DESCRIPTION FOR THE GENERAL PUBLIC

The aim of the project is to make investigations on an extension and generalization of the discussive logic D_2. Logics are formal systems that are meant to model selected types of reasoning. In the case of the discussive logic, we have some argumentations that are lead by participants of a discussion. The original solution in this respect comes from a Polish logician, Stanisław Jaśkowski. The main aim of the present project is to consider some variants of Jaśkowski's calculus and consider a possibility of generalization of Béziau systems that arose by a direct reference to Jaśkowski's idea. Next to a development of a logical calculus being an extension of the system built in the years 1948-1949 by Stanisław Jaśkowski, a philosophical analysis of consequences of the extension of the discussive language will be carried out. The originally proposed idea refers to the situation in which a group of debaters is exchanging some views. During a discussion various views are presented and an exchange of opinions is being ensued. Contrary or even contradictory statements can appear. However, no one, including participants of a given discussion as well as possible external observers, would conclude that every sentence follows from propositions expressed during the discussion, as it would be the case if the classical consequence would applied for inconsistent set of premises. While trying to describe this phenomenon Jaśkowski used a language with connectives that bring out the structure of statements and have a modal character – they require the use of a translation that transforms particular statements into the form that contains the modal operator: "it is possible that". Using some formal tools Jaśkowski tried to answer the question, what follows from statements made during a discussion. To this aim, he intuitively considered an external observer following the process of the exchange of opinions. In his considerations Jaśkowski examined not only usual in this context, classical connectives, but also discussive ones: implication, equivalence, as well as – in the paper from 1949 – discussive conjunction. Those discussive functors were meant to write down structures of statements that refer to interactions having place between participants of a discussion. Jaśkowski's use of the modalized language leeds to a question of a description of the whole situation in terms of so-called Kripke possible worlds semantics, where in a given world or – in the context of the discussion – from the point of view of a given participant of the discussion, something is possible whenever it is true in some accessible world or, respectively in the situation of discussion, whenever it is accepted by some participant of the discussion. However, Jaśkowski did not consider modal functors ("it is possible that" and "it is necessary") as operators that could be explicitly used by debaters. Firstly, we would like to consider this question within the project and examine an extension of the discussive logic by modal operators appearing in the object language, but not merely used as a meta-language, auxiliary tool. As a result, we will formulate and examine a modal logic (that is a logic used to investigate features of modal operators) built over the discussive logic.

Although, some variants of Jaśkowski's approach have been developed, quite a number of questions are still open. Apart from the mentioned task of an extension of the discussive logic for the modal case, we see a room for further development of investigations on Béziau's calcules that was also inspired the discussive logic. In his paper on a logic **Z,** Béziau *explicitely* referred to works of Polish logician, using a modalised negation: „it is possible that not". It is important, in which way we will understand the functor of possibility. Depending on the way in which we will interpret the phrase „it is possible that", i.e. which logic will be used for the translation, we will obtain various explications of the object language functor of negation and various outcome systems as a result. J-Y. Béziau in his own solution used the modal logic S5, where from the point of view of Kripke semantics, all worlds are mutually accessible. Some specific solutions in this respect have been given and are known from the literature, however the obtained results are not fully satisfactory. Our second aim is to extend Béziau's solution for the next classes of modal logics generalizing the original Béziau's solution obtained for the logic S5 and ones that are known for other logics. Of course, the meaning of the negation that has been used by Béziau gives also a possibility of discussive interpretation. Up to our knowledge, this feature has not been considered in the literature, and we want to fill this gap, too.

Jaśkowski presented a very simplified model of discussion, where each participant has an access to all participant. As we have mentioned, after translation it corresponds from the formal point of view to the use of the modal logic S5. There are known works concerning a possibility of formulation of the very same discussive logic D_2 by reference to other modal logics. However, a question arises which conclusions will be accepted as following from a given discussion if participants will respond only for statements delivered by some debaters according to a relation that is not corresponding to logics determining D_2. This issue will be undertaken in the planned project as the third task.

Studies on Jaśkowski's works are important for two reasons: first, Jaśkowski's logic is the first fully formally defined example of so-called paraconsistent logic; second, the idea of modalisation belongs to main methods of explication of various calculi that are meant to precisely represent some philosophical issue. In both respects the suggested investigations can be seen as a dissemination of the thought of the Polish scholar situating him among the main characters of the contemporary philosophical logic.