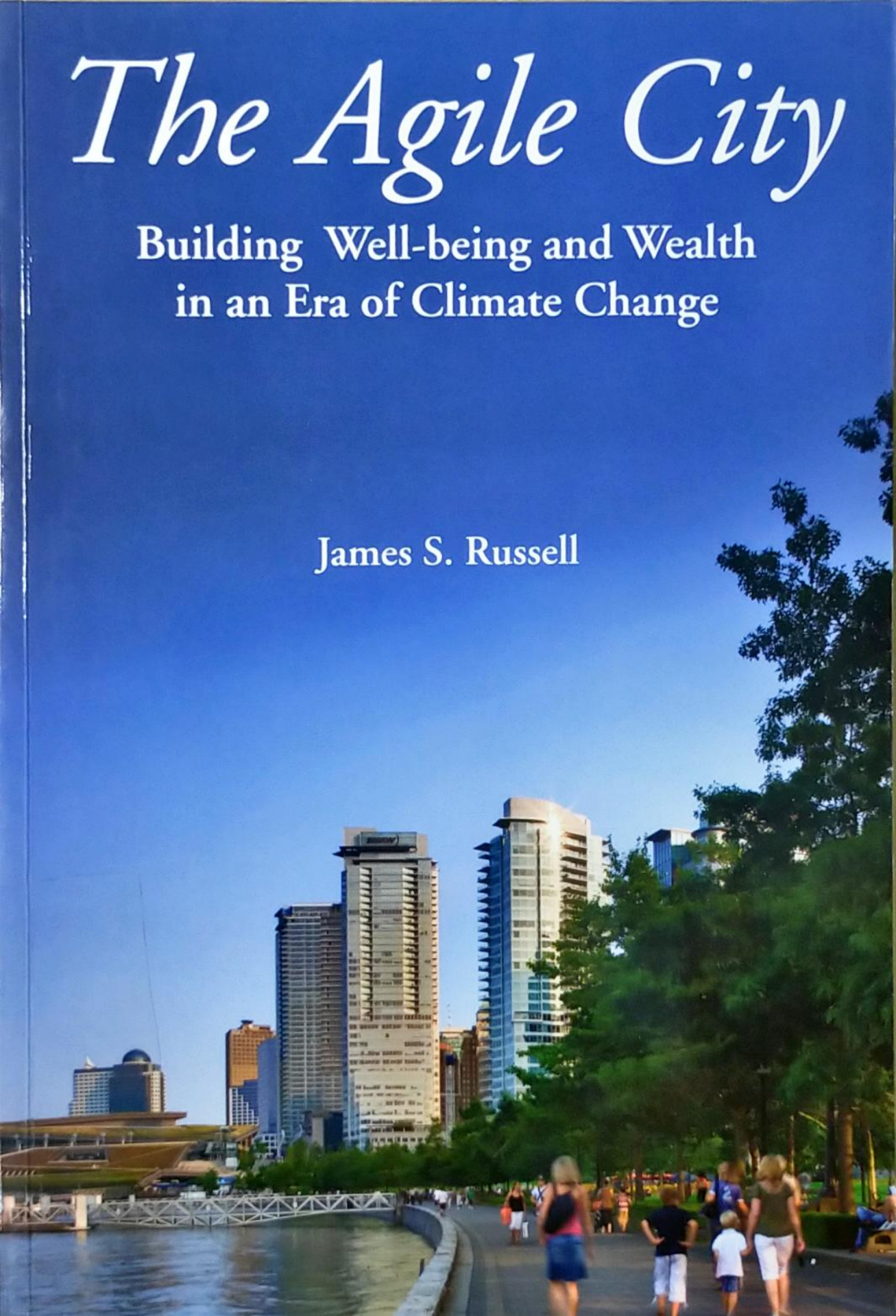
The Agile City

Building Well-being and Wealth in an Era of Climate Change

James S. Russell



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PROLOGUE

Carbon-neutral Now

The blond stone walls and handsome vaulted roof of Kroon Hall have an unassuming barnlike presence amid neo-Gothic neighbors at Yale University. An intimate plaza, a pleasing meeting place for the School of Forestry and Environmental Studies, welcomes you. Hefty wooden louvers on the tall, narrow entrance side cut afternoon sun (figure P.1). Inside, sun filters down the wood-paneled main stair, inviting you to climb to the top-floor reading room, with its gracefully vaulting ceiling. There, photovoltaic panels over skylights shower celestial light, perfectly balanced by stripes of sunlight seeping through the louvered end wall. You might notice the little green and red lights next to the windows that signal when natural breezes can be used instead of heating and cooling, but you probably do not know that five very-low-energy systems heat and cool the building. It's not obvious that Kroon's long narrow shape minimizes absorption of summer heat while gathering the low winter sun and grabbing passing breezes for ventilation. Though the building