Topic 1 • Science Literacy Book Report (100,000 points)

PHYS-2050 (16) • Spring 2006

Purpose

Science Classes

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

How Will I Get Science Information in the Future?

For some of you, your courses at Western Michigan University may be the last time you will have the benefit of someone directing what science you are exposed to. So, what happens when you get to the “real world”? Well, you may be bombarded with information from all sorts of sources: your job, newspapers, magazines, books, television, radio, movies, the Internet, friends, conversations overheard while standing in line somewhere – you name it. What these methods may lack, though, is the control and expertise of your teachers. You can find all sorts of amazing information on the Internet, but you would have to be very naïve to believe 100% of everything you read there. Much of our news is dominated by politics, but how much science do our politicians know? At the moment, we have exactly one professional engineer and one physicist in the House of Representatives (both of these men are from Michigan – you should know who they are, but probably don’t), none in the Senate. Most of Congress is made up of lawyers. While there is nothing wrong with studying the Law per se, legal arguments do not follow the same rules and purposes of scientific arguments. Therefore there is nothing that requires an environmental cleanup bill, for example, to have anything to do with the environment or cleaning it up. Likewise, the following headings 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 – 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 (pär’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 (distrōnis), 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 Airframing 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-1150 and PHYS-2070 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
and then writing a paper where you try to find the one or two things that seem like PHYS-205 Physics, 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 techthrillers.

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 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 popular ones, 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 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”? 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 submit your final copy of your work – if you don’t then your final paper won’t be graded. This is to keep Dr. Phil from going nuts “as I haven’t reviewed your work yet” – we need to know this. If you choose to use this option, you must turn in your final work – if your paper is due on Friday, your final paper is due the following Monday. 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 pages 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 “typewritten”, 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 is the standard Courier 12 point font. 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.

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 Their – 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 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 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 Y2K6 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 acceptable)
- Single, simple cover sheet
- Readable standard Courier font/typface
- Reasonably clean and proofread grammar
- Good spelling
- 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 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?

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 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
anything. 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

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 machines, 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

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.
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.

11. Papers are due on Thursday 13 April 2006 by 5pm. You have a Grace Period that extends until Monday 17 April 2006 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.

Full Book Descriptions at: http://homepages.wmich.edu/~kaldon/classes/ph205-16-bl.htm

PHYS-2050 (16) (Kaldon) Western Michigan University Booklist—Spring 2006

This list stays in constant flux, with additions suggested by faculty, students and friends. Your comments are always welcome. Some of the entries are out of date and new works 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

When I first started thinking about a booklist, it was because I had heard of an engineering school that required all of its freshmen to read Frankenstein. Not the 1930s movies, but the original early 19th century ghost story. Although there are other contenders, I personally date Science Fiction from the writing of this book. This is a story in ethics, of taking responsibility for your science and your creative genius. So even though I don’t have a good citation for this, surely you can find a copy of this work somewhere. If you’ve only ever seen the old black & white movies, you’ll be very much surprised.

Science People

H W KLV

Surely You’re Joking, Mr. Feynman / James D. Watson

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 should read 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) Tova or Bust! by Richard Leighton, that documents Feynman’s last great adventure to try to visit legendary Tova Tova 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 visitors; One just has to visit a place like that, if you’re Dick Feynman. (There is also a movie, InfAMY, 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 Knepperbocker Theatre in the summer of 1997.)

H W KLV - Genius: The Life and Science of Richard Feynman / James S. Gleick

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!

H W KLV R - The Double Helix / James D. Watson

-or- H W KLV - What Mad Pursuit / Francis Crick

Both books are about the race to figure out the structure of DNA. Watson’s is the classic that surprised many with its honesty and 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 firmly 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 American Watson, that captures the spirit of the whole adventure of writing for the DNA structure very nicely)

W KLV - Rosalind Franklin and DNA / Anne Sayre

PHYS-2050 (16) (Kaldon) - Spring 2006 - 12
Watson’s *Double Helix* has been the classic of a generation; Crick’s *What Mad Pursuit* puts a lid on some of Jim’s exuberant self-aggrandizement. One of Watson’s creations is a character named Rosie, the personification of the embittered old maid of science— who just happened to do the X-ray diffraction work crucial to W&C’s Nobel Prize winning theory without her knowledge. The problem is that “Rosie” didn’t exist, and this author wants to try to set the facts straight. (The Nobel Prize committee does not award prizes posthumously, which is why you didn’t know.)

**H W K L V R**  
*The Making of the Atomic Bomb* / Richard Rhodes  
(886 pages)  
II, IV, V, IX

Probably too long for this class, I mention it 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 unclassified library. No matter your feelings on the ethics of the result, the science and events 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.

**H W K L V R**  
*Lonely Hearts of the Cosmos* / Dennis Overbye  
II, IV, V

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 50 or 100? It’s a forty year old feud that takes place in public meetings and in scathing attacks in print.

