Learning to “Parse” Information

Evaluating what you read in this context is very much in line with definition 3 of the verb parse:

parse (pars) verb

parsed, parsing, parses verb, transitive
1. To break (a sentence) down into its component parts of speech with an explanation of the form, function, and syntactical relationship of each part.
2. To describe (a word) by stating its part of speech, form, and syntactical relationships in a sentence.
3. To examine closely or subject to detailed analysis, especially by breaking up into components. “What are we missing by parsing the behavior of chimpanzees into the conventional categories recognized largely from our own behavior?” (Stephen Jay Gould).
4. Computer Science. To analyze or separate (input, for example) into more easily processed components. Used of software.

verb, intransitive

To admit of being parsed: sentences that do not parse easily.

[Probably from Middle English pars, part of speech, from Latin pars (dative), part (of speech).]

Source: Microsoft Bookshelf ’95 (American Heritage Dictionary of the English Language (Third Edition))
and so end up talking about the “Physics of taking someone’s blood pressure”. While the use of a sphygmomanometer is rather fascinating, even Michael Crichton isn’t likely to spend much time to reveal any information about its use in the pages of one of his technothrillers.

The Assignment

- Select a book from the “approved booklist” or get approval for a different title from Dr. Phil.
- You should not read a book that you have already read, it only makes the assignment harder. You may find that a book you are already reading for another class may be acceptable.
- Failure to read an approved book is a 100,000 point penalty.
- If you have ever had Dr. Phil before and you read any of the best-seller type books (Crichton, Clancy), you must read a “serious” book for this book report. Failure to comply with this rule will result in an 80,000 point penalty. If you try to submit a report on the same book that you have read for Dr. Phil before, there will be a 100,000 point penalty. This is a science literacy assignment after all, so we want you to learn something new.
- Book titles can be reported in a space provided on the first and second exams. If you don’t have a book title in mind, or you don’t remember it, you can leave the space blank. This is partly so Dr. Phil can see what people are doing and partly to remind you of this assignment. But it is not required.
- Read the book, especially with an eye as to how science is portrayed, 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.
- Each book in the booklist has a brief description of some points that Dr. Phil came up with. You do not have to agree with Dr. Phil. This is an opinion paper and your opinion matters. Personal anecdotes that tie in with what you have read are appreciated.
- This assignment is not just about Physics. This booklist is about science, engineering, technology, computers and the history, application, ethics, morality, and understanding of it all. So the paper is about this, too. To simply rate the book based on the “Physics” may be to miss the entire point – or in this case, a good chunk of the 100,000 points.
- Write a 4 to 5 page report, typed, double-spaced and a single simple cover sheet, on what you read, paying attention to the assignment. You can write more if you feel you need to, but more will not translate automatically into a higher grade. Good grammar and spelling are expected. Standard Format.
- OR If you want to write a paper comparing and contrasting a book with the movie version of the book, in the context of the assignment, you can expand the page count to 7 to 8 pages. (There is no extra credit for doing this, but sometimes it can be fun to really tear into both movie and book.)
- Dr. Phil is expecting that a “B” paper will satisfy the above requirements. Exceptional papers will be rewarded; problems will be deducted.
- Late papers will drop an additional letter grade (10,000 points) per calendar day, starting after 5pm at the end of the Grade Period.
- 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: The most popular books, i.e. the ones Dr. Phil has read the most papers on, have been written by Michael Crichton (The Andromeda Strain, Five Patients, The Terminal Man, Congo, Jurassic Park, Airframe and Timeline) and Tom Clancy (The Hunt for Red October and The Sum of All Fears). They wouldn’t be popular (and rich) authors or have their stories turned into hit movies unless their writings were a lot of fun. Now not all of these nine books may be authorized for this particular seminar, and no other Crichton or Clancy books will be approved, so don’t bother asking. But despite the fact that they show up in a lot of papers, there is no problem with many people writing their papers on the same book.

Content

This is an Opinion Paper

For many of the papers you may have written in high school or college, they have not wanted you to have or express your own opinions. But this is exactly what we want here – Dr. Phil wants to know what you think, whether you liked the book, etc.

It is All Right to use “I”

Unlike some college papers, it is not necessary to write in a formal style. Since this is an opinion paper, it is okay – even encouraged – to say that “I think that…”.

This is Not a Fourth Grade Book Report

Back when you were a kid, most book reports consisted of “I read Book X. This happened and then this happened and then this happened.” Such a report really ends up being just a discussion of the plot. The problem with this is three-fold: (1) Dr. Phil has already read your book, so he knows how the plot goes. (2) Writers like Michael Crichton and Stephen Hawking are best-selling authors because they get paid more than you do to write – they’re better at it. Why would Dr. Phil want to read your version of The Andromeda Strain when he can read the book? (3) Just replaying the plot of a novel or a list of topics covered in a non-fiction book or the events in a scientist’s life in a biography does not involve any analyzing of the subject. It is this analysis – thinking about what you just read, thinking about what you already knew and what you have learned – that is the heart and soul of this science literacy assignment.

You Can Be as Serious or as Light as You Choose

Some of the books are more serious in tone than others. Several of the books regard rather controversial topics. You are free to avoid them. One semester a student asked if they could write their paper as if they were writing a letter to someone and talking about their experience. Sure – as a writing technique it’s sort of a crutch, but it got the job done. Others have taken a more humorous tone, or have gotten hostile or offended. Just remember that you should be able to justify your comments. What is Dr. Phil thinking when you make a paper that says the book didn’t do anything for them and it was boring and too technical after Chapter Four, and then in conclusion they said it was a great book and they’d recommend it to anyone?

You Do Not Have to Agree With Dr. Phil

Most of these books are on the list because Dr. Phil likes them and they cover some subject areas that should make for good papers. However, everyone’s experiences and preferences are different. Very few people in the world are Physicists or Physics teachers, and there are certainly very few Dr. Phil’s in this world. So it would be surprising if you responded to every book the same way as Dr. Phil did – especially since a good chunk of the book list was read a long time ago when he was a kid and not a Ph.D. Physicist. Since Dr. Phil asks for your opinion, you are free to give it. You hate the book. You can hate the assignment. You can decide that you didn’t learn a thing from the book. Fine. Great. Wonderful. Now just write it up. Give examples, be specific. Some of the very best papers in a particular semester have come from the same book where the students reach completely opposite conclusions.

Suggestions

The following are suggestions for ways to start your paper (or start thinking about your paper) if you are stuck.

- Why Did I Choose This Book?
- For some, the reason might be as simple as “it was the only book I could find”. If you were a college student in 1903, you would’ve already read a lot of books and would be reading many more. In 2007, you can go to college and avoid reading books. So everyone’s experience is different. Just be honest.
- What Did I Know (Or Not Know) Before I Read This Book?
- What such a report really ends up being is just a discussion of the plot. The problem with this is three-fold: (1) Dr. Phil has already read your book, so he knows how the plot goes. (2) Writers like Michael Crichton and Stephen Hawking are best-selling authors because they get paid more than you do to write – they’re better at it. Why would Dr. Phil want to read your version of The Andromeda Strain when he can read the book? (3) Just replaying the plot of a novel or a list of topics covered in a non-fiction book or the events in a scientist’s life in a biography does not involve any analyzing of the subject. It is this analysis – thinking about what you just read, thinking about what you already knew and what you have learned – that is the heart and soul of this science literacy assignment.

You Can Be as Serious or as Light as You Choose

Some of the books are more serious in tone than others. Several of the books regard rather controversial topics. You are free to avoid them. One semester a student asked if they could write their paper as if they were writing a letter to someone and talking about their experience. Sure – as a writing technique it’s sort of a crutch, but it got the job done. Others have taken a more humorous tone, or have gotten hostile or offended. Just remember that you should be able to justify your comments. What is Dr. Phil thinking when you make a paper that says the book didn’t do anything for them and it was boring and too technical after Chapter Four, and then in conclusion they said it was a great book and they’d recommend it to anyone?

You Do Not Have to Agree With Dr. Phil

Most of these books are on the list because Dr. Phil likes them and they cover some subject areas that should make for good papers. However, everyone’s experiences and preferences are different. Very few people in the world are Physicists or Physics teachers, and there are certainly very few Dr. Phil’s in this world. So it would be surprising if you responded to every book the same way as Dr. Phil did – especially since a good chunk of the book list was read a long time ago when he was a kid and not a Ph.D. Physicist. Since Dr. Phil asks for your opinion, you are free to give it. You hate the book. You can hate the assignment. You can decide that you didn’t learn a thing from the book. Fine. Great. Wonderful. Now just write it up. Give examples, be specific. Some of the very best papers in a particular semester have come from the same book where the students reach completely opposite conclusions.

Suggestions

The following are suggestions for ways to start your paper (or start thinking about your paper) if you are stuck.

- Why Did I Choose This Book?
- For some, the reason might be as simple as “it was the only book I could find”. If you were a college student in 1903, you would’ve already read a lot of books and would be reading many more. In 2007, you can go to college and avoid reading books. So everyone’s experience is different. Just be honest.
- What Did I Know (Or Not Know) Before I Read This Book?
- When you sit down to read a book, there is a lot of stuff that you bring to the table with you – this includes what you have learned in school, your life experiences, all the other books you have read in
your life, many hours of watching TV & movies and what you are interested in doing. These are some of the things that will affect how you react to a book and these are some of the things that Dr. Phil would like to know about you, in order to understand your responses.

