Topic 1 • Science Literacy Book Report (100,000 points)
PHYS-115 (4) • Spring 2005

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 overhead 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 naive 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 thinking heads we get our news from on TV are not trained in science and technology for the most part. I don’t know what Dan Rather or Connie Chung 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 read a book and examine what you read and how it affects you, as well as whether you believe it. (You don’t have to.)

Learning to “Parse” Information

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

parse (pār’s) verb
parsed, pars·ing, pars·es 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 (part(-is)), part (of speech).]

Source: Microsoft Bookshelf ‘95 (American Heritage Dictionary of the English Language (Third Edition))

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

Books 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 one medium – books – 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. They are, as you shall see, not just Physics books, but cover all the Natural Sciences, Engineering, Computers, Technology, Medicine and the Morality and Ethics of using these. The total list is kept around a hundred titles. Books come on and off the list from time to time, sometimes because Dr. Phil gets sick of reading too many papers on Airframs or Jurassic Park, etc., and sometimes because some books work better with some classes (such as PHYS-309) than others.

Because this is not strictly a Physics paper but a Science Literacy paper, the range of books is considerable. There are fiction and non-fiction titles, biographies, science fiction, mysteries and technothrillers – books that straddle the line between science fiction and current reality – from some popular best-selling authors as Tom Clancy and Michael Crichton, covering topics that include Physics, Biology, Chemistry, Engineering, Computers, Mathematics, Technology, Medicine, etc. The list is anything but boring.

It is easiest to pick a book you have not read before. And if you pick a title from the booklist, that’s it. However, you may decide that (a) you have read everything on the list, (b) read everything you think is interesting on the list or (c) waited too long to get the book(s) you were interested in from the library and are now stuck. You may read a book that isn’t on the booklist, but you must get Dr. Phil’s approval beforehand and be prepared to hand in a draft of your paper at least one week before it is due. If you go ahead and write a paper on a book that Dr. Phil has not approved anyway, there is a 100,000 point penalty.

Movies as a Source of Information

It turns out that many of the books on Dr. Phil’s booklist have some connection to a movie or a TV program. Many of these are mentioned in the booklist. If you are tempted to avoid reading a book by watching the movie version – don’t. For one thing, the movies are almost always different than the books. And not only has Dr. Phil read all the books, he has seen all the movies (and owns most of both).

So if you just watch the movie, you are going to get caught (and it’s a 90,000 point deduction). Secondly, in most cases, even jaded students like you will usually conclude that the book is usually better than the movie. While there is a lot to say about movies, there isn’t the time to contain all the information content of the book. Movies, at best, hold the flavor of the book.

Having said that, it can be worthwhile to compare what is in the book and movie of a particular combination. Sometimes Dr. Phil uses Book/Movie combinations for his second-semester Physics courses (PHYS-115 and PHYS-207 at WMU). You can, however, do this on your own if you agree to a change in the rules. Having more to evaluate means you have to write a longer paper – it’s only fair. You also have to split your paper between the book and the movie.

Scope of the Paper

A booklist only about Physics topics is likely to be a very short and boring list. While it is true that “Everything is Physics”, there is nothing more pathetic that someone reading a really good medical story
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 a 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 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 but 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 Grace 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 Timelining) 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 semester, 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.” 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 supposed to make of 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 have read a lot of books. In 2005, 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”? Could 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 didn’t, then your final paper won’t be graded. This is to keep Dr. Phil from going nuts “as I experience major *je ne sais quoi* from a *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 than we do, but control 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 your padding.

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**Readable Font (Courier 12, Courier New 12, Dark Courier 12 – 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 are 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, Book Antiqua 12, Bookman Old Style 12 and Century Schoolbook – then converts to Dark Courier for printing.

| Courier 12 point font is a very readable font. |
| Dark Courier 12 point is slightly more readable. |

**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 *spell* and *epistle* or *algebra* and *algerba*. Word choice in English is very specific. Misplacing a single *s* can change the meaning of the word. For example, *example* and *exempla* (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 encyclopaedia, 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 Dr. Phil has specified the margins, line spacing, fonts, and further suggests that you do not indent new paragraphs by thirty spaces or put one or more blank lines between paragraphs, or start the first page halfway down because you are repeating as a header the information that is already on your cover sheet – these “tricks” to pad your paper won’t work. And endlessly repeating the same phrases or thoughts will be noticed because your paper will be read. And if you 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 3½ top and bottom margins and 2½ 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 Y2K5 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 Cover Sheet CANNOT Possibly Be Considered To Be Page 1

(If you can’t figure out how to do this, either number your pages by hand, or put the cover sheet at the end of the computer file.)

