Georgetown University

Surface and Depth Understood Through Linguistics and Logic in *Alice's Adventures in Wonderland*

Alanna Cronk

English Critical Methods

Professor Nathan Hensley

March 2, 2021

No matter what fictional world an author creates, there is no escaping the rules of logic. Lewis Carrol's novel *Alice's Adventures in Wonderland* features a mystifying and otherworldly landscape that bewilders readers with its Mock Turtle, human-playing card hybrids, Cheshire Cat, and more. While the *surface* of this world is plain and ordinary, as Alice falls *beneath* the surface, and the setting transforms into this bizarre new world. The differences between the surface and Wonderland in this novel can be attributed to the difference between the logic people use in everyday life and formal logic, and how language impacts a person's access to both forms of logic. To prove this, this essay will first identify the pedestrian nature of logic and language in the surface world of *Alice's Adventures in Wonderland*. Then, this essay will contrast the nature of the surface with the deeper levels of this landscape and outline how this deeper world calls for a more nuanced understanding of logic. To prove the logical nature of Wonderland's "madness," this essay will also include a discussion of formal logic and provide formal proofs of validity.

To understand the logic in this essay, it is first important to distinguish between logica utens and logica docens. Logica utens refers to the logic people use conversationally in everyday life (Pietarinen 358). Logica docens refers to a more "theoretical and pedagogical" study of logic (Pietarinen 358). In the spirit of a more theoretical study, it is also pertinent to have an understanding of Ferdinand de Saussure's theory of linguistic signs. Saussure defines a "sign" as the unification of the signified and the signifier (i.e., a literal "tree" and the sound image tree) (647). Saussure also says, "there are no pre-existing ideas, and nothing is distinct before the appearance of language" (649). The takeaway from this for the purpose of this essay is that if one stumbles across a new signifier, they will not have an idea of what it signifies, and vice versa (if one comes across an entirely new object there will be no neat signifier to map it onto).

The surface level of this novel is unquestionably logical. It is notable that Wonderland is located beneath the "normal" world, making the "normal" world literally on the surface (Carroll 8). The dynamics of the surface are much simpler than Wonderland. Interactions here are plain, predictable, and familiar. One conversation in this location comes at the end of the book after Alice is gone for a long time while sleeping—she hears her sister shout "Wake up!" to which Alice responds, "I've had such a curious dream!" (Carrol 108). It is entirely foreseeable that if Alice had been sleeping for a long time, the sister would wake up Alice up. Nothing about this interaction is strange because both the reader and Alice would both have language in hand to confront this situation. Logically, the structure of the interaction looks like this:

$$Gone \; For \; A \; Long \; Time \; Sleeping \; (alice) \rightarrow Wakeup \; (sister(alice), alice)$$

$$Gone \; For \; A \; Long \; Time \; Sleeping \; (alice)$$

$$\therefore Wakeup \; (sister(alice), alice)$$

In loglish (mix of English and logic), this reads: if Alice is gone for a long time sleeping, then the Alice's sister will wake Alice up. Alice was gone for a long time sleeping. Therefore, Alice's sister woke Alice up.

All the linguistic signifiers included in this dialogue map to known objects or concepts: "Gone For A Long Time Sleeping," "Wakeup," "those who are asleep," and "those who wake others." The familiarity with language makes it possible to understand this interaction with logica utens, since this form of logic is utilized through conversation and does not require formal proofs (however, I included a formal proof for comparison later on). Had this encounter occurred in any other non-fantasy piece of literature there would be no question if it was logical or

peculiar, and it does not require an understanding of the material conditional, or predicate logic (which are all present in the example I wrote) to validate.[1]

The deeper levels of Wonderland introduce new signifiers and signified objects which leads to logical confusion. Alice is generally confused in Wonderland. The word "curious" appears nineteen times in the novel to describe Alice's feelings and experiences in Wonderland (Carroll 1-109). The Oxford English Dictionary specifically defines the phrase "curiouser and curiouser" from this book to mean more curious and "increasingly strange" (OED). It also defines strange as "difficult to take in or account for" (OED). The happenings of Wonderland are difficult to take in because there are new signs which are missing either things to signify or signifiers. Signs are comprised of two parts and not having a signifier to map "opening out like the largest telescope that ever was" (the event unfolding that caused Alice to exclaim "curiouser and curiouser!") makes the event difficult to process (Carroll 14). Carroll even includes a drawing of Alice to demonstrate what "opening up like the largest telescope that ever was" means, theoretically because the description would not immediately evoke a precise event in the reader's mind. However, this difficulty does not make Wonderland illogical. It only requires a more advanced form of logic (logica docens rather than logica utens) to make sense of. Logica utens unveils the structure of language and is unaffected new unfamiliar signifiers with unknown objects they signify.

