pop out
  → You can tell when something has gone wrong

Seven Stages of Action Theory as a Design Aid

- Provides valuable assistance in design
- ↓
- Can be used as a checklist to see if the gulfs in execution and evaluation are bridged
- These correspond to the **principles of good design** mentioned in Chapter 1
    - Visibility
    - Good conceptual model
    - Good mapping
    - Feedback

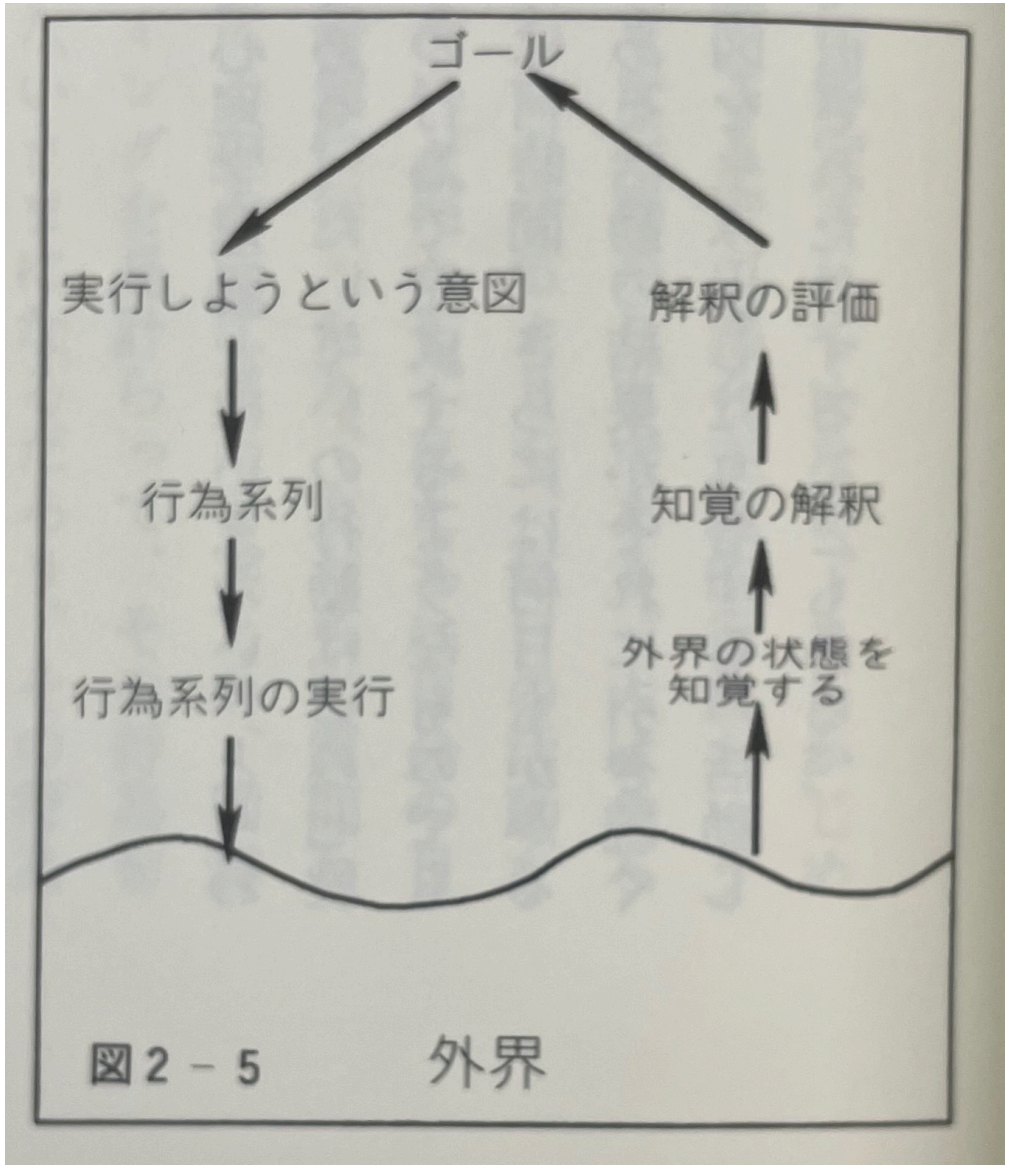


図2－5

**どれくらい簡単に次の
ことができるだろうか。**

装置の機能を見きわめられるか？

どんな操作をすることができるかを知ることができるか？

問題になっているシステムが期待通りの状態にあるかどうかを言えるか？

意図を実際の行為に対応づける関係を見つけられるか？

システムの状態と解釈との間の対応づけがわかるか？

その行為をすることができるか？

対象システムがどんな状態であるかがわかるか？