fits as comfortably as an old pair of jeans, Hopkins Architects, of London, working with the locally based Centerbrook Architects and Planners, have calibrated every detail of this new office and seminar-room building to produce, husband, or harvest energy (figure P.2).

A few years ago, a building could garner headlines because it cut energy use 20 or 30 percent from today's norms. Kroon aimed much higher, at "carbon neutrality": reducing to zero the heat-trapping gases that warm the planet.[1]

Zero. A few years ago, experts would have said you can't get there. But improvements in building design, technology, and construction now make carbon-neutral buildings an increasingly reachable goal. Electric cars can be

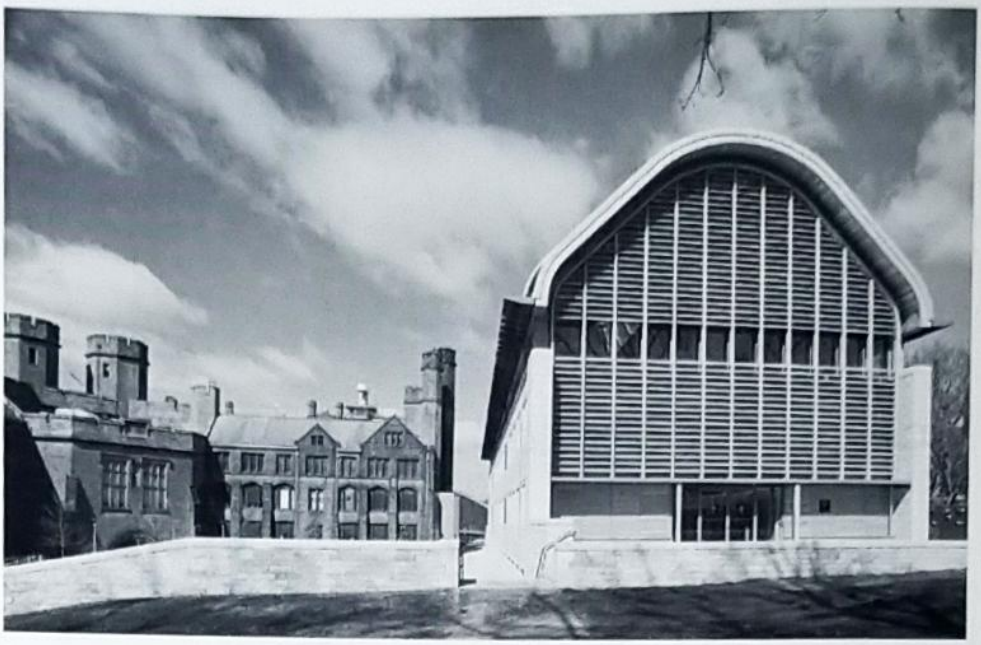

Figure P.1 Kroon Hall, Yale University. The louvers on the east-facing side of this building are one of many tactics designed by Hopkins Architects with Centerbrook Architects to achieve near zero-carbon emissions. Credit: © Robert Benson

Figure P.2 The daylighted top-floor reading room and café at Kroon Hall, Yale University. Photovoltaic panels over skylights generate energy and filter the sun, which balances sidelight seeping through the building's protective exterior louvers. Credit: © Robert Benson