· What Did I Learn (Or Not Learn) From Reading This Book?
Remember, although you might need to discuss a plot point to explain something, your paper is not about what happened in the book, it is how you reacted to what happened. When we watch a play or a movie or read a novel or play a video game, we often engage in “a willing suspension of disbelief” in order to be entertained. Most people don’t really believe in wizards casting magic spells or the plots in James Bond movies or think that there really is a Darth Vader in a black helmet and cape that can use The Dark Side of the Force, or that terrorists set off a nuclear bomb at a Super Bowl game in Denver. But going along with the author is something we do to be entertained. Now, if you don’t buy it, you aren’t going to like it – we need to know this. If you don’t think that we really sent astronauts to the Moon (and some people don’t), then that will affect how you view any book about space travel. See how this ties in with the previous topic?

· Pick 2 or 3 Good Examples
This is a 4 to 5 page paper. You don’t have time to discuss every one of the topics/chapters in Stephen Hawking’s A Brief History of Time – so you can’t. A rule of thumb might be about a page for your introductions, a page each for two or three good examples and a page of conclusions.

Provided you follow the assignment – you’ve got your four or five pages.

· Conclusion
You really do have to wrap up your paper. After all, the premise is that books are one way that you might learn something about or improve your science literacy, so did you learn anything? Or did you read something that supported what you already knew? How does this assignment or this book affect your “world view”? Would you recommend this book to your friends? … to other students?

Draft Review (Optional = NOT Required)
If you wish, you may submit a typed, draft copy of your paper at least one week before it is due. Dr. Phil will take a quick read and look for (1) basic mechanical flaws and structural problems in your paper and (2) how your paper fits in with the concept of science literacy and the purpose of the actual assignment. In return, the clock stops while Dr. Phil has your paper – if Dr. Phil has your paper for two days, then you add two days to your due dates, etc. The draft will not be graded and the submission of a draft is not required. If you choose to use this option, you must turn in your draft with your final paper – if you don’t, then your final paper won’t be graded. This is to keep Dr. Phil from going nuts “as I experience major deja vu from thinking that I already had made a comment about some aspect”. (Please note that the phrase “rough draft” is never used, which should suggest that the draft be fairly complete as a paper. This is just a free shot before it counts. What could be fairer?)

Please note: If you choose a non-booklist but approved book, you MUST submit a Draft.

Structure – Standard Format
Most of You Will Use Word Processing Software Rather Than Typing
The assignment describes a “typed” paper, but very few of you will actually use a real typewriter. In fact, most of you will use some version of Microsoft Word, on either a Windows PC or a Macintosh.

4 to 5 Pages, Double-Spaced, 1” Margins All Around
The goal here is uniformity of papers for everyone, as well as ease of reading for Dr. Phil.

Left Justified, Ragged Right Margins, Standard Indent for Each New Paragraph
This produces a clean left side of the page and is the easiest to read. Turning on “Justify” also lines up the right side of the page, but does so by inserting extra spaces in each line to pad them. This is fine for magazine and book publishing, where they have more control and different rules than you do, but in a paper it makes each line jerky to read and incredibly annoying. Each paragraph should be indented with either a Tab or alternately five spaces. Do not put blank lines between paragraphs – that’s padding.

Readable Font (Courier 12, Courier New 12, Dark Courier 11 – ONLY ALLOWED Fonts)
One thing Dr. Phil learned at the 2004 Clarion workshop was how much easier it is to read 115 papers when they are all in Standard Format. Now the standard will vary from professor to professor, industry to industry, but it is important to follow the rules. Since papers used to be “typed”, a typical standard font in college is COURIER – a non-proportional font that resembles typewriter print. Courier 12 point is large and easy to read, and it is readily available in some form for all printers using Windows, MacOS, Linux. Most Windows computers use TrueType fonts (TTF), and there the standard is Courier New 12 point. However, Courier New is a little bit “thin” on a laser printer and isn’t nearly as dark as the Courier font on the original HP LaserJet printer from over twenty years ago. Turns out there is a “fix”. Hewlett-Packard has a free TTF font called Dark Courier which is, well, darker. Unfortunately it isn’t quite as clean on your screen, but it does print nicely on laser printers. (And if you ever have to make copies, Dark Courier photocopies much more clearly than Courier New.) You can use any of the regular Courier “family” of fonts for your paper. Using Arial, Times New Roman, Old Dreadful Number 7, etc., will be penalized.

Dark Courier is available from a lot of places, but if you get it from HP’s Tech Support, then you know it will be “clean.” Unfortunately the URL is really long and nasty – I’ll put it on the website when I get a chance. The fastest way to find it is to Google: hp dark courier ttf. The first hit should be HP’s Business Tech Support. Sorry, I don’t know if you can install these fonts under MacOS.

NOTE: There is no requirement that you “write” your paper in Courier/Courier New/Dark Courier – only that you PRINT it out this way. Dr. Phil usually writes his fiction in “prettier” fonts like Garamond 14, Bok Antiqua 12, Bookman Old Style 12 and Century Schoolbook – then converts to Courier New or Dark Courier at printing.

Structure – Standard Format

Most of You Will Use Word Processing Software Rather Than Typing
The assignment describes a “typed” paper, but very few of you will actually use a real typewriter. In fact, most of you will use some version of Microsoft Word, on either a Windows PC or a Macintosh.

4 to 5 Pages, Double-Spaced, 1” Margins All Around
The goal here is uniformity of papers for everyone, as well as ease of reading for Dr. Phil.

Left Justified, Ragged Right Margins, Standard Indent for Each New Paragraph
This produces a clean left side of the page and is the easiest to read. Turning on “Justify” also lines up the right side of the page, but does so by inserting extra spaces in each line to pad them. This is fine for magazine and book publishing, where they have more control and different rules than you do, but in a paper it makes each line jerky to read and incredibly annoying. Each paragraph should be indented with either a Tab or alternately five spaces. Do not put blank lines between paragraphs – that’s padding.

Readable Font (Courier 12, Courier New 12, Dark Courier 11 – ONLY ALLOWED Fonts)
One thing Dr. Phil learned at the 2004 Clarion workshop was how much easier it is to read 115 papers when they are all in Standard Format. Now the standard will vary from professor to professor, industry to industry, but it is important to follow the rules. Since papers used to be “typed”, a typical standard font in college is COURIER – a non-proportional font that resembles typewriter print. Courier 12 point is large and easy to read, and it is readily available in some form for all printers using Windows, MacOS, Linux. Most Windows computers use TrueType fonts (TTF), and there the standard is Courier New 12 point. However, Courier New is a little bit “thin” on a laser printer and isn’t nearly as dark as the Courier font on the original HP LaserJet printer from over twenty years ago. Turns out there is a “fix”. Hewlett-Packard has a free TTF font called Dark Courier which is, well, darker. Unfortunately it isn’t quite as clean on your screen, but it does print nicely on laser printers. (And if you ever have to make copies, Dark Courier photocopies much more clearly than Courier New.) You can use any of the regular Courier “family” of fonts for your paper. Using Arial, Times New Roman, Old Dreadful Number 7, etc., will be penalized.

Dark Courier is available from a lot of places, but if you get it from HP’s Tech Support, then you know it will be “clean.” Unfortunately the URL is really long and nasty – I’ll put it on the website when I get a chance. The fastest way to find it is to Google: hp dark courier ttf. The first hit should be HP’s Business Tech Support. Sorry, I don’t know if you can install these fonts under MacOS.

NOTE: Handout may be reduced in size. Fonts may not display on the web page.

Spelling
Nearly all word processors contain some sort of Spell Checker. Use it. But you must know that computers, like calculators, are basically stupid machines. A spell checker cannot tell the difference between two, to, too or They – all of which are pronounced the same. Word choice in English is very specific. Misspellings, especially, of the author’s name (or Dr. Phil’s name), looks sloppy, as if the paper was written at the last minute and/or without any care.

Grammar
Reasonable grammar is expected in a college paper. This requirement is loosened slightly in some papers, because some students are not native English speakers and some papers may be written in a casual, often first-person style. However, your paper is supposed to be read – if your meaning isn’t clear or your sentences don’t make sense, your paper’s grade will suffer. Microsoft Word and other modern word processors may have a Grammar Checker feature, but unlike a Spell Checker, Grammar Checkers do not work very well and only find some sorts of errors. They work best with certain types of documents, such as company memos, in order to give all company documents that same “feel”. Your best bet is to proofread your paper for readability. But even among good writers, it can be very hard to proofread your own work. So you can (1) get a friend to read over your paper and see if they understand it or (2) go to the Academic Skills Center and have someone there go over your paper with you.

Additional Information
Sometimes students go beyond the book, by looking up topics in the dictionary or encyclopedia, or going to the Web and searching the Internet. This is NOT required. But some students get enthusiastic about what they have read and want to know more. So you may use additional sources, but don’t use them as ways to pad your page count and cut down on how much you have to write. Additional sources and additional information go on additional pages.
No Need For Footnotes
Again, this is not a formal paper in the sense of many other college papers. It is not required that you footnote, or even give page numbers, for every point that you make or quote (or phrase) you use from the book.

