Social Dynamics

Sociology / Complex Systems 260
Fall 2016
Course Website: https://umich.instructure.com/courses/100609

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Class: Tu/Th 10-12:30
Room: 4128 LSA
Office Hrs: Weds., 1-3

Course Description:

Throughout every society, we find patterns. In different times and places, people have particular ways of dressing, eating, talking, and even thinking. Neighborhoods remain segregated for generations, fads sweep whole countries in a matter of weeks, and both markets and crowds behave more like independent entities than a collection of individuals. We also find that these patterns are not fixed in nature but instead, quite dynamic. Cultures and neighborhoods change, sometimes quite suddenly. Fads become unpopular as suddenly as they caught on, and both markets and crowds can go from being well-behaved and predictable to dangerously unpredictable and extreme in shockingly short amounts of time.

Where do these patterns and dynamics come from? Throughout the history of social science, people have given a wide variety of answers to this question. The type of explanations we will be focusing on in this class are those which consider how the *interdependency* of individuals leads to the unexpected and unintentional emergence of collective behaviors and outcomes. To this end, we'll be covering a wide range of subjects: processes of social influence and interaction, information cascades, tipping points, agent-based modeling, the impacts of diversity on problem solving, networks of interaction and their consequences, and new opportunities for researchers to study these dynamics via the recent availability of so-called "big data."

Grading:

Your grade in this course will be based on three components: your participation in the course, 2 short papers (5-7 pages each), and reports your will write up for 4 labs we will be doing in class.

Class Participation	20%
Writing Assignment #1	20%
Writing Assignment #2	20%
Labs (4 x 10% each)	40%

As you can see, participation will determine a big part of your ultimate grade in this course. There will be several ways for you to excel in this arena including contributing to in-class conversations, volunteering to come up with discussion questions, and posting questions, comments, and resources Canvas.

Doing the assigned readings will make the difference between an awesome course and an only so-so one. To that end, much of my assessment of your participation in class will also hinge on how much you engage with the readings. In the unfortunate hypothetical scenario in which it looks like there is a trend toward not doing them developing, I also reserve the right to institute reading pop reading quizzes (I'd really rather not, but the choice is ultimately up to you all!)

Course Readings:

Many of our readings will be posted to the course's Canvas page. In addition, you will need to get the following two books that we will be reading the majority of in class. They should both be readily available either online or at local bookstores:

> Page, Scott. 20101. *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies.* Princeton: Princeton University Press.
>
> Watts, Duncan. 2004. *Six Degrees: The Science of a Connected Age.* New York: Norton.

In addition to these texts, you will need to download and install a free software called Netlogo for some of the labs we will be doing in class:

> **Netlogo download** – http://ccl.northwestern.edu/netlogo/

RECOMMENDED READING STRATEGY: Some of the readings we Do in this course will be pretty advanced. Do NOT worry or stress if you are not able to pick up everything on your first read through a piece – everyone goes through a learning curve when it comes to technical and academic writing! The key thing to keep in mind as you are reading is developing some of your own ideas about what is being said and keeping track of questions that come up for you (they will make for great discussions!) We will be hitting the key points and themes of them class, so hopefully by the end of lecture, things will feel clearer.

Course Policies:

Attendance: Participation requires that you be present in class. As such, regular attendance inevitably plays a big role in your grade for this course. The expectation is that you will make every attempt to attend all scheduled meetings for the course.

Late Assignments: Late assignments will be deducted 10 percentage points per day late. After 4 days, they will not be accepted. I understand that sometimes emergencies and illnesses come up. To that end, rare exceptions will be made ***if you can provide the required documentation***.

Academic Integrity: Representing the work of others as your own, be it that of another student, previously published work, or uncited internet resources, is not acceptable in this or any other course. If you are found to be doing such, you will at the very least receive an F for the assignment, and potentially fail the class and face formal sanctions by the University. If you have questions about academic integrity or plagiarism, I encourage you to both talk to me and review some of the resources UM has made available on those subjects - http://www.lsa.umich.edu/academicintegrity/

Learning Environment: Having an awesome class is much easier if we work together to create a respectful and engaged environment within which to explore ideas and talk. To that end, I encourage everyone to take on a sense of ownership for making this classroom a place where *everyone* feels safe being enthusiastic and curious. I also encourage you to please let me know if anything comes up that concerns you or makes you feel uncomfortable.

Reading Schedule

Week 1

9/6 ***Course Introduction***

9/8 ***What is Order? Where does it come from?***

Anderson, Phil. 1972. "More is Different." *Science.*

Hayek, F.A. 1982. "Cosmos and Taxis." Pp. 35-54 in *Law, Legislation, and Liberty*. *Volume 1: Rules and Order.* Routledge.

Week 2

9/13 ***Theorizing from the Bottom Up***

Schelling, T. 1977. *Micromotives and Macrobehavior.* New York: Norton and Company. Chapter 1.

9/15 ***Agent-Based Modeling***

Wilensky, Uri and William Rand. "An Introduction to Agent-Based Modeling." Chp 1.

*** Install Netlogo on your laptop BEFORE class: http://ccl.northwestern.edu/netlogo
*** Bring laptop to class

Week 3

9/20 ***Information Cascades and Bandwagons***

Watts, Chapter 7.

Bikhchandi, S., Hirshleifer, D., and Welch, O. 1992. "A theory of fads, fashion, custom, and cultural change as informational cascades." *Journal of Political Economy* 100: 992 -1026

9/22 ***Segregation Models and Tipping Points***

Schelling, Thomas. 1971. "Dynamic Models of Segregation." *Journal of Mathematical Sociology.* 1:143-186

Week 4

9/27 **LAB 1:** *Segregation and Tipping Points*
*** Bring laptop to class***

9/29 ***Cumulative Advantage and Social Influence***

Watts, Chapter 4.

