Preface

Understanding consciousness is one of the major unsolved problems in science. An ever more important method of studying consciousness is to study disorders of consciousness, such as brain damage leading to coma, vegetative states, or minimally conscious states. Following the success of the first Coma and Consciousness Conference held in Antwerp in 2004, satellite to the 8th Annual Meeting of the Association for the Scientific Studies of Consciousness (ASSC8), the 2nd Coma and Consciousness Conference, satellite to ASSC13, focused on the clinical, societal, and ethical implications of “coma science.” Held at the historic Berlin School of Mind and Brain of the Humboldt University in Berlin, 4–5 June 2009, the conference was a joint meeting of the European Cooperation in Science and Technology COST Action BM0605 “Consciousness: A transdisciplinary, integrated approach”; the Coma and Consciousness Consortium — McDonnell Foundation Initiative Grant “Recovery of consciousness after severe brain injury”; the European Union Specific Targeted Research Projects (STREP) “Measuring consciousness: Bridging the mind-brain gap” (Mindbridge); and the Marie Curie Research Training Network “Disorders & coherence of the embodied self” (DISCOS). The conference was endorsed by the European Neurological Society and co-funded by the Mind Science Foundation. It brought together a distinguished small group of neuroscientists and clinical investigators engaged in the study of coma and consciousness and mechanisms underlying large-scale cortical integration, state-of-the-art neuroimaging studies of sleep, anesthesia and patients with disorders of consciousness, and experts in the fields of the neurology of consciousness and ethics who addressed the larger context in which the emerging neuroscience will be received and integrated.

Recent studies have underscored that recovery of consciousness after severe brain injury remains poorly understood. Many of these investigations are very much in the public eye in part because of their relationship to controversies about end-of-life decisions in permanently unconscious patients (e.g., Terry Schiavo in the United States and Eluana Englaro in Italy recently), and the relationship to one of the major philosophical, sociological, political, and religious questions of humankind. The challenges are surprisingly difficult with a degree of diagnostic uncertainty that may range at the bedside in some patients from unconscious to fully aware, even for patients with no evidence of behavioral responsiveness. As measurements improve, behaviorally defined states from vegetative state (wakeful unawareness), minimally conscious state (at least some evidence of awareness), and up but not including patients in locked-in syndrome (full consciousness with virtually no motor control) will reveal subcategories of patients whose level of consciousness we cannot at present with confidence identify.

Although public interest is high, the broad needs for systematic research in this emerging area of knowledge is currently unmet. This volume focuses on our current understanding of the neuroanatomical and functional underpinnings of human consciousness by emphasizing a lesional approach offered via the study of neurological patients. Our intended goal aims at updating and advancing knowledge of diagnostic and prognostic methods, potential therapeutic strategies, and importantly identifying challenges for professionals engaged in the study of these patient populations. The selected contributors are all outstanding authors and undisputed leaders in their field.

The papers presented in this volume are likely to help form the scientific foundations for frameworks to systematically organize information and approaches to future clinical assessments of consciousness. The
interest of this is threefold. First, the exploration of brain function in disorders of consciousness represents a unique lesional approach to the scientific study of consciousness and adds to the worldwide effort to identify the “neural correlate of consciousness.” Second, patients with coma and related disorders of consciousness continue to represent a major clinical problem in terms of diagnosis, prognosis, and treatment. Third, new scientific insights in this field have major ethical, societal, and medico-legal implications, which are the topic of the last part of this book.

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Steven Laureys (Liège)
Adrian Owen (Cambridge)
Nicholas Schiff (New York)
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