

## POL 530: Systems Disasters

Syllabus updated 2021-07-17; Total Pages: 1347

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Class	Office
Tu 6:10–9:00	by appointment
Online, see Moodle for Zoom URL <a href="https://moodle.reed.edu/course/view.php?id=3711">https://moodle.reed.edu/course/view.php?id=3711</a>	Online, see Moodle for Zoom URL <a href="http://alexmontgomery.com/officehours">http://alexmontgomery.com/officehours</a>

### Course Description

The foundations of modern life rely on many intertwined, complex systems. When functioning properly, these systems (which have economic, social, political, and technical elements) are invisible and frequently taken-for-granted. The failure of these systems can lead to disastrous consequences. This course investigates systems that shouldn't have failed but did as well as systems that should have failed but haven't (yet) from the perspectives of normal accidents theory and concepts of high-reliability operations, with a focus on high-risk systems such as air travel, military operations, spaceflight, nuclear power, and nuclear weapons. We will draw on real-life and counterfactual systems and disasters as examples. Students will learn to analyze complex systems from a variety of perspectives through thinking about systems design and operation and will choose one or more high-risk systems to analyze for a final project. Conference.

### Learning Outcomes

After successfully completing this class, a student will:

- learn the theoretical underpinnings of the study of systems disasters
- understand how different theories relate to each other and to the world
- know how to apply theories to historical and contemporary systems

### Requirements

*Class Participation:* Students are required to actively participate in the class; they will have the opportunity to do so both during and outside of class hours. Good participation involves—among other things—listening carefully to others, referring or responding to the previous speaker's comments while citing them by me, and asking questions in addition to or instead of making statements. There *is* such a thing as bad participation. This includes—but is not limited to—overriding others, dominating conversations, and conducting ad hominem attacks. Conflicts do arise in the classroom, and I expect you to engage with and resolve them as a learning opportunity in or after class; I am a resource for this. Participating includes reading carefully, posting memos before section, engaging in discussions during section, and continuing conversations after class. Also see Academic Support Services' handouts on "[Making the Most of Conference](#)" and "[Tips for Class Discussion](#)."

*Reading:* Skim the piece before reading it – title, abstract, introduction, and conclusion. Try to get the basic argument. It is much better to get the basic argument of every piece than it is to read every word of one or two pieces. When you read a text, you should annotate it. Highlight or circle signposts, including causal questions, summaries, conclusions, assumptions, counterarguments, lists, and emphasis (See [Amelia Hoover Green's article "How to Read Political Science"](#)). When you are done, write up a short outline/summary of the piece for your own reference (See my handout on "[How to write summaries after taking notes](#)").

*Memos:* Starting the first week, every student will author a short (250-500 words) reaction memo. The memos are not meant to be summaries of the articles or books. Instead, they are intended to help you organize your ideas and to help situate the readings vis-a-vis each other for that day as well as the course thus far. Your memo should respond to the readings thoughtfully, and should include the following elements: a) a "wow" statement about an idea or ideas that you appreciated; b) some puzzles regarding ideas that you did not fully understand and/or a thoughtful critique of one or two particular arguments that you did not find persuasive and c) some unanswered questions or thoughts for discussion that arose while you were doing the reading. Please remember to address the collective assignment of readings by not focusing solely on just one reading or a subset throughout the entire memo. I will read them and return them to you by the start of class. This should be turned in to the forum on the course website by 9 AM on Tuesday morning.

*Makeups:* If you miss a day of section for any reason whatsoever, you may make it up by posting a summary of each of the readings for that day to that day's forum on Moodle. You should be writing short summaries of the readings in any case! It is imperative that you come to class if at all possible due to the small size and the limited number of sessions.

*Readings:* Readings for the course are drawn from three books and E-Readings, which can be downloaded directly from the links on Moodle. These are best used in conjunction with [Zotero](#), which is supported by the library. Students are expected to have a copy of the readings immediately accessible for class every day for reference. [Students who use laptops and tablets for notetaking learn less and do less well on assessments](#), and [the mere presence of your smartphone reduces your available cognitive capacity](#); consequently, you are

strongly encouraged to store your phone as far away from you as you can bear during class, print out your readings or use a tablet with good annotation software, and to take notes by hand. Readings marked “Further” on the syllabus are other relevant articles or books; they are not required for class. Students who have a particular interest in the topics in question are encouraged to read these pieces and to incorporate them into their assignments. All three books are required for the course.

