

Preface

This book sets out the conditions in which the need for a new approach to the production of architecture in the 21st century is established, where our homes and cities are facing increasing pressures from environmental challenges that are compromising our wellbeing and our lives. Vibrant architecture embodies a new kind of architectural design practice that explores how lively materials, or ‘vibrant matter’, may be incorporated into our buildings to confer on them some of the properties of living things, such as movement, growth, sensitivity and self-repair.

My research examines the theoretical and practical implications of how this may occur through the application of a new group of materials in the production of our living spaces, collectively referred to as ‘vibrant matter’. Characteristically, these substances possess some of the properties of living systems but may not have the full status of being truly ‘alive’ and include forms of chemical ‘artificial’ life, such as ‘dynamic droplets’ or synthetically produced soils. These complex systems are able to directly communicate with the natural world using a shared language of chemistry and so negotiate their continued survival in restless contexts.

These chemical conversations may become a design strategy by applying the principles of an emerging scientific field called natural computing, which is evolving Alan Turing’s interest in the computational powers of Nature. Natural computing shapes the outcomes of vibrant matter and offers a range of new tools for design through a new technical operating system identified as an ‘assemblage’. Assemblages provide a unique set of associated concepts, operating principles and qualitatively distinctive outcomes from machines. A range of design projects that demonstrate the principles of a new approach to the choreography of space are explored through the construction of spatial programs and formulating design tactics in projects such as the ‘Hylozoic Ground’ installation, a collaboration with architect Philip Beesley for the 2010 Venice Architecture Biennale. Further experimental and speculative development of the assemblage operating system is explored through further design work in ‘Vibrant Venice’, which proposes to grow an artificial limestone reef underneath the foundations of the city. Urban-scale outcomes are also explored in ‘Vibrant Cities’, which applies synthetic soils as a material and technological strategy that optimizes environmental performance in underused and poorly imagined sites within urban environments.

Collectively, these technical and design studies suggest that the theory and practice of vibrant matter may give rise to new kinds of material solutions within the practice of the built environment, which could be applied to architectural design as ‘vibrant architecture’, which is stochastic and life-promoting – and stands in stark contrast to the prevalent view of sustainable practices, which are centred on an industrial approach to resource conservation.

Vibrant architecture may create new opportunities for architectural design practice that venture beyond top-down form-finding programs, by enabling architects

to codesign in partnership with human and non-human collectives, which result in the production of post-natural landscapes. Ultimately, vibrant architecture may operate as an ecological platform for human development; one that augments, not diminishes, the liveliness of our planet.