Four to Five Pages
Please make a note that “4 to 5 pages” does NOT mean that 3½ pages is “sufficient”. It is not. Dr. Phil interprets “4 to 5 pages” to mean FOUR FULL PAGES PLUS YOU MAY BE GOING ONTO THE FIFTH PAGE. You can write more than five pages, but there is no automatic reward for doing so. Some people, like Dr. Phil, just write “long”.

Padding Stunts
There are all kinds of “tricks” you could employ to try to make those four pages without writing four pages. But since . . . want to include a long quote from your book, the proper way to include a long quote of more than two lines on a page is to single-space the quote, so that it is (a) set off, (b) easily showing that it is a quote and not your writing and (c) so that it does not take up an excessive amount of space. Sorry.

Dr. Phil has in the past received papers with 3” top and bottom margins and 2” side margins. This leaves a typing area of only 4 1/2” by 5”, coupled with a 14 point or 16 point font, and even a four page paper under these printing conditions contains almost no text. Hardly seems fair to everyone else.

It’s the worst phrase in the world for the Y2K7 student, already struggling to get to work and maintain a home life: “And there will be a paper due…”

So Just What Do You Mean By A “College Paper”?
A college paper is a reflection on you as a student, both in appearance and the quality of the work. It is expected that the writing assignments will be handled in a competent, serious and professional manner. To that end, a college-level paper by Dr. Phil’s definition contains the following non-negotiable elements:

• Typed (word processed), double-spaced
• Margins: 1” all around
• Page numbers (by hand is acceptable)
• Single, simple cover sheet
• Readable standard Courier font/typeface
• Good spelling
• Reasonably clean and proofread grammar
• Stapled in upper left-hand corner
• SINGLE-SIDED ONLY!

The Seven Statements
If you ask Dr. Phil what he wants in a paper or how to start, this is what he will tell you:
(1) Do not spend the whole paper summarizing the plot (assume Dr. Phil has read the book – he has) and
(2) Do not cheat and just rent the movie instead of reading the book (assume Dr. Phil has seen all the movies – he has – 90,000 point penalty) (see the assignment for restrictions on movie comments),
(3) You might want to explain how you chose this book (sometimes it’s because it was the only one the library still had),
(4) when you sit down to read a book, you always bring something to the table, even if you know nothing about the subject, or have never read any science fiction or whatever – it is this stuff, what you already knew, that is part of what Dr. Phil would like to know about, plus …
(5) what you learned or did not learn from the book. If fiction, you might tell why you believed the author – or did not. If non-fiction, whether the author was understandable.
(6) Give a couple of examples to show me that you read the book, but you won’t be able to talk about everything. Again: DO NOT SUMMARIZE THE BOOK’S PLOT BEYOND 2 SENTENCES!
(7) Any kind of personal story or anecdote or current events that connects with your book is super.

This paper is not about PHYSICS, but about SCIENCE LITERACY (Sciences – including Physics, Engineering, Technology, Computers, and the Morality and Ethics Involved in using same).

Due Dates
PHYS-1070
Topic 1 – A Science Literacy Book Report
Due Thursday 14 June 2007 at 5pm
Grade Period Ends: Monday 18 Jun. at 5pm

PHYS-1070
Topic 1 – A Science Literacy Book Report
Due Thursday 16 November 2006 at 5pm
Grade Period Ends: Monday 20 Nov. at 5pm

The Grace Period Means You Can Turn In Your Paper on Thursday, Friday or Monday, as You Choose. If you submitted a Draft Paper to Dr. Phil, you must include the Draft with your Final Paper. NOTE: Watch Out For Exam 3

MANDATORY DEDUCTIONS FOR FAILURE TO COMPLY WITH THESE PERFECTLY REASONABLE RULES.
NOTE: Given that printing and typing are not always carefree processes, if you find that the printer does not line up properly or is otherwise giving you trouble at the last minute, write "Printer Trouble" on the back of the last page and very briefly describe your troubles; this lets Dr. Phil know that you were under duress and wouldn’t normally turn in a bad looking paper. You can then drop off a cleanly printed copy of the paper after the deadline, if one is required. PLEASE! Keep copies of your paper on two floppies.

IF YOU USE A REAL TYPEWRITER, then spell checking and corrections are not automatic. Make sure, however, that you go over typed papers and make minor corrections with a pencil.

IF YOU DON’T CARE ABOUT YOUR PAPER, WHY SHOULD DR. PHIL?
A Writing Sample

**U-571** is about an American submarine that is sent out on a mission to infiltrate a wounded German U-boat and take its Enigma machine and codebook. The Enigma is the coding machine that the Germans used to keep their messages secret from the Allies. To not get one was to guarantee failure. Anyway, soon after the boarding crew grabs the machine, the American sub sinks and the Americans are stuck on a wounded U-boat. The movie is about what happens to them as they try to get back to America alive with the machine. I really liked the movie and even though I don't know how submarines work, the sub in **U-571** definitely appeared realistic. The actors looked as though they had been trained in the Navy. It had excitement, adventure and tension. My one gripe is that you never get to know the characters. I mean, you how they act and how they feel at any particular moment, but you never really know them. Even though I didn't like that, I think that wasn't as important to the plot when the screenwriters wrote it. I think that what they did want to convey is what makes a captain a captain, because a lot of the movie is the lieutenant's conflict over whether he would sacrifice a crew member or save the rest of them. Overall, this is an exceptionally good movie.

Chris Molnar, age 12
Sylvan Christian School
The Grand Rapids Press
Friday, 28 April 2000
The Weekend p. 31

This Example Typed in Microsoft Word 95/7.0c, with 1" margins, double-spaced and with the Dark Courier 11-point font, printed on a Hewlett-Packard LaserJet 4ML printer. It is likely to be reduced to half-size in your actual handout.

So what does a paper for Dr. Phil look like? I've avoided simply copying what an "A" paper looks like, because then I'll just get 25 to 100 papers just like that. But to some extent, it looks a lot like what this young movie reviewer has done regarding the Spring 2000 movie **U-571**. Now obviously this is a lot shorter than your assignment and Mr. Molnar's agenda was very different than yours – he was a kid reviewing a movie for a newspaper. But in a little over half a page, Mr. Molnar has given a brief description of the plot of the story, identified that he doesn't know a lot about submarines but that he felt that what was presented was believable, and that the characters, while not well-rounded, behaved in a believable manner. Now explain how you picked this particular book to read, add a few pages talking about what you know or don't know about the science, engineering or computer technology (or the morality and ethics of using same) in the book you are reading, and then you'll have a Dr. Phil book report. More or less.

**THIS IS WHAT THE BOOKLIST (PAGES 12-26) LOOKS LIKE:**

1. **Frankenstein: A Modern Prometheus** / Mary Shelley
2. **Surely You’re Joking, Mr. Feynman**
3. What Do You Care What Other People Think? by Richard Feynman
4. The Grand Rapids Press
5. First Up
6. **The Double Helix** / James D. Watson
7. Rosalind Franklin and DNA / Anne Sayre
8. What Mad Pursuit / Francis Crick
9. **Tuva or Bust!** by Richard Leighton
10. Feynman’s own books at the beginning of the list are a lot of fun, but they are his stories, the way he remembers them. This is a very complete, and often poignant, story of a very complex and unconventional scientist (who never seems to do ordinary teaching). Well written, but I warn you that physicists seem to like it!
11. Feynman’s own books at the beginning of the list are a lot of fun, but they are his stories, the way he remembers them. This is a very complete, and often poignant, story of a very complex and unconventional scientist (who never seems to do ordinary teaching). Well written, but I warn you that physicists seem to like it!
12. Two very funny accounts of The Manhattan Project, a life as a physicist, being on the California school textbook board, the space shuttle Challenger commission, painting and playing the bongo drums. These are short books - you must read them both for this assignment. For those of you who might get caught up in the fun, there is another (non-science and therefore not eligible) book, *Trip or Bust!* by Richard Leighton, that documents Feynman’s last great adventure to try to visit legendary Tannu Tuva in the heart of Central Asia, having once seen only a postage stamp from the place and being amazed that the country absorbed by the USSR had a capital with no vowels. One just has to want to visit a place like that, if you’re Dick Feynman. (There is also a movie, *Infinity*, about the Los Alamos years, with Matthew Broderick and Patricia Arquette as Mr. & Mrs. Feynman, but no one has ever seen it – it showed up in Holland at the Knickheercher Theatre in the summer of 1997.)
13. I think that were isn't as important to the plot when the screenwriters wrote it. I think that what they did want to convey is what makes a captain a captain, because a lot of the movie is the lieutenant's conflict over whether he would sacrifice a crew member or save the rest of them. Overall, this is an exceptionally good movie.

Chris Molnar, age 12
Sylvan Christian School
The Grand Rapids Press
Friday, 28 April 2000
The Weekend p. 31

This Example Typed in Microsoft Word 95/7.0c, with 1" margins, double-spaced and with the Dark Courier 11-point font, printed on a Hewlett-Packard LaserJet 4ML printer. It is likely to be reduced to half-size in your actual handout.