#### Required

- Charles Perrow (1999) *Normal Accidents: Living with High-Risk Technologies*. New York, NY: Basic Books, 411, ISBN 0691004129
- Gene I. Rochlin (1998) *Trapped in the Net*. Princeton, NJ: Princeton University Press, 218, ISBN 9780691002477
- Scott D. Sagan (1993) *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*. Princeton, NJ: Princeton University Press <<http://www.worldcat.org/oclc/27429286>>, 279, ISBN 0691021015

**Course Website:** Frequent use of the course website will be helpful for success in the class. Discussion and collaboration with your peers in both sections of the class is available to you through the website; supplemental and core readings will be made available there; and assignments will be turned in electronically using the site.

**Assignments:** There is one formal piece of work for this course: a final paper. A document explaining the final paper will be passed out in class. In general, I look for four things: A clear argument in the introductory paragraph, an explanation of the theories that you will be using, an illustration of your argument with direct examples, and a conclusion that discusses the implications of your findings. Please note that bibliographies are required and do count towards the word count.

**Citation and Plagiarism:** A major goal of this course is to encourage good reading, research, and citation habits. Good research requires good documentation of sources and the ability to put one’s own analysis and thoughts into a paper rather than relying on others. When in doubt as to whether you should cite something, always do it. Citations are required for ideas as well as facts, and are imperative even if you are not directly quoting authors. Make sure that you provide as specific a citation as possible; if an author discusses an idea in one section or one page, cite the specific section or page instead of the full article or book. I usually recommend that students use in-text author-date citation with Chicago Manual of Style citations; see their Citation Quick Guide: <[http://www.chicagomanualofstyle.org/tools\\_citationguide.html](http://www.chicagomanualofstyle.org/tools_citationguide.html)>.

However, style is less important than the cites being present. If you use an idea or a fact without attribution, you are plagiarizing someone else’s work. Plagiarism and cheating are violations of academic integrity and thus violations of Reed’s Honor Principle. As specified by Reed’s academic conduct policy, such violations will result in disciplinary actions, including suspension or permanent dismissal from the College. Plagiarism is submitting a piece of work which in part or in whole is not entirely the student’s own work without attributing those same portions to their correct source. For examples of plagiarism and how to avoid it, see <<http://tinyurl.com/jdlrbd3>>. If nothing else, you should avoid “sinister buttocks” syndrome. For more information on Reed’s policies see: <[http://www.reed.edu/academic/gbook/comm\\_pol/acad\\_conduct.html](http://www.reed.edu/academic/gbook/comm_pol/acad_conduct.html)>.

Plagiarism often comes as the result of a student being up against a deadline without being able to meet it. If you are having trouble meeting a deadline for whatever reason, please contact me. Because every assignment is a paper that will be handed out well in advance, I have no problem giving extensions. It is always better to ask for more time than to plagiarize. When you ask for an extension, you should a) explain what events are causing you to miss the deadline (if academic, you don’t need to tell me if personal) and b) request an amount of time proportional to the interfering events. You may ask for an extension up to, but not exceeding, the amount of time remaining for the assignment, except for cases of emergencies or unanticipated circumstances.

**Accommodations:** If you’d like to request academic accommodations due to a disability, please contact Disability and Accessibility Resources. As soon as they have sent out the Accommodation Notification Letter, schedule an appointment with me to discuss how those accommodations could apply to this course.

#### 6/15/21: 01.1. Nuclear Power (146 Pages)

- Charles Perrow (1999) Chap. Introduction, 1-3 In Perrow *Normal Accidents*, 3–101
- Karlene H. Roberts (1990) Managing High Reliability Organizations. *California Management Review*. 32(4), 101–113 <<http://www.proquest.com/docview/215882454/abstract/9E9672491ACD40B4PQ/1>> – visited on 2021-06-01, ISSN 00081256

#### Chernobyl

- E. Stang (1996) Chernobyl - System Accident or Human Error? *Radiation Protection Dosimetry*. 68(3-4)December, 197–201 <<http://dx.doi.org/10.1093/oxfordjournals.rpd.a031864>>, ISSN 0144–8420

#### Diablo Canyon

- Paul R. Schulman (1993) The Negotiated Order of Organizational Reliability. *Administration and Society*. 25(3)November, 353–372 <<http://dx.doi.org/10.1177/009539979302500305>>

