User Interface Software Projects

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Understanding and Conceptualizing Interaction

Conceptual model

- A conceptual model is:
  - "a high-level description of how a system is organized and operates"
    - (Johnson and Henderson, 2002, p 26)

- A conceptual model enables:
  - "designers to straighten out their thinking before they start laying out their widgets" (p 28)

- Metaphors and analogies
  - understand what a product is for and how to use it for an activity
- Concepts that people are exposed to through the product
  - task–domain objects, their attributes, and operations (e.g. saving, revisiting, organizing)
- Relationship and mappings between these concepts

First steps in formulating a conceptual model

- What will the users be doing when carrying out their tasks?
- How will the system support these?
- What kind of interface metaphor, if any, will be appropriate?
- What kinds of interaction modes and styles to use?
  - always keep in mind when making design decisions how the user will understand the underlying conceptual model

Conceptual models

- Many kinds and ways of classifying them
- We describe them in terms of core activities and objects
- Also in terms of interface metaphors

Interface metaphors

- Conceptualizing what we are doing, e.g. surfing the web
- A conceptual model instantiated at the interface, e.g. the desktop metaphor
- Visualizing an operation,
  - e.g. an icon of a shopping cart for placing items into

Interface metaphors

- Interface designed to be similar to a physical entity but also has own properties
  - e.g. desktop metaphor, web portals
- Can be based on activity, object or a combination of both
- Exploit user's familiar knowledge, helping them to understand 'the unfamiliar'
- Conjures up the essence of the unfamiliar activity, enabling users to leverage of this to understand more aspects of the unfamiliar functionality

Benefits of interface metaphors

- Makes learning new systems easier
- Helps users understand the underlying conceptual model
- Can be very innovative and enable the realm of computers and their applications to be made more accessible to a greater diversity of users

