Berislav Žarnić (1959 - 2017)

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Berislav Žarnić, a Croatian logician and philosopher, died long before his time on 25 May 2017 in Split, at the age of 57. This abrupt and stark outcome of his recent health condition came as a deep shock. All the shared plans, ideas, and especially the friendly and collegial conversation and advice were suddenly replaced by the truth that all this had been definitively interrupted and was no longer there in the way that had almost unquestionably been assumed. His death left his family in deep sorrow, caused great personal loss to his friends and colleagues, and created a huge gap in the areas of his expertise.

Berislav Žarnić was born on 26 November 1959 to a Croatian family in Tivat (Bay of Kotor, Montenegro). The family moved to Split, Croatia, where he went to elementary and high school, and thereafter he studied philosophy and sociology at the University of Zagreb, graduating in 1985. He worked as a high-school teacher in Split, obtained a Mr. Sc. in philosophy from the University in Zagreb in 1996, and defended his PhD thesis *Valjanost praktičnog zaključka* [Validity of Practical Inference] in 2000 at the same university under Goran Švob as supervisor. In 1997, Berislav Žarnić gained a permanent position at the University of Split, where he had already been teaching from 1995. He taught logic, philosophy of education, logic of social sciences, philosophy of science, and other philosophical subjects, from 2011 in the position of Full Professor. He served several times as Vice-Dean of the Faculty of Humanities and Social Sciences and of the Teachers College at the University of Split. He also collaborated with the University of Rijeka and the University of Zagreb.

Two scholarly visits had a decisive impact on his future work. The first one was a short visit to the University of Amsterdam in autumn 1997, where he met prominent scholars working in dynamic logic, such as Frank Velt-

man, Jeroen Groenendijk and Johan van Benthem. The second visit was a three-month scholarship at Uppsala University under the guidance of Krister Segerberg in 2001/2002. In the coming years, besides his teaching, he collaborated in research projects in logic at the Institute of Philosophy in Zagreb from 2002, and at the University of Warsaw in 2010 – 2012. He was acknowledged for his role in the founding in 2005 of the Faculty of Humanities and Social Sciences at the University of Split. In 2016, as the principal founding member, he was elected Head of the Research Centre for Logic, Epistemology, and Philosophy of Science at the University of Split.

I had the good luck and privilege to collaborate intensively with Berislav, beginning almost twenty years ago with the co-organising and joint writing of tests for state competitions in logic in Croatia. Further collaboration followed in the framework of philosophical logic research projects based at the Institute of Philosophy in Zagreb, involving work on research papers, and attending conferences together, including those in Vienna, Münster, Montreux and Xi'an. Work with Berislav on our joint textbook on logical questions and procedures (2008) was a special experience of mutual cooperation, analysis and finding solutions, of collaboration to the tiniest detail in the typesetting of the book. His distinct sense for team work and his intellect in problem solving were crucial for the conclusion of this and many other joint tasks.

Berislav Žarnić's work has had a significant reception worldwide in the field of dynamic logic and philosophy of education, and is referred to in papers by many eminent scholars from Europe through the Americas and to Asia. He is the author of forty-one paper in logic and philosophy both in international and Croatian publications, and held over sixty conference talks and invited lectures abroad and in Croatia. Besides, he is the author of the book *U perspektivi dinamične semantike* [In the Perspective of Dynamic Semantics] (2005), we co-authored *Logička pitanja i postupci* [Logical Questions and Procedures] (2008), he is co-editor of *Theory of Imperatives from Different Points of View* (2011; vol. 2, 2013), as well as of *Between Logic and Reality: Modeling Inference, Action, and Understanding* (2012). He was co-editor of the *Encyclopedia of Educational Philosophy and Theory* (1999 – 2015), cooperating further in the new, continuously updated edition, which M. Peters, the editor, has dedicated to him. He co-edited two monographic issues of a journal: *Imperatives, Performatives and Norms in Social Reality* (2011) and *Logic Matters: East and West* (2015). He co-organized the following series of conferences: *Physics and Philosophy* in Split, with Franjo Sokolić as chair, SOCREAL (*International Workshop on Philosophy and Logic of Social Reality*) in Sapporo, in 2016 as a co-chair with Tomoyuki Yamada, and *Formal Methods and Science in Philosophy* in Dubrovnik.