**FIRST UP**

Frankenstein: A Modern Prometheus / Mary Shelley

**WHAT MAD PURSUIT** / Francis Crick

**TUVA OR BUST!** by Richard Leighton

**SURELY YOU’RE JOKEING, MR. FENYMAN**

**THE DOUBLE HELIX** / James D. Watson

Rosalind Franklin and DNA / Anne Sayre

**WHAT MAD PURSUIT** / Francis Crick

**THE DOUBLE HELIX** / James D. Watson

- Both books are about the race to figure out the structure of DNA. Watson’s is the classic that surprised many with its frank portrayal of how scientists really do science. On the other hand, the original title for The Double Helix was supposed to be Honest Jim, which most people who knew Jim Watson felt was a little overboard. Crick finally decided that he had had enough of that serious version and finally wrote his own, less reverent, but probably more accurate tale. (There is a BBC TV movie called Race for The Double Helix, starring Jeff Goldblum as the geeky

**THE GRAND RAPIDS PRESS**

Friday, 28 April 2000
The Weekend p. 31

This Example Typed in Microsoft Word 95/7.0c, with 1" margins, double-spaced and with the Dark Courier 11-point font, printed on a Hewlett-Packard LaserJet 4ML printer. It is likely to be reduced to half-size in your actual handout.

**WHAT MAD PURSUIT** / Francis Crick

**THE DOUBLE HELIX** / James D. Watson

- Both books are about the race to figure out the structure of DNA. Watson’s is the classic that surprised many with its frank portrayal of how scientists really do science. On the other hand, the original title for The Double Helix was supposed to be Honest Jim, which most people who knew Jim Watson felt was a little overboard. Crick finally decided that he had had enough of that serious version and finally wrote his own, less reverent, but probably more accurate tale. (There is a BBC TV movie called Race for The Double Helix, starring Jeff Goldblum as the geeky

**THE GRAND RAPIDS PRESS**

Friday, 28 April 2000
The Weekend p. 31

This Example Typed in Microsoft Word 95/7.0c, with 1" margins, double-spaced and with the Dark Courier 11-point font, printed on a Hewlett-Packard LaserJet 4ML printer. It is likely to be reduced to half-size in your actual handout.

**WHAT MAD PURSUIT** / Francis Crick

**THE DOUBLE HELIX** / James D. Watson

- Both books are about the race to figure out the structure of DNA. Watson’s is the classic that surprised many with its frank portrayal of how scientists really do science. On the other hand, the original title for The Double Helix was supposed to be Honest Jim, which most people who knew Jim Watson felt was a little overboard. Crick finally decided that he had had enough of that serious version and finally wrote his own, less reverent, but probably more accurate tale. (There is a BBC TV movie called Race for The Double Helix, starring Jeff Goldblum as the geeky

**THE GRAND RAPIDS PRESS**

Friday, 28 April 2000
The Weekend p. 31

This Example Typed in Microsoft Word 95/7.0c, with 1" margins, double-spaced and with the Dark Courier 11-point font, printed on a Hewlett-Packard LaserJet 4ML printer. It is likely to be reduced to half-size in your actual handout.
Topic 1: The One Page Version (100,000 points)

1. Pick a book from the booklist. If you don’t want to use a book from the booklist, you must get approval from Dr. Phil and turn in a Draft Paper at least a week before the due date. If you had Dr. Phil before, you can’t use the same book and you can’t read a second best-seller, if you read a best-seller the first time.

2. Read the book. This is a Science Literacy assignment, not just Physics. So read the book with an eye toward what you finding about all the sciences, engineering, technology, computers, medicine, and the morality and ethics of using them. Is the author believable? Understandable?

3. Think about what you brought to the table before you read the book – what you know, your experiences.

4. Consider what you learned from the book. Is it new to you? Or is it something you already knew? This is an opinion paper, so what you know and what you think does matter. You do not have to like your book.

5. Write the paper. Do not just retell the plot or story. Dr. Phil has read the book and so have you. Start from there. You might begin by telling why you selected this book. Then pick 2 or 3 things and talk about them in the context of (3) and (4) above.

6. Be careful to make sure you are talking about the book your paper is on. Many of these books have movie versions – Dr. Phil has seen them and knows the differences. He has also read all the books. (You may choose to write a paper about both book and movie, adding in a section about the differences between the two, as well as the assignment, but the page count goes up to 7 to 8 pages.)

7. The paper should be written in English with correct spelling and reasonable grammar. Because it is an opinion paper, you may use the word “I” as in “I think that…” (first-person is acceptable).

8. The paper should be 4 to 5 pages typed (probably on a PC or Mac using a word processor in Fall 2005), double-spaced, with 1” margins all around, a single simple cover sheet, and numbered pages. The cover sheet cannot be page 1, and 4 to 5 pages means that there are at least 4 complete pages of text without extra blank lines at the beginning or end. You may write the page numbers by hand if you wish.

9. Most computer printers and word processors allow you to control the font (lettering) size and style. Acceptable fonts are: Courier/Courier New (12 point), Dark Courier (11 pt). If you have printer problems, contact Dr. Phil. If you typing on a real typewriter, see Dr. Phil.

10. You may, if you want to, turn in a Draft Paper at least one week before it is due, for a free evaluation by Dr. Phil. If you are reading a book not on the booklist and Dr. Phil approved it, you must submit a Draft Paper. In either case, if you turned in a Draft Paper and Dr. Phil marked it up, you must turn in that marked up Draft with your Final Paper, or your Final Paper will not be graded. The number of days that Dr. Phil has your Draft are added to your Due Date, so there is no penalty for writing a Draft Paper.

11. Papers are due on Thursday 14 June 2007 by 5pm. You have a Grace Period that extends until Monday 18 June 2007 at 5pm – that means you can turn in your paper on that Friday or Monday with no penalty. After that, there is a 10,000 point/day penalty.

12. Major penalties: Writing about the movie and not the book—90,000 points. Writing about a book that was not approved or on the booklist—100,000 points. Previous Dr. Phil students reading the wrong book—80,000 or same book—100,000 points. Writing only about the Physics in a book that isn’t about Physics—or Writing only about the plot of a book with no analysis—the fraction of 100,000 points that the offending section covers. Other minor penalties assessed based on severity/frequency (2000 points ea.)

13. Papers that meet the minimum qualifications are worth at least a “B”. Exceptional papers will be rewarded; problems will be deducted.

Dr. Phil likes most of the papers he gets, but it takes some effort to get everyone to take this assignment seriously.

PHYS-1070 (20) • Summer-I 2007 - 11


PHYS-1070 (20) (Kaldon)
Western Michigan University
Booklist—Summer-I 2007

(KEY: H - Hope College; W - WMU Library; L - KELLY Libraries; V - GVUS Library; R - GRCC Library)

This list stays in constant flux, with additions suggested by faculty, students and friends. Your comments are always welcome. Some of the new works are added since I last checked a particular library. Some popular titles may be available in Paperback. Some older titles are included even though I haven’t seen them listed anywhere. Public libraries and libraries at other colleges have not been checked. Many titles should be available through area bookstores, or the main WMU Bookstore.

“Science, Engineering, Technology, Computers, Math, and the Morality and Ethics of Using Same” – Dr. Phil

Over the last few years I have been working on a booklist for reading assignments in all my classes. Since this class lasts for 14 weeks, there is time for some “recreational” reading – my small contribution is to perhaps pique your interest into reading something that is “good” for you. My office is always open for science literacy discussions of books, movies and bad television.

First Up

- Frankenstein: A Modern Prometheus / Mary Shelley
- Surely You're Joking, Mr. Feynman
- What Do You Care What Other People Think?
- The Double Helix / James D. Watson
- Genius: The Life and Science of Richard Feynman / James S. Gleick

Two very funny accounts of The Manhattan Project, a life as a physicist, being on the California school textbook board, the space shuttle Challenger commission, painting and playing the bongo drums. These are short books - you must read them both for this assignment. For those of you who might get caught up in the fun, there is another (non-science and therefore not eligible) book, Tuva or Bust! by Richard Leighton, that documents Feynman’s last great adventure to try to visit legendary Tuum Tum in the heart of Central Asia, having once seen only a postage stamp from the place and being amazed that the country absorbed by the USSR had a capital with no vowels. I just have to want to visit a place like that, if you're Dick Feynman. (There is also a movie, Infinitely, about the Los Alamos years, with Matthew Broderick and Patricia Arquette as Mr. & Mrs. Feynman, but no one has ever seen it – it showed up in Holland at the Knickerbocker Theatre in the summer of 1997.)

- Gödel, Escher, Bach: An Eternal Golden Braid / Douglas Hofstadter

The most important book ever written on the computer revolution. The book and the movie, which is terrible, are about Gödel and Einstein's friend Escher who, in the First World War, made a series of works about curved space. Neither is out of date now, and you can’t get a copy of the movie anywhere. If you've only ever seen the old black & white movies, you'll be very much surprised.

- What Mad Pursuit
- The Alamos Years

Two very funny accounts of The Manhattan Project, a life as a physicist, being on the California school textbook board, the space shuttle Challenger commission, painting and playing the bongo drums. These are short books - you must read them both for this assignment. For those of you who might get caught up in the fun, there is another (non-science and therefore not eligible) book, Tuva or Bust! by Richard Leighton, that documents Feynman’s last great adventure to try to visit legendary Tuum Tum in the heart of Central Asia, having once seen only a postage stamp from the place and being amazed that the country absorbed by the USSR had a capital with no vowels. I just have to want to visit a place like that, if you're Dick Feynman. (There is also a movie, Infinitely, about the Los Alamos years, with Matthew Broderick and Patricia Arquette as Mr. & Mrs. Feynman, but no one has ever seen it – it showed up in Holland at the Knickerbocker Theatre in the summer of 1997.)

