FRS105
-The Science of Memory in Movies-

I. WHEN AND WHERE: Tuesday: 1:30pm to 4:20am
Location: PSH/PNI, Room 511

II. INSTRUCTOR: Alin Coman, Ph.D.
Peretsman-Scully Hall, Room 529
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Office hours: by appointment

III. COURSE DESCRIPTION/OVERVIEW:

Human memory is a topic of widespread scientific and popular interest. As part of this course we will use (and watch) popular movies about memory to answer several questions about this extraordinary function of the mind/brain.

Are our memories reliable? Watching Rashomon (1950, Dir. Kurosawa) will make us think twice about trusting our memories as accurate replicas of the past.

If memories are malleable, can we will ourselves to forget "uncomfortable" events from the past? Eternal Sunshine of the Spotless Mind (2004, Dir. Gondry) will illuminate the science behind directed forgetting and will prompt discussions about the neural mechanisms involved in memory and the ethics of memory engineering.

What would we be if we had no memory of the past? Movies that depict patients who suffer from brain lesions (Memento, 2000, Dir. Nolan) and Alzheimer's disease (Away from her, 2006, Dir. Polley) explore this possibility and will facilitate discussions of the relation between memory and identity.

We will answer these (and other) questions by reading and discussing scientific articles that investigate human memory. This course will expose you to the most up to date theories of memory as well as to recently developed methodologies designed to study it scientifically (e.g., neuroimaging, lesion studies, social network analysis).

IV. COURSE REQUIREMENTS

Readings/Movies

You are expected to attend all meetings and read the assigned readings. Both the popular science readings and the scientific readings are posted on Blackboard for you to download and read. You should complete the readings and submit your critical summary on the Monday before class.

Weekly movies/ papers

During the course of the semester we will watch 10 movies. After watching the movies, we will discuss the science behind the ideas captured in the movies. Each week you will submit a short critical reading summary of approximately two double-spaced pages on Blackboard (by 11:59 pm on Monday before the week's seminar). It is recommended that you integrate information across papers, movies, and weeks when composing your answers. Each paper should be titled using the following convention: Family Name _Week # (e.g. Smith_Week2).

V. GRADING: Grading is distributed as follows (details under *Evaluation*):

1) Class participation: 20%

2) Critical reading summaries: 30%

3) Midterm project (Film your own memory): 20%

4) Final paper (Movie Analysis): 30%

VII. THE MOVIE LIST: During the semester, we will watch 10 movies that contain accurate depictions of how memory works. For the final paper, you will be provided with an additional list of 8 movies and you will be asked to select one of the eight to write a paper about (details under *Evaluation*).

CLASS SCHEDULE

Week 1: TOPIC: Introduction to the science of memory in movies

No readings

Week 2: TOPIC: Memory flexibility

MOVIE: *Rashomon (Director: Akira Kurosawa; 88min)*

Popular science reading:

- Speak, Memory (Oliver Sacks): https://www.nybooks.com/articles/2013/02/21/speak-memory/

Scientific readings:

- Tversky, B, & Marsh, E. (2000). Biased retelling of events yield biased memories. *Cognitive Psychology, 40*, 1–38.
- Brown, R. & Kulik, J. (1977). Flashbulb memories. *Cognition*, *5* (1): 73–99.
- Talarico, J. M. & Rubin, D. C. (2003). Confidence, not consistency, characterizes flashbulb memories. *Psychological Science*, *14* (5): 455-461.

Week 3: TOPIC: Real-world consequences of memory flexibility

MOVIE: *The thin blue line (Director: Errol Morris; 103min)*

Popular science reading:

- False memories and false confessions: the psychology of imagined crime (Emma Bryce): https://www.wired.co.uk/article/false-memory-syndrome-false-confessions-memories

Scientific readings:

- Loftus, E (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. *Learning & Memory*, *12* (4): 361–366.
- Wade, K. A., Garry, M., Read, J. D., &Lindsay, D. S. (2002). A picture is worth a thousand lies: Using false photographs to create false childhood memories. *Psychonomic Bulletin & Review*, *9*, 597–603.
- Edelson, M. Sharot, T., Dolan, R.J., Dudai, Y. (2012). Following the crowd: brain substrates of long-term memory conformity, *Science, 333*(6038): 108–111.