Berislav was professionally devoted mainly to philosophical logic, as he liked to call it, a branch requiring philosophical ideas to be rigorously verified

by semantic models and logical formalisms, and, at the same time, putting logic under the requirements of a philosophical foundation and sense. He characteristically aimed at and liked to think in set-theoretical formal semantic terms, combining different formal languages and deduction systems. Another of Berislav's constant philosophical and practical focuses was education and the philosophy of education. This is reflected, besides in his theoretical work, in his conscientious work on university study programmes and course curricula, in his dedicated advisory work with students and younger scholars, as well as in his work for Croatian national education agencies. Let us mention that some of his papers and books have been included in the literature for university courses in Croatia and neighbouring countries, as well as for universities in Amsterdam, Beijing, Hamburg, Stanford, and Warsaw.

We highlight some theoretical contributions from Berislav Žarnić's broad, philosophically profound and technically meticulous work.

In "Validity of practical inference" (1999) he further develops a dynamic logic approach (e.g. Veltman's update semantics) in order to model practical inference. He gives a semantics for goal sentences and factual sentences (Kenny's *Fiat* and *Est* sentences), and, ultimately, a natural semantic definition of the validity of practical inference, with an appropriate semantic decision procedure. In this approach, characteristic of Žarnić's way of philosophizing, language is not just language, but world(s) (technically, $w \subseteq A$, with w for a world, A for the set of sentence letters); a sentence is not just a sentence or a world cognizing form, but also something that can change the world (technically, a sentence is associated with a function that maps relational structures (states, σ) to relational structures).

In the following years, Žarnić elaborated this semantics as a framework for a logic of imperatives. He revived Lemmon's approach (1965) of formalizing imperatives, !(p/ q), on the basis of the von Wright style of logic of change (von Wright 1963). In "Is unsaying polite?" (2012) he arrived at the semantics of imperative sentences by functionally expressing the cognitive and motivational updates necessary for a required action (cf. "Dynamic models in imperative logic", 2011). In addition, he proved the expressive completeness of the reduced imperative language in the following sense. Imperatives to "produce" or "sustain" ¬ p: !(p/¬ p), !(¬ p/¬ p), !(T /¬ p) are redundant in a language that can express the producing or sustaining p: !(¬ p/ p), !(p/ p), !(T / p). It follows that negated speech acts do not increase the expressiveness of imperative language. Žarnić's work on Lemmon-style imperative logic by incorporating a logic of change gradually evolved, starting mainly from "Imperative change and obligation to do" (2003) and "Imperative logic, moods and sentence radicals" (2003). Intermediate versions of imperative logic are given in "Dynamic semantics, imperative logic and propositional attitudes" (2002), with a revised and extended version in *U*

perspektivi dinamične semantike (2005), and in "Imperative negation and dynamic semantics" (2003).

In a general logical-philosophical view (see "Logical root of linguistic commitment", 2013), Žarnić focuses on the creative power of language, in a psychological and, what he especially emphasizes, in a social sense: "any locution can create some social fact". Thus, the logic of utterances, like imperative logic, is for him the root logic of all its "effect logics" (the logic of intentions, like belief and desire, the logic of obligation and linguistic commitments), establishing a net of interrelated logics to be studied together. In addition, Žarnić argues in favour of ontological contingentism ("there is at least one non-necessary object") on the ground of the presence of object-creation and object-destruction imperatives ("Ontology of sentential moods", 2016).

Concentrating on deontic logics, and by further developing a Broomean set-theoretical approach, which includes a source-dependent code function of normative requirements, Žarnić gave a typology of norms by defining the metanormative properties of norm requirements and norm codes (like congruency, consistency, deductive closure, materiality, formality), and the properties of normative sources (like world- and agent-relative, world- and agent-absolute, realization equivalent) (see "A logical typology of normative systems", 2010). By introducing a translation function from a deontic language into the previously formally defined metanormative language, some standard deontic logics are proven to be, for instance, "gapless", deductively closed, and agent- and world-absolute. On these grounds, Žarnić proved that for each world- or agent-relative code there is a "realization equivalent" world- or agent-absolute code.