**H W K L V R**  
*A Brief History of Time: From the Big Bang to Black Holes* / Stephen W. Hawking  
II, IV

Probably the first physics book to stay on The New York Times best-seller list for months. 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 Knickerbocker Theatre. There is actually a book called *A Viewer’s Companion To A Brief History Of Time*, which Hawking describes as the book about the movie about the book.

**H W K L V R**  
*Infinite In All Directions* / Freeman J. Dyson  
II, IV

Dyson is a very interesting human being, besides being someone not enough people ever listen to. One of the essays comments on how NASA shouldn’t put all its eggs in one basket with a single, large, expensive Hubble Space Telescope - this written before the HST was launched and its nearsightedness was discovered.

**H W K L V R**  
*Living Fossil: The Story of the Coelacanth* / Keith S. Thomson  
II, IV

The very first science book I read on my own was a little Scholastic Book Service paperback that I had 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. (Jurassic Park come to life!) 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.

**H W K L V R**  
*QED: The Strange Theory of Light and Matter* / Richard P. Feynman  
(1985)  
II, IX

This booklist has had some books about Feynman, it seemed with the addition of the Modern Physics students to the booklist, that one should add some of Feynman’s best known work. *QED* stands for Quantum Electro-Dynamics, and there probably isn’t a better person to describe this in a non-technical book that “the Chief”. I’ll 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.

**H W K L V R**  
*Lise Meitner: A Life in Physics* / Ruth Lewin Sime  
(1996)  
II, IV

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 Prizes for science cannot be given posthumously.) Lise Meitner, on the other hand, died in 1968 and there is no question 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 Meitner was treated by the nearly completely male Physics community, but I wouldn’t want to put opinions in your head.

**H W K L V R**  
*Nobel Prize Women in Science: Their Lives, Struggles, and Momentous Discoveries* / Sharon Bertsch McGrayne  
(1993)  
II, IV

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

**The Result is 2010**

---

**The Science Fiction Adventure Billions of Light Years Away:** imagine being one of just three human beings, ready and able to separate from the learning billions on Earth by one-quarter of a million miles of the real hard vacuum of space... and having something go seriously wrong with your spacecraft. Lowell commanded the real Apollo 13, the mission that didn’t make it to the Moon, wrote this compelling story. Tom Hawks always wanted to do something about this mission, and when Ron Howard ran across, Lost Moon, their agents got together and...

---

**October Sky:** A Memoir (original title: Rocket Boys) / Homer H. Hickam, Jr. (1998)

---

**Dragonfly:** NASA and the Crisis Aboard Mir / Bryan Burrough (1998)

---

**Fire, poison gas, masses, 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 swirling the atmosphere, delays in getting the Space Shuttle ready 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 space on Mir (Russian for peace). With the end and breakup of the Soviet Union, Mir’s history has been pretty much a roller coaster. Kapt on for years past its design life, because it is all that either NASA or the Russians have in space, an odd collaboration between former Cold War adversaries abandons the “dragonfly” in the sky.

---

**Science Fiction and Technical Novels**

---

**W L V R - Rendition with Rama** / Arthur C. Clarke

---

**W L V**

---

**II V V, X**

---

**W L - L -**

---

**III, II, X**

---

**II V V**

---

**W L - L -**

---

**III, III, V, VII, VIII**

---

**W L - L**

---

**III, III, V, VII, VIII**

---

**W L - L -**

---

**III, III, V, VII, VIII**

---

**W L V R - The Andromeda Strain** / Michael Crichton

---

**III, III, IX**

---

**W K L V R**

---

**III, VIII, IX**

---

**W K L V R**

---

**III, VIII, IX**

---

**II V V**

---

**II V V**

---

**W K L V R - The Hunt for Red October**
This is a classic science fiction novel of an alien desert ecology, combined with all the galactic drama and interstellar politics you could ever want. A generation of science fiction readers grew up blown away by the scope and grandeur of this novel, which has achieved a stature almost like J.R.R. Tolkien’s *Lord of the Rings* Trilogy, especially since *Dune* was followed by numerous sequels. (The sequels are best enjoyed by those fascinated by the politics, otherwise, they suffer from the usual sequels problem of a loss of innocence from the first, wonderful book.)

Fair Sale / Eugene Burdick and Harvey Wheeler (1962?)