#### Fukushima

- Charles Perrow (2011) Fukushima and the Inevitability of Accidents. *Bulletin of the Atomic Scientists*. 67(6)November/December, 44–52 <<http://dx.doi.org/10.1177/0096340211426395>>

#### Further

- Mathilde Bourrier (1996) Organizing Maintenance Work at Two American Nuclear Power Plants. *Journal of Contingencies and Crisis Management*. 4(2)June, 104–112 <<http://dx.doi.org/10.1111/j.1468-5973.1996.tb00082.x>>, ISSN 1468–5973
- Charles Perrow (2007) Are Terrorists as Dangerous as Management? The Nuclear Plant Threat. In *The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters*. Princeton, NJ: Princeton University Press, ISBN 0691129975. chapter 5, 133–173
- M. V. Ramana (2011) *Beyond Our Imagination: Fukushima and the Problem of Assessing Risk*. April 19 Bulletin of the Atomic Scientists website <<http://thebulletin.org/web-edition/features/beyond-our-imagination-fukushima-and-the-problem-of-assessing-risk>>
- James M. Acton and Mark Hibbs (2012) *Why Fukushima Was Preventable*. March Carnegie Endowment for International Peace <<http://carnegieendowment.org/files/fukushima.pdf>> – visited on 2014-04-30
- James Mahaffey (2014) Atomic Accidents: A History of Nuclear Meltdowns and Disasters: From the Ozark Mountains to Fukushima. In Mahaffey *Atomic Accidents*, 357–375
- James Mahaffey (2014) Tragedy at Fukushima Daiichi. In Mahaffey *Atomic Accidents*. chapter 10, 376–403
- Jeva Lange (2015) *America's Nuclear Power Plants Use Passwords like '1234'*. October 5 TheWeek <<https://theweek.com/speedreads/581374/americas-nuclear-power-plants-use-passwords-like-1234>> – visited on 2020-01-03

## 6/22/21: 02.1. Nuclear Weapons (289 Pages)

- Scott D. Sagan (1993) Chap. Introduction, 1-6 In Sagan *The Limits of Safety*, 3–279
- Charles Perrow (1999) Chap. Early Warning Systems In Perrow *Normal Accidents*, 282–293
- Foeke Postma (2021) *US Soldiers Expose Nuclear Weapons Secrets Via Flashcard Apps*. May 28 Bellingcat <<https://www.bellingcat.com/news/2021/05/28/us-soldiers-expose-nuclear-weapons-secrets-via-flashcard-apps/>> – visited on 2021-06-02

### Further

- Lee Clarke (1993) Drs. Pangloss and Strangelove Meet Organizational Theory: High Reliability Organizations and Nuclear Weapons Accidents. *Sociological Forum*. 8(4)December, 675–689 <<http://dx.doi.org/10.1007/BF01115218>>, ISSN 08848971
- Todd R. La Porte et al. (1994) Systems, Organizations and the Limits of Safety: a Symposium. *Journal of Contingencies and Crisis Management*. 2(4)December, 205–240 <<http://dx.doi.org/10.1111/j.1468-5973.1994.tb00044.x>>
- Eric Schlosser (2016) World War Three, by Mistake. *The New Yorker*. December 23, 13 <<https://www.newyorker.com/news/news-desk/world-war-three-by-mistake>> – visited on 2020-01-03
- Ben Westcott (2016) *Duped by Fake News Story, Pakistani Minister Threatens Nuclear War with Israel*. December 26 CNN <<https://www.cnn.com/2016/12/26/middleeast/israel-pakistan-fake-news-nuclear/index.html>> – visited on 2020-01-03
- Colin H. Kahl (2019) This is How Easily the U.S. and Iran Could Blunder into War. *Washington Post*. May 23, 6 <[https://www.washingtonpost.com/outlook/this-is-how-easily-the-us-and-iran-could-blunder-into-war/2019/05/23/40dbbcae-7c07-11e9-8ede-f4abf521ef17\\_story.html](https://www.washingtonpost.com/outlook/this-is-how-easily-the-us-and-iran-could-blunder-into-war/2019/05/23/40dbbcae-7c07-11e9-8ede-f4abf521ef17_story.html)> – visited on 2019-10-06, ISSN 0190–8286
- Alan Robock et al. (2019) How an India-Pakistan Nuclear War Could Start—and Have Global Consequences. *Bulletin of the Atomic Scientists*. 75(6)November, 273–279 <<http://dx.doi.org/10.1080/00963402.2019.1680049>>, ISSN 0096–3402