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 flippies.

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?

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 it is that 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

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
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 subs 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
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 find interesting about all the sciences, engineering, technology, computers, medicine, and the moral 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 something you already knew? This is an opinion paper, so what you know and what you think matters. 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 Spring 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 your 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 (12 pt.). If you have printer problems, contact Dr. Phil. If you are 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 is added to your Due Date, so there is no penalty for writing a Draft.

11. Papers are due on Thursday 31 March 2005 by 5pm. You have a Grace Period that extends until Monday 4 April 2005 at 5pm – that means you can turn 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 ps 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.

Full Book Descriptions at: http://homepages.wmich.edu/~kaldon/classes/ph115-4-bl.htm
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
- The Andromeda Strain / Michael Crichton

There is a nice local connection, and is married to a physicist. You might ask what the latter has to do with this ...
- a backdrop to this story is the Manhattan Project, as we follow the main character, a Native American Army

The backdrop to this story is the Manhattan Project, as we follow the main character, a Native American Army

Rendezvous with Rama / Arthur C. Clarke

The very first science book I read on my own was a little Scholastic Book Service paperback that I had bought for 49
- /g32

The very first science book I read on my own was a little Scholastic Book Service paperback that I had bought for 49

Nature's End / Whitley Strieber and James W. Kunetka

- W - L - -

years after a very limited nuclear war. Our culture is so dependent on high technology, yet few know how fragile these ...
- a backdrop to this story is the Manhattan Project, as we follow the main character, a Native American Army

The backdrop to this story is the Manhattan Project, as we follow the main character, a Native American Army

The ancient fossil coelacanths were small; there is a lifesize model of a coelacanth in the first floor geology/fossil
- exhibit in Rood Hall on the WMU Campus.

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H - - L V

... the real hard vacuum ... of how grad students and researchers get treated by each other. Is the Hubble constant for the expansion of the Universe equal to 50 or 100? It's a forty year old feud that takes place in public meetings and in scathing attacks in print.

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... the real hard vacuum ... of how grad students and researchers get treated by each other. Is the Hubble constant for the expansion of the Universe equal to 50 or 100? It's a forty year old feud that takes place in public meetings and in scathing attacks in print.

Nobel Prize Women in Science:  Their Lives, Struggles, and Momentous Discoveries / Sharon Bertsch McGrayne

- (1993)

Nobel Prize Women in Science:  Their Lives, Struggles, and Momentous Discoveries / Sharon Bertsch McGrayne

- (1993)

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

H - - L V

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Apollo 13 (original title: Lost Moon) / James Lowell & Jeffery Kluger

II,III,V

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II,III,V


II,III,V

Fire, poisons, passes, collisions, uncertainty about who is paying the bills – these are all things that can make life tense on Earth. Imagine having them happen in Low Earth Orbit. In the summer of 1979, America's space station, Skylab, fell back into Earth's atmosphere – a victim of solar max activity swelling the atmosphere, delays in getting the Space Shuttle flying and a Congress too cheap to buy an adapter to allow a rocket motor to be put on Skylab and save it. While we are still waiting for the assembly of the next American space station, NASA rented some space on Mr (Russian for peace). With the end and breakup of the Soviet Union, Mr.'s history has been pretty much a roller coaster.

Kepler's three Laws are still valid. But distance from the Sun is a major determinant of the kinds of life that have evolved there. It is remarkable that the first planet we have confirmed orbiting a sun other than the Sun is a world that is densely populated by water. Today, if you were to find a planet with that kind of atmosphere and water, it would be considered a place ripe for life; would have been 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 spacecraft - the movie is pretty accurate. (But don't just review the movie!)

16. The Right Stuff / Tom Wolfe

II,III,V

II,III,V

The Right Stuff / Tom Wolfe

II,III,V

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PHYS-115 (4) (Kaldon) - Spring 2005 - 15

Sequels. The movie is also excellent, starring Roy Scheider (now seen as the Captain of the SeaQuest) and offering those "moments of pie," but once again, the movie and the book are different and (trust me on this one) Dr. Phil knows the difference.

