

Overview

Course:	CS 179: Design of Useful and Usable Interactive Systems	
Course Level:	Upper-level undergraduate	
Course Description:	“The course covers skills and techniques necessary to design innovative interactive products that are useful, usable and that address important needs of people other than yourself. You will learn how to uncover needs that your customers cannot even articulate. You will also learn a range of design principles, effective creativity-related practices, and techniques for rapidly creating and evaluating product prototypes. You will also have several opportunities to formally communicate your design ideas to a variety of audiences. You will complete two large team-based design projects.” ¹	
Module Topic:	Justice In Design: Developing Your Moral Stance	
Module Author:	Sophie Gibert	
Semesters Taught:	Spring 2022	
Tags:	Usability [CS], Dynamic routing [CS], Design [CS], Justice [Phil], Distributive justice [Phil], Formal opportunities [Phil], Material resources [Phil], Capabilities [Phil], Welfare [Phil], Egalitarianism [Phil], Luck Egalitarianism [Phil], Sufficiency [Phil]	
Module Overview:	<p>This module introduces students to the process of articulating their moral values and examining their actions in light of those values. To demonstrate the process of articulating a moral value, we focus on the value of <i>distributive justice</i>. Students consider different conceptions of distributive justice, including competing theories of the fundamental currency of justice, or the goods that matter, and competing principles of distribution. They practice identifying the kinds of goods that designers are distributing when they create products, as well as the kinds of goods <i>they</i> have distributed via their design choices during previous projects for this course. Finally, students examine a case study involving navigation apps and consider whether a particular design choice is distributively just. Overall, the module prepares students to approach their third project for the course with values in mind. As they plan and execute their third project, they articulate one of their values and reflect on how their project supports or might fail to support that value. Students may, but are not required to, focus on the value of distributive justice in completing their reflections.</p>	<p>The professor has begun integrating ethics into every part of the syllabus for this course. He requested a module that would help students develop and articulate a moral stance and consider how their design choices can better reflect their moral stance. This module seeks to break down this process and demonstrate one way of approaching it.</p>
Connection to Course Material:	<p>Students in this course learn the skills and techniques necessary to design innovative, interactive products that are useful, usable, and that address important needs of people other than themselves. Over the course of the semester, they engage in multiple team-based design projects. The module helps students begin to articulate their moral values and examine their projects and design choices in light of those values. It also introduces students to the idea</p>	<p>The value of distributive justice was chosen because students in this course focus on making their designs useful and usable. An immediate question arises: useful and usable <i>for whom</i>? As designers, students make distributive choices. Specifically, they distribute the good of</p>

¹ [Link](#).

that their design choices are distributive choices, subject to the standards of distributive justice.

usability. This module asks them to consider what kind of good usability is in different contexts and how it should be distributed.

Goals

Module Goals: By the end of the module, students will be able to:

1. Articulate one of their moral values and evaluate their design choices in light of it.
2. Identify the kinds of goods they are distributing when they create a product or service and say why those goods matter.
3. Identify different ways in which they could distribute goods and discuss their merits and drawbacks in terms of justice.

Key Philosophical Questions:

1. What is distributive justice, and why does it matter?
2. What kinds of goods are at stake in the design of a given product, and why do those goods matter?
3. What principles should govern the just distribution of goods?

Question 1: Part of what it is to articulate a moral value is to say what it is and why it is important.

Question 2: Design choices are distributive choices. They distribute *usability*. The kind of good that usability is depends on the context and what is being designed. Students consider four kinds of goods: formal opportunities, material resources, capabilities, and welfare.

Question 3: For any given good, the question arises of how it should be distributed. Different principles of distributive justice (e.g., egalitarianism) provide different answers.

Materials

Key Philosophical Concepts:

- Distributive justice
- Formal opportunities
- Material resources
- Capabilities
- Welfare
- Egalitarianism
- Luck egalitarianism
- Sufficiencyarianism

According to *egalitarianism*, goods should be distributed equally across individuals, regardless of their features. Egalitarians disagree about what kinds of goods should be distributed equally. Four prominent views identify the following goods as the goods that should be distributed equally: *formal opportunities* to attain positions of advantage in society, *material resources*, *capabilities* (i.e., real opportunities to do

Assigned Readings:

- Selections (pp. 185-191) from Dworkin, Ronald. 1981. "What is Equality? Part I: Equality of Welfare." *Philosophy and Public Affairs* 10 (3): 185-246.
- 10-minute video (watch on up to 1.25x speed). Hausman, Daniel. 2016. "Luck Egalitarianism." *Serious Science*: https://www.youtube.com/watch?v=Ok59nOhP3cg&ab_channel=SeriousScience

things, such as opportunities to avoid oppressive social relationships and participate as an equal citizen in a democracy), and *welfare*.