Originally, the first book in the series, *Fair Sale* is from a Gibson short story of the same name (included in a collection titled *Burning Chrome*). 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 of all that high technology. If you ever saw the Harrison Ford movie *Bladerunner*, then you’ve seen some of the dark film noire quality that the cyberpunk movement has introduced into SF. These two guys wrote *The Difference Engine*, which has several sequels (and some short story prequels in *Crystal Express* and others), is kind of about hacker “cops” 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 a stirred-up version of a Hollywood 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* is from a Gibson short story of the same name (included in a collection titled *Burning Chrome*). The book 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 of all that high technology. If you ever saw the Harrison Ford movie *Bladerunner*, then you’ve seen some of the dark film noire quality that the cyberpunk movement has introduced into SF. These two guys wrote *The Difference Engine*, which has several sequels (and some short story prequels in *Crystal Express* and others), is kind of about hacker “cops” 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 a stirred-up version of a Hollywood 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* is from a Gibson short story of the same name (included in a collection titled *Burning Chrome*).
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 future's future.) In fact, I read that you read the second without reading the first, though. Rumors are 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.

---

West, the Hardy Boys and the Microkids (the people in this book) are today.

---

Another New York Times best-seller, Kidder is just a good writer who tags along with a crowd of computer designers. Noteworthy not only because of the praise that reviewers are heaping on this title, but because the publisher is Microsoft. This is a book about how computers work, but it is not your usual sort of "how computers work" book. It is especially beautiful. And since Dr. Phil tells a storytelling approach to Physics, you can imagine his delight with Code.

This is a book about how computers work, but it is not your usual sort of "how computers work" book. It is especially beautiful. And since Dr. Phil tells a storytelling approach to Physics, you can imagine his delight with Code.

58. - The Electronic Sweat Shop / Barbara Garson

- Computers------------------------------------------------------------------------------------------------------------------------------------
The Mismeasure of Man of a decade ago, in recounting the history of intelligence testing and the ideas of IQ and general intelligence (called “g”) and how they are tested for. Gould treads a fair line in his award-winning book, in which he skewers Gould’s book and its unfaltering portrayal of general intelligence testing as inaccurate, which of course is what you would expect them to say.

The Dinosaurs Heresies: New Theories Unlocking the Mystery of the Dinosaurs and Their Extinction / Stephen Jay Gould

Innumeracy: Mathematical Illiteracy and Its Consequences / John Allen Paulos

The Eugenics Movement and Its Consequences / Michael J. Behe

This book is about the art of the “back of the envelope” calculation, like figuring out how many rabbits live in the desert based solely on the number of roadkills you pass. You may feel that there is more math in here than Harte lets on, but again, you should be able to skim the tough bits and still follow the threads of the arguments.

When I mention this booklist to other faculty, one of the names that comes up a lot is Stephen Jay Gould. I’ve heard that he has a PhD in science communication, but I think it might be more accurate to say that he has a PhD in science communication. He is a master of the art of the “back of the envelope” calculation, like figuring out how many rabbits live in the desert based solely on the number of roadkills you pass. You may feel that there is more math in here than Harte lets on, but again, you should be able to skim the tough bits and still follow the threads of the arguments.

First it was literacy, then Cultural Illiteracy. Now the big topics in education are math illiteracy, science illiteracy and computer illiteracy. You don’t have to be a mathematician to appreciate some of the things that Gould talks about, and all 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.
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 surprising popular book for this assignment.

**WKLV** - *Rubish! The Archaeology of Garbage* / William Rathje and Cullan Murphy

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 landfill hatted with sofas and major appliances? (They are shipped and sold to the developing countries where they need them more than we really want them for brand names or newness. - In other words, they are really recycled.)

**WLV** - *The Beaches Are Moving. The Drowning of America’s Shoreline* / Wallace Kaufman

A nice book that tries to explain that shoreline and property lines just don’t mix, while we keep on assuming that Mother Nature will respect our manmade boundaries. Or the mistaken belief that putting up one breaker will not affect anything and change the erosion pattern elsewhere.

**HKLIV** - *Missile Envy. The Arms Race and Nuclear War* / Helen Caldicott

If you are looking for a balanced view of the pros and cons of the atomic age - this isn’t it. Dr. Caldicott became incensed with the numbers and horrors of atomic weapons and gave up a rewarding medical practice in order to combat them. Still, there are many good arguments and discussions in this critical look at the real and projected costs of the arms race and questionable arguments that have supported it. For example, during the Missile Gap crisis in the early 60’s, the Soviets actually only had four working missiles. (The CIA was really embarrassed when they found this out!)

****** - *Cadillac Desert* / Marc Peter Reisner (1986)

Listed as 61st of top 100 most notable Fiction English works, about the problems of water use out West.