Problems with interface metaphors

- Break conventional and cultural rules
  - e.g. recycle bin placed on desktop
- Can constrain designers in the way they conceptualize a problem space
- Conflict with design principles
- Forces users to only understand the system in terms of the metaphor
- Designers can inadvertently use bad existing designs and transfer the bad parts over
- Limits designers' imagination in coming up with new conceptual models
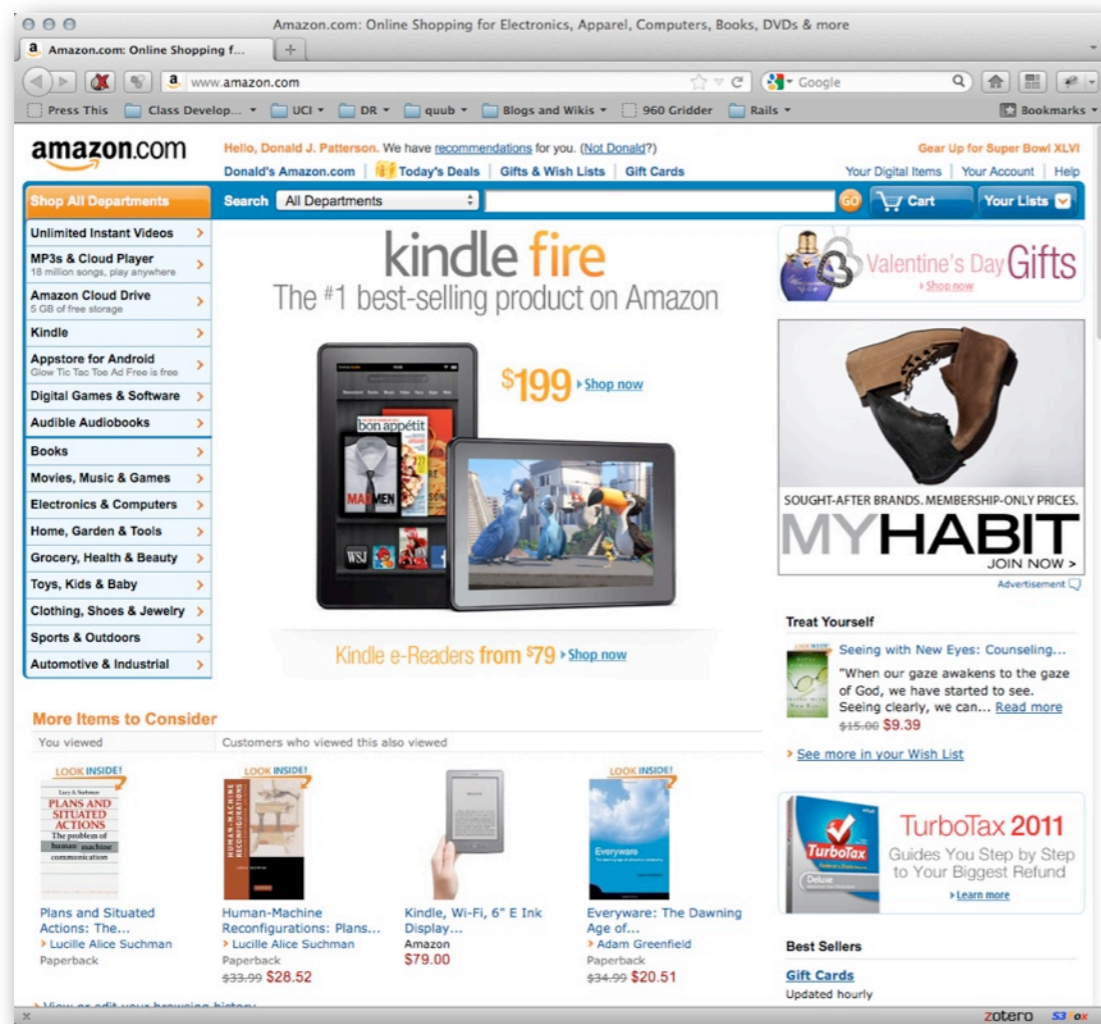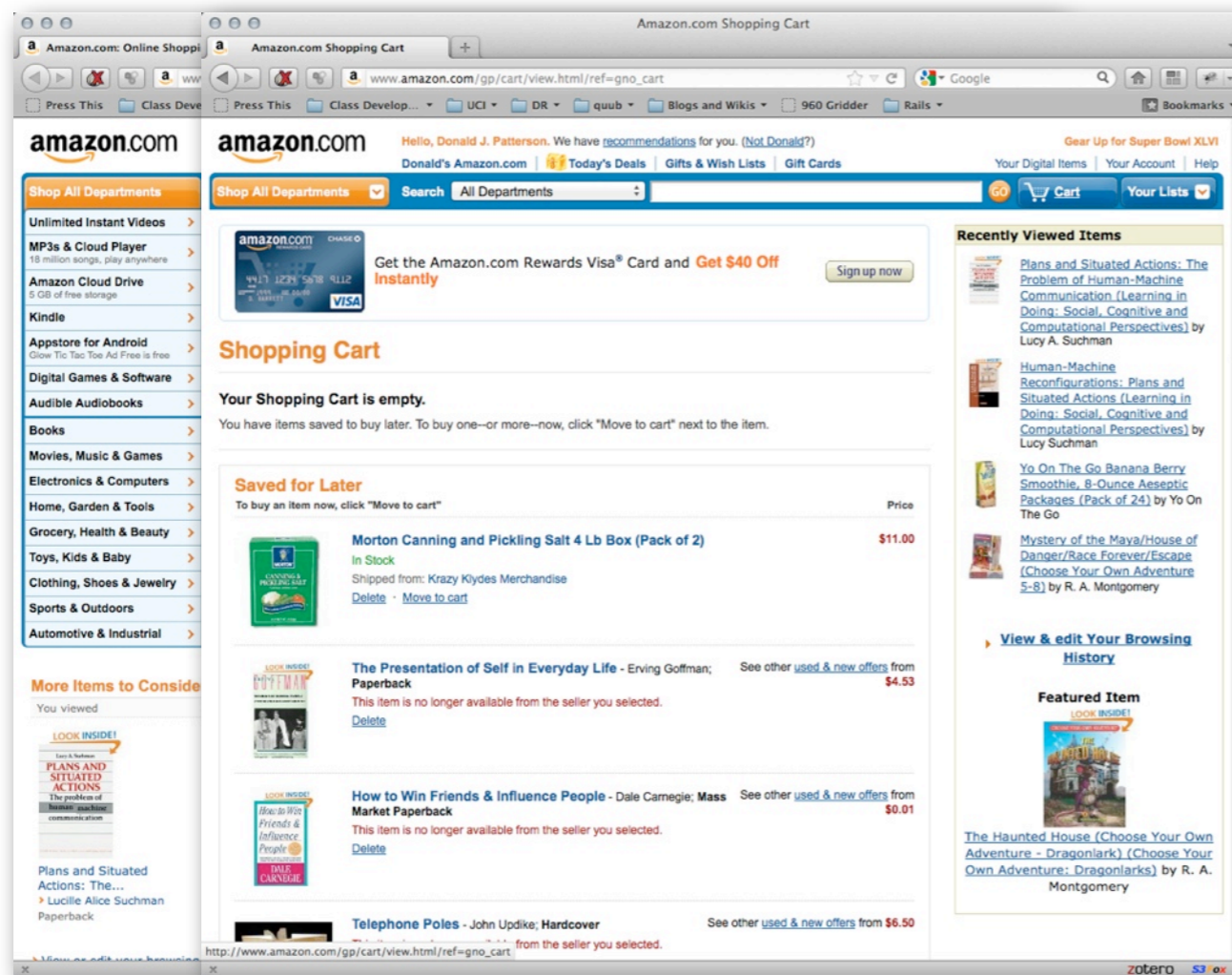
Interface metaphors
