The 60 years old "Information Theory" and the Fuzzy Concept of Information

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60 years ago the American mathematician and electrical engineer Claude Elwood Shannon 1916-2001) published "A Mathematical Theory of Communication" and nobody could survey this theory's enormous consequences for science and technology. Shannon's article appeared in two parts in the July and October 1948 editions of the *Bell System Technical Journal*. However, it is very probable that this article wouldn't have become famous without the help of the American mathematician and Science administrator Warren Weaver (1894-1978), whose popular text "The Mathematics of communication" re-interpreted Shannon's work for broader scientific audiences. Weaver's "preface" and Shannon's article were published together in the book *The Mathematical Theory of Communication* (1949) that represents the beginning of the then so-called "Information theory".

However, in his "introduction" Weaver went over and above Shannon's mathematical theory mentioning not only the technical but also the semantic and influential problems of communication. This classification is very similar to the foundations of the *Theory of Signs* (1938) that was established by the American engineer, psychologist and philosopher Charles William Morris (1901-1976).

First, this contribution to IEEE SOFA 2009 deals with the connectivity between Shannon's *Information Theory* and the *Theory of Fuzzy Sets and Systems*, that was established by the American electrical engineer and Berkeley-professor Lotfi A. Zadeh (born 1921) in 1965. We also focus to the non-technical but philosophical aspects of *Information Theory* and we advocate a *Fuzzy Information Theory* that has to be appropriate to cover the fluctuating (or fuzzy) concept of information – particularly with regard to the philosophical aspects.
Second, this contribution will inform on the biography of Warren Weaver and his work in the late 1940s. He was one of the very exciting persons in science in the last century! In 1948/49 Weaver did not only publish his "introduction" into Shannon's *Mathematical Theory of Communication* but he also the article "Science and Complexity" for the *American Scientist* and the very influential memorandum "Translation" where he mentioned the possibility of using digital computers to translate documents between natural human languages.
Weaver's thinking was an important catalyst for many developments in the history of information science and computer science. Furthermore we show that his thoughts lead to interesting questions that are currently discussed in the areas of Soft Computing.