- The One Page Version (100,000 points)
- Philosophy of Science

Since this class lasts for 14 weeks, there is time for some “recreational” reading – my small contribution is to perhaps pique your interest into reading something that is “good” for you. My office is always open for science literacy discussions of books, movies and bad television.

First Up

- Frankenstein: A Modern Prometheus / Mary Shelley
- Surely You're Joking, Mr. Feynman
- What Do You Care What Other People Think?
- The Double Helix / James D. Watson
- Genius: The Life and Science of Richard Feynman / James S. Gleick

Two very funny accounts of The Manhattan Project, a life as a physicist, being on the California school textbook board, the space shuttle Challenger commission, painting and playing the bongo drums. These are short books - you must read them both for this assignment. For those of you who might get caught up in the fun, there is another (non-science and therefore not eligible) book, Tuva or Bust! by Richard Leighton, that documents Feynman’s last great adventure to try to visit legendary Tuum Tum in the heart of Central Asia, having once seen only a postage stamp from the place and being amazed that the country absorbed by the USSR had a capital with no vowels. I just have to want to visit a place like that, if you're Dick Feynman. (There is also a movie, Infinitely, about the Los Alamos years, with Matthew Broderick and Patricia Arquette as Mr. & Mrs. Feynman, but no one has ever seen it – it showed up in Holland at the Knickerbocker Theatre in the summer of 1997.)

- Gödel, Escher, Bach: An Eternal Golden Braid / Douglas Hofstadter

The most important book ever written on the computer revolution. The book and the movie, which is terrible, are about Gödel and Einstein's friend Escher who, in the First World War, made a series of works about curved space. Neither is out of date now, and you can’t get a copy of the movie anywhere. If you've only ever seen the old black & white movies, you'll be very much surprised.

- What Mad Pursuit
- The Alamos Years
wishing winning theory without her knowledge. The problem is that “Rosie” didn’t exist, and this author wants to try to tell the facts straight. (The Nobel Prize committee does not award prizes posthumously, which is why you don’t know.)

The Making of the Atomic Bomb / Richard Rhodes (886 pages) Probably for this class, I mention because (a) Rhodes is not a scientist, but like Tracy Kidder mentioned below, he is simply just a very good writer, and (b) this is absolutely the most complete history of the Manhattan Project that you’ll find in an unabridged list. No matter your feelings on the ethics of the science and the secrets that led up to the Bomb and the incredible grouping of scientific minds in one place that did, it is one of the 20th century’s great stories. To me, the best part is that he not only explains what is going on, but weaves a story that lets you understand what the scientists did and did not know and the whole politics of the Manhattan Project.

Tuesdays Park: A Wall Street Tycoon and the Secret Palace of Science That Changed the Course of World War II / Jennet Conant (2002)

Alfred Lee Loomis is not a household name today, but James B. Conant is at least visible in the history of science in the 20th century. President of Harvard and advisor to U.S. Presidents on scientific matters, Conant was a friend of Loomis’, and the author’s grandfather. Today there is sometimes a strained relationship between academic & government science worlds and the corporate science world. And there is definitely a question in the post-Enron era of how much public good rich tycoons do our society. Loomis’ story combines quite the American success story with a strong personal interest in science – and the will to put his money where his mouth was. This book makes a case that it was the support from Tuesdays Park that helped science win World War II, not just the big money government efforts like the Manhattan Project. Wonder if anyone has sent this book to Chairman Bain (grin)

Loves Hearts of the Cosmos / Dennis Overbye

A look into both the people and astrophysics in the search for the origins of the universe, and also a very human tale of how grad students and researchers get treated by each other – is the Hubble constant for the expansion of the Universe equal to 59 or 100? It’s a very old feud that takes place in public meetings and in scathing attacks in print.

A Brief History of Time: From the Big Bang to Black Holes / Stephen W. Hawking

Probably the first physics book to stay on The New York Times best-seller list for 13 years. Very readable treatment of modern cosmology. They made a documentary movie called A Brief History of Time; probably one of the first physics movies to even run in real theaters. I first saw it at Hope College’s Knickbocker Theatre. There is actually a book called A Visitor’s Companion to A Brief History Of Time, which Hawking describes as the book about the movie, about the book.

The Universe in a Nutshell / Stephen Hawking (2001)

As Hawking himself admits in the Foreword, he never expected A Brief History of Time (1988) to be so successful. It has been, especially considering the difficulty of the subject matter. Always a science educator worries about the grad students who have tried and simply didn’t do so well – a great job on both reading the book or writing the paper. So I join with Hawking in having a sequel in adding this book to the list – Hawking finally deciding he didn’t want to do Son of A Brief History of Time, so much as updating and talking about the cool things that this paralyzed man has been thinking about the last dozen years. The illustrations are slick and computer generated. Full of color, they sometimes really resemble real life physics textbook illustrations – you need a key to understand what the heck they’re about. However, there is plenty of physics and ideas that are quite understandable to give you the base, and the chance to understand the really “far out” consequences of what might happen if physics works a particular way.

Infinite in All Directions / Freeman J. Dyson

Dyson is a very interesting human being, besides being someone not enough people ever listen to. One of the even more interesting things is that NAS didn’t put all its eggs in one basket on this one. A single, large, expensive Hubble Space Telescope - this written before the HST was launched and its nearsightedness was discovered.

Living Fossil: The Story of the Coelacanth / Keith S. Thomson

The very science book I read on my own was a little Scholastic Book Service bagbook that I bought for 49 cents (or so) called Search for a Living Fossil. This is a much more complete history of the accidental discovery of coelacanths living in the 20th century, thought to be extinct for some 70,000,000 years. (Juraassic Park come to life!)


This booklist has had some books about Feynman, so Feynman should add some of Feynman’s best known work. OED stands for Quantum Electro-Dynamics, and there probably isn’t a better description to this in a non-textbook that “the Chief”. I’ve admit, I haven’t looked at this one for a long time (I was a poor graduate student when this came out, so I didn’t buy it at the time), so you should go for the biographies if this seems too tough


Elsewhere in the booklist is a book about Rosalind Franklin, whose X-ray crystallographic work led Watson and Crick to determine the structure of DNA and win the Nobel Prize. Franklin probably should have shared in this triumph, but her untimely death from cancer prevented any arguments or revision of history as to who did what. (The Nobel Prize for Medicine cannot be given posthumously.) Liselotte H. de Vinck’s biography that she was robbed of a Nobel Prize for a crucial bit of Physics that led us into the Atomic Age. If you have a shred of decency in you, you’ll be appalled at how Mother was treated by the nearly completely male Physics community, but I wouldn’t put it in opinion of your head.


Sharon Bertsch was, as I recall from a talk I heard her give on this subject, a journalist in Michigan for a time, so there is a nice local connection, and is married to a physicist. You might ask what the latter has to do with this mini-review. Well, consider that many of the women scientists in this book were either assumed to be merely the assistants of their husbands, or not suitable to be seen in the public halls of science and so toiled in basements, attics, or tutored advanced students in their homes. Many of the earlier stories are about women who were paid nothing for their teaching and research, simply because they were women. The stories of Rosalind Franklin and others denied the Nobel Prize are also included here, not because of some post-modern feminist revaluation, but because scientists today have recognized their real contributions. Considering that there are many in science who unabashedly are scrapping for the big prize, it is remarkably refreshing to read success stories against a backdrop of odds that seemed guaranteed to create only failure.

The Right Stuff / Tom Wolfe

This very popular book about the birth of the Astronaut corps and their transformation by the media into Heroes was made into a movie that was supposed to launch John Glenn into the White House in 1984. Didn’t happen. Actually, there is a lot more in the book than is in the movie, but you might want to sneak a peak at the movie if you aren’t familiar with some of the gadgets of aircraft flight testing and spaceflight - the movie is mostly pretty accurate. (But don’t just review the movie)

Apollo 13 (original title: Lost Moon) / James Lovell & Jeffrey Kluger

Forget space adventure adventures of billions of years away: imagine being one of just three human beings, really and truly separated from the teaming billions on Earth by one-quarter of a million miles of the real hard vacuum of space... and having to deal with the difficulty of getting along with your wife and children. This is an incredible story, that didn’t make it to the Moon, wrote this compelling story. Tom Hanks always wanted to do something about this mission, and when Ron Howard ran across Lost Moon, their agents got together and...
The backdrop to this story is the Manhattan Project, as we follow the main character, a Native American Army sergeant, who is also J. Robert Oppenheimer's driver. Not only does this place us in the middle of the action, but he has legitimately been told that all these people and actions that are going on to the rest of us. Stalino Gasman is the location of the first atomic bomb test and nearly all the characters in this historical novel are real.