Van de Rijt, A., Kang, S., Restivo, M. and Patil, A. 2014. "Field experiments of success-breeds-success dynamics." *PNAS* 111: 6934-6939.

Salganik, M., Dodds, P. and Watts, D. 2006. "Experimental Study of Inequality and Unpredictability in an Artificial Cultural Market." *Science.*

Week 5

10/4 ***Cognitive Toolboxes***

Page, Chapters 1-3.

***** LAB 1 WRITEUP DUE *****

10/6 ***Diverse Toolboxes to Diverse Models***

Page, Chapters 4-5.

Week 6

10/11 ***Diverse Models in Decision-Making & Problem-Solving***

Page, Chapters 6-8.

10/13 ***Preferences, Values, and Toolboxes***

Page, Chapters 9-11.

Week 7

10/18 **No Class – Fall Study Break**

10/20 ***Networks Intro and Overview***

Watts, Chapter 1

Borgatti, S., Mehra, A., Brass, D., and Labianca, G. 2009. "Network analysis in the Social Sciences." *Science* 323: 892-895

***** WRITING ASSIGNMENT 1 DUE*****

Week 8

10/25 ***Small Worlds***

Watts, Chapter 2 – 3

Kleinfeld, J.S. 2002. "The Small World Problem." *Society* 39:61-66

10/27 **LAB 2:** *Small Worlds Lab*

Watts, D.J. and Strogatz, S.H. 1998. "Collective dynamics of 'small-world' networks." *Nature* 393: 440 – 442

*** Bring laptop to class***

Week 9

11/1 ***Strength of Weak Ties***

Granovetter, M. 1973. "The strength of weak ties." *American Journal of Sociology* 78: 1360 - 1380

11/3 ***Homophily***

McPherson, M., Smith-Lovin, L., and Cook, J. 2001. "Birds of a Feather: Homophily in Social Networks." *Annual Review of Sociology* 27: 415 – 44

***** LAB 2 WRITEUP DUE *****

Week 10

11/8 **LAB 3:** *Network Lab*
*** Bring laptop to class***

11/10 ***Networks and Social Movements***

Oliver, Pamela and Myers, Daniel. 2003. "Networks, Diffusion, and Cycles of Collective Action." Pp. 173 – 203 in *Social Movements in Networks,* edited by M. Diani and D. McAdam. New York: Oxford University Press.

Tucker, Joshua. 2014. "Tweeting Ferguson: how social media can (and cannot) facilitate protest." *The Washington Post.* (https://www.washingtonpost.com/blogs/monkey-cage/wp/2014/11/25/tweeting-ferguson-how-social-media-can-and-can-not-facilitate-protest/)

Week 11

11/15 ***Spread of Disease through Networks***

Watts, Chapter 6.

Bearman, P., Moody, J., and Stovel, K. 2004. "Chains of affection: The structure of adolescent romantic and sexual networks." *American Journal of Sociology* 110: 44-91

11/17 ***Social Capital***

Coleman, James. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* 94: S95 – S120.

Putnam, Robert. 1995. "Bowling Alone: America's Declining Social Capital." *Journal of Democracy.* (http://muse.jhu.edu/article/16643)

***** LAB 3 WRITEUP DUE *****

Week 12

11/22 **NO CLASS**

11/24 **Thanksgiving - NO CLASS**

Week 13

11/29 ***The Promise and Peril of 'Big Data' Social Science Research***

King, G. 2011. "Ensuring the Data-Rich Future of the Social Sciences." *Science* 331: 719-721

Ginsberg, J. *et. al.* 2009. "Detecting influenza epidemics using search engine query data." *Nature* 457: 1012- 1014.

Lazer, D. *et. al.* 2014. "The Parable of Google Flu: Traps in Big Data Analysis." *Science* 343: 1203 – 1205.

12/1 LAB 4: *Google Trends and Ngrams Lab*
*** Bring laptop to class***

Week 14

12/6 ***Going Viral***

Goel, S. and Hoffman, J. 2015. "The Structural Virality of Online Diffusion." *Management Science* 1-17.

Cheng, J. *et. al.* 2014. "Can Cascades be Predicted?"

12/8 ***Digital Traces of Movement and Migration***

Eagle, N., Pentaland, A., and Lazer, D. 2009. "Inferring social network structure using mobile phone data." *PNAS* 106: 15274-15278.

Zagheni, E. and Weber, I. 2012. "You are where you E-mail: Using E-mail Data to Estimate International Migration Rates." *Proceedings of ACM Web Science.*

State, B. *et. al.* 2014. "Migration of Professionals to the US: Evidence from LinkedIn Data." *Proceedings of Social Informatics.*

***** LAB 4 WRITEUP DUE *****

Week 15

12/13 ***Experiments and Ethics in "Big Data" Social Science Research***

Bakshy, E. *et. al.* 2012. "Social influence in social advertising: Evidence from field experiments." *Proceedings of the 13th ACM Conference on Electronic Commerce, 146-161.*

Kramer, A., Guillory, J. and Hancock, J. 2014. "Experimental evidence of massive-scale emotional contagion through social networks." *PNAS* 111: 8788-8790

Verma, I. 2014. "Editorial Expression of Concern and Correction." *PNAS* 111: 10779

Simonite, T. 2012. "What Facebook knows." *MIT Technology Review.*

**** WRITING ASSIGNMENT 2 DUE BY NOON ON FRIDAY, 12/16 ****