

PREFACE

Writing the preface for a book feels good, because once you find yourself in a situation to write the preface, it usually means that you have already written the rest of the book.

Writing this book was a real challenge. I would have probably never written it if there was not Stefan Voss from the University of Hamburg to propose me to write it - thanks Stefan! It may seem that it is not very difficult to describe the application of a relatively young technology, such as the Semantic Web, to the domain of education. It may seem that there is actually not much to write about that topic. But it just seems so. On the contrary, the greatest challenge in writing this book was the abundance of material and exciting ideas about how to apply Semantic Web technologies to education. I knew from the very beginning that I will have to select carefully from many theories, practices, evolving ideas and approaches, and important research efforts, in order to compose a coherent whole. Worse still, I also knew that I will have to leave out of the book many other results, initiatives, and ongoing projects that would certainly be worth describing under more relaxed constraints. Thus, the endeavor was exhausting.

The Semantic Web is about how to deploy artificial intelligence concepts and techniques on the Web, in order to harness the Web and make it more useful, more user-centered, and more responsive to human interaction. It is about how to represent knowledge on the Web, and how to make the Web process that knowledge and reason about it. It is about how to make the Web itself look and act more intelligently when it interacts with humans. The Web can look and act more intelligently only if it complies with the huge variety of its users by proactively and adaptively creating a correspondingly huge variety of behaviors, to meet the users' needs.

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Essential elements of the Semantic Web are ontologies. Much of this book is about them, albeit in the context of education. They represent deep knowledge of various domains and topics, i.e. classes of objects, their relations, and concept hierarchies that exist in various domains. Ontologies enable machine understanding and machine processing of knowledge and meanings on the Semantic Web. Hence they are the cornerstone of the Semantic Web's intelligent interaction with the users.

However, to most end users ontologies appear just as elements of the Semantic Web infrastructure, and infrastructure is never impressive just by itself. What is impressive are usually the results, or even just the capabilities, enabled by the infrastructure.

And this is where the exciting part starts. Education is a very fertile soil for applying Web technologies anyway, and the Semantic Web opens a number of new doors and multiplies the prospects of Web-based education. Being always fascinated with education in general, and being a person who always wants to learn more, I believe the Semantic Web is the way to go if we want to improve Web-based education for the benefit of the learners. To this end, the Semantic Web-based education brings intriguing opportunities to combine advanced technologies of the Semantic Web with inspiring and imaginative theories and practices of learning and teaching. Moreover, Semantic Web-based education strongly supports interactions between learners, teachers, and authors of educational materials, thus facilitating development of online learning communities.

In 1990s, I joined the community of researchers interested in applying artificial intelligence to the domain of education, the AIED community. Nice people! Some of them are interested in psychological aspects of learning and teaching processes, whereas others focus more on learning technologies and artificial intelligence. Altogether, I found that community to be an extremely suitable milieu for me to learn more, do more research, and expand my professional interests. It is within that community that I developed my understanding of what Semantic Web-based education should look like.

Another group of people that I owe very much are the researchers of the GOOD OLD AI research group (<http://goodoldai.org.yu>). They are bright young people, full of creative ideas, brilliant minds, and dear friends of mine. I found exchanging ideas and socializing with them a great source of energy in writing this book. Special thanks goes to one of them, Jelena Jovanović, who carefully proof-read the manuscript and suggested a number of improvements that I incorporated in the book.

Of course, the most important group of people one can belong to is family. I must stress the extreme support and patience that my family has shown in supporting me to complete this book. Without their understanding,

it would not be possible to stand all the efforts that have been involved. The encouragement that I had from my family and friends.

Apart from the support from family and friends, this book includes another three key elements. The first one was my decision and commitment to write it. Although I hesitated a bit in the beginning, I remember that it was last summer in Edinburgh that I definitely decided to write it. One day, I was admiring the view of the Edinburgh Castle from a nice café on Princess Street, and then in the evening I was sitting in a pub, watching a video of Green Day performing in an open-air concert. That day brought a lot of pleasure and positive energy, and after that I knew I will manage to write this book.

The second one is education. The fulfillment it brings can be very diverse. Sometimes it is so intense, like Wednesday market in Anjuna, or like seeing Patti Smith on stage. But it can also be subtle and iridescent, like Norah Jones' ballads. If I was asked to associate a color with education, I think I would suggest the color of sand at sunrise. Or the color of Al-Khazneh in Petra, seen through the crack of As-Siq.

The third element of this book is the Semantic Web and its ontologies. They fit so well with education, by building a strong platform for it, by bringing reflection, and by interweaving everything. The feeling they bring is like that of still water; or that of sitting on the top of a hill in Hampi; or like driving back from Fletcher Bay to Coromandel Town, on a dirt road, at dusk, slowly, gazing at the shadows of nearby islets, listening to Brian Eno's voice and music from the tape; or like Peter Gabriel, alone in a spotlight, playing piano and singing *Here Comes The Flood*. If I was to associate a color with ontologies, then it would definitely be deep blue. Ocean blue.

That's it. I am going to have a long rest now. Wake me up when September ends.

Vladan Devedžić
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