Week 4: TOPIC: Memory consolidation/reconsolidation

MOVIE: *Eternal sunshine of the spotless mind* (*Director: Michel Gondry, 108min*)

Popular science reading:

- The Quest to Forget (Robin Marantz Henig): https://www.nytimes.com/2004/04/04/magazine/the-quest-to-forget.html

Scientific readings:

- Cahill L., Prins B., Weber M., and McGaugh J.L. (1994). Beta-adrenergic activation and memory for emotional events. *Nature, 371*:702–4.

- Reist C., Duffy J.G., Fujimoto K., et al. (2001). Beta-adrenergic blockade and emotional memory in PTSD. *International Journal of Neuropsychopharmacology, 4*:377–83.

- Brunet, A. Orr, S.P., Tremblay, J., Robertson, K., Nader, K., Pitman, R.K. (2008). Effect of post-retrieval propranolol on psycho-physiologic responding during subsequent script-driven traumatic imagery in post-traumatic stress disorder. *Journal of Psychiatric Research, 42*, 503–506.

Week 5: TOPIC: Memory and identity

MOVIE: *Afterlife (Director: Hirokazu Koreeda, 118min)*

Popular Science Readings:

- In a Perpetual Present (Erika Hayasaki): https://www.wired.com/2016/04/susie-mckinnon-autobiographical-memory-sdam/

Scientific readings:

- Rubin, D. C. & Schulkind, M. (1997). The distribution of autobiographical memories across the lifespan. *Memory & Cognition*. 25 (6): 859–866.

- Wagenaar, W. (1986). My memory: A study of autobiographical memory over six years. *Cognitive Psychology, 18*(2), 225-252

Week 6: Midterm presentations: "Film your own memory"

Week 7: SPRING BREAK (NO CLASS)

Week 8: TOPIC: Extraordinary memory

MOVIE: *Temple Grandin (Director: Mick Jackson, 107 min)*

Popular science reading:

- Total Recall: The People Who Never Forget (Linda Rodriguez McRobbie): https://www.theguardian.com/science/2017/feb/08/total-recall-the-people-who-never-forget

Scientific readings:

- Parker ES, Cahill L, McGaugh JL (2006). A case of unusual autobiographical remembering. *Neurocase*, *12* (1): 35–49.
- Yaro, C. & Ward, J. 2007). Searching for Shereshevskii: What is superior about the memory of synaesthetes? *The Quarterly Journal of Experimental Psychology*. **60** (5): 681–695.
- Simner, J., Mayo, N, & Spiller, M.J (2009). A foundation for savantism? Visuo-spatial synaesthetes present with cognitive benefits. *Cortex*. **45**: 1246–1260.

Week 9: TOPIC: Memory loss due to brain lesions

MOVIE: *Memento (Director: Christopher Nolan, 113min)*

Popular science reading:

- The Abyss: Music and Amnesia (Oliver Sacks): http://www.newyorker.com/reporting/2007/09/24/070924fa_fact_sacks

Scientific readings:

- Medved, M. I. and Hirst, W. 2006. Islands of memory: Autobiographical remembering in amnestics. *Memory, 14*: 276–288.
- Hassabis, D., Kumaran, D., Vann, S.D., Maguire, E.A. (2007). Patients with hippocampal amnesia cannot imagine new experiences. *Proceedings of the National Academy of Sciences, 104*: 1726-1731.
- Bechara, A., Damasio, H., Tranel, D., Damasio, A.R. (1997). Deciding advantageously before knowing the advantageous strategy. *Science, 275*: 1293–5.

Week 10: TOPIC: Memory loss in degenerative disorder

MOVIE: *Away from her (Director: Sarah Polley, 110min)*

Popular science reading:

- Patient Voices (Karen Barrow): https://www.nytimes.com/interactive/2017/well/patient-voices-alzheimers.html

Scientific readings:

- Guzmán-Vélez, E., Feinstein, J. S., & Tranel, D. (2014). Feelings without memory in Alzheimer disease. *Cognitive and Behavioral Neurology, 27*, 117-129.
- Addis, D. R. and Tippet, L. J. (2004). Memory of myself: Autobiographical memory and identity in Alzheimer's disease. *Memory, 12*, 1, 56-74.
- Addis, D. R., Sacchetti, D. C., Ally, B. A., Budson, A. E. and Schacter, D. L. 2009. Episodic simulation of future events is impaired in mild Alzheimer's disease. *Neuropsychologia, 47*: 2660–2671.