**W.L. - The Andromeda Strain / Michael Crichton**
The first major sci-fi book I ever read. Crichton's gift as a writer is to blend fact and fiction so that you cannot tell what is true and what is story. (There really is a Jersey Stone and all those publications of his list are real.) A secret satellite falls out of orbit and the entire population of the town of Piedmont, Arizona is mysteriously wiped out. Well, almost everyone. The scene ends with us wondering what is going on in time. You'll have to read the book (don't just rent the movie). Sci-fi, sure, but it is often mentioned when real plagues like Ebola are mentioned.

**H.W.K.L - The Hunt for Red October**
**H.W.K.L - The Sum of All Shapes / Tom Clancy**
Clancy is well-known as the writer of modern, fast paced, techno-thrillers that seem to know far too much about the workings of classified Defense Department equipment and the inner workers of the CIA and the intelligence committee. There is a lot of science and engineering detailed in these two books - a good read to take some of the mystery out of all that secret stuff. The Hunt for Red October involves the attempted defection of a brand new Soviet super sub; the United States is trying to help them defect while the USSR is trying to sink them. The movie, although entertaining, is much shallower than the novel, as is typical. The Sum of All Shapes brings in a new level, with the bad guys trying to nuke the Super Bowl! Some people like all the details of the technology, but I prefer that I am not so steeped in detail that I forget the plot. Jack Ryan, who has been played in the movies by Alec Baldwin and Harrison Ford, is the main character in both stories.

**H.W.K.L - Gateway / Frederick Pohl**
There have been plenty of SF books about first contact with an alien race, but this one is nice because we are dealing with an alien race that is neither advanced nor get to see the aliens (at least not in this book). There's a lot of social in the applications of physics and there is a kind of pioneering spirit that permeates the drama. Followed by a series of sequels, which are pretty good, but never recapture the innocence of this first one.

**W.L. - Football / Larry Niven and Jeri Pourmelle**
Dinosaur extinction may have been caused by a collision with a comet or an asteroid. Recently, a 6,000,000 pound rock passed within 50,000 miles of the Earth and astronomers didn't even know it was there until three days after it passed! But what if dropping rocks on the Earth was the prelude to an invasion?

**W.L. - Inherit The Stars / James P. Hogan**
When Professor Stickel of the GVSU Physics Dept., first brought this S.F. book to my attention, my first thought was my usual evil thoughts to S.F. book cover artists who don't have a clue when it comes to science. A mummy in a space suit on the Moon? Come on, that can't happen. The dead astronaut would either be vacuum sealed or anaerobic slush of goo in a short time. Ah, but what if the guy in the space suit has been sitting dead on the Moon for 50,000 years before we had a space program? This forensic paranormal has a neat thing to think about. (Okay, in the end it is weak - MARS true of a lot of books - read anything James Michener has written since about Centennial). There is a paperback version called Giants (?) which includes Inherit the Stars and two sequels. It is not excessively long.

**W.L. - The Two Faces of Tomorrow / James P. Hogan**
This is a very different TV movie from New Year 1995, you probably ran into the network/MCI commercial with the strange English kid raving about digital information. The National Information Superhighway is coming. Internet is already here. NWU's computers are heavily networked. At what point does an information network have so many computers and connections that it no longer is "just a tool", but becomes self-aware? This is the problem faced in this SF story, where the government deliberately sets up a space station just in order to try to force the issue. The results don't quite work out the way anyone (even the authors) expected. We tend to think that computers and human emotions and attributes to computers, though any tendencies toward personality are strictly the result of programming. This story really discusses some of the stuff that computer science people have been bawling about with Artificial Intelligence (AI) for years.
During the Cold War, the threat of nuclear extermination was something tangible and real. And books like Fall Safe and On the Beach were both terrifying nightmares and warnings that made people stop and think about what they would do if they lived in a world that was just a few years before Nuclear-Free Zones. The idea that it's modern, starting people out on the right foot, and how it's going to affect our way of life, doesn't really get into the business system of our self-righteous heroine of the novel. If you read some of the history of computer books about

The Warrior, you might be interested in this book as a way of learning more about the same series as Neuromancer. Islands in the Net

The dark film noir quality that the cyberpunk movement has introduced into SF. These two guys wrote The

I spent the summer of 1994 reading maybe eight or nine "cyberpunk" novels, a genre of science fiction that deals with computers, hackers, information and how society will hold together with the promise and fall apart with some of the physics principles that we've worked on all semester come into play here. A fast read, and maybe educational, too.

**Alternative Realities (Science Fiction and Fantasy)**


Talk about bestsellers! To get these three books off of the New York Times Fiction List, they changed the rules to dump them onto a new "Children's List". But despite motivating millions of kids to suddenly start reading books, a lot of adults are reading Harry Potter, too. So, is there anything scientific about Harry Potter? Well, there's magic, and how magic works, the rules it follows, the morality and ethics of using them. Sounds like an analogy to me! Just as you don't get off "easy", you will be required to read the first three Harry Potter books. Read just one, and you're faced with a moral dilemma. "Should I buy this?" a book that has been credited with creating the first computer, in fact, it really didn't work at all time. -- But what if it had? What if Victorian English historians did not have the power of iron, steel and steam, but of the Difference Engine? Victorian engineers have always intrigued me: they seriously believed that they could build anything, but they were also so arrogant to assume Man's superiority in all things that it was sort of a donna about the consequences of their actions. (You want the complete Dr. Phil Existential Gadget Experience?) Compare and contrast the social impact of the computer technology in this book and in the movie Until The End Of The World.) Giftorian and Sterling's creations do all that and more. This book is very accurately Victorian, which means that it is written in a crowded gingerbread style that seems somewhat alien until you get used to it, and it is no way

**Neuromancer** / William Gibson

I spent the summer of 1994 reading maybe eight or nine "cyberpunk" novels, a genre of science fiction that deals with computers, hackers, information and how society will hold together with the promise and fall apart with some of the weight of that high technology. If you ever saw the Harrison Ford movie Blade Runner, then you've seen some of the dark film noir quality that the cyberpunk movement has introduced into SF. These two guys wrote the original Difference Engine, listed earlier. Neurumancer, which has several sequels (and some short story prequels in Crystal Express and others), is kind of about hackers "covets" riding the wild range of cyberspace and generally poking their noses into places those big, evil, impersonal corporations would rather one didn't poke. Very much run like an action adventure movie and great fun; it's hard to keep score as to who the good/bad guys are. The recent movie Johnny Mnemonic [a short story of the same name (included in a collection titled Burning Chrome)] and from the same series as Neuromancer. In the next city, the other rings, rings much closer to a possible future. While there is sort of a adventure mystery to justify having a story, part of the interest in this book is the kind of New Agey/hippie/lifestyle/slash global corporations slash Amway/entrepreneur slash Amway/slash/individualistic/good neutrality business system of our self-righteous heroine of the novel. If you read some of the history of computer books about

Apple, Microsoft and the California and Seattle high tech business climates, Sterling's vision clearly springs from the same ideals. (What I can't figure out is whether Sterling believes or whether he's making fun of it.)

**Cryptonomicon** / Neal Stephenson (1999)

Oh, yeah, here's a real Dr. Phil book -- 910 pages and includes zeta functions, equations with infinite sums, Perl scripts and an appendix with a coding scheme. It's technofiction, coupled with World War II code decryption, deceit and a disturbing account of missing people. It's Star Trek, interspersed with French history, medieval castles, the architecture of havens and security issues. And Finns, MLA (Modern Language Association), Alan Turing, Bletchley Park, U-boats. History books read like this in July 2001, I found myself fully prepared to understand the collapse of Global Crossings. Much fun, but you've got to be a reader. (Dr. Phil devoured it in three days, in between other work.)

**Time and Again** / Jack Finney

Time travel has fascinated science fiction writers for a long time. Imagine going back and see what really happened. Jack Finney's What-if story uses an ingenious concept for time travel: that we are trapped in our own time by all the little details of modern life that surround us. Live and breathe the details of another era, and you might find yourself back in New York City in the 1880's. Definitely one of the "Gee, I wish this was true" stories, I've included this on the list because it really highlights the technology of a century ago, which in turn puts a real perspective on where we are today. (There is a sequel, From Time to Time, that was written some twenty years later. As is typical of sequels, it doesn't have quite the innocence of the first book, but it is really enjoyable and has some really excellent twists in its plotting. I wouldn't recommend that you read the second without reading the first, though.) Runners up was The Time and Again may be made into a movie; something that couldn't have been done well with movie making technology even just a few years ago.

**Pastwatch: The Redemption of Christopher Columbus** / Orson Scott Card (1996)

As has been noted earlier, time travel is definitely an odd sub-genre of science fiction. We can imagine traveling to other stars, even if it really might take extraordinary time and measures, but how… is it, will it, could it be possible... source.(This is sort of the modern revisionist view, which showed up in the movie 1492: The Conquest of Paradise, among other places.) So… what if you could change what happened? Would you do it? Would you do it even though you know that... from the time of your meddling. And you thought that it was tough deciding where our garbage should be disposed off!

**World War: In the Balance** / Harry Turtledove (1994)

This book is the beginning of a massive series that is now four book long and I don't really think it's done yet. The Hammer and the Cross / Harry Harrison (1993)

I debated about putting this book on the list for two years. This is sort of reverse engineered science fiction. Charles

Grass is a planet whose ecology is based on, well, grass. Hundreds of different kinds, colors, textures, flavors, etc. And the human colony also deals with the native animals in mimicry of an old style English fox hunt -- and this is where the mystery begins. I put it in this section, rather than under regular Science Fiction, because, well, it's a strange book and I like it. I know some people have had some weird reactions to it. (We own a copy because a friend of ours was too weirded out by it to keep it in her house!)

