

Theory of Knowledge exhibition: Complexity and Clarity in Explanations

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For this Theory of Knowledge exhibition, I have selected the prompt: “**What makes a good explanation?**” I believe this prompt is particularly significant as explanations are at the core of sharing conceptual knowledge. Throughout this essay, an explanation will be defined as a reasoned answer to an implicit or explicit question. Contrary to factual answers, explanations can be followed up by “Why?” and are about gaining understanding.

Object 1: The explanation of catalysts and inhibitors from my previous chemistry textbook

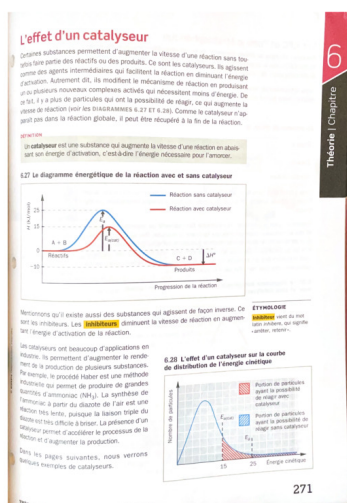


Figure 1: A page from a previous science textbook of mine.⁴

This object is a page from my previous chemistry textbook explaining catalysts and inhibitors. The book was designed to teach Grade 11 chemistry in Quebec. However, not everything inside it was accurate, like the description of inhibitors on this page, which is almost entirely false. In fact, although the book correctly depicts the effect of inhibitors, its justification for their behaviour is wildly inaccurate. How can false statements be considered to be good explanations?

A true explanation of inhibitors might require an entire book. Furthermore, a more complex explanation may only have confused students at that stage of their understanding of chemistry. This small, simple, and false explanation did its job: it provided an initial understanding of a concept to students learning about it for the first time. This highlights an important characteristic of explanations: **they need to be at an appropriate level of complexity for their target audience, even if that requires sacrificing accuracy.** This implies that no explanation can be universally acceptable, as the accuracy of an explanation

should depend on one's prior knowledge of the subject.

This iterative approach to learning is at the heart of how pure sciences are taught, as it would not be useful to go too far in depth into a completely new subject right at the

beginning. In this case, the author of the book simply judged that this explanation of inhibitors would provide students with a sufficient understanding, in line with their level in Chemistry.

Object 2: Some quotes from the Bible

This object is the Bible, and more specifically, a few quotes from the Bible, the fundamental book of a few religions, notably Judaism and Christianity.⁶ The presented quotes show a religious explanation of what happens after death. The first one (Ecclesiastes 12:7¹) highlights a distinction between body and soul and the second and third one (John 5:28,29²) explain that resurrection will come either in heaven or hell.

Those explanations are unprovable. The scientific method's rigour to determine the truth from myths cannot be applied here, as this is religious knowledge. Does this mean that this explanation is bad? Of course not. As of 2019, more than 60% of Canadians 15 years old or older described themselves as Christian,⁵ and many of them believe in some way, shape or form this explanation to hold some truth. Why do those people prefer this explication over a more scientific one? Because for nothing to happen after death doesn't actually feel like an answer; it doesn't provide a sense of fulfillment.

This highlights another important characteristic of good explanations : **the receiver usually needs to feel a sense of content from the explanation.** If an explanation is not satisfying enough, because it is too vague, concludes by "we don't know", or is devoid of meaning, it will often not be generally considered as a good explanation, even if it is technically correct. In this case, science cannot bring forward an answer fulfilling enough for everyone, which is where religion takes place.

Conclusion

This exhibition presented two occurrences of explanations in science and religion. Through those examples, two of the main characteristics of good explanations were highlighted : a good explanation needs to be adapted to its target audience in terms of complexity and, in general, a good explanation needs to provide its receiver with a sense of fulfillment. This exhibition also showed that fitting to those criteria often requires sacrificing accuracy and provability, but that those trade-offs may well be worth it. Those characteristics are useful to be aware of when trying to share conceptual knowledge as they will facilitate the reception of understanding.

Ecclesiastes 12:7 English Standard Version

⁷ and the dust returns to the earth as it was, and the spirit returns to God who gave it.

John 5:28 English Standard Version

²⁸ Do not marvel at this, for an hour is coming when all who are in the tombs will hear his voice

John 5:29 English Standard Version

²⁹ and come out, those who have done good to the resurrection of life, and those who have done evil to the resurrection of judgment.

Figure 2: A few relevant quotes from the Bible.^{1,2,3}

Bibliography

- [1] *Bible Gateway Passage: Ecclesiastes 12:7 - English Standard Version*. Bible Gateway. URL: <https://www.biblegateway.com/passage/?search=Ecclesiastes%2012%3A7&version=ESV> (visited on 10/17/2022).
- [2] *Bible Gateway Passage: John 5:28, John 5:29 - English Standard Version*. Bible Gateway. URL: <https://www.biblegateway.com/passage/?search=John%205%3A28%2CJohn%205%3A29&version=ESV> (visited on 10/17/2022).
- [3] Bibleinfo.com. *What Does the Bible Say about Death?* Jesus said, “Do not marvel at this; for the hour is coming in which all who are in the graves will hear His voice and come forth—those who have done good, to the resurrection of life, and those who have done evil, to the resurrection of condemnation” (John 5:28, 29, NKJV). URL: <https://www.bibleinfo.com/en/questions/what-does-bible-say-about-death> (visited on 10/15/2022).
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- [5] Statistics Canada Government of Canada. *Religion in Canada*. Oct. 28, 2021. URL: <https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2021079-eng.htm> (visited on 10/17/2022).
- [6] The Editors of Encyclopaedia Britannica. *Description, History, Books, & Facts*. In: *Britannica*. URL: <https://www.britannica.com/topic/Bible> (visited on 10/17/2022).