**Technology and Engineering**


You can find some fun books in the $1.95 sale racks. Disasters are such an instructive way to talk about technology and how our society and media react to it, that I sometimes have library assignments and papers on the topic. No science is particularly good or evil. Furthermore, no matter how hard we try, accidents can and will happen. And when we become complacent, as humans are wont to do as long as things are working just fine, we don’t try as hard anymore. Three Mile Island type events have happened before, but why they might become more common. Government, industry and insurance people are always like to quote statistics and probabilities about dam failures, the Exxon Valdez, etc., etc. But people aren’t numbers. And someone in the field has to be putting those numbers together (and presumably going home happily and getting a good night’s sleep after a day of defining what are to be considered “acceptable losses”). There’s a certain amount of jargon, acronyms, and numbers, yet from your point of view Perrow is a storyteller and these are stories you should hear. It is both scary and comforting; consider that as I write this, teams of investigaters are still investigating the crash of the TWA 747 off Long Island, when (to use a term bandied about before) and slowly putting all the pieces together in order to try to understand how it happened. It’s not a lot of comfort to the souls lost on that flight, but we will learn. Until the next time, of course.

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

Engineering is a very broad and misunderstood field, and engineers are a very misunderstood breed of people. So it’s nice to have a professional engineer who can write the time to tell some stories and give the readers some incite into what engineering and being an engineer is all about. I mention that Adams is an M.E., because although you don’t need a big science/engineering background to read this book, you may find that any of his topics are familiar stuff from your introductory physics course.

**KLV** - *Star Wars: A Penetrating Look Into The Lives of The Young Scientists Behind Our Space Age* / William Broad

A look at the pro-SDI culture at the Lawrence Livermore National Laboratory. Edward Teller, their fearless leader and father of the American H-Bomb, personally sold President Reagan on the merits of the Strategic Defense Initiative, even as the American Physical Society and other scientific organizations said it couldn’t work.

**LV** - *Why Buildings Fall Down: How Structures Fail* / Matthis Levy and Mario Salvador

There are thousand year old structures that are still standing today while some pretty expensive modern real estate falls right down. Forget the lawyers and the lawsuits, these books look at the "why" of structural engineering, past and present. There is, by the way, another book entitled *Why Buildings Stand Up* (WKLV)."

**- To Engineer is Human: The Role of Failure in Successful Design / Henry Petroski

This is not a new invention of the 1990’s; a great deal of engineering design work was done long before there were computers. Engineering design involves many skills and comes with some mistakes along the way. Brittle fracture, the cooking of steel (the recipe for aesthetic stainless steel is included; serves 4000), bridge collapses, etc.

**- The New Science of Strong Materials: or Why You Don’t Fall Through the Floor / William J. Clayton

For those who want a more technical treatment than Petroski’s To Engineer is Human, this book offers a good discussion of why some materials work and others don’t. Excellent for those who are stronger or more brittle than their peers. As a Canadian, I must complain that Petroski is strongly American in his treatment of matters.
because young Dr. Crickton was able to weave a convoluted tale about a pathologist trying to solve a murder with the usual Crickton 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 formulaic, preachy and everything worked out in the end. This book is like Quincy, but grown up. It is stated and from the somewhat polarized papers I have received, clearly "Mr. Hudson" has some agendas 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. Recommend, but with reservations.

I II IV V

- W - L - - The Hot Zone / Richard Preston

Robin Cook’s novel Outbreak and a blockbust movie of the same name (not by Robin Cook) were big news in the summer of 1995; both have an exciting story of the spreading of a plague and the attempts to stop it. Michael Crickton’s Andromeda Strain also spins a yarn about scientists rushing to prevent the spread of a deadly organism. 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 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 (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 provided 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.

H - - - - - - The Coming Plague / Laurie Garrett

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 Zaire. Why put all these books on 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 should not finish this 750 page in order to write a meaningful paper.)

- - - - - - Carters / 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 history of its evolution, you might wonder why one needs to include a science fiction work about "Ebola, one hundred times more contagious than Ebola", as USA Today says. After all, isn’t The Andromeda Strain the ultimate SF disease? 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 laid it out in a rap that’s not put-down style.

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

Enough with the deadly Ebola virus books, okay Dr. Phat? 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 people. (2) It is written by someone who was around 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 Belgian nurses. (4) This is not some quick-and-dirty get rich on the Ebola scare book, but originally written in Flemish back in 1991 (Yambuku: The Story of the Ebola Virus), to tell the story of the nurses at the mission hospital to the Belgian Red Cross. 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 stuck 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. Let’s face it, it is easy to feel sorry for people dying from diseases in foreign lands like Africa and feel safe that such things will not affect us here at home in America. Be afraid… be very afraid…

- - - - - - Genome: The Autobiography of a Species in 23 Chapters / Matt Ridley (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 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 was by then considered dangerous.

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

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’s so much more to the book. You’ll never look at another diet plan or special food in the same way again. Science? My dear sir or madam, this is all in the name of Science!
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 Tuxedo 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 Bill? ( grin)


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 ghoulish 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 Cornwell’s The Body Farm is not fiction, but fact. Cool…


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 worried 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 about doing 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 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, deceit and a mad pursuit of missing gold. It’s modern, talking about computer networks, infrastructure, bandwidth, data havens and security issues. And Penns, 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.)

End of List