Embedded EthiCS @Harvard: S20 Repository Entries
Lyndal Grant

1. **Course**. CS145/245: Cloud Networking and Computing

2. **Course Level.** Upper-level undergraduate/ graduate

3. **Course Description.** "Clouds have become critical infrastructures for many applications in business and society (e.g., social media, public health, and entertainment). In this course, we will take a look inside the cloud infrastructure and learn critical technology trends and challenges in the networking and computing layers. We will discuss the design choices of performance, scalability, manageability, and cost in various cloud companies such as Amazon, Google, Microsoft, and Facebook. This course includes lectures and system programming projects."[1] (Course description)

4. **Module Topic.** Should cloud service providers be able to refuse service on ethical grounds?

5. **Module Author.** Lyndal Grant

6. **Semesters Taught.** Spring 2019-2020

7. **Tags.** networks (CS), cloud computing (CS), free speech (phil), rights (phil), property (phil)

8. **Module Overview.** Cloud service providers (CSPs) provide on-demand computing resources to businesses, allowing them to meet their computing needs as they grow without making risky and expensive investments in IT infrastructure. This module considers how much power cloud service providers (CSPs) should have over how their services are used, and in particular, whether cloud service providers should be able to refuse service to particular customers on ethical grounds. Should CSPs be regulated like public utilities (such as telephone companies), which are required to offer their services at reasonable rates to all interested customers? Or should CSPs, like most companies, reserve the right to refuse to do business with clients whose behavior they deem morally objectionable? We explore this issue through the lens of an illustrative case study: Amazon Web Services' denial of service to Wikileaks.

9. **Connection to Course Material.** In this course, students learn about the technical aspects of the cloud computing business, studying the design choices made by major players such as Google and Amazon. This module builds on that material by asking students to consider how decisions these companies make about which customers to serve might affect those customers' rights and interests, and whether new regulation is needed to ensure they do not wield their power in ways that unjustly restrict the freedoms of others.

---

[1] https://minlanyu.seas.harvard.edu/teach/cs145-spring19/

Marginal note: This module covers a policy issue – a question about how tech companies should be regulated – rather than a question about how tech companies or tech industry professionals should behave. We find that modules that focus on policy ethics work just as well as modules that focus on how tech companies or tech industry professionals should act. (Keeping the option in mind can also help when identifying an ethical issue that connects strongly with the course material is more difficult than usual.) An alternative module for this course discusses electronic privacy and security as they apply to cloud computing services, which is another great fit for this course.

10. Module Goals.

1. Familiarize students with scenarios in which the interests of CSPs and cloud computing consumers might conflict.
2. Introduce students to the distinction between positive and negative rights, particularly as it applies to free speech, property rights, and economic rights.
3. Give students practice applying different conceptions of rights to concrete cases involving CSPs.

11. Key Philosophical Questions.

1. Given the importance of cloud computing to a wide range of economic and social activities, should CSPs should be regulated like public utilities — restricting their freedom to decide whom they provide services to?
2. How strong is the case that, in being denied service by Amazon Web Services, Wikileaks' free speech rights were violated?
3. Given that CSPs own their computing resources, do they have the right to determine who uses those resources and how?

12. Key Philosophical Concepts.

- Negative and positive rights
- Free speech
- Property rights
- Economic rights

13. Assigned Readings.

No readings were assigned for this module.

14. Class Agenda.

1. Question for the day: Should CSPs be able to refuse service to particular customers on ethical grounds?
2. Case study: Amazon Web Services and Wikileaks

3. Negative and Positive rights
4. Argument for "yes" answer to guiding question based on CSP's property rights.
5. Argument for "no" answer to guiding question based on consumers' economic and social rights.
6. Argument that CSPs should be regulated like public utilities.

15. **Sample Class Activity.** After introducing students to the central case study for the module — Amazon Web Services' denial of service to Wikileaks following Wikileaks' release of thousands of classified US government documents — students are broken up into small groups and asked to read the following statement by Amazon regarding their decision:

> [By agreeing to our terms of service] "you represent and warrant that you own or otherwise control all of the rights to the content ... that use of the content you supply does not violate this policy and will not cause injury to any person or entity."

> From AWS statement: "It's clear that WikiLeaks doesn't own or otherwise control all the rights to this classified content. Further, it is not credible that the extraordinary volume of 250,000 classified documents that WikiLeaks is publishing could have been carefully redacted in such a way as to ensure that they weren't putting innocent people in jeopardy. Human rights organizations have in fact written to WikiLeaks asking them to exercise caution and not release the names or identities of human rights defenders who might be persecuted by their governments."

Students are then asked to discuss the following question: in booting WikiLeaks off its servers, did Amazon violate Wikileaks' free speech rights?

Marginal note: In response to WikiLeaks' accusations that Amazon Web Services had violated its free speech rights, Amazon responded that WikiLeaks had violated its terms of services by using its service to publish stolen government documents. This activity gives students a chance to evaluate that argument for themselves, and to begin thinking about the broader implications of Amazon's handling of the case and whether its response was warranted. This activity also sets us up for discussion of a further case study later in the module -- Amazon Web Services was recently pressured by critics to terminate its relationship with Palantir (an American software company specializing in data analytics) due to Palantir's contractual relationship with US Immigration and Customs Enforcement (ICE). These critics cited Amazon's statement above in making their argument (and in particular the passage concerning putting innocent people in jeopardy), so having students engage with the statement does double duty as preparation for that discussion.

16. **Lessons Learned.**

This module was well-received and generated enthusiastic discussion among the participating students, who were a mix of advanced undergraduates and graduates students. One thing that came as a surprise to the Embedded EthiCS Fellow was that most of the students were unfamiliar with recent debates over net neutrality – or even with the concept of net neutrality. Debates over net neutrality raise closely related issues about how tech companies should be regulated, which makes them a useful parallel here (not to mention the fact that there is far more literature on net

neutrality to draw from). Since we assumed students would already have some familiarity with those debates, we did not build in time to go over the basic background, which would have been useful in retrospect. (It is easy for philosophers to assume that computer science students will already be familiar with major ethical controversies in the tech industry, but this is not always the case.)