

# MAN202T: Sociology of Design

Session 13



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# SESSION OUTLINE

- About Affordances
- Examples

# Affordances

- Affordance is not users' judgment or evaluation of products' perceived qualities, but the action capabilities based on objective conditions of users and products at present
- Affordances in product design are not meant to convey information for communication purpose, but are the groundwork for the necessary behavior in achieving a product's function
- In any interaction involving an agent with some other system, conditions that enable that interaction include some properties of the agent along with some properties of the other system.
- *Affordance* refers to whatever it is about the environment that contributes to the kind of interaction that occurs

# Example: Affordances versus Semantics

## Affordances (actions linked with usability)

How intuitive is the ignition key in a car?

How do old people get into a car with high ground clearance?

What do drivers do when they have to take a quick nap in a car?

## Signs ... Semiotics (Semantics-meaning)

What does the car mean to the customer?

How is it used in his/her social interactions?

Why do people write their names on the rear screens of cars?

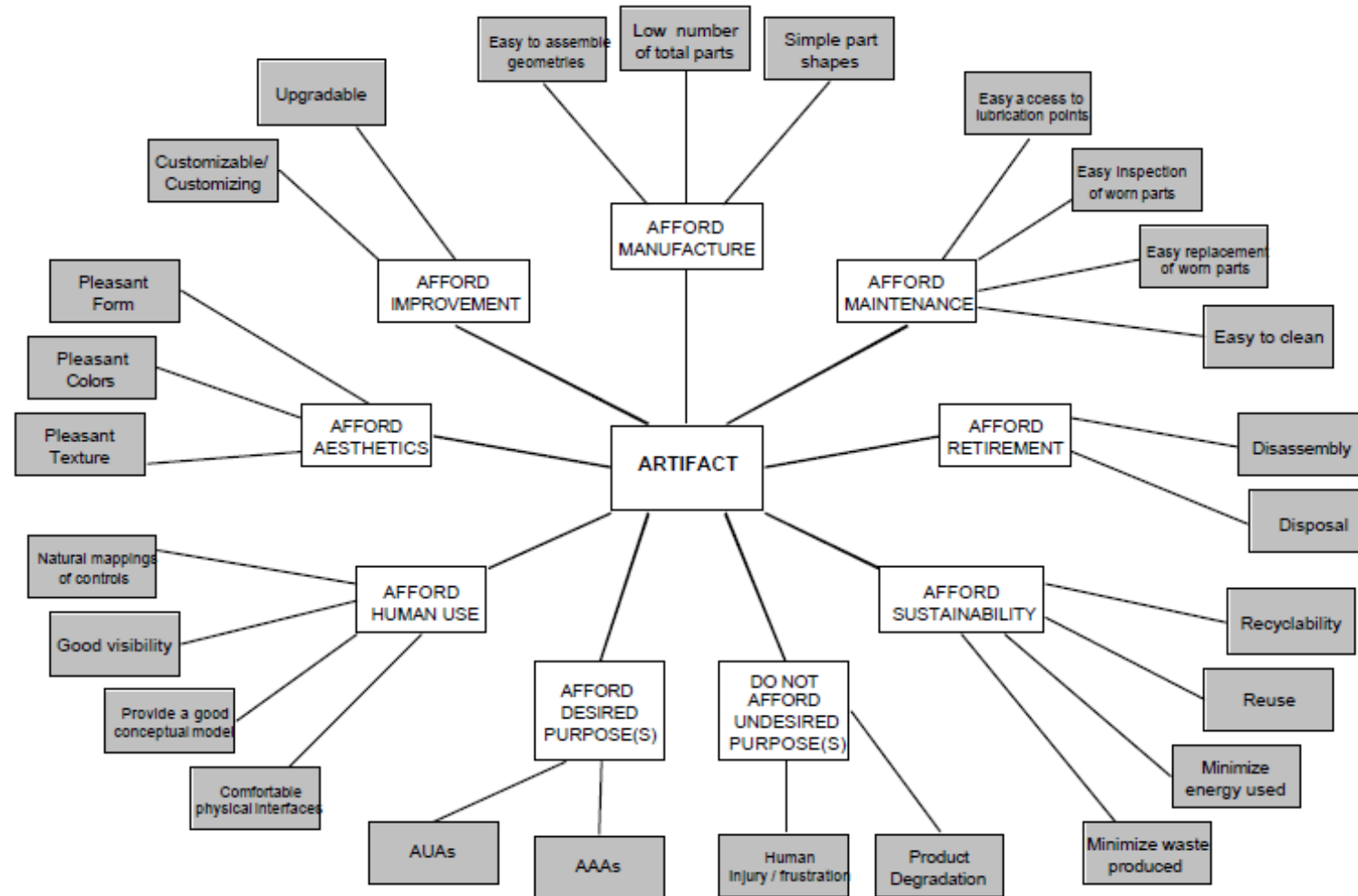
# Additional references

- <https://www.youtube.com/watch?v=a6F0EYCUjcE>
- <https://www.youtube.com/watch?v=-vwhXFWD6qk>
- <https://www.youtube.com/watch?v=3WvtEFJGp-8>

# Affordances differ from functions

- The affordance approach requires a broader, more environment-centric view that could help identify potential failures or negative effects which the other methods have difficulty identifying... ex: Poka-yoke
- Affordances have a role to play in investigating undesirable possible actions, perhaps leading to designs that are safer and easier to use
- Affordance-based reasoning = given a device predict possible user actions, whereas Function-based reasoning = given a function find possible devices

