Call for Papers:
“Relating Logic and Relating Semantics”

Special Issue of Logic and Logical Philosophy:

SPECIAL ISSUE GUEST EDITORS
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CALL FOR PAPERS. Submissions should be in English and use the form of a source LATEX file. Instructions for authors and a LATEX template for submissions can be found at: http://llp.umk.pl/inf4a.html
Full-text submissions should be sent to one of the addresses: jarmuzek@umk.pl and paoli@unica.it
Contributions are welcome from philosophers, logicians, mathematicians, linguists, and computer scientists.

IMPORTANT DATES
Paper submission deadline: 15th of February 2021
DEADLINE EXTENDED: 30th April 2021.

DESCRIPTION
The call is a result of the 1st Workshop on Relating Logic (September 25–26, 2020, organized by Emerging Field: Logic and Philosophy of Science; Department of Logic, Nicolaus Copernicus University in Toruń, Poland; Department of Pedagogy, Psychology, Philosophy, University of Cagliari, Italy, https://www.filozofia.umk.pl/katedra-logiki/call-na-workshop-on-relating-logic/).

Relating Logic is a logic of relating connectives (just as Modal Logic is a logic of modal operators). The basic idea behind a relating connectives is that the logical value of a given complex proposition is the result of two things: (i) the logical values of the main components of this complex proposition supplemented with (ii) a valuation of the relation between these components. The latter element is a formal representation of an intensional relation that emerges from the connection of several simpler propositions into one more complex proposition.

More formally, let $A_1, \ldots, A_n$ be propositions with some fixed logical values and let $c$ be an $n$-ary relating connective. Then the logical value of complex sentence $c(A_1, \ldots, A_n)$ depends not only on the logical values of $A_1, \ldots, A_n$, but additionally on the value of the connection between $A_1, \ldots, A_n$. It therefore depends on an additional valuation of pairs (resp. $n$-tuples) that is the part of the overall process of evaluation of the logical values of complex propositions built with relating connectives. This way we can form logical systems to deal with reasoning about non-logical relationships.
Often when we replace the parameters of classically valid arguments with real sentences and the classical connectives with certain natural language connectives, bizarre inferences result, such as the one below:

| Ann has not died or Mark is in despair. |
| Mark is not in despair or Ann is calling for a doctor. |
| Ann has not died or Ann is calling for a doctor. |

(a)

The problem arises because when we construct everyday arguments, we consider not only the logical values of the sentences but also expect certain non-logical relationships to hold between them, such as a causal relationship in the case above. Further examples of such relationships conveyed by arguments expressed in natural language are analytic, temporal, content, preference and connexive relationships. A formal language needs more than the standard formal apparatus of disjunction and conjunction for handling extensional phenomena; it needs machinery to make sense of intensional phenomena too.

It is easy to observe that if we interpret the expression or present in (a) in models \( \langle v, R \rangle \) (where \( v \) is a binary valuation of variables and \( R \) is a binary relation defined on a set of formulas) in the following way: \( \langle v, R \rangle \models A \lor B \) iff either \( \langle v, R \rangle \models A \) or \( \langle v, R \rangle \models B \), and \( R(A, B) \), then inference (a) is not valid.\(^1\) However, if we assume that \( R \) is transitive, then (a) is valid.

Although the simplest model for a relating logic is a pair: \( \langle v, R \rangle \), the situation may get more complicated. We can use multi-relating models to represent more types of non-logical relations between sentences. In addition, the valuation of relationships between sentences may not be binary but may be many-valued or more subtly graded. Furthermore, we can mix relating semantics with possible world semantics, equipping all worlds with additional valuations of complex sentences. Last, but not least, any semantics may be treated as relating one, when we assume that in case of complex sentences a relationship is represented by a universal relation.

The solution that relating logics offers seems to be quite natural, since when two (or more) propositions in natural language are connected by a connective, some sort of emergence occurs. In fact, the key feature of intensionality is that adding a new connective results in the emergence of a new quality, which itself does not belong to the components of a given complex proposition built by means of the same connective. An additional valuation function determines precisely this quality. Talk of emergence is justified here, because the quality that arises as a result of the connections between the constituent propositions is not reducible to the properties of those propositions. Consequently, if the phenomenon of emergence is to be properly captured, we need additional valuations in a model. The key feature of relating semantics is that it enables us to treat non-logical relations between sentences seriously.

**Scope.** Topics of submissions include among others:
- applications of relating semantics,
- algebraic interpretation of relating logics,
- comparison of relating semantics with other formal semantics,
- history of relating logics,
- modal extensions of relating logics,
- model theory of relating logics,
- philosophical logics defined by relating semantics,
- proof theory for relating logics,
- philosophical foundations of relating logics,
- other related topics (like dependence logic, set-assignment semantics etc.).

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\(^1\) Preserving, of course, the classical meaning of negation and writing \( \lor \) instead of \( or \).