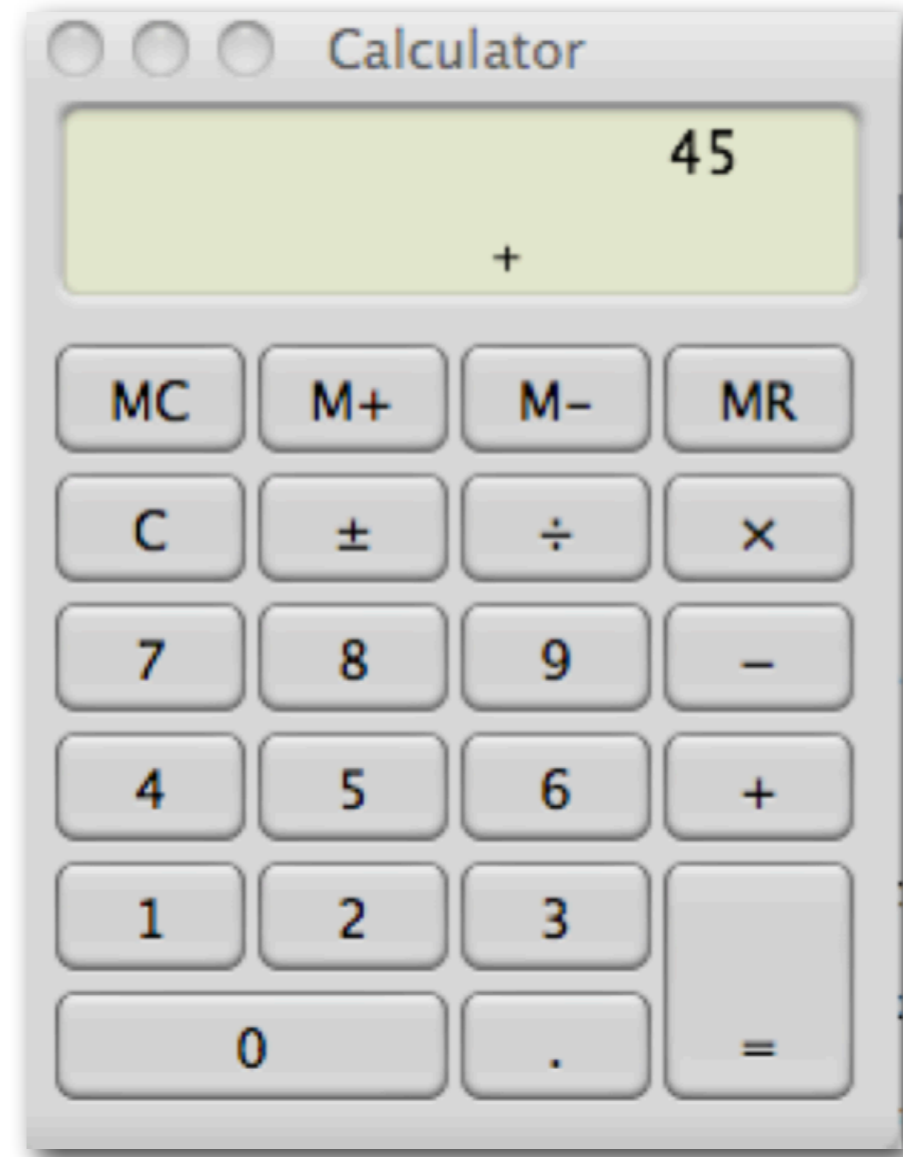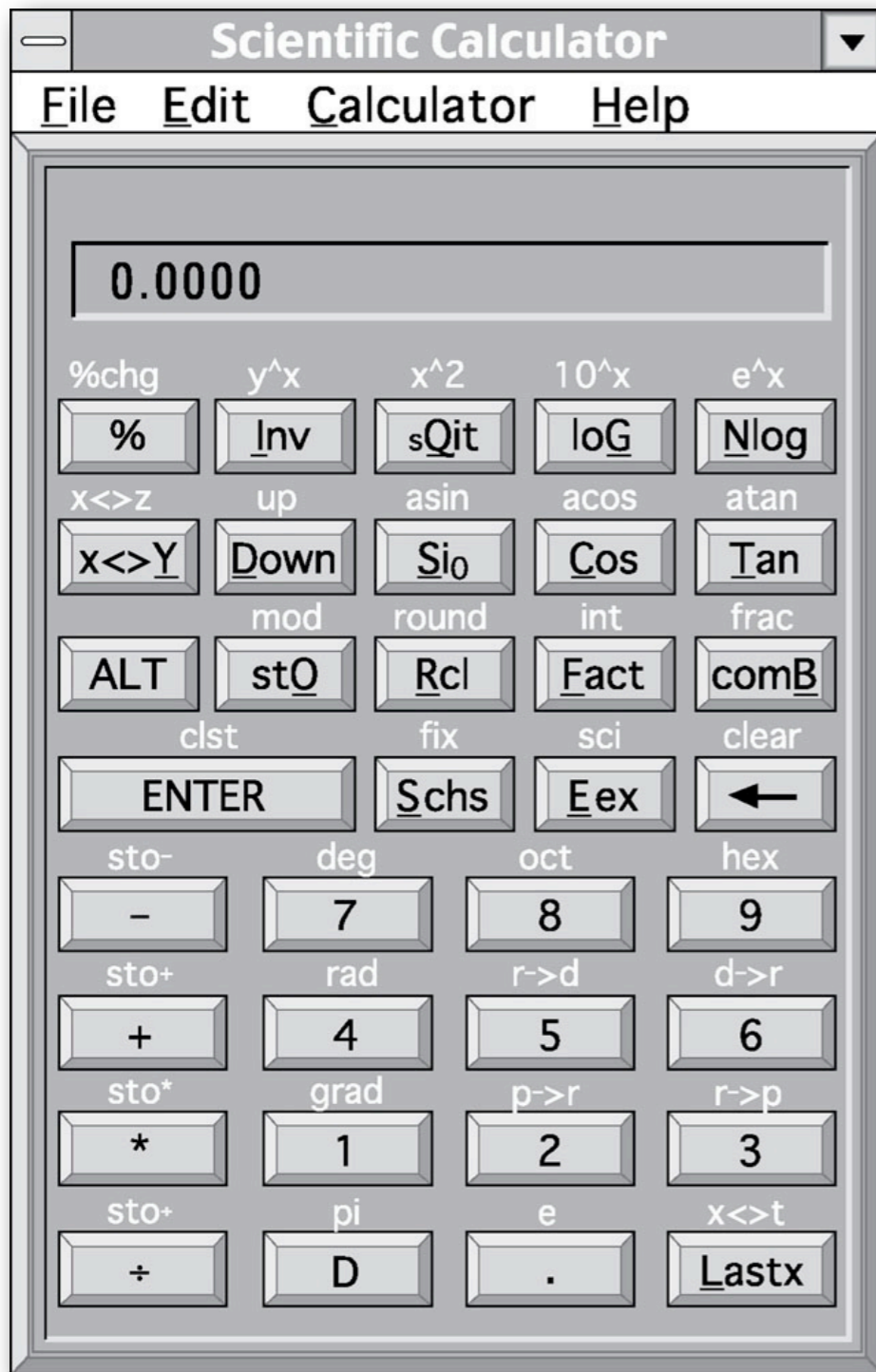
- Shopping cart metaphor
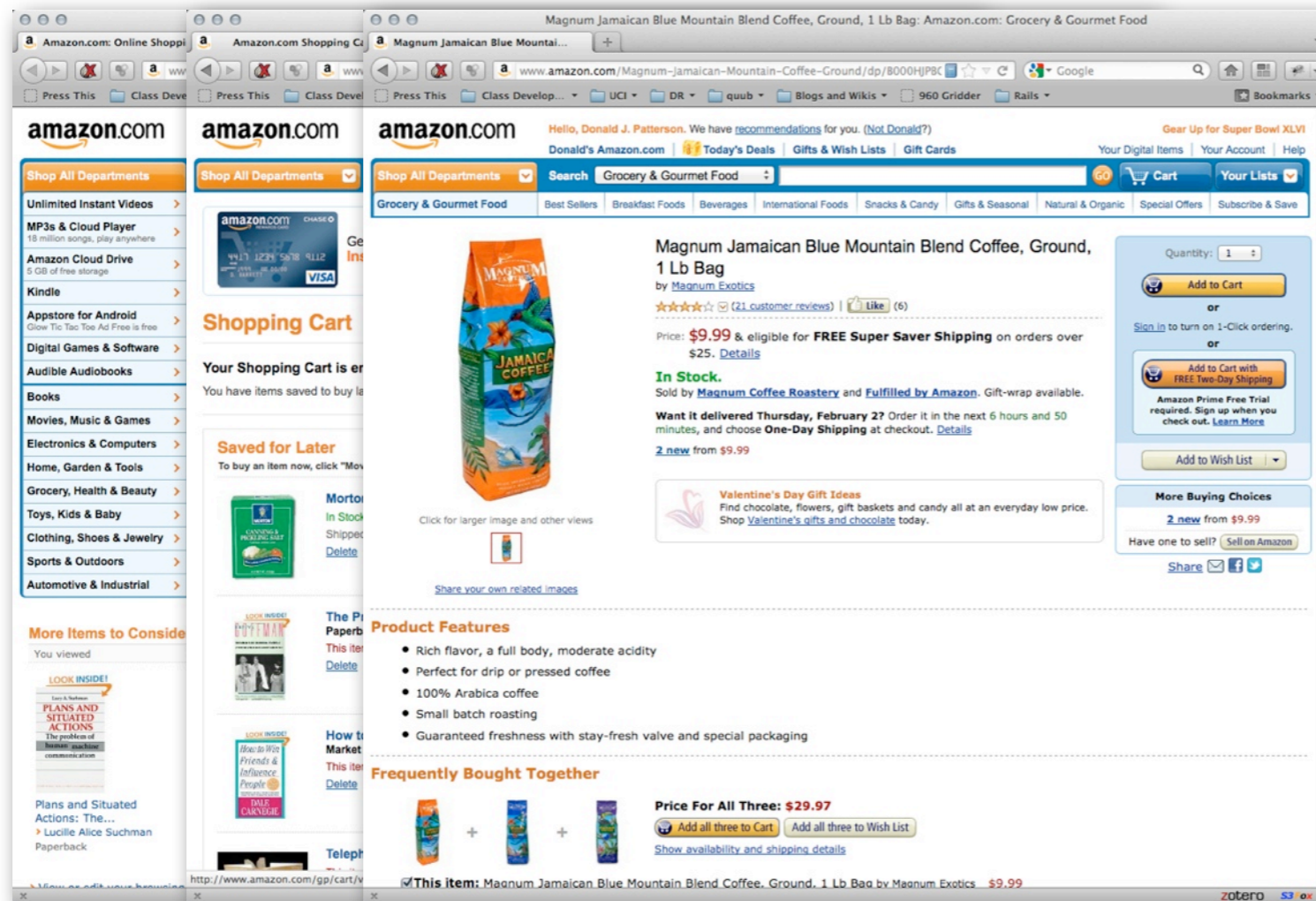   - What are the components of this metaphor?