**Fail Safe** / Eugene Burdick and Harvey Wheeler (1962?)

59.

**Fail Safe** / Eugene Burdick and Harvey Wheeler (1962?)

59.

**Fail Safe** / Eugene Burdick and Harvey Wheeler (1962?)

59.

**Fail Safe** / Eugene Burdick and Harvey Wheeler (1962?)

59.
...
Every science generation has a sexy new topic or two that seems to solve every problem. Fractals were real big a few years ago, and now it is Chaos theory. For most of us, it doesn’t seem surprising anymore. But it has been really tough for a lot of scientists to accept Chaos theory, because they grew up believing in the powerful Physics developed by Galileo, Newton, etc., which seemed to make the Universe run on clockwork and precise equations. On the other hand, if it works...

- **KLV** - Natural Acts: A Sidelong View of Science and Nature / David Quammen

Fun stories of biodiversity, science and scientists: water, cockroaches, The End of Life, The Beginning of Life, snorkeling in Montana and a man with a metal nose.

- **KLW** - The Dinosaurs Heretofore: New Theories Unraveling the Mystery of the Dinosaurs and Their Extinction / Robert T. Bakker

I’ve always liked Bob Bakker: he’s animated and enthusiastic, has a big shaggy beard, always wears a hat and is not a thin person. Bakker, whose work was not only critical to the making of the movie Jurassic Park, is also a well-known philosopher of science. His work has been upsetting the old ideas of dinosaurs as slow, plodding, cold-blooded (literally and figuratively) reptiles. And since there are no dinosaurs today, every generation has a theory on why they are extinct. Bakker was at WMU in the Fall of 1995 and Battle Creek in 1994: if you ever have a chance to catch his “act”, do so, especially if you have kids. A very engaging and enthusiastic speaker.

- **KLW** - The Mismeasure of Man / by Stephen Jay Gould

When I mention this book to other faculty, one of the names of one that comes up a lot is Stephen Jay Gould. I’ve heard Gould speak several times, but I thought that these two titles would complement the current reading list. With all the controversy in the fall of 1995 about the book The First Curse, a certain amount of attention was brought to bear on the ideas of IQ and general intelligence (called “g”) and how they are tested for. Gould tells a fair line in his award winning The Mismeasure of Man a decade ago, in recounting the history of intelligence testing and the desire to turn Psychology into a science like Physics, mostly to point out that these were blind sciencess as it was done in those days. The First Curse authors, of course, fail to see the danger to play, and Murray tries to show Gould’s book is not entertaining. Of course, the point is what you would expect them to say.

- **KLW** - Darwin’s Black Box: The Biochemical Challenge to Evolution / Michael J. Behe (1996)

Christmas 1996 brought two good books to my booklist. This one came from my father-in-law, a newly retired biology professor, colleague, with a note “To Keep Us Honest”. Hmm… wonder where he stands on the issue of evolution? The book is not a creationist tract. “He believes in evolution. He doesn’t believe in the scientific model that he does not believe in religious dogma for answers to these questions. But he argues persuasively that biochemical machines must have been designed—either by God, or by some other higher intelligence.” Now, I’m a physicist, not a biologist, but I do know that there’s a great deal of debate, and even more “non-debate” about Darwin and evolution, where science and faith are played as adversaries in an either/or game. If you, don’t like the game, change the rules. Seems to me that Behe has a fair point for the third way. Perhaps Behe’s work points in this direction. The fly in the ointment seems to be Behe’s key argument. (Don’t be swayed by his constant refrain quoting Darwin himself – you’ll know what I mean. It isn’t actually a valid point the way he uses it.) Behe argues that is something is complex but it is therefore Darwin false. Unfortunately, there is a subtle logical error in this that is fairly basic – especially if you want to believe Dr. Phil would be happy to point this out to you.

- **KLW** - Wonderful Life: The Burgess Shale and Nature of History / Stephen Jay Gould

Gould’s take on the evidences of evolution, as he turns into the southeastern corner of the first floor and you’ll see Michelle VandyBorglum’s display on the Burgess Shale — hmm, wonder if it’s still there. Anyway… As it evolves isn’t controversial enough in some circles, Gould uses the explosion of diversity and families of arthropods that thrived in abundance and then were never seen beyond the time of the Burgess Shale fossils, implying a loss that should be thought of as described in the familiar model of the spreading bush or the (infamous) lineup of ape to Man. Mankind’s loss of some cosmic record is not easy, and is typical of books in this bouquet, you can bet personalities and history play a part in this story. Watch out for the three weird beasts, originally seen in the Burgess Shale, that turned out in later research to be parts of the same creature.


Science fact and science fiction have been intertwined for a long time. Lots of SF stories start out as one-trick exercises to showcase some new technology or show-off some new quirk revealed by science and technology. Futurists also use SF as a way of seeing how the future might be put together. I see no new technologies over the years and has tried to put together a reasonable way to implement it. Not that some of these are easy, mind you, but as long as we’re going to have starships zipping through the universe, you might as well speculate how one might actually do such a thing. And that’s Dr. Forward, physicist, to you. He’s a member of the American Physical Society, Sigma Xi, etc. The title, by the way, is from a line by Arthur C. Clarke, himself a famed SF author and novelist: “Clarke’s Third Law: Any sufficiently advanced technology is indistinguishable from magic” – from his Profiles of the Future.


My wife ran across this book and enjoyed it so much she passed it on to her old Astronomy professor from college. This is Modern Physics explained for both scientists and non-scientists.


This may be one of the shortest books in the booklist, but it is very long in depth and information. Rees takes a look at six astrophysical constants, numbers that essentially define our Universe and its suitability for use in to live in. In Physics class we tend to just simply accept our physical constants such as g, G, c, k, h, etc., without thinking about the consequences of these values. And although the Universe is H U G E, it can be very difficult to measure, perhaps as we are on one small planet orbiting a minor star in the midst of a terribily ordinary galaxy. So of the six numbers (N, c, t, i, s, d), some are not known well, but all have meaning.


Nothing engenders interest in a fine book like a compelling movie. And a hit movie about a high-end mathematician? Never happens. There is no question that “A Beautiful Mind”, starring Russell Crowe and Jennifer Connelly, deserved the attention it received, but anyone reading the book will wonder once again how Hollywood managed to do it – create a completely different story and emphasis. However you cut it, though, the point remains that here is a man labeled as a genius, who worked mightily about “making a contribution” to his beloved mathematics, who disappears into a world filled with schizophrenia, only to reemerge by his own will to accept a much deserved Nobel Prize in Economics (there is no Nobel in mathematics).
Crichton's Andromeda Strain also spins a yarn about scientists rushing to prevent the spread of a deadly organism. summer of 1995; both have an exciting story of the spreading of a plague and the attempts to stop it. Michael Robin Cook's novel Outbreak and a blockbuster movie of the same name (not by Robin Cook) were big news in the

Dr. Phil has been using computers since 1976, had e-mail since 1984, and remembers ARPANET and BITNET, long before they were around. Good design involves many skills and quite a few mistakes along the way. Brittle fracture, the cooling of steel (the recipe for austenitic stainless steel is included; serves 4000), bridge collapses, etc.

The Terminal Man / Michael Crichton (1970) Crichton followed his wildly successful Andromeda Strain novel with this non-fiction book of you guessed it, five patients admitted to Massachusetts General Hospital. He discusses not just the immediate medical history of the cases, but the history of the medicine that goes into the treatment. When I suggested this to someone in Fall of 1993, it occurred to me that one of the most intriguing aspects of reading this book for this assignment is that there is a need to separate the science from today and yesterday, especially concerning diagnosis and treatment. It's hard to believe that there was no computerized medicine as both bane and boon for health care in the '90s. Very popular with health science majors in 1994, so be warned that I've read a lot of these papers.

Skunk Works: A Personal Memoir of My Years at Lockheed / Ben R. Rich and Leo Janos  (1994) Clarence "Kelly" Johnson is one of the great technological giants of the 20th century. His Lockheed "Skunk Works" produced a series of triumphs some of which are still probably completely classified. The magic here was an ability to blend engineering and business so that everything was a total package that moved forward. The event was the laying of the Golden Spike to complete the joining of the Union Pacific Railroad from the Midwest with the Central Pacific Railroad from California. Reliable, fast communication and transport from Atlantic to Pacific became a reality. By the way, the first official telegram sent across the continent was "SIR LANCELOT, WHY YOUR TROJAN HAVEN'T ARRIVED?"