Egalitarians think distributive justice is a matter of reducing inequalities between people with regard to certain important goods. Meanwhile, *luck egalitarians* take justice to be a matter of compensating for undeserved bad luck. And *sufficientarians* are primarily concerned with ensuring a minimum standard of goods for everyone in society.

This short selection from Dworkin's "What is Equality?" provides a basic overview of the debate between welfare-egalitarians and resource-egalitarians and introduces the rival view that formal opportunities should be distributed equally.

In this 10-minute video, Hausman contextualizes Dworkin's paper, "What is Equality?" and introduces the debate over luck egalitarianism in an intuitive way.

Implementation**Class Agenda:**

1. Preparation for small-group discussion (2 minutes)
2. Design critique (15 minutes)
3. Introduction to distributive justice and theories of the fundamental currency of justice (15 minutes)
4. Small-group discussions: Identifying the kinds of goods being distributed in different design cases (15 minutes)
5. Presentation of the navigation apps case (5 minutes)
6. Small- and large-group discussions: Considering whether unrestricted dynamic routing is just, according to multiple principles of distributive justice (20 minutes)
7. Concluding remarks (3 minutes)

Sample Class Activity:	<p>Students engage in a number of small- and large-group discussions throughout the module. Class begins with a 15-minute “design critique,” in which students consider the usability positives and negatives of three different designs of town hall entrances. Later, during the portion of the module dedicated to theories of what goods matter, students work in small groups to identify the kinds of goods that are distributed by the designers of town hall buildings and the kinds of goods that they themselves distributed in designing mobile apps for Harvard tourists. Finally, during the portion of the module dedicated to examining principles of distributive justice, students engage in small- and large-group discussions about the design of navigation apps. Specifically, students discuss whether the use of unrestricted dynamic routing is distributively just or unjust, given that it often results in an influx of traffic on residential neighborhood roads.</p>	<p>The professor begins each class session with a design critique, in which students discuss the usability positives and negatives of some product (e.g., a ketchup bottle, an e-mail alert system). They are typically given the following design goal: Make the product easy and efficient to use.</p>
Module Assignment:	<p>Before the module, students are asked to read an excerpt from Ronald Dworkin’s well-known paper, “What is Equality?” and watch a short video. They submit a brief (2 paragraph) response to the following prompt:</p> <ul style="list-style-type: none"> ● Suppose you bring a cake to your friend's birthday party. More people have shown up than expected, and everyone wants cake. There's not enough for everyone to have a slice, unless you cut the slices very small. How do you distribute the cake, and why? ● Now suppose an acquaintance passes away and leaves you in charge of distributing her remaining money to charity. She had no particular attachments to any causes but cared a great deal about justice. How do you distribute the money, and why? ● Consider your answers to parts A and B. Did you distribute the cake and the money in the same way, or based on the same principle? Why or why not? <p>After the module, students spend several weeks developing their third team-based project for the course. Each week, students report on their progress</p>	<p>This module followed suit by starting with a design critique. However, the design goal was both to make the design easy and efficient to use <i>and</i> to make it <i>inclusive</i>. Students considered three different images of entrances to town hall buildings. One featured a staircase leading to the front of the building and a separate, more accessible entrance around the corner. The second featured a staircase and a separate ramp, both leading to the same front door. The third featured a hybrid staircase-ramp entrance, inspired by the Museum M in Leuven, Belgium, designed by Stéphane Beel.</p> <p>The pre-module assignment was designed to get students thinking in an intuitive and non-technical way about distributive justice and to plant the idea that different goods might demand different principles of distribution.</p> <p>The post-module assignment questions were formulated in collaboration with the professor. The questions were interspersed across multiple assignments to encourage students to consider ethics and values at every stage of their project’s development.</p>

via a written assignment. As part of these assignments, students submit a brief (1-2 paragraph) response to each of the following three questions:

1. Articulate one of your moral values. What does it mean to you, and why is it important?
2. How will your project support the value you have chosen?
3. What are some potential unintended or indirect ways in which your project or design choices could fail to support the value you have chosen? What are you doing to prevent this from happening?

Students are welcome to choose distributive justice as the value they discuss, but they are not required to do so.

Lessons Learned: Students responded very well to this module, and engagement was high across the room. Students found the four currencies of justice particularly useful, and they enjoyed hearing their peers' reactions to the town hall case.

The activity model—namely, having multiple small-group discussions followed by class-wide discussions—was somewhat difficult to implement in the hybrid setting, given the unpredictable nature of in-person versus Zoom attendance. Having fewer instances of small-group discussion may have been helpful in this setting.