

Topic 1 • Science Literacy Movie Report (100,000 points)
PHYS-1060 (1) • Fall 2008

Purpose

Science Classes

As a student, you have received science and science related information from your teachers. Whether you believe it or not is up to you. But a professional has taken the time to determine what sorts of things are important to know and with how much detail, both for the purposes of the courses you are taking and for the more general purpose of “Science Literacy”, to help make you a better citizen and better able to function in our science & technology driven 21st Century.

How Will I Get Science Information in the Future?

For some of you, your courses at Western Michigan University may be the last time you will have the benefit of someone directing what science you are exposed to. So, what happens when you get to the “real world”? Well, you may be bombarded with information from all sorts of sources: your job, newspapers, magazines, books, television, radio, movies, the Internet, friends, conversations overheard while standing in line somewhere – you name it. What these methods may lack, though, is the control and expertise of your teachers. You can find all sorts of amazing information on the Internet, but you would have to be very naïve to believe 100% of *everything* you read there. Much of our news is dominated by politics, but how much science do our politicians know? At the moment, we have exactly one professional engineer and one physicist in the House of Representatives (both of these men are from Michigan – you *should* know who they are, but probably don’t), none in the Senate. Most of Congress is made up of lawyers. While there is nothing wrong with studying the Law *per se*, legal arguments do not follow the same rules and purposes of scientific arguments. Therefore there is nothing that requires an environmental cleanup bill, for example, to have anything to do with either the environment or cleaning it up. Likewise, the talking heads we get our news from on TV are not trained in science and technology for the most part. I don’t know what Tom Brokaw or Katie Couric majored in at college, but I can probably bet it wasn’t Physics. They may have, unlike you, been able to graduate from college without ever having had a Physics course. Even on the cable channels, one of the hosts of a computer show I used to watch is now doing a cable show on gardening – go figure.

So how will you evaluate information on your own? This is possibly something that you have never thought about, but Dr. Phil and other professionals have. Dr. Phil’s approach is to have you watch a movie and examine what you see and how it affects you, as well as whether you believe it. (You don’t have to.)

Dr. Phil’s Definition of Science Literacy

science literacy *n.* An exposure to science in a historical context that serves to allow a person to observe the world around them with understanding, deal with technological applications at home and work, appreciate the distinction between fact and speculation in the media and politics, have a working knowledge of numbers and the scale of the universe, and be able to pursue more information if desired, as a function of everyday life.

Philip Edward Kaldon, Fall 1995

Movies as a Source of Information

From all the sources listed in **How Will I Get Science Information in the Future?**, most are very difficult to evaluate. Dr. Phil can’t easily watch hours of VCR tapes or interview your friends along with every paper he reads to compare your impressions with the actual information being presented. So by narrowing the choices to a single medium – movies – we can have a little control and consistency between papers.

For more than ten years Dr. Phil has been building up a booklist of suitable books. Some of these have movies associated with them, which forms the basis of Dr. Phil’s new movielist of suitable science literacy movies. This version is primarily movies with a space, space travel or related theme.

The Assignment

1. Select a movie from the approved movielist. (Failure to use an approved movie is a 100,000 point penalty.) You can ask Dr. Phil about approving for a different movie.
2. View the movie, paying particular attention to how science and technology are portrayed, as well as space and space travel (as appropriate). If you chose a mini-series, you should watch at least two episodes.
3. Consider what you may have learned that was new to you, whether you believe it to be accurate or whether you feel that the science issues were well explained. Remember that this is an assignment on science and technical literacy, so what you already know (or don’t know) is important.
4. Write an opinion paper answering the Four Questions: (1) Tell us something about yourself and your background. (2) Tell us why you chose this particular movie and what you knew about the movie or what the movie was about beforehand. (3) Discuss the science literacy issues, especially about how science and technology are portrayed, as well as space and space travel (as appropriate). (see parts 2 and 3 above). (4) Would you recommend this movie to friends or fellows students for entertainment, science literacy or just to laugh at the ineptness of Hollywood?
5. The paper should have a MINIMUM of 4 complete pages, without padding to make it 4 pages.
6. Paper should have 1” margins all around.
7. Use a Courier font (Courier New in Windows), 12 point, double-spaced, one TAB or five spaces to start each paragraph.
8. NO extra lines between paragraphs. NO breaking up pages to answer the Four Questions. NO headers or repeating each of the Four Questions just to pad out the paper.
9. Single, simple cover sheet, with the title of the movie centered in the middle of the cover sheet, with Your Name, PHYS-1060, Date arranged in the lower right of the cover sheet. Oh, and one staple in the upper left-hand corner. No report covers.
10. Dr. Phil is expecting that a “B” paper will satisfy the above requirements. Exceptional papers will be rewarded; problems will be deducted.
11. Papers will be accepted during the last week of class, **December 1-5, 2008**. *This is a change from the Syllabus, as I’ve been taking time to redesign this assignment especially for PHYS-1060.*
12. Late papers will drop an additional letter grade (10,000 points) per calendar day, starting after 5pm at the end of the Grace Period.
13. Papers are due at the start of class, or can be dropped off in Dr. Phil’s mailbox at the Physics Dept. office *by 5pm on the due dates listed below.*

NOTE: there is no problem with many people writing their papers on the same movie. You do not have to get approval from Dr. Phil for a movie already on the list.