# Range of Affordances... Design for X



# Approaches to identify affordances

- Pre-determination (user survey)
- Indirect observation (thought experiments / imagination ... what if)
- Direct observation (prototype-user interaction)
- Automated Identification



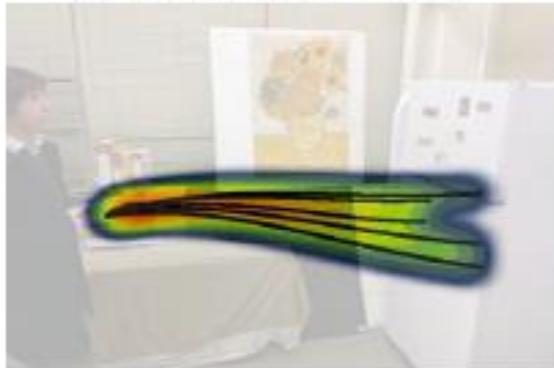
# Example, Anticipating the next move



(a) Robot's RGB-D view.



(b) Heatmap of object affordances.



(c) Heatmap of trajectories.



(d) Robot opening the door.

For a personal robot to be able to assist humans (in homes, manufacturing), it is important for it to be able to detect what a human is currently doing as well as anticipate what she is going to do next and how

# Exercise 13: Distinguish affordance from signs and functions

- Look for affordances in the institute
- Perform a thought experiment
  - What if the walls in the academic block afford writing/sketching?
  - What if my hostel room were to become a playground?
- Look for affordances in your ethnographic observations (people in action)



# Map the concepts that you have been exposed to

- |                               |                          |                                 |                                     |
|-------------------------------|--------------------------|---------------------------------|-------------------------------------|
| 1. Product                    | 17. Function             | 33. Smart / Intelligent Product | 47. Functionalism                   |
| 2. Technology                 | 18. Structure            | 34. Cyber-physical system       | 48. Conflict theory                 |
| 3. User                       | 19. Behavior             | 37. Augmentation                | 49. Symbolic Interactionism         |
| 4. Stakeholder                | 20. Purpose / objectives | 38. Automation                  | 50. Social Interaction              |
| 5. Need                       | 21. Complex Systems      | 33. Metaphor                    | 51. Meaning                         |
| 6. NPD (New Prod Devp)        | 22. Hierarchy            | 34. Abduction                   | 52. Action                          |
| 7. Fuzzy Front end            | 23. Feedback             | 37. Adaptation/Adaptive         | 53. Interaction Rituals             |
| 8. Problem                    | 24. Complex Networks     | 38. Goal                        | 54. Emotional Energy                |
| 9. Solution                   | 25. NK model             | 39. Learning                    | 55. Power                           |
| 10. Reqmt / product spec      | 26. ISM                  | 40. LSM                         | 56. ANT                             |
| 11. Min Viable Prod/Prototype | 27. Morphology charts    | 41. VSM                         | 57. Points of passage               |
| 12. Discovery                 | 28. Cybernetics          | 42. Collective Systems          | 58. Translation / 59 Enrolment      |
| 13. Diagnosis                 | 29. Holistic             | 43. Neural Networks             | 60. Ethnography                     |
| 14. Engineering               | 30. Inter-disciplinary   | 44. Fuzzy systems               | 61. Semiotics/Signs/Semantics       |
| 15. Manufacture               | 31. Iterative            | 45. Evolutionary computing      | 62. Affordance                      |
| 16. Design                    | 32. Creative             | 46. Rule based expert systems   | 63. Presence / 64 Gesture-Response  |
|                               |                          |                                 | 65. Improv(isation) 66. Reflexivity |



Courses / Domain	Systems Thinking	Intelligent Sys	Sociology	“CORE” Engineering
Theories	Complex Systems	Adaptive Sys (Neural Net, Evolutionary), Cybernetic (Mech)	Functionalism, Conflict, Interactionism, Semiotic (Language), ANT	Properties & Laws of Matter-Energy-Information
Concepts / Principles / Models	System-Env Boundary Complexity Hierarchy/Levels Feedback Network	Goal driven Reactive/S-R Adaptive/Learning Variety	Social-Meaning-Action Interaction Ritual I-We Points of Passage Translation Enrolment	Equilibrium Dynamics Energy Conservation Entropy
Methods / Techniques	Disc Matrix SNAC ISM NK LSM	VSM ANN Fuzzy Rule based GA / ES	Listen Observe Rich Pictures Reflect Improv	Brainstorming SCAMPER Morphology charts TRIZ QFD
Tools	Software Tools (ISM)	Software Tools	Software Tools / Journals	Sketching/CAD/MATLAB Prototyping Tools
Methodologies / Approaches to problem solving	4D (patterns)	Metaphor driven Synthetic method	Ethnography, Human Centered Design, Action-oriented	Analysis-Design



# Map the buildup of EE with pedagogy (1-5), Reflect on two lowest moments and two highest moments

1. Color code for a class
2. Rich picture drawing
3. Learning from a movie (12 angry men)
4. Interactionism - Sharing of personal experiences (Startup Centre to TBI)
5. Reflection on team dynamics
6. Giga-mapping (self-organization)
7. Improv games in the class (Tug o War, Keench meri photo)
8. Family photographs
9. UnQuiz (Groundhog's Day)
10. One day Hackathon
11. Movie (Dead Poets Society) / (Whiplash)
12. Ethnography inside & outside classroom - Making familiar strange (poetry, music from context)
13. Reflective narrative & conversation
14. Semiotics of an advertisement
15. EHIPASSIKO



# Work on the ethnography report

