

Foreword

If you “dream things that never were and say, why not?”¹ Then this book will inspire you. The chapters sometimes provide a peek into possible futures and sometimes provide a flood of ideas that leave one reeling. One research area of intense interest to me is that of online experiments, with a particular interest in remote laboratories applied to physics and electrical engineering. Traditionally there are two types of online experiments considered by researchers: remote laboratories (based upon remote access to physical equipment) and virtual laboratories (based upon access to simulations and virtual reality). These two variations of online experiments are nearly always treated as separate research areas. Additionally, remote laboratories that require replenishment of a resource are almost never attempted, as they do not scale to handle large numbers of users. In one chapter of this book the reader discovers a project that integrates these two types of laboratories. That chapter describes an experiment based on an FPGA implementation of a controller for a simulated water tank, so the water never runs out nor needs cleaning. This combination of physical hardware and simulation/virtual reality/augmented reality should open a novel approach to new online experiments. In many of the chapters the reader is presented with other similar beautiful insights.

This book provides glimpses into contemporary research in the domain of remote experiments, but the ideas also range over the domains of telehealth, collaborative learning environments, the role and use of mobile devices, brain-computer interfaces, haptic feedback (with one application in training dentists), virtual reality and materials processing.

Great research arises from asking great research questions. Warren Berger discusses this topic in his recent book *A More Beautiful Question*. He defines a beautiful question as one that is “an ambitious yet actionable question that can begin to shift the way we perceive or think about something - and that might serve as a catalyst to bring about change”. As one reads the chapters of this book one begins to see some of the “beautiful questions” that the authors develop and how the subsequent “what if” and “how” questions are developed.

After reading this book (or those chapters that take your interest) take some time to think of your “beautiful question”. We look forward to reading about your work in the books that will follow from Teresa Restivo, Alberto Cardoso and António Lopes, the editors of this book.

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¹ Paraphrased from Robert Kennedy who said “Some people see things as they are and say why? I dream things that never were and say, why not?” In fact Kennedy paraphrased George Bernard Shaw who originally said in his play *Back to Methuselah* “You see things; and you say ‘Why?’ But I dream things that never were; and I say ‘Why not?’” Check the full story on <http://www.quotecounterquote.com/2011/07/i-dream-things-that-never-were-and-say.html>.