## 6/29/21: 03.1. Markets (215 Pages)

- Gene I. Rochlin (1998) Chap. 1-6 In Rochlin *Trapped in the Net*, 3–107
- Mauro F. Guillén and Sandra L. Suárez (2010) The Global Crisis of 2007–2009: Markets, Politics, and Organizations. In Lounsbury and Hirsch *Markets on Trial: The Economic Sociology of the U.S. Financial Crisis: Part A*, 257–279 <[https://www.emerald.com/insight/content/doi/10.1108/S0733-558X\(2010\)000030A012/full/html](https://www.emerald.com/insight/content/doi/10.1108/S0733-558X(2010)000030A012/full/html)> – visited on 2021-06-07
- Donald Palmer and Michael Maher (2010) A Normal Accident Analysis of the Mortgage Meltdown. In Lounsbury and Hirsch *Markets on Trial: The Economic Sociology of the U.S. Financial Crisis: Part A*, 219–256 <[https://doi.org/10.1108/S0733-558X\(2010\)000030A011](https://doi.org/10.1108/S0733-558X(2010)000030A011)> – visited on 2021-06-07
- Charles Perrow (2010) The Meltdown Was Not an Accident. In Lounsbury and Hirsch *Markets on Trial: The Economic Sociology of the U.S. Financial Crisis: Part A*, 309–330
- Marc Schneiberg and Tim Bartley (2010) Regulating or Redesigning Finance? Market Architectures, Normal Accidents, and Dilemmas of Regulatory Reform. In Lounsbury and Hirsch *Markets on Trial: The Economic Sociology of the U.S. Financial Crisis: Part A*, 281–307 <[https://www.emerald.com/insight/content/doi/10.1108/S0733-558X\(2010\)000030A013/full/html](https://www.emerald.com/insight/content/doi/10.1108/S0733-558X(2010)000030A013/full/html)> – visited on 2021-06-07

### Further

- Anke Müssig (2009) The Financial Crisis: Caused by Unpreventable or Organized Failures? *International Journal of Economic Sciences and Applied Research*. 2(1), 51–70
- Donald Palmer and Michael W. Maher (2010) The Mortgage Meltdown as Normal Accidental Wrongdoing. *Strategic Organization*. 8(1)February, 83–91 <<http://dx.doi.org/10.1177/1476127009355368>>. Publisher: SAGE Publications, ISSN 1476–1270

## 7/06/21: 04.1. Weapons (201 Pages)

- Gene I. Rochlin (1998) Chap. 7-11 In Rochlin *Trapped in the Net*, 108–209
- Stephanie Carvin (2017) *Normal Autonomous Accidents: What Happens When Killer Robots Fail?* Rochester, NY: Social Science Research Network SSRN Scholarly Paper ID 3161446, 32 pages <<https://papers.ssrn.com/abstract=3161446>> – visited on 2021-06-02
- Paul Scharre (2018) Chap. 9-12 in *Army of None: Autonomous Weapons and the Future of War*. W. W. Norton & Company, 143–202, ISBN 978-0-393-60899-1
- Zachary Kallenborn (2021) *Was a Flying Killer Robot Used in Libya? Quite Possibly*. May 20 Bulletin of the Atomic Scientists website <<https://thebulletin.org/2021/05/was-a-flying-killer-robot-used-in-libya-quite-possibly/>> – visited on 2021-06-02