Nothing worth doing once isn't worth doing twice, according to the popular culture gurus who have created the trend of sequelmania. Years after Clarke had finished 2001, he got the bug to go back and expand the story and to try to bring the science up to date. The result is 2010 and it's a pretty good story – almost a violation of "Dr. Phil's Rule of Sequelmania. Years after Clarke had finished 2001, he got the bug to go back and expand the story and to try to bring the science up to date. The result is 2010 and it's a pretty good story – almost a violation of "Dr. Phil's Rule of Sequelmania.

There have been plenty of SF books about first contact with an alien race, but this one is nice because we are dealing with the artifacts of the alien race and never get to see the aliens (at least not in this book). There's a lot of good applications of physics and there is a kind of pioneering spirit that permeates the drama. Followed by a series of sequels, some of which are pretty good, but never recapture the innocence of this first one.

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 preamble to an invasion?

The Space Odyssey series is one of the most popular books on the list. Congo is a nice mixture of science, technology and adventure in the deepest darkest and most mysterious parts of Africa. We tend to believe the rhetoric about the global village; in reality, there are vast stretches of the world (and our heritage) of which we know almost nothing. My favorite image is one of how they certify equipment as suitable for fieldwork... Congo was destined for even greater coverage --... The Sum of All Fears / Tom Clancy

The 1980's saw us watching the ever-resourceful McGuyver and his trusty Swiss Army Knife, think and work his way out of any scrape. But a hundred years earlier, fiction adventure books abounded where the hero( es) managed to survive and bring civilization on whatever deserted isle that happened to be shipwrecked on. In this tale, the main heroes are Union supporters who manage to escape certain death at the hands of the Confederates by use of a stolen balloon, only to be swept away in a violent storm and balloon-wrecked on a remote volcanic island, who knows where. The "mysteries" of The Mysterious Island abound: where are they? How will they ever get home? And what unseen force is helping them survive? I first read this when I was 9, and I think that it strongly influenced my interests in dabbling in all manners of science, engineering and technology. I doubt that I would do as well as these hearty souls, but then they really did have a lot of help and a 19th century upbringing and no dependence on computer technology. The big difference between abridged and unabridged versions of the book, as noted in From the Earth to the Moon, is much longer inventories and descriptions of things in the latter.

During the Cold War, the threat of nuclear extermination was something tangible and real. And books like Fail Safe... 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 preamble to an invasion?

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Time travel has fascinated science fiction writers for a long time. Imagine going back and see what really happened.

And the human colony also deals with the native animals in mimicry of an old style English fox hunt -- and this is where 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!) Grass is a planet whose ecology is based on, well, grass. Hundreds of different kinds, colors, textures, flavors, etc.

Another New York Times best-seller, Kidder is just a good writer who tags along with a crowd of computer designers at Data General in the early 80's and watches them create a new minicomputer. The tension is palpable and the company's problems are there -- bad customers, bad disk drives.) You might want to check out the December 2000 issue of Wired magazine – they have an article about where Tom III, V, VI, VII, VIII, X, from the same series as Neuromancer. Islands in the Net

What started out as just a study of how computers are used in the workplace, turns into a fascinating and somewhat depressing account of how big business and government mis-use computers to create the modern equivalent of the feudal system. While there is a sort of adventure mystery to justify having a story, part of the interest in this book is the kind of social commentary on our society. People who are used to living in a technological society start to question what their society is really like and how it has come to be. The book is the beginning of a massive series that is now four books long and I don't really think it's done yet.

Despite what you read about King Arthur, modern England really was established in 1066. But what if the Battle of Hastings had happened in 866? And the Vikings had won? This is the beginning of a series of books (One King's World). So… what if you could change what happened? Would you do it? Would you try to make things better? The author is actually suitable for this assignment. For example, Sphere and Disclosure are fun books, but they will not appear in this list – and for good reasons. But Airframe works very hard to give the reader some insight into what goes on behind the scenes of probably the most complex machines ever invented. As with Antimatter: Strain, Disclosure and other Chrestomith stories, he has artfully collapsed the timeline so that there are no unexpected arrivals from the protagonist, but that tends to help move the story along. For WMU PHYS-102 students, this is a nice example of systems interactions at work, for WMU PHYS-107 students, you'll see a lot of the physics principles that we've worked on all semester come into play here. You fast read, and maybe educational, too.

