

# ARCHITECTURE AND IDENTITY

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# **ARCHITECTURE AND IDENTITY**

Responses to Cultural and  
Technological Change

Third edition

Chris Abel

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For my students; past, present and future

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# Preface

The first edition of this collection of essays was published in 1997 and the second, including two new chapters, followed in 2000. Both editions also included the same foreword written by Suha Ozkan, then Secretary General of the Aga Khan Award for Architecture, who I was privileged to know through my participation in the Award process and many connected events. The length of the foreword and Suha's detailed comments persuaded me at the time that a separate introduction was unnecessary, particularly as both editions were published within a short period.

However, much else has happened in the realm of architectural thought and practice in the 20 years that have passed since that first edition, calling for a fresh overview. In addition to the six new essays selected for this expanded third edition I have therefore also written an introduction knitting together the new essays with the earlier chapters, focusing on the overarching themes and integrating ideas running through the book. I have also been motivated over the past decade to articulate those larger perspectives in the process of working on another book, *The Extended Self: Architecture, Memes and Minds*. Written specifically in quest of a viable theory of the coevolution of mind, body and technology and its environmental effects, the latter work draws upon many of the fundamental ideas and themes first launched in these essays and which I describe in that book as the foundation or 'building blocks' upon which it is largely based. While each book necessarily stands alone, to a great extent they are therefore also complementary: the earlier essays in this collection providing the essential history of ideas leading up to the latter more general theory, which in turn points back to its own roots as well as forwards to where recent developments in the neurosciences and other fields may be leading us. A third book is also in preparation that expands on the theoretical content of the other two publications. Together the three works will eventually comprise the summation of what has basically always been a continuing exploration of closely related ideas and themes, if only approached from different angles over time.

The six new chapters include both more recent essays updating key issues and two of my earliest publications that I neglected to include in either the first or second editions, but which help to fill in some important gaps in the overall development of ideas presented here. Chapter 1, 'Evolutionary planning', was

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first published in 1968 and replaces the former chapter titled ‘Urban chaos or self-organization?’ that was included in the first two editions. That chapter was written as a combination of the earlier publication and another essay with the latter title published in 1969. However, while it covered more ground, it did so at the price of a loss of clarity of the main argument concerning self-organizing urban systems. I concluded therefore that my argument is better served by republishing the original 1968 essay by itself.

The second new essay from that period, ‘Cultures as complex wholes’ (Chapter 9), was first published in 1972 and specifically addresses the broader theme of cultural theory, in which ‘culture is conceived as being embodied in the formation of ideas’. Covering related issues of consciousness, the essay sets the ground for much else in this book, including the later studies in memetics and embodied minds outlined in other chapters. These include a previously unpublished essay ‘Technically embodied selves’ (Chapter 8). Written for this new edition, the essay abstracts key elements of the theory elaborated in *The Extended Self* and further explores the development of online virtual selves and their psychosocial implications. A postscript has also been added. Based on notes originally written in 1982 for a draft introduction to an earlier but uncompleted collection of essays, it is included here for the additional light it sheds on the philosophical premises underlying this book.

To avoid repetition, an essay on the evolution of the high-rise office, ‘Prime objects’, published in the previous two editions has been omitted in this edition since that subject is now well covered in one of the new essays, ‘Reimagining the Vertical Garden City’ (Chapter 22). The selection of new essays has also been guided by the need to strengthen each section of the book, which retains the previous grouping of related themes and topics under three main headings: ‘Science and technology’; ‘Critical theory’, and ‘Regionalism and globalization’. Each group of chapters is also arranged as before in chronological order within each section. In a few cases subtitles have been added to some of the original shorter essay headings to clarify the subject matter. Similarly, I also changed the main title where it could be made plainer, as in Chapter 3, now retitled ‘Empathy in science and design’, Chapter 6, ‘The virtual studio’, and lastly, Chapter 12, ‘Metaphor in architectural creativity’. In all such cases the original published main titles and sources are noted along with the new chapter headings.