### Further

- Chris C. Demchak (1996) Tailored Precision Armies in Fully Networked Battlespace: High Reliability Organizational Dilemmas in the ‘Information Age’. *Journal of Contingencies and Crisis Management*. 4(2)June, 93–103 <<http://dx.doi.org/10.1111/j.1468-5973.1996.tb00081.x>>, ISSN 1468–5973
- Ronald C. Arkin (2010) The Case for Ethical Autonomy in Unmanned Systems. *Journal of Military Ethics*. 9(4)December, 332–341 <<http://dx.doi.org/10.1080/15027570.2010.536402>>, ISSN 1502–7570, 1502–7589
- Eliezer Yudkowsky (2011) Artificial Intelligence as a Positive and Negative Factor in Global Risk. In Nick Bostrom and Milan M. Ćirković, editors *Global Catastrophic Risks*. Oxford University Press, ISBN 978-0-19-960650-4. chapter 15, 308–345
- Ian Kerr and Katie Szilagyi (2012) Asleep at the Switch. *How Lethal Autonomous Robots Become a Force Multiplier of Military Necessity*. Miami: University of Miami School of Law., 39
- Kenneth Anderson and Matthew C. Waxman (2013) *Law and Ethics for Autonomous Weapon Systems: Why a Ban Won’t Work and How the Laws of War Can*. Rochester, NY: Social Science Research Network SSRN Scholarly Paper ID 2250126, 33 pages <<http://papers.ssrn.com/abstract=2250126>> – visited on 2015-08-24
- Heather M. Roff (2014) The Strategic Robot Problem: Lethal Autonomous Weapons in War. *Journal of Military Ethics*. 13(3), 211–227 <<http://dx.doi.org/10.1080/15027570.2014.975010>>, ISSN 1502–7570
- Michael Horowitz and Paul Scharre (2015) *An Introduction to Autonomy in Weapon Systems*. February 13 <<http://www.cnas.org/intro-to-autonomy-in-weapon-systems>> – visited on 2015-08-24
- Heather M. Roff (2015) *Autonomous or ‘Semi’ Autonomous Weapons? A Distinction Without Difference*. January 16 Huffington Post <[http://www.huffingtonpost.com/heather-roff/autonomous-or-semi-autono\\_b\\_6487268.html](http://www.huffingtonpost.com/heather-roff/autonomous-or-semi-autono_b_6487268.html)> – visited on 2015-08-25
- Heather M. Roff (2015) *The International-Relations Argument Against Killer Robots*. August 19 Defense One <<http://www.defenseone.com/ideas/2015/08/international-relations-argument-against-killer-robots/119275/>> – visited on 2015-08-25
- Heather M. Roff (2015) Lethal Autonomous Weapons and Jus Ad Bellum Proportionality. *Case Western Reserve Journal of International Law*. 47(1)April, 37–52 <<http://scholarlycommons.law.case.edu/jil/vol47/iss1/7>>, ISSN 0008–7254
- Maciej Cegłowski (2016) *Superintelligence: The Idea That Eats Smart People*. October 29 <<https://idlewords.com/talks/superintelligence.htm>> – visited on 2020-01-03
- Paul Scharre (2016) *Autonomous Weapons and Operational Risk*. February Ethical Autonomy Project, Center for a New American Security
- Heather M. Roff (2019) Artificial Intelligence: Power to the People. *Ethics & International Affairs*. 33(2), 127–140 <<http://dx.doi.org/10.1017/S0892679419000121>>, ISSN 0892–6794, 1747–7093

## 7/13/21: 05.1. Flight (198 Pages)

- Charles Perrow (1999) Chap. 5 In Perrow *Normal Accidents*, 123–169
- Gene I. Rochlin, Todd R. La Porte, and Karelene H. Roberts (1987) The Self-Designing High Reliability Organization: Aircraft Carrier Flight Operations at Sea. *Naval War College Review*. 90Autumn, 76–90
- John Downer (2011) “737-Cabriolet”: The Limits of Knowledge and the Sociology of Inevitable Failure. *American Journal of Sociology*. 117(3)November, 725–762 <<http://dx.doi.org/10.1086/662383>>, ISSN 0002–9602

### 737 Max

- Dominic Gates (2019) *Flawed Analysis, Failed Oversight: How Boeing, FAA Certified the Suspect 737 MAX Flight Control System*. March 17 <<https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/>> – visited on 2019-10-06
- Posted 18 Apr 2019 GMT (2019) *How The Boeing 737 Max Disaster Looks To A Software Developer - IEEE Spectrum*. April 18 <<https://spectrum.ieee.org/aerospace/aviation/how-the-boeing-737-max-disaster-looks-to-a-software-developer>> – visited on 2019-10-06
- William Langewiesche (2019) What Really Brought Down the Boeing 737 Max? *The New York Times*. September 18, 29 <<https://www.nytimes.com/2019/09/18/magazine/boeing-737-max-crashes.html>> – visited on 2020-05-14, ISSN 0362–4331

*Air Canada 759*

- Admiral Cloudberg (2019) *The Near Crash of Air Canada Flight 759*. August 29 <<https://medium.com/@admiralcloudberg/the-near-crash-of-air-canada-flight-759-c61094867d45>> – visited on 2019-10-06  
*Air France 447*

- William Langewiesche (2014) The Human Factor. *Vanity Fair*. September 17, 26 <<https://www.vanityfair.com/news/business/2014/10/air-france-flight-447-crash>>