Movies (some good, some great, some not-so-great):

- **October Sky (1999)**
- **The Right Stuff (1983)**
- **Apollo 13 (1995)**
- **Countdown (1968)**
- **2001: A Space Odyssey (1968)**
- **2010: Odyssey 2 (1984)**
- **Red Planet (2000)**
- **Mission to Mars (2000)**
- **Capricorn One (1978)**
- **Armageddon (1998)**
- **Deep Impact (1998)**
- **Sunshine (2007)**
- **Contact (1997)**
- **The Dish (2000)**
- **Forbidden Planet (1956)**
- **Pitch Black (2000)**
- **Starship Troopers (1997)**
- **Space Cowboys (2000)**
- **Event Horizon (1997)**
- **Space Station 3D (2002)**
- **The Astronaut Farmer (2006)**
- **Marooned (1969)**

Mini-Series (view an episode or two):

- **From the Earth to the Moon (1998)**
- **Oppenheimer (1980)**
- **When We Left Earth: The NASA Missions (2008)**
- **Cosmos (1980)**

DISNEY (could be pretty bad, but will be seen by many people):

- **The Black Hole (1979)**
- **Fly Me To The Moon (2008)**
- **Space Chimps (2008)**

PHYS-1060 (1) (Kaldon)
Western Michigan University
Movielist With Comments—Fall 2008—In Progress

The Right Stuff (1983) Sam Shepard, Scott Glenn, Ed Harris, Dennis Quaid • Long and corny, but somehow carries off feeling of the right stuff. Huge difference in feel from *Apollo 13* actually feels right, too.

Apollo 13 (1995) Tom Hanks, Bill Paxton, Kevin Bacon, Gary Sinise, Ed Harris • In years to come you will see the scenes from this movie instead of the original NASA recordings because they look more real.

2001: A Space Odyssey (1968) • One of the great SF and Stanley Kubrick movies of all time, but long and very deliberate (i.e. slow). A good friend of mine loves the movie but has never managed to stay awake through the whole thing in one sitting. The special effects in this movie made *Star Trek*, *Star Wars* and Industrial Light and Magic all possible, to say nothing of having better apes than *Planet of the Apes*.

2010: Odyssey 2 (1984) Roy Scheider, Helen Mirren, John Lithgow • I would be curious to know what people think to see the movie before reading the book. My guess is that parts of the story are hard to follow. Those who have seen the movie second that I know tend to like the movie better. There are many great images in this movie, as well as some terrific quotable lines. You'd never know that Helen Mirren is a British actress with her wonderful Russian accent. Though Roy Scheider in no way resembles William Sylvester in the first film, the sixteen years between films is much more the story here – sterile NASA gives way to much more lively US/Soviet détente.

October Sky (1999) Laura Dern • As is typical, compressed from the book rather than a docudrama, but very good. One of the real sleeper movies of early 1999 was *October Sky*, based on this real-life story of a kid who goes from a dead-end future in the West Virginia coal mines to building model rockets with some friends – to getting serious about rocketry and eventually working with the Big Toys that NASA operates. For most of us, the era of Sputnik is as foreign as living in a company town in the middle of nowhere.

Contact (1997) Jodie Foster, Tom Skeritt, Matthew McConaughey • Terrific view of how radio astronomers work, and the excitement of discovery. And how we know what we know. (Also some of the worst simulated zero-gee floating ever filmed.) But for me, this movie is a fave. On a big screen with Dolby™ sound, you really believe that you are standing over that mammoth rotating machine.

For Movie Fans and Serious Science Students Who Want to Rip a Movie That Wastes a Great Cast...

Sphere () How did Dustin Hoffman get in a dumb movie? Based on a Michael Crichton bestseller, this movie goes into deep undersea to discover – a spaceship which shouldn't be there. More Psychology than Physics, it is at least unusual. And deep sea living has some intriguing counterpoints to living in space.

--or--

Event Horizon () What should've been an interesting mystery about a starship which returned from a long voyage eventually deteriorates into a horrific bloodbath, wasting a fine cast. Before it gets stupid, though, it does raise some interesting issues.

--or--

Wing Commander () A lot of movies based on video games come out really bad. In this case, they take a fairly good cast of European veteran character actors, and throw them of the airlock – *Wing Commander* keeps on trying to emulate a naval war movie, but which one? Ships under sails firing broadsides at each other? WW II aircraft carriers? WW II submarine movies? Not only plot, but Physics gets lost in this turkey.

Starship Troopers (1997) Caspen Van Diem, Dina Meyer • Robert Heinlein was one of the deans of 1950s and 1960s SF. His early stuff is classic, his later stuff is epic – and very strange. *Starship Troopers* is classic Heinlein, but I was real surprised when they decided to turn it into a movie. Amazingly, Heinlein's odd concept of a future of citizen soldiers, with a rather fascist central government, survives partially intact. And the "bugs" that are out to destroy humanity – they are tough and hard to kill. Oh sure, there are some plot flaws you could drive a battle fleet through and science is sometimes tossed out the window, but as a real gung-ho war movie it is visually stunning, fast paced and exciting. And there's plenty of fodder to praise and shred for your paper, especially with Armor as the book part of the assignment. Oh, and don't ask about using Heinlein's original book for your comparison.

Some More Space Related:

Red Planet

Mission to Mars

Countdown (1968) James Caan, Robert Duvall • Somehow I never saw this early Robert Altman film until recently.

**Engineering and Beyond:
Is This Science?**

Armageddon

Deep Impact

Documentaries

Space Station (IMAX) (2005) narrated by Tom Cruise • Though the DVD won't give you the wonders of the IMAX 3D version, which is the closest most of us will ever get to actually going into space, this is actually still a pretty good visual documentary about the construction of the International Space Station.

From the Earth to the Moon (1998) Tom Hanks produced this after doing Apollo 13. It has many parts – you wouldn't have to do all the parts.