Chapter 5. **LOGIC**

In the new setting of different observers some facts in usual logic can become invalid. For example, the axiom of choice is not valid. Consider W_2, this set has 10^4 elements, however, the largest number that a W_2 observer can see is 99 (from a point of view of an observer with a larger thickness number), therefore, picking any element from W_2 will take more steps than what is allotted for the W_2 observer, hence impossible. However, there is an interesting chain of the sets W, namely $W_2 \subset W_4 \subset W_8 \subset ... \subset W_{2^n} \subset ...$. For this chain, it is clear that the Axiom of Choice is valid for when picking an element from $W_{2^{n-1}}$ by a W_{2^n} (or higher) observer. Moreover, we can always pick *any* element from W_n, whenever we are in W_{2n}.

In Chapter 4, we introduced the concept of time. Then we can see that the Axiom of Choice is would be valid in the following sense: an observer will see any element after $\frac{2^n}{n}$ time increments, but this observer will not know about it, only the observer that sees the number 10^{2^n}.

Next, we have the paradox of the set of all sets (consider the set of all subsets of that set). In the new light, there is no such paradox, due to the fact that a given observer will not be able to see all the subsets, i.e. a W_n-observer can only see 10^n elements, which have 2^{10^n} subsets, so only an observer with larger thickness values would be able to see it.

It is also unknown whether there exists a W_n observer from a point of a view of a W_m-observer with $m > n$.

Other problems of Logic, such as the continuum problem, the Zorn lemma, theory of proofs, the law of excluded third, and so on will be discussed soon.