• Alternative Realities (Science Fiction and Fantasy)---

Harry Potter (I, II and III) / J.K. Rowling (1997,1998,1999) I don't hate the books that three books off of the New York Times Fiction List, they changed them into quite a good read. I'd recommend them. 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? 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 so you don't get off easy, you will be required to read the first three Harry Potter books. Read just one, and you've face a 70,000 point deduction. Page count is 7 pages, two pages per book, plus one for intro/summation. If you've already read the first three Harry Potter, read Harry Potter IV and discuss the whole series in 8-9 pages. Usped that you have to read or write so much? Pick a book for grown-ups off the list!

The Difference Engine / William Gibson and Bruce Sterling

I debated about putting this book on the list for two years. This is sort of reverse engineered science fiction. Charles Babbage worked on making mechanical computing devices. His greatest effort, the Difference Engine, was never finished, and although he is often credited with creating the first computer, in fact it didn't really work at the time. -- But what if it had? What if Victorian English engineers had not just 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 in this world, so they didn't give a damn about the consequences of their actions. (You want the complete Dr. Phil Existential Gestalt Experience? Compare and contrast the social impact of computer technology in this book and in the movie At the End of the World, Gibson 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 in no way politically correct. Reader discretion is advised.

The Electronic Sweat Shop / Barbara Garson

I spent the summer of 1994 reading maybe eight or nine “cyberpunk” novels, a genre of science fiction that deals with technology and how society will hold us in their power. While we can agree 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 Difference Engine, listed earlier. Neuromancer, which has several sequels (and some short story prequels in Crystal Express and others), is kind of like hacker “cyberobs” riding the wild range of cyberspace and generally poking around just for kicks. Virtual corporations would rather one day emerge, as would virtual criminals. They aren’t necessarily an action adventure movie and great fun; it’s hard to keep score as to who the badguy is. The recent movie Lecture is similar, but it’s a Gothic short story of the same name. (Incidentally, the book is from a collection titled Burning Chrome, and is from the same series as Neuromancer, in the Net -- on the other hand, what an improbable future.) While there is a sort of adventure mystery to justify having a story, part of the interest in this book is the kind of social commentary on our society which is rather one dimensional, but that’s why it’s a novel, as is the neighbor business system of our self-righteous heroine of the novel. If you read some of the history of computer books above Apple, Microsoft and the California and Seattle high tech business climate, Sterling’s vision clearly sprang from the same ideals. (What I can’t figure out is whether Sterling believes or whether he’s making fun of it.)

Grass / Shen S. Tapper

Grass is a planet whose ecology is based on, well, grass. Hundreds of different kinds, colors, textures, flavors, etc.

The Soul of a New Machine / Tracy Kidder

Hastings had happened in 866? And the Vikings had won? This is the beginning of a series of books (One King’s World). So… what if you could change what happened? Would you do it? Would you try to make things better? The author is actually suitable for this assignment. For example, Sphere and Disclosure are fun books, but they will not appear in this list – and for good reasons. But Airframe works very hard to give the reader some insight into what goes on behind the scenes of probably the most complex machines ever invented. As with Antimatter: Strain, Disclosure and other Chrestomith stories, he has artfully collapsed the timeline so that there are no unexpected arrivals from the protagonist, but that tends to help move the story along. For WMU PHYS-102 students, this is a nice example of systems interactions at work, for WMU PHYS-107 students, you’ll see a lot of the physics principles that we’ve worked on all semester come into play here. You fast read, and maybe educational, too.

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 "Gei, 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 what 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 it. I wouldn't recommend it for reading the first book.) This book reminds me of the series 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.

Time travel has fascinated science fiction writers for a long time. Imagine going back and see what really happened.