#### Further

- Gene I. Rochlin (1989) Informal Organizational Networking as a Crisis- Avoidance Strategy: US Naval Flight Operations as a Case Study. *Industrial Crisis Quarterly*. 3(2)June, 159–176 <<http://dx.doi.org/10.1177/108602668900300205>>, ISSN 0921–8106
- Jack Nicas et al. (2019) Boeing Built Deadly Assumptions Into 737 Max, Blind to a Late Design Change. *The New York Times*. June 1, 8 <<https://www.nytimes.com/2019/06/01/business/boeing-737-max-crash.html>> – visited on 2019-10-06, ISSN 0362–4331
- Matt Stoller (2019) *The Coming Boeing Bailout?* July 3 <<https://mattstoller.substack.com/p/the-coming-boeing-bailout>> – visited on 2019-09-27
- Maureen Tkacik (2019) Crash Course. *The New Republic*. September 18, 23 <[https://newrepublic.com/article/154944/boeing-737-max-investigation-indonesia-lion-air-ethiopian-airlines-managerial-revolution?utm\\_source=social&utm\\_medium=facebook&utm\\_campaign=sharebtn&fbclid=IwAR0qwegKGRLegi9FxsIgk\\_JJk5K3mMWoS8QuoWpG0\\_lqLi8R\\_JsUzTvscd](https://newrepublic.com/article/154944/boeing-737-max-investigation-indonesia-lion-air-ethiopian-airlines-managerial-revolution?utm_source=social&utm_medium=facebook&utm_campaign=sharebtn&fbclid=IwAR0qwegKGRLegi9FxsIgk_JJk5K3mMWoS8QuoWpG0_lqLi8R_JsUzTvscd)> – visited on 2019-09-26, ISSN 0028–6583

### 7/20/21: 06.1. Space (127 Pages)

- Charles Perrow (1999) Chap. Space Missions In Perrow *Normal Accidents*, 258–281

#### STS-107 Columbia

- Moshe Farjoun and William H. Starbuck (2005) Introduction and Synopsis. In Starbuck and Farjoun *Organization at the limit*, 3–18. OCLC: ocm58451736
- Diane Vaughan (2005) System Effects: On Slippery Slopes, Repeating Negative Patterns, and Learning from Mistake? In Starbuck and Farjoun *Organization at the limit*, 41–59. OCLC: ocm58451736
- Karlene H. Roberts, Peter M. Madsen, and Vinit M. Desai (2005) The Space between in Space Transportation: A Relational Analysis of the Failure of Sts-107. In Starbuck and Farjoun *Organization at the limit*, 81–97. OCLC: ocm58451736
- Karl E. Weick (2005) Making Sense of Blurred Images: Mindful Organizing in Mission Sts-107. In Starbuck and Farjoun *Organization at the limit*, 159–177. OCLC: ocm58451736

#### STS-51L Challenger

- Trevor J. Pinch (1991) How Do We Treat Technical Uncertainty in Systems Failure? The Case of the Space Shuttle Challenger. In Todd R. La Porte, editor *Social Responses to Large Technical Systems: Control or Anticipation*. Dordrecht: Springer Netherlands, NATO ASI Series <[https://doi.org/10.1007/978-94-011-3400-2\\_7](https://doi.org/10.1007/978-94-011-3400-2_7)> – visited on 2021-06-02, ISBN 978–94–011–3400–2, 143–158
- Karl E. Weick, Scott D. Sagan, and Karlene H. Roberts (1997) Book Review Symposium Review of the Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA. *Administrative Science Quarterly*. 42(2)June, 395–410 <<http://dx.doi.org/10.2307/2393925>>, ISSN 00018392

### 7/27/21: 07.1. Sea, The Future (171 Pages)

- Gene I. Rochlin (1998) Chap. 12 In Rochlin *Trapped in the Net*, 210–218
- Charles Perrow (1999) Chap. 6 In Perrow *Normal Accidents*, 170–231
- Charles Perrow (1999) Chap. 9 In Perrow *Normal Accidents*, 304–352

#### USS Fitzgerald

- T. Christian Miller, Megan Rose, and Robert Faturechi (2019) *The Inside Story of an American Warship Doomed by Its Own Navy*. February 6 ProPublica. Read online, PDF is only if you have no internet connection <<https://features.propublica.org/navy-accidents/uss-fitzgerald-destroyer-crash-crystal/>> – visited on 2019-10-06