MS 9326: The Internet is Down: Network Collapse

Provisional Syllabus subject to minor revisions

Winter 2020

Instructor: Nick Dyer-Witheford **Contact:** ncdyerwi@uwo.ca

Time: Mondays 10am-1pm **Delivery:** Online, Synchronous

Course Description: This course will provide an integrated technical, economic, political and ecological understanding of how the Internet works, and how it can fail. Fears of collapse have attended the network of networks from its inception but have always been controverted by the increasing capacities of information technologies—so far. Recent years, however. have seen another rise in anxieties about the stability of the digital system whose centrality to advanced capitalism is dramatically demonstrated under pandemic conditions. In this seminar we examine various ways the Internet can breakdown, be it in one massive "wipeout" event or through an incremental accumulation of micro-collapses. Topics include the techno-economic architecture of the net, with its array of hubs and choke-points; so-called "normal" accidents to power grids and networks; the mounting threats posed to digital and energy infrastructures by the fire and flood of climate change; the consequences of cyber-crime and cyber-war;; and the "slow shutdown" of increasing censorship and blackouts by authoritarian states. The course will draw on materials from high theorists of network society, such as Paul Virilio, Benjamin Bratton and Wendy Chun; from more pragmatic perspectives on Internet breakdown, such as those of emergency planners software engineers, and cyber-security experts; and from the growing canon of Internet collapse narratives in art and popular culture. This seminar requires no specialized technical knowledge and will be open to a wide variety of student approaches.

Course Materials: Readings, video and films will be available via OWL, and will be drawn from sources including, but not limited to, the following works and authors: David D. Clark, *Designing An Internet*; Benjamin Bratton, *The Stack: Software and Sovereignty*; Wendy Hui Kyong Chun, *Updating to Remain the Same: Habitual New Media*, Gretchen Bakke, *The Grid: The Fraying Wires Between Americans and Our Energy Future*; Charles Perrow, *Normal Accidents: Living With High-Risk Technology*; Paul Virilio, *Speed and Politics*; Shannon Mattern, "Incidental Internet Infrastructures" and "Networked Dreamworlds"; Bruce Schneider, *To Kill Everyone, Press Here*; Patrick Burkart and Tom McCourt: *Why Hackers Win: Power and Disruption in the Network Society*; Gabriella Coleman, "Hack-Curio"; Nick Dyer-Witheford and Svitlana Matviyenko, *Cyberwar and Revolution: Digital Subterfuge in Global Capitalism*; Timothy Maughan *Infinite Detail*.

Evaluation: Participation & 6 written weekly responses (approx. 500 words each) 20%; 2 Seminar presentations (20% each=40%), date TBD; Final Paper Proposal (500 words) 5%; Final Research Paper (5000 words) 35%.

Schedule

Week 1 Jan 11 **Origins and Architectures**. After introducing the course, we review the origins of the Internet, the key features in its architecture, its uneven global distribution and its centrality to late capitalism.

Week 2 Jan 18 **Stack and Grid**. This week's session introduces two crucial ideas: that of the Internet as a "stacked" hardware-software-human megastructure, and analysis of the energy "grid" on which it depends.

Week 3 Jan 25 **(De) (Re) Centralize**. While the Internet was designed as a decentralized communication system, political economic forces increasingly concentrate aspects of is operation, creating nodes, hubs and choke-points that are at once centres of corporate power and network vulnerability.

Week 4 Feb 1 **Integral Accidents**. Engineers understand accidents as normal features of complex systems; we explore how this idea has been developed in social analysis through the concept of an "accidentology" of risks "integral" to networked society.

Week 5 Feb 8 **Fire and Flood**. Many Internet infrastructures pre-date wide awareness of a global warming crisis; we investigate how changing climate condition, rising sea levels and monster wildfires pose unforeseen and extraordinary threats to network stability and emergency communication planners.

Week 6 Feb 15 **Reading Week**

Week 7   Feb 22 **The Hacker Complex**. Hacking has long been seen as a network danger; we interrogate the complex genealogy and diverse theorizations of the figure of the hacker and its ambivalent relationships to a rapidly growing cybersecurity industry.

Week 8 Mar 1 **Cyber-Criminality**.   While it is difficult to gauge the scale, or even agree on a definition, of Internet crime, illicit activity seems to have growing capacity to paralyze institutions and cities, to temporarily disconnect entire countries and even to jeopardize wide section of the network.

Week 9 Mar 8 **Digital Warfare**. The Internet has military origins, but its comprehensive weaponization is a twenty-first century feature, including industrial sabotage, computational propaganda, critical infrastructure attacks played out across a "splinternet" landscape of geopolitical antagonisms

Week 10 Mar 15 **State Shutdowns**. Nation states declare themselves protectors of Internet security, but often themselves disrupt network communication amongst their own populations, by blackout, slow-downs and censorship, often aimed at rebellious social movements.

Week 11 Mar 22 **The Image of Collapse**. This session will be devoted to the ways that growing anxieties about the condition of the Internet are reflected in popular culture, in media from video games to novels, and what these images convey of hopes and dreads associated with digital capitalism.

Week 12 Mar 29 **New Internets**. The fragilities and threats to the existing Internet have led a number of different groups and movements to propose radical transformations or reinventions of digital networks: we examine several of these manifestos, from varied social and political perspectives.

Week 13 April 5 **Outcomes.** The semester ends with a session collectively workshopping participants' final paper proposal.

If you have further questions about this course, by all means email **ncdyerwi@uwo.ca**.