The Vernor Vinge sequence of books. Vinge is a great writer, and this is a great series: A Fire Upon the Deep, which has several sequels (and some short story prequels in Crystal Difference Engine, listed earlier. Neuromancer

Another New York Times best-seller, Kidder is just a good writer who tags along with a crowd of computer designers at Data General in the early 80's and watches them create a new minicomputer. The tension is palpable and the company's problems are there -- bad customers, bad disk drives.) You might want to check out the December 2000 issue of Wired magazine – they have an article about where Tom III, V, VI, VII, VIII, X, from the same series as Neuromancer. Islands in the Net

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The Hammer and the Cross / Harry Harrison (1993)

Despite what you read about King Arthur, modern England really was established in 1066. But what if the Battle of Hastings had happened in 866? And the Vikings had won? This is the beginning of a series of books (One King’s World). So… what if you could change what happened? Would you do it? Would you try to make things better? The author is actually suitable for this assignment. For example, Sphere and Disclosure are fun books, but they will not appear in this list – and for good reasons. But Airframe works very hard to give the reader some insight into 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 “Gei, 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

Airframe / Michael Crichton (1996)

It almost seems unnecessary to have to add another Chrestomith novel to the booklist, but then not everything written

Rumor has it that 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 Recreation 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 that we might travel in time. The SF author doesn’t worry about such little details. The fun in time travel stories is the potential for the unusual juxtaposition of events or the paradox of interfering with the past. In Card’s story, Columbus is identified as being a nexus in history – because of his success in crossing the Atlantic, he brought untold misery to millions of people, native peoples wiped out or conquered and displaced, slaves brought in as a cheap labor 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 it would change everything in your own time? That the era and the peoples that live everywhere would suddenly cease to exist and a whole new history would unfold from the time of your meeting.

And you thought that it was tough deciding where our garbage should be disposed of!
When a school shows Stoll the fancy new technology computer classroom they've installed, his first question is not how much megahertz, but what was the room used for before?

**II, IV, V**

There are some wonderful stories about the computer industry in this book. Having gone to school with geeks and nerds like me, the title alone is worth the price of admission. Bob Cringely turned this work into a three-part, two-and-a-half hour PBS special this year: Triumph of the Nerd: How the Personal Computer Changed the World.

**IV, VI, IX**

This is a book about Bill Gates, the young, multi-billionaire chairman of software megafirm Microsoft. It is both a biography of the man and a history of the microcomputer revolution. Sometimes it is hard to remember that the Macintosh came out in 1984, the IBM Personal Computer debuted in 1981 and even the venerable Apple II computer only dates back to 1977 or '78. Lots of firms have come and gone, to say nothing of countless leading edge computers and programs, but Microsoft has been there from the beginning and despite the thousands of employees, Bill Gates' vision is still the law in Redmond, WA. But this is no glassy-eyed corporate P.R. piece; I think that it deals very fairly with the brilliant and infamous reputations of both Chairman Bill and his company. As a result, mathinks that Bill Gates will hate this book. By the way, Gates is now writing a column that the Detroit Free Press is running and you can send e-mail to him (or his minions) on computer issues at: askbill@microsoft.com.

**I, V, VIII**

The title refers to Steven Jobs' cheerleading term for the vision that became the Apple Macintosh computer. This book about the history of the Macintosh was written by a rabid Macaholic (many of us probably can see ourselves in one of his examples. The author of several books on math and the public, John Allen Paulos also writes columns for several magazines and has a sequel to this book called Beyond Innumeracy.

**IV, IX**

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 that chaos should control a lot of problems in Nature, after all, our lives seem pretty much chaotic! 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 this works...

**II, IV**

"I always liked Bob Bakker; he's animated and enthusiastic, has a big shaggy beard, always wears a hat and is a thin person. Bakker, whose work was not only critical to the making of the movie Jurassic Park, but was sort of the prototype for Alan Grant and shows up in the video game version of Jurassic Park, is another of several dinosaur experts that have been upsetting the old ideas of dinosaurs as slow, plodding, cold blooded (literally and figuratively) reptiles. And since there are no dinosaurs today, everyone has got a theory on why they are extinct. Bakker was at WUM in the Fall of 1995 and Battles 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.

**I, II**

This is an archaeological tour through early cultures, their writing and their mathematics. You don't have numbers until you have some concept of counting; after that, it's all history. The title alone is worth the price of admission. Bill Gates will hate this book. By the way, Gates is now writing a column that the Detroit Free Press is running and you can send e-mail to him (or his minions) on computer issues at: askbill@microsoft.com.