Extending this research, in a paper with his assistant, Gabriela Bašić, "Metanormative principles and norm governed social interaction" (2014), as well as in his "A social pragmatic view on the concept of normativity" (2016) and "Deontic logic as a study of conditions of rationality in norm-related activities" (2016), the mutually independent norm set ($\mathcal{N}$, obligatory content) and counter set ($\overline{\mathcal{N}}$, non-obligatory content) are introduced, and the "perfection" properties (von Wright) of a normative system are defined by means of the properties of these sets and of their interrelationship. The "perfection" property of completeness (gaplessness, $p \in \mathcal{N} \vee p \in \overline{\mathcal{N}}$) is proved to be straightforwardly introducible by means of the principle of "what is not forbidden is permitted", whereas "perfectioning" by means of the principle "what is not permitted is forbidden" is shown to be under-determined. In addition, in "A social pragmatic view …" Žarnić shows how deontic dialetheic logic can be used as a suitable logic for a norm-recipient agent to bridge the presence of inconsistent norms while preserving the rest of the system's "perfection".

The above metanormative results could have wide application, for instance, in law and ethics, and, besides, they are also connected with Gödel's ontotheology and its concept of "positive" properties.

All the previously mentioned research is interconnected with formal logical systems. Berislav's preference often goes to "hybrid" systems. In particular, let us mention his labelled natural deduction systems for Kanger's theory of rights (with Segerberg's adequacy criteria) ("Jedan sustav obilježene prirodne dedukcije za Kangerovu teoriju prava" [A labelled natural deduction system for Kanger's theory of rights], 2006), as well as for imperative logic ("Dynamic models and imperative logic", 2011).

The topics of logic research were for Berislav intrinsically connected with the philosophy of education. Knowledge is for him an "open-ended process" ("dynamic conceptual network"), and, accordingly, learning does not have an algorithm that guarantees an increase of predictive and explanatory power. Hence, if we define learning as knowledge acquisition with an increase of predictive and explanatory power, then learning is not effectively learnable ("Learning to learn: an epistemological paradox in education", 2001). In "Vrijeme otvorenog znanja" [The time of open knowledge] (2015), he recognizes the open character of learning in the "anomalous" development of the concept of time. After mature Newtonian and Kantian concepts of time, this development arrives at the special relativistic concept of time, which is more similar to a child's conception of time (as confirmed by Piaget's experiments), where simultaneity is not a primitive property of time. He also argues for a non-Tarskian, and particularly for a non-transitive (beside the non-monotonic), character of the consequence relation of educational philosophy and theory, which have a mixed, normative-descriptive character ("On the logical form of educational philosophy and theory", 2016). An openness approach to learning can also be recognized in our joint textbook collection of problems *Logička pitanja i postupci*. This introductory logic focuses on learning logic by means of solving logical problems where questioning and procedural thinking become intrinsically interwoven.

The paper "Validity of practical inference" (1999) became a reference point in the development of the dynamic logic of preference change (see, e.g., in J. van Benthem, "For better or for worse: dynamic logics of preference", in *Preference Change*, T. Grüne et al., Springer, 2009). Berislav's work on imperative logic is often referred to in literature, including the *Handbook of the History of Logic*, vol. 6 (van Eijck and Stokhof, "The gamut of dynamic logics"). The metanormative results also raised interest, with the metanormative typology referred to by J. Broome in his *Rationality through Reasoning* (Wiley-Blackwell, 2013). Berislav's contributions have been cited in PhD theses worldwide. All these and other results, many of them recog-

nized within the logical-philosophical community, are certainly more than enough to inspire a whole logical-philosophical school that could continue and further develop this suddenly interrupted deeply dedicated research. The last paper by Berislav Žarnić published during his life is "Normativity in communication" (2017), a joint paper with G. Bašić, which defines an ideographic language for formal pragmatics and proposes a typology of communication norms.

Research for Berislav was not some merely scholarly activity, but a most intense part of life. It was a valuable experience to share with him the moments of content, gladness, and success, as well as the moments of discontent, difficulties, and disappointment. Such exchange gave us, on one hand, incentives for further work, and, on the other hand, it led us most often to ways out and to further constructive plans.

Berislav posited high standards and norms not only in his theoretical work but equally in the manner of live, personal communication. His manner of conversation and discussion, respectful toward the collocutor and friendly, but right-minded and at the same time analytical, with top intelligence and philosophical insight, remains exemplary for academic and human communication and cooperation.

Keeping his work and deeds in our memories, let us look to the future, too, where the whole richness that he has left behind, probably in a different way than so far, may show new ways and yield new results. Let us thank him for all the good he did and that he has left behind for us and for coming generations.

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For a full list of publications see http://marul.ffst.hr/~berislav/doku.php.

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