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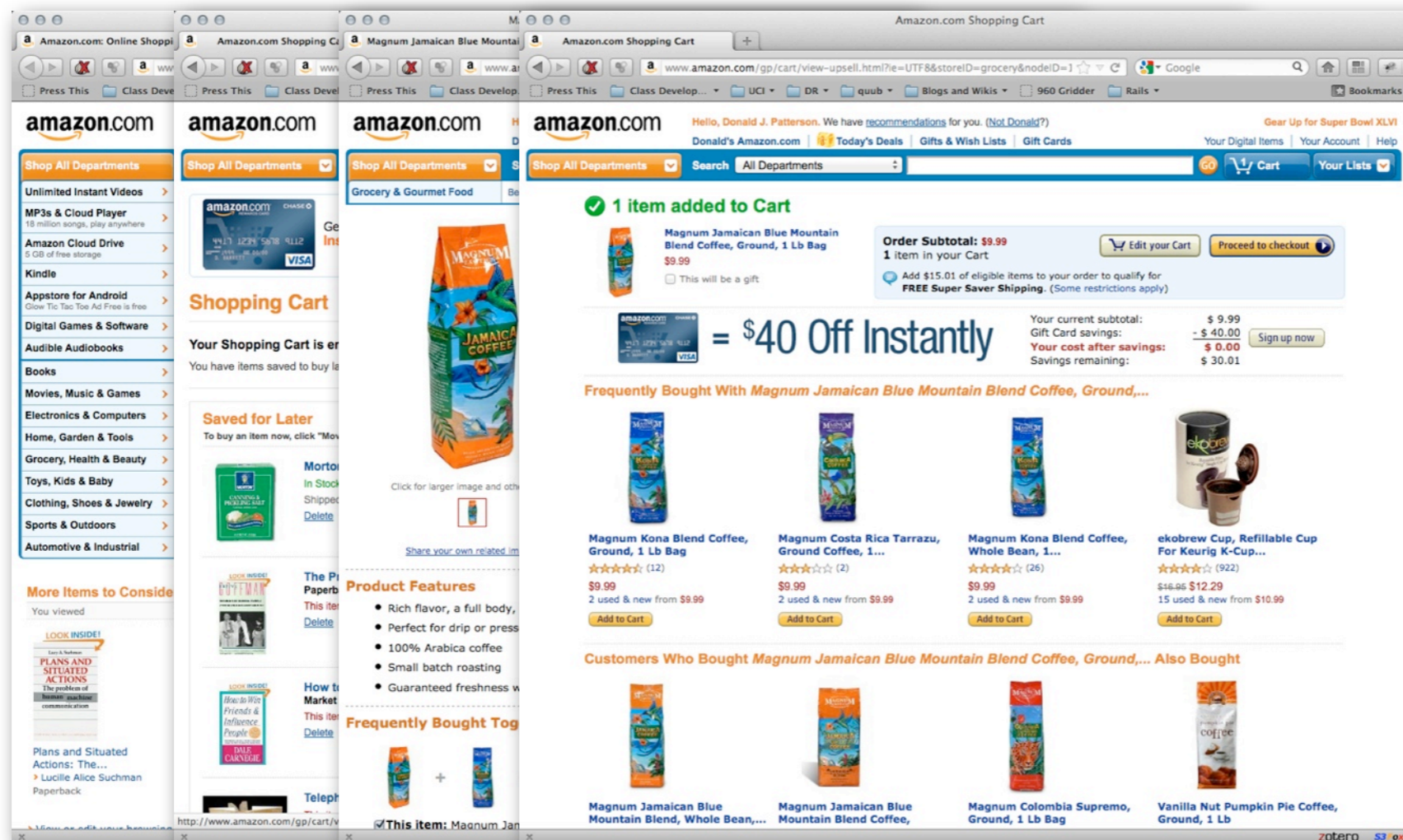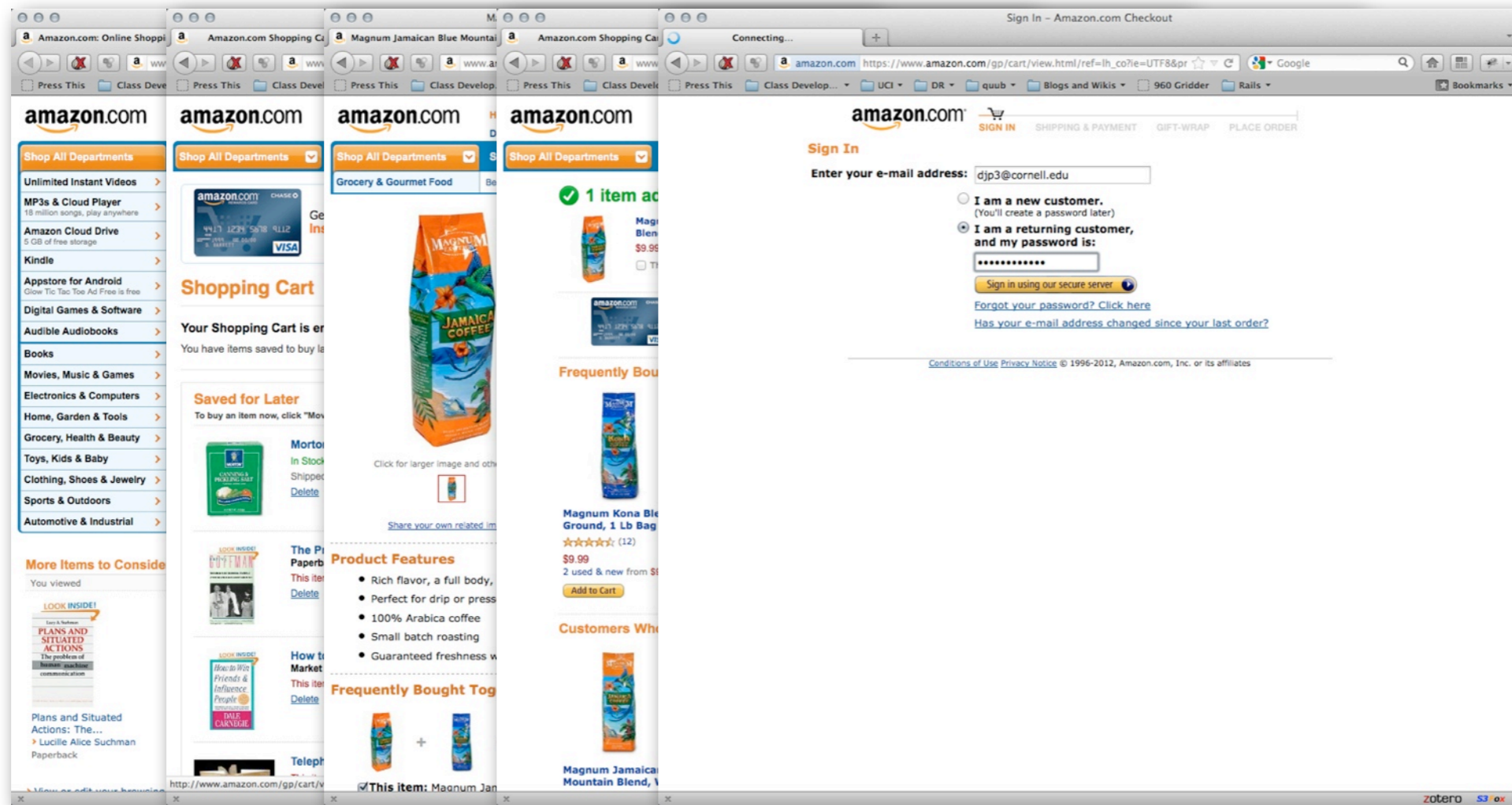# Discuss