I will analyze a particular scene in Wonderland to further disprove the conception of Wonderland as "curious" and illogical. As Alice talks to the Chesire-Cat, the Cat states "we're all mad here. I'm mad. You're mad… You must be… or you wouldn't have come here" (Carrol

---

[1] A conditional takes the form (antecedent → consequent). A conditional is valid so long as it is never the case that the antecedent is true while the consequent is false; Predicate logic is a form of logic which uses predicates (the capitalized words) to convey the state of 'n' number of arguments (the lowercase word or letter within the parenthesis).

56). Alice does believe not this conclusion necessarily follows from the premises as Carroll notes, "Alice didn't think that proved it at all" (Carrol 56). Interestingly, this argument follows the same structure of the previous interaction between Alice and her sister. Here is where mapping the structure of the argument, a practice of logica docens, provides an advantage.

$$\forall x \ (Located \ in \ Wonderland(x) \rightarrow Mad(x))$$

$$\exists x \ (Located \ in \ Wonderland \ (x))$$

$$\therefore \exists x \ (Mad(x))$$

In loglish, this reads: for all x, if x is located in wonderland, then x is mad. There is at least x located in Wonderland. Therefore, there is at least one x so that x is mad.

However, this time, a material conditional premise is not sufficient for Alice. Even though the quality of this warrant is no less than in the previous scenario, this time, Alice rejects the first premise and believes the entire argument is not sound. This is because Alice does not recognize the structural similarity between the two encounters. At its heart, both arguments are a conditional, the fulfilment of the conditional's antecedent, and then finally the fulfilment of the consequent of the conditional. Logica utens allows Alice to process and validate material conditional statements on the surface level because the language there is familiar. Alice has not previously interacted with Wonderland and does not have a sound image to map it to or previous experience to habituate her to how this world functions—the sign is incomplete. Surface level logic relies on familiar signs. Without them, one would be forced to rely on theoretical logic to make sense of interactions. Since Alice is not familiar with this form of logic, Wonderland's arguments appear to her as unsound, even though they are not.

The Cat provides further justification for Alice, which dives even deeper into the "curious" logical premises. The Cat gets Alice to agree that dogs are "not mad" and what makes

them not mad is the fact that a dog "growls when it's angry and wags its tail when it's pleased," while the Cat does the reverse; the Cat concludes "therefore, I am mad" (Carroll 56). Alice poses no further objections. This argument can be similarly modeled and proven logically valid.

$$\forall x \ (Reverse \ Reaction(x) \rightarrow Mad(x))$$

$$\exists x \ (Reverse \ Reaction(x))$$

$$\therefore \exists x \ (Mad(x))$$

In loglish this says: for all x, if x has a reverse reaction, then x is mad. There is at least one x that has a reverse reaction. Therefore, there is at least one x so that x is mad.

This proves logical validity thoroughly. It *also* has the same structure as the previous two arguments. Whether or not Alice understands the defense of validity this time or she has given up arguing with the Cat is ambiguous. What is not ambiguous is the soundness of this argument. What makes this third model especially useful is that the similar structure proves it is not the logic that is any more technically complicated than the surface but the that such a model is inaccessible without colloquial language and familiarity with signs.

It is the more complicated logic that colors Wonderland and defines the iconic setting of this book. In this case, when the language is removed from logical arguments, every single instance was structurally identical. What does vary is the language that wore the argument. When incomplete symbols are added into the dynamics of this fictional world, this is what disrupts one's ability to utilize logica utens. Logica utens is what one uses without even knowing, so when it presents with strange words, people do not know how to recognize validity—its appearance changes. This is what leads to the "wonder" of Wonderland. What seems irrational, unreasonable, and unsound, is caused by a deeper understanding of logic.

Reference

Carrol, Lewis. *Alice's Adventures in Wonderland*. Penguin Classics, 2015.

"curious, adj. and adv." OED Online, Oxford University Press, December 2020,

      www.oed.com/view/Entry/46040. Accessed 27 February 2021.

Pietarinen, Ahti-Veikko. "Cultivating Habits of Reason: Peirce and the Logica Utens versus Logica

      Docens Distinction." *History of Philosophy Quarterly*, vol. 22, no. 4, 2005, pp. 358. *JSTOR*,

      www.jstor.org/stable/27745037. Accessed 27 Feb. 2021.

Saussure, Ferdinand. *Course in General Linguistics*. New York: Philosophical Library, 1959. Print.

"strange, adj. and n." OED Online, Oxford University Press, December 2020,

      www.oed.com/view/Entry/191244. Accessed 27 February 2021.