The Terminal Man / Michael Crichton (1970) After the triumph of The Andromeda Strain and the publishing of the non-fiction Five Patients, Crichton produced this cynical fictional story of uncaring doctors forging ahead with a research project to help epileptic patients control their seizures with electrodes in their brains (or plugged in like a computer terminal, hence the title). Sci-fi for twenty-five years, not too bad. This story is as much about ethics as it is about the leading edge of science. If anything, the movie version is even more Crichtonian: Crichton's statement in the introduction of the medical profession he had trained for and his conclusions because he felt the uncaring heart that they had couldn't be the right thing to make him right.
portrayal of science and government in those fictional works. But what's the real scoop about how well are we prepared to face a super plague? Well, The Hot Zone is not fiction. It's about a real outbreak of a real disease in the United States—Ebola virus disease--Africa--United States (the actual Library of Congress subject headings: Ebola virus disease—Africa—United States (the actual Library of Congress subject headings: Ebola virus disease--Africa--United States). No sooner had I put the Ebola book The Hot Zone on the Spring/Summer 1995 booklist, gone to see the Ebola movie Outbreak and read Robin Cook's unrelated Ebola novel Outbreak, when Ebola was suddenly front page news again in Zaire. "The Coming Plague" is "the Making of the Atomic Bomb" for Man's attempt to control the horrible and mysterious tropical diseases of the world, including Ebola virus. Why put all these disease books in the list? Because the West tends to have this attitude that we are invincible and invulnerable with our high technology. And Garrett is someone who knows what she is talking about, not just a writer. (As with The Making of the Atomic Bomb, you need not finish this 750 page in order to write a meaningful paper.)

---

**Carriers** (Patrick Lynch (1995))

You've probably noticed that this booklist has themes. No, this book isn't about naval air technology, it's a novel about a really bad disease. If you've read any of the real Ebola books The Hot Zone or Ebola: A Documentary Novel of Its First Explosion, you might wonder why one needs to include a science fiction work about "a bug one hundred times more contagious than Ebola", as USA Today says. After all, isn't The Andromeda Strain the ultimate SF disease book? Well, the science literacy point of all these books is get people to think. In a world with rapid travel, modern medicine and other gifts of high technology, we would be wise to consider that our position is not without risk. More than one technological crisis has reminded us, for at least a brief time, of our hubris, but we in the United States have managed to escape much of the worst possibilities. Actually, this is a pretty good book, revolving around some excellent technical issues about biochemistry and raising a lot of terrific issues about government, corporate and foreign responsibilities and control measures, and last out in a rapid can't-put-it-down style.

---

**Ebola: A Documentary Novel of Its First Explosion** / William T. Close, M.D.

During the deadly Ebola virus outbreak, okay Dr. Phil? Well, after having done a couple already, I should really include this book, which fits into a funny category. (1) It is a historical novel of the first outbreaks of Ebola, and so humanizes the disease. (2) It is written by someone who was there in the aftermath. (3) We are likely to see a movie of this one made, because Dr. Close is the father of the actress Glenn Close, who wants to play one of the Baltimore nurses who became infected by the Ebola scare book, but originally written in French back in 1991 (Yambuku: The Story of the Ebola Virus), to tell the story of the nurses at the mission hospital to the people back home, and now translated into English.

---

**The Road to Wettaway** / T. Coraghessan Boyle (1993)

This is a great book. It is hard to decide whether it is comedy or history, real or fiction. In the end, it is a fascinating look into a piece of Michigan's past, at the great Dr. Kellogg, the Battle Creek Sanitarium, breakfast cereal, and the whole Victorian upper class' obsession with excess. There is a movie, but there's so much more to the show in the book. You'll never look at another diet plan or special food in the same way again. Science? My dear or madam, this is all in the name of Science!

---

**The Body Farm** / Patricia Cornwell (199x)

"You are about to enter the fascinating world of forensic medicine." Thus began every episode of the TV show Quincy. In fact this is a rather fascinating world, and millions of mystery readers enjoy the hunt for clues and details as much from the forensic investigators as the police and detectives. Here are two science literacy tours from the dark, convoluted world of murder and mystery.

---


CSI: Law & Order. Sherlock Holmes, Crossing Jordan... Murder mysteries, police stories, even medical examiner and coroner accounts fascinate us, whether fiction or fact. It isn't just that we're all gothish monsters on the inside, (honestly!), but there is the intellectual puzzle of evidence, statement, clue and deduction. In this science of determining time of death, time represents both information and the enemy. At the moment of death, the complex chemical and biological systems in our bodies stop or slow, and various levels of degradation and invasion begin to set in. Science has progressed far beyond just measuring the state of rigor mortis or body temperature - and the Tennessee research facility described in Patricia Cornwall's The Body Farm is not fiction, but fact. Cool...

---

**Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It** / Gina Kolata (1999)

For all the stories about the bubonic plague (Black Death) of the Middle Ages or AIDS and Ebola today, the most deadly world pandemic occurred right at the end of WW I, the 1918 Influenza Epidemic. Now everybody has gotten the flu. But your grandparents or great-grandparents probably never told you or your parents about the 1918 flu. Fear of the 1918 flu returning helped drive the Swine Flu Vaccine flaskos of 1976. Dr. Phil was a college freshman then, but because college campuses are a hotbed of diseases, I went ahead and got my shot, even though the shot itself was by then considered dangerous.

---

**The Time Traveler's Wife** / Audrey Niffenegger (2004)

Besides a fascination to think what one could do with time travel – and the philosophical questions it raises. And there seem to be two kinds of time travel books: those which try to come up with a theory of how to make time travel work and those which don't bother. Not only does this book not bother to come with a theory, there's no big fancy machines at work. This guy is just a time traveler. He has no control. It's really a love story, of sorts. One strange love story which requires each section to remind us "when" each character exists. It would be easy to say, "Oh, for a science literacy paper this is impossible, so end of story." But there must be a reason why Dr. Phil put this on the list.

---


By the author of The Elegant Universe, this is another attempt to discuss some of the philosophy which comes as the result of modern physics theory and thinking. It is geared for the general audience, but you have to be in the mood for discussing natural philosophy. And thinking about whether there's anything in nothing.
Don’t bother asking to read other Tom Clancy’s or Michael Crichton’s Disclosure, Sphere, Jurassic Park or Lost World (Jurassic Park 2). Dr. Phil will say “No”.

This Version of the List Contains 116 (or so) Titles Many of Which Are Listed In The Computer Catalogs At Area College and University Libraries (The Library Codes are Out-of-Date). Maybe, Just Maybe, You Might Want to Keep This Handy Book List for Future Reference?

All Books Have Been Carefully Chosen So If You Don’t See Any Science In A Particular Book Rather Than Saying “I Don’t See Any Science” Why Not Ask Yourself: “Why Do You Think That Dr. Phil Put the Book On The List?” Be Sure You Read The Assignment Sheet Carefully Before You Write Your Paper See the Following Pages for More Information About the Format for Papers!

PLEASE! I Know That This Takes Time -- I Know That Fitting In A Paper Is Hard Work
I Know That Printers Don’t and Word Processors Mangle,
So Store Your Work on TWO Floppy Disks or a USB Memory Device If You Use a Computer.
If You Use A “Real Typewriter” Rather Than a Computer, I Understand Your Problems.

So Don’t Use Your Paper As An Excuse To Cut Class
That’s What the Grace Period is For – To Have Time to Fix The Glitch

---

We Want You HERE To Participate (And Get Your Work Done On Time, Too.)

New – An attempt to code the titles as an aid to keep you from making a bad mistake.

I, – Best-Seller
Many books are popular in their field, but a best-seller is defined as one that appeals to a much wider audience. Should be readable.

II, – Fact
This book is based on Fact.

III, – Fiction
Fiction is made-up. All Novels are fiction. Occasionally a book is based so much on a real incident, that I’ve coded at least one book as both Fact & Fiction.

IV, – History/Biography/Reminisce
The material in this book is based on actual events, which you could look up elsewhere, or use as a reference to some extent.

V, – Technology
The technology of 1999 is the technology of the 20th Century. This includes more than just the latest Intel Pentium III, chips at 650 MHz, but all sorts of stuff invented since the 20’s and 30’s. Understanding our technology is a major cornerstone in what Dr. Phil calls Science Literacy.

VI, – Non-1999 Technology
Most of us would not survive very well outside the 20th Century technological base. Studying the technologies of the Victorian or Edwardian engineers (19th & earliest 20th Century), or of metal work in the year 1000, or how one gets food to the table in a world without Saran Wrap™, microwaves or McNuggets™ is one window on today. A few books that study possible future technologies are also labeled with this code.

VII, – Fantasy/Alternate Worlds
Some people argue that all Science Fiction is just somebody’s fantasy, but technically Fantasy applies to stories that exist outside the realm of science – nearly anything with Magic, for example. Magic is often written in such a way that it becomes a science or a technology to its users in fantasy, and this is a good way to learn to study how and why we know science.

I’ve also included in this code, some books which have chosen to rewrite what history we know, again as a way to evaluate where we are today. These are What if…? books.

VIII, – Difficult to Evaluate
These books are minefields in some way. You can write a really lousy paper by not getting the point of the book and many people have. Most book reports on The Diamond Throne, a fantasy book, or Dune, an SF book, concentrate on the politics.

Now if you are going to talk about the politics in relation to Science Literacy, you’re going to have to be really good. Otherwise, its best to stick the mantra for this paper:

Science, Engineering, Technology, Computers, Math and the Morality and Ethics of Using Same.

IX, – “Nutrient Dense”
Fancy way of saying long, hard book.

X, – Advisory for the Faint of Heart
Contains one or more of the following: adult situations, controversial materials or descriptions that are hard to handle. You have been warned!