**II, V**

This book is about how computers work, but it is not your usual sort of "how computers work" book. It is especially noteworthy not only because of the praise that reviewers are heaping on this title, but because the publisher is Microsoft. If you think that this is some Bill Gates promotional piece, though, you'd be quite wrong. Microsoft is first mentioned on page 102, and then only in a humorous comment that someday people might think that "logic gates" were somehow named by The Bilbiter. And Windows isn't even mentioned until page 334, just ten pages after MS-DOS is mentioned. Who should read this book? I think everyone is eligible. Computer geeks and EE's may know some of this, but I dare say there is much more detail than they've ever seen. And it was my wife the librarian who pounced on this book at Scholar's Books & Music, not Dr. Phil. It sometimes looks intimidating, with diagrams and tables of numbers, but if you start at the beginning you will see that the author has laid out his story beautifully. And thanks to Dr. Phil tells a storytelling approach to Physics, you can imagine his delight with Code.

**II, IV, IX**

This is a collection of short stories on biodiversity, science and scientists: water, cockroaches, The End of Life, The Beginning of Life, and since Dr. Phil tells a storytelling approach to Physics, you can imagine his delight with Code.

**II, V, VIII**

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 that chaos should control a lot of problems in Nature, after all, our lives seem pretty much chaotic! 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 this works...
were required by or the result of, new foods.  Most of us live in such isolation from where our food comes from, that

There are thousand year old structures that are still standing today while some pretty expensive modern real estate

This is Modern Physics explained for both scientists and non-scientists.

If you have any interest in recycling, the environment - or the other side of the coin, with the production and
distribution of consumer goods, this book will open your eyes to what happens after stuff is thrown out. Why aren't
our this book serves as a useful reminder that we are what we eat. Forty years ago, most of what we buy in the stores
today as packaged or prepared foods did not exist, and most people had at least a good idea of where food came from,
even if they didn't know the history of it. This has been a surprisingly popular book for this assignment.

The book jacket suggests that Behe... 'is not a creatorist. He believes in the scientific method, and he does not
look to religious dogma for answers to these questions. But he argues persuasively that biochemical machinery is
"intelligent design" – 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. Well, if you don't like the game, choose the other. See? They say there's room for a tertium quid (or we say, third option). 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 here, if you'll know what I mean. It isn't actually a valid point that he uses.) Behe argues that if something is irreducibly complex that it therefore proves Darwin false. Unfortunately, there is a subtle logical error in this that is easily lost – especially if you want to believe. Dr. Phil would be happy to point this out to you.

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If you have any interest in recycling, the environment - or the other side of the coin, with the production and
distribution of consumer goods, this book will open your eyes to what happens after stuff is thrown out. Why aren't

It's not a lot of comfort to the souls lost on that flight, but we will learn. Until the next time, of course.

Technology is a very broad and misunderstood field, and engineers are a very misunderstood breed of people. So

Skewer Gould's book and its unfaltering portrayal of general intelligence testing as inaccurate, which of course is

If you are looking for a balanced view of the pros and cons of the atomic age - this ain't it. Dr. Caldicott became

This book serves as a useful reminder that we are what we eat. Forty years ago, most of what we buy in the stores
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even if they didn't know the history of it. This has been a surprisingly popular book for this assignment.

There are thousand year old structures that are still standing today while some pretty expensive modern real estate

the numbers ( N, c, d, i, Q, D ), some are not known well, but all have meaning.

Six of them start out as one-trick exercises to showcase some new technology or show-off some new quirk revealed by science and technology. Physics allows us to use SF as a way of seeing how the future might be put together. Forward has looked into many new technologies over the years and has tried to put together a reasonable way to implement it. Not that some of these devices sound like they have some future, but it is interesting to speculate on what they might be as well speculate how one might actually do such a thing. And that's Dr. Forward, physical 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 futurist. "Clarke's Third Law: Any sufficiently advanced technology is indistinguishable from magic" – from his Profiles of the Future.

This book serves as a useful reminder that we are what we eat. Forty years ago, most of what we buy in the stores
today as packaged or prepared foods did not exist, and most people had at least a good idea of where food came from,
even if they didn't know the history of it. This has been a surprisingly popular book for this assignment.

Skewer Gould's book and its unfaltering portrayal of general intelligence testing as inaccurate, which of course is

If you have any interest in recycling, the environment - or the other side of the coin, with the production and
distribution of consumer goods, this book will open your eyes to what happens after stuff is thrown out. Why aren't

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We can conclude that Darwin was never the first to suggest that the concept of evolution is a valid one. 