Week 11: TOPIC: The formation of collective memories

MOVIE: *Waltz with Bashir (Director: Ari Folman, 90min)*

Popular Science Reading:

- Who shot Mohammed al-Dura? (James Fallows) https://www.theatlantic.com/magazine/archive/2003/06/who-shot-mohammed-al-dura/302735/

Scientific readings:

- Schuman H. & Scott, J. (1989) Generations and Collective Memories. *American Sociological Review, 53*:785-793.
- Stone, C.B., Van der Haegen, A., Hirst, W., & Luminet, O. (2014). Personally relevant vs. nationally relevant memories: An intergenerational examination of World War II memories across and within Belgian French-speaking families. *JARMAC, 3*(4), 280-286.
- Coman, A., & Hirst, W. (2015). Relational motives and socially shared retrieval induced forgetting: The role of social group membership. *Journal of Experimental Psychology: General, 144, 717-722.*

Week 12: TOPIC: Propaganda and transmission of memory

MOVIE: *Whose is this song (Director: Adela Peeva, 70min)*

Popular Science Reading:

- The Word at War (Lynne Duke): http://www.washingtonpost.com/wp-dyn/content/article/2006/03/25/AR2006032500983.html?noredirect=on

Scientific readings:

- Hastorf, A. H., & Cantril, H. (1954). They saw a game; a case study. *The Journal of Abnormal and Social Psychology, 49*(1), 129-134.
- Svob, C. & Brown, N. R. (2012). Intergenerational transmission of the reminiscence bump and biographical conflict knowledge. *Psychological Science, 23*, 1404-1409.
- Berger, J. (2011). Arousal increases social transmission of information. *Psychological Science, 22(7)*: 891-893.

Week 13: Conclusion: bringing it all together

MOVIE: *La Jetee (Director: Chris Marker, 28min)*

No readings

VIII. EVALUATION

1) Class participation: 20%

2) Critical reading summaries: 30%

3) Midterm project (Film your own memory): 20%

4) Final paper (Movie Analysis): 30%

Class Participation Guidelines. Each week, during the second part of the class, we will have a discussion about the concepts presented in the movie or assigned readings. We will engage in discussions and critical analyses of these movies/readings, so please be prepared to present your ideas in class and have conversations with the other students about these ideas.

Reading Summary Guidelines. You will have to upload on Blackboard a critical reading summary of approximately 2 double-spaced pages in which you will briefly describe your ideas, thoughts, critiques based on the readings that you had to do for that week. Upload these reading summaries on Monday (by 11:59pm) before the class meets. These critical reading summaries have to contain a brief description of the main idea presented in the papers, but also a critical analysis on your part that attempts to either critique the investigation or expands the ideas presented in the paper.

Midterm Guidelines. For the midterm, you will engage in an artistic project that involves filming your own memory. As part of this project you will have flexibility in how to depict your memory. Some may choose to re-enact a memory from the past and record the reenactment with the help of friends/family (on available recording devices). Some others may choose to have conversations with other people involved in the experienced event in an attempt to collectively reconstruct the memory. Yet some others may choose to record an event as it is unfolding, and then attempt to recall the event, followed by a discussion of the differences/similarities between the event and the memory of the event.

You will have flexibility to decide how to film your own memory and even to go beyond these specific instructions as you do so. If you need to discuss your ideas, reach out to me to set up an appointment.

Final exam Guidelines. The final exam is in the form of a paper (10-12 double-spaced pages long) with the scientific analysis of a movie from the list below. To select the movie you want to write about, please read the description of the movie from specialized websites and, after watching it, look for scientific articles that you believe are relevant for the concepts presented in the movie. The paper should include at least 3 references (citations of academic journal articles, books or book chapters) that were not part of the reading list for the class. The paper is due on January 12, at 5pm.

NOTE: You may select a different movie from the ones in the list below to write about for your final paper, but you will need to secure my approval beforehand.

FINAL EXAM MOVIE LIST:

1. *Hiroshima, mon amour (Alain Resnais, 92 min.)*
2. *Stories we tell (Sarah Polley, 118 min.)*
3. *2046 (Wong Kar-wai, 129 min.)*
4. *Inception (Christopher Nolan, 148 min.)*
5. *Blade Runner (1982) (Ridley Scott, 117 min.)*
6. *Unknown White Male* (Rupert Murray, *88 min.*)
7. *Boyhood (Richard Linklater, 165 min.)*
8. *Inside Out (2015) (Pete Docter & Ronnie del Carmen, 95 min.)*