Memorandum ME EN 3400 (Spring 2024)

To: Russ Askren

From: Brandon Lim

Date: 4/15/2024

Subject: Reading & Writing 3

cc: N/a

Attachments: N/a

1. **Identify the chapter or article you read, by author and title, distinguishing between book title and chapter title using IEEE bibliographic conventions.**

[1] P. Sandin, “Common-Sense Precaution and Varieties of the Precautionary Principles” in *Risk: Philosophical Perspectives.* Routledge Taylor and Francis Group, 2007.

1. **Create a message (a single simple sentence (remember from reading Doumont)) that matches the article. Provide textual justification from the article to support your message.**

Precautionary principles should be combined with common sense and actions when making decisions involving uncertainty to ensure its true precautionary measures are being made**.**

“There is indeed an intimate link between precaution in the everyday sense and the precautionary principle in its various guises.” [1]

“An action a is precautionary with respect to something undesirable U only if a is performed with the intention of preventing U.” [1]

“An action a is precautionary with respect to something undesirable U, only if the agent has externally good epistemic reasons (a) for believing that U might occur, (b) for believing that a will in fact at least contribute to the prevention of U and (c) for not believing it to be certain or very likely that U will occur if a is not performed.” [1]

“An action a is precautionary with respect to something undesirable U, only if the agent does not believe it to be certain or very likely that U will occur if a is not performed.” [1]

“When presenting a course of action as precautionary, it should be explicitly and precisely stated with respect to what undesirable outcomes that course of action is meant to be precautionary. Furthermore, it should be explicitly and precisely sated how the three criteria of intentionality, uncertainty, and epistemic reasonableness are fulfilled by the course of action.” [1]

1. **Summarize the content of article, with a focus on the engineering aspects of the content. Summarizing the content of the article should not simply provide a chronological summary of the article (the author did this, then the author did something else), but should show that you have digested and synthesized the content of the article in a manner that reflects our engineering interests. The summary must be comprehensive. For example, if the author uses four examples to demonstrate the message, I expect to see each example summarized and explain how it supports the message. Your summary should be complete and support the message you identify for the article.**

When hiking in the mountains, drinking water from a stream could be dangerous, so individuals should abstain from drinking the water. When asked if genetically modified crops should be allowed to cultivate in other parts of the country, the request is turned down because not enough information is known about the consequences. The rationale to make these decisions comes from the precautionary principle used in legal documents and policy statements. This precautionary principle has been disagreed upon and split up into three different versions throughout discussion. The precautionary principles are rules of choice, epistemic rules or principles and procedural requirements.

The interpretation of rules of choice is that in particular situations, certain courses of action should be taken. The literal interpretation of this is that if there are cause and effect relationships that are not fully established scientifically, which is always the case, pre-cautionary measures should be taken. This could lead to decision paralysis which is counterproductive and incoherent. In an argument made by Sunstein regarding global warming, there is not full agreement by scientists on the dangers of global warming, as a result, rules of choice prohibits any course of action. In another example, the prohibition of genetically modified foods in developing countries due to precautionary measures brought about by rules of choice could result in famine where the consequences of the precautionary measure were more counterproductive. Philosophers have translated the rules of choice into the form of one or other decision rules from decision theory. One example of this translation is from Hansson where the principle is interpreted as the maximum rule where the agent should choose the action where the worst possible outcome is least bad. Sandin’s translation is that if there is an uncertain threat, some kind of action is mandatory. This translation does not mix with Hanssons translation well because the precautionary principle does not imply maximin at all. There are many flaws within the precautionary principle of rules of choice and it has been rejected as an action-guiding principle, so we can turn to alternative ways of action guiding like epistemic rules and principles.

An epistemic precautionary principle is a principle that requires that evidence suggesting a causal link between an activity and possible harm should be given greater weight than it would in other circumstances. Although, it is hard to reasonably interpret this principle as a pure epistemic principle when belief systems are invoked. Sandin discussed that a precautionary default or pessimistic assumption used in place of inadequate information should be replaced with information when obtained leading us to a new precautionary principle of procedural requirement.

One interpretation of the procedural requirement is the principle for what arguments are admissible in decision making. Principle 15 of the Rio Declaration includes that the lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. The problem with this application of the precautionary procedure is that it is undemanding and says little more than to not use ignorance as an argument. Procedural versions of the precautionary principle are combined with legal principles, rules, and questions of legitimate authority which emphasizes argument in on direction of decision making but does not necessitate a particular decision.

The precautionary principle is commonly thought to be linked to the everyday concept of precaution. For example, in 1854 Dr. John Snow recommended removing the handle of a water mump in London to stop a cholera epidemic from spreading through the water. Although a precautionary principle was not present when the action was carried out, Dr Snow initiated precautionary actions. This suggests an intimate link between everyday common sense and precautionary principles.

For an action to be precautionary, there must be intention to take precautions, the action must be in response to uncertainty, and there must be a way of distinguishing between precautionary actions and actions thought to be precautionary without reason. . An action is precautionary with respecting to something undesirable if it is performed with the intention of preventing it. An action is also precautionary with respect to something undesirable if an individual does not believe it to be certain or very likely that something will occur if the action is not performed. An action is precautionary with respect to something undesirable if the individual performing the action has good epistemic reasons for believing the undesirable consequence will happen, the individual believes that the action with contribute to the prevention of the undesirable consequence and the individual does not have certainty over the outcome if the action is not performed.

In conclusion, when taking a course of precautionary action, it should be explicitly stated what the undesirable outcome is and what course of action is needed to be precautionary. It should also be stated how intentionality, uncertainty and reasonability are fulfilled by the action. By applying the maxim to this, a consistent observation of a universal precautionary principle is conceived, and evaluation of measurements are presented to support the precautionary principle.

1. **Make observations (at least 3) about communication techniques that you found effective (or ineffective). If the article has images, take a careful look at how they are constructed, what the caption says, and how the article makes use of the images in the text. Or, identify a paragraph or section that is particularly well put together. What makes it work that way? Or, find a complex idea that was very well explained. What made the explanation work? Make sure you explain the technique with adequate justification that indicates you could use (or avoid) the technique. Since the articles are all PDFs, snipping examples to include in your memo is useful and recommended. These snips do not need to use proper figure formatting or referencing techniques.**

* I found this article to be overall ineffective in how it presented the information. The information was very hard for me to understand while reading due to a high emphasis on why things had problems instead of why they were presented as useful analysis tools. For example, it made me feel as if the principles could have been left out of the article completely and it would have been more concise just focusing on how to have correct precautionary actions. This snippet shows a huge chunk of a principle section just talking about its flaws instead of why I should be using it. In my writing I will aim to not include information that I think it pointless in talking about if it’s not even referred to a lot in my recommendations.

A close-up of a document

Description automatically generated

* A good communication technique was the transitioning into various sections with ending sentences and headers. The ending sentence in a section let me know what to expect in the next section and if the topic of the next section had various parts to it, it was broken up into multiple sections distinguished by good headings. Using this in my own writing will definitely be beneficial to guiding the reader along my essays or writing.

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* Something I thought was ineffective in this article was the lack of explanation for non-common words or context. For example, I thought the introduction of epistemic rules was not explained very well. It was hard for me to piece together the term in general and what its effect was on the information. In my own writing, I will aim to give a lot of context and explanation for topics I deem to be confusing in nature rather than just touching on it briefly. A seen in the snippet of the passage, I feel that the explanation for epistemic precautionary principles is very short lived and hard to connect with.

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