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... something is irreducibly complex that it therefore proves Darwin false. Unfortunately, there is a subtle logical error

Science fact and science fiction have been intertwined for a long time. Lots of SF stories start out as one-trick

Los Alamos and Oak Ridge are probably the most famous of the WW II Manhattan Project sites. But Hanford,

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The book jacket suggests that Behe... 'is not a creatorist. He believes in the scientific method, and he does not
look to religious dogma for answers to these questions. But he argues persuasively that biochemical machinery is
"intelligent design" – 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. Well, if you don't like the game, choose the other. See? They say there's room for a tertium quid (or we say, third option). 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 here, if you'll know what I mean. It isn't actually a valid point that he uses.) Behe argues that if something is irreducibly complex that it therefore proves Darwin false. Unfortunately, there is a subtle logical error in this that is easily lost – especially if you want to believe. Dr. Phil would be happy to point this out to you.


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- W L V -  The Beaches Are Moving: The Drowning of America's Shoreline / Wallace Kaufman

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- L V -  Flying Buttresses, Entropy and O-rings: The World of an Engineer / James L. Adams

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- W L V -  - Having the Right Stuff / G. & B. Nash
--- The New Sciences of Strong Materials: Why You Don’t Fall Through the Floor / J. E. Gordon

For those who want a more technical treatment than Petrokia’s To Engineer is Human, this book offers a good alternative. Although the materials are stronger or more brittle than steel, it is not as strong as those of other metals.


Clarence "Kelly" Johnson was 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 work with a clean sheet of paper and engineer what had been needed. Is anybody truly interested in the story of an event that was a milestone in the development of the airplane? Perhaps.

--- Disclosure, and I suppose we must include Twister

This is one of the books that Michael Crichton wrote while he was in Harvard Medical School, to help pay the bills.

- Five Patients: The Hospital Explained / 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 patient, but also the history of the condition 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 nearly twenty-five year gap between then and today, especially considering the improvements in modern, high tech computerized medicine as both bane and boon for health care in the ’90s.

--- 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 ago, but not today. This story is as much about ethics as it is about the leading edge of science. If anything, the movie version is even more Crichton’s statement on the inhumanity of the medical profession he had trained for and then abandoned because he couldn’t be the uncaring tyrant that he felt they were trying to make him. Of course, it doesn’t hurt to be able to write best-sellers and win the Hollywood screenwriters to your demands. And Hollywood regards creative controls. This movie TV may not portray medicine in the best of lights, but at least the show is populated with human beings.

--- Disclosure

because young Dr. Crichton was able to weave a convoluted tale about a pathologist trying to solve a murder with the usual Crichton attention to description and history. A mystery book club that meets at Grand Valley State University used this book recently, and one of our discussion threads focused on the old TV show Quincy, which was always a lot of fun, but tended to be somewhat routine, formulaic, preachy and everything worked out in the end. This book is like Quincy, but grown up. It is dated and from the somewhat polarized papers I have received, clearly "Mr. Hudson" has some agenda here, even if it is just informational. (I personally think that the book was written to be controversial and make enough money to pay the bills.) I’m sure I’ve seen a TV movie based on this work, but I haven’t seen a reference yet. Recommended, but with reservations.

--- The Coming Plague / Laurie Garrett

You’ve probably noticed that this booklist has themes. No, this book isn’t about naval air technology, it’s a novel about a real outbreak of a real disease in the United States of America forever. 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 transportation from Atlantic to Pacific was now a reality. But how did such a project get started in the middle of the Civil War? We so often think that everything was at a standstill during the great wars, but that isn’t exactly true. The Terminal Man is a story of politics, history and a spectacular construction project – one of the great engineering triumphs of the 20th century. Historian Ambrose is most recently noted for his work on the Panama Canal, but in his recent book National D-Day Museum, work that Tom Hanks and Stephen Spielberg (Saving Private Ryan) have been trying to bring to the public’s eye. Thirty years ago I read Pierre Berton’s wonderful The National Dream about the construction of the Canadian Pacific Railroad, which is Canada’s transcontinental railroad story. Thankfully, in my lifetime, I have the pleasure of reading a similar epic about the American transcontinental railroad.

--- The Coming Plague

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 finish this 750 page in order to write a meaningful paper.)