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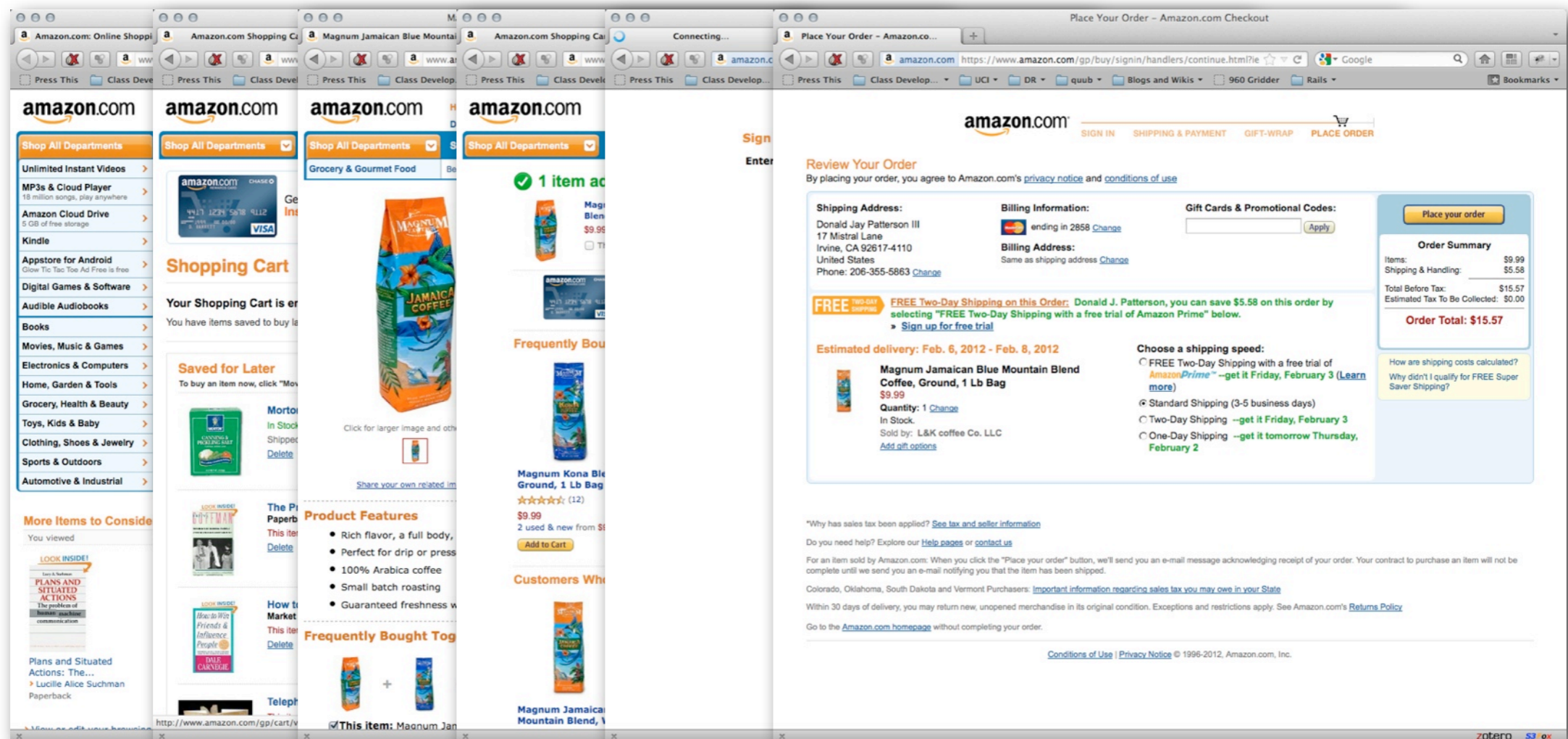
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Interaction types

- **Instructing**
  - issuing commands and selecting options
- **Conversing**
  - interacting with a system as if having a conversation
- **Manipulating**
  - interacting with objects in a virtual or physical space by manipulating them
- **Exploring**
  - moving through a virtual environment or a physical space