**Assignment due on October 5 (2022): *How Would Fermi Have Fixed It***

Read the article by Hans Christian von Baeyer *How Would Fermi Have Fixed It?* (1988) and answer the following

1. Describe how Fermi would approach a difficult, seemingly intractable problem.

He would break down the problem into a substratum of smaller problems and gain a rough estimate of the intricate problem.

2a) What is a ‘Fermi problem’ and how did Fermi want his students to approach this type of problem?

Fermi problems involve estimating something based on justified guesses or other information based on quantities, variance, or upper and lower bounds.

2b) Does the ability to ‘think scientifically’ as illustrated by the ability to craft an answer to a question such as ‘how many piano tuners are in Chicago?’ have relevance to the daily lives of nonscientists?

Yes, nonscientists might need to estimate things by using Fermi’s concept but on a simpler scale usually. How many eggs will I need to cook for breakfast might be a good example.

3a) What are the two approaches to a problem that are given in the paragraph that starts with ‘Questions’?

A call to authority or making reasonable assumptions, deriving your own, and admitting approximate solutions.

b) Which of these two approaches is ‘better’ for a person’s ‘personal growth’ and why?

Deriving your own as the only way to truly know a concept is to do research and come to your own conclusions on subjects as just looking up information might give you answers but you don’t understand why that information exists or how the data was created anyway.

c) What does Van Baeyer list as being needed for “mundane challenges – preparing chili from scratch, replacing a water pump, resolving a family quarrel”?

logic, common sense, and patience.

4) What is your interpretation of Pirsig’s (the author of *On Scientific Method*, which we have previously discussed) statement “The real cycle you’re working on is a cycle called ‘yourself’”?

The cycle we are constantly working on day after day is the betterment of ourselves and the end goal is to be the best person we can be.

5) a) Explain von Baeyer’s argument that it is better to discover the answer to a problem yourself than to look up the answer or use someone else’ (possibly an expert’s) answer.

He believes that looking up answers robs a person of pleasure and pride of discovering something new or did themselves in turn lowering their self confidence.

b) Do you agree with this argument? Why or why not?

More than I disagree, as sometimes needing an expert opinion is needed when dealing with complex problems where you have no starting information or experience but when you need to find simple or medial things that you may not be able to look up. Being able to “eyeball” about how much you need based on good guesses is an important skill for people tp have.

6) This article was written in 1988; roughly 10 years before the internet became a ‘thing’. Today we all have instant access to ‘the world’s information’. Is there still a need for people to be able to ‘figure something out’ today? Why or why not?

Yes, sometimes there will be scenarios where the internet isn’t available or where the internet has many different conclusions and isn’t clear. Figuring something out can be really useful in many scenarios where the internet isn’t as clear or accurate.