--- The Coming Plague

We’re prepared to face a super plague? Well, The Hot Zone is great stuff, both of them, and very entertaining. Part of the entertainment value comes from the very believable portrayal of science and government in those fictional works. But what’s the real scoop about how we are 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 (the actual Library of Congress subject headings: Ebola virus disease—Africa and Ebola virus disease—Virginia–Reston) and the efforts to identify and stop the spread. Although The Hot Zone apparently prepared the inspiration for Outbreak, Preston claims that we are not nearly as well prepared as the fictional accounts would have you believe. NOTE: The graphic (sensationalized!) descriptions of what hemorrhagic fevers do to the living are not for the squeamish.

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This is one odd 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 is so much more to the story in the book. You will never look at another diet or special food in the same way again. Science? My dear sir or madam, this is at least in the name of Science!

The Body Farm / Patricia Cornell (1996)

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 fiasco 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, even though it was turned down.


I heard Laurie Garrett talking about her new book on NPR in the Fall of 2000 and rushed out to buy it. Garrett is the author of The Coming Plague, listed above, and as a reporter for Newsday, she has circled the globe covering stories like Ebola, AIDS, etc. What struck me was her comments, which I had never really thought about before, that public health is not only not the same as medicine, but that the two might be considered to be opposites – maybe even enemies in the battle for funding and money. She makes an excellent case for the sorts of problems that exist now and will blow up in our faces in the near future because of our failure to think in terms of global public health.


The Human Genome Project has been described as the biological equivalent of the Manhattan Project in physics. Well, it is easy to be sorry for people dying of dread diseases in foreign lands like Africa and feel sad that such things will not affect us in America. Be afraid… be very afraid…

The Road to Wellsville / T. Coraghessan Boyle (1993)

A nice companion to The Victorian Internet earlier on the list, the laying of the telegraph cable connecting the New World with the Old World in the 19th century was the “Victorian equivalent of the Apollo project”. Consider that A thread Across the Ocean: The Heroic Story of the Transatlantic Cable / John Steele Gordon (2002)

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 hellish world of schizophrenia, only to reemerge by his own will able to accept a much deserved Nobel Prize in Economics (there is no Nobel in mathematics).

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 the success it has been, especially considering the difficulty of the subject matter. Science educators worry that too many of the people who bought that book did so merely to put in prominently on their coffee tables or bookshelves as if pretending to have read it. And many of Dr. Phil's students who have tried Brief didn’t necessarily do so great a job either reading the book or writing the paper. So I join with Hawking in having some trepidation 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 paralyzied man has been thinking about the last ten years. The illustrations are stick and computer generated. Full of color, they sometimes resemble really bad 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.

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, decoy and a mad pursuit of missing gold. It’s modern, talking about computer networks, infrastructure, bandwidth, data havens and security/isues. And Finns, MLA (Modern Language Association), Alan Turing, Bletchley Park, U-boats. Having read this book in July 2001, I found myself fully prepared to understand the collapse of Global Crossings. Mucho fun, but you’ve got to be a reader. (Dr. Phil devoured it in three days, in between other work.)

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The Body Farm / Patricia Cornell (1996)

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Data Dead / Kathy Reynolds (1997)

"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.  

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As Hawking Himself Admits in the Foreword, He Never Expected A Brief History of Time (1988) to Be the Success It Has Been, Especially Considering the Difficulty of the Subject Matter. Science Educators Worry That Too Many of the People Who Bought That Book Did So Merely to Put in Prominently on Their Coffee Tables or Bookshelves as If Pretending to Have Read It. And Many of Dr. Phil’s Students Who Have Tried Brief Didn’t Necessarily Do So Great a Job Either Reading the Book or Writing the Paper. So I Join with Hawking in Having Some Trepidation 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 Ten Years. The Illustrations Are Stick and Computer Generated. Full of Color, They Sometimes Resemble Really Bad 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.

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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, Decoy and a Mad Pursuit of Missing Gold. It’s Modern, Talking About Computer Networks, Infrastructure, Bandwidth, Data Havens and Security Issues. And Finns, MLA (Modern Language Association), Alan Turing, Bletchley Park, U-boats. Having Read This Book in July 2001, I Found Myself Fully Prepared to Understand the Collapse of Global Crossings. Mucho Fun, But You’ve Got to Be a Reader. (Dr. Phil Devoured It in Three Days, in Between Other Work.)
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 107 (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, If You Use a Computer and 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 850 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!