While the structure offers a convenient system of reference, as I explain in my introduction, like the pieces of a jigsaw puzzle each essay forms a part of the same broad exploration in search of a deeper understanding of the role of architecture in the evolution of cultural and social identities. The challenging difference is that the overall picture changes with time as knowledge itself evolves, affecting some parts of the puzzle more than others, hence the need for this updated edition. However, while some of the specific technologies discussed have since been developed much further, the principles described here on which they are based still hold true. That holds as much for the cybernetic

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technologies of production described in Chapters 2 and 4 as for the ‘appropriate technologies’ outlined in Chapter 19, the historical and theoretical genesis of which is as significant if not more so than the technical details. Aside from some minor editing I have therefore resisted any attempt to update the original technological content or any similar issues described in the earlier essays, preferring to leave that task to later writings in the book on related subjects.

Finally, in the closing section of my introduction I address the issue of the overriding but elusive search for truth and what I and other critics have described as a willful indulgence in obscurity among some postmodernist writers. Hopefully readers will find the ideas presented in this book relatively clear. In some cases, as in a few of the essays gathered in the first section on ‘Science and technology’, the occurrence of specialist terms such as those used in the discussions on cybernetics and memetics has been unavoidable, though every effort has been made to clarify those terms for a wider readership.

Ultimately, however, the on-going process of exploration and discovery as documented in these essays is at least as important to the whole adventure as any more specific conclusions or insights they might afford. Whatever else readers may derive from this book, if they come to share even a little of that same sense of adventure then my journey will have been well worth the undertaking.

Carrickfergus, June 2016

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# Acknowledgements

The following list includes those supportive individuals and institutions acknowledged in the first and second editions, together with those who played equally positive roles in the period since then leading up to the production of this third volume, some of whom are sadly no longer with us but whose contributions are not forgotten.

First thanks go to those who played their part at the very beginning of my career in opening up new avenues of enquiry or creating other opportunities. Special thanks go to Roy Landau at the Architectural Association (AA) School of Architecture who helped me to see architecture as part of a broader spectrum of urban and environmental issues. The interdisciplinary symposia that Landau organized at the AA were also a highlight of that period and brought together the thoughts of philosophers and leading figures from different fields, inspiring me to do the same in my own studies. Melvin Webber's advice to me during his visit to London in 1967 to research systems theory in turn gave my own nascent explorations into other disciplines a decisive boost; ventures that were further encouraged by Gordon Pask during my final year at the AA, whose later support for my researches was also deeply appreciated. I also remain indebted to both Alvin Boyarsky and Peter Cook, who in their respective capacities as AA Chairman and fifth-year program director ensured my successful graduation despite the unusual nature of my design thesis as a purely written work of theory.

My next round of thanks goes to those persons who played key roles in making it possible for me to travel and work in the many parts of the world described in these essays. First in this category is Angela Schweitzer, then teaching at the University of Chile, who, following a visit in 1977 to Portsmouth School of Architecture where I was then teaching, took an interest in my researches and arranged my first lecture tour outside the northern hemisphere in the following year to South America, and so forever changed my perspective on the architectural world at large, with all its cross-cultural complexities. Second is Ray Kappe who, as founder-director of the Southern California Institute of Architecture (SCIARCH) in Los Angeles, gave me my first teaching appointment in the US as visiting lecturer in the spring of 1979, where I ran a seminar on philosophy and architecture. It was during this time and the following two years teaching at

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Texas Tech that I was first able to put together my thoughts on linguistic analogies and some of the other philosophical topics covered in these essays.

Next is Fawiza Lucas, a former student of mine at Portsmouth School who, as Dean of the Department of Architecture at the Science University of Malaysia in Penang, invited me to teach there in 1981, so opening up another fascinating part of the world with which I have been absorbed ever since. In the same period I met Ken Yeang, whose projects and writings on bio-climatic architecture have since been a constant inspiration and whose support for my own related studies has been invaluable. Warm thanks also go to Saleh Al-Hathloul, Dean and Head of the Architecture Department at King Saud University in Riyadh, who gave me my next appointment and so opened the gateway to the Middle East for me, and with it access to an infinite source of architectural wealth. I am especially grateful for his support for my efforts to assimilate Islamic traditions of design into the foundation programme, about which I have written elsewhere. Further opportunities to teach at the National University of Singapore and the Middle East Technical University in Ankara quickly followed, where I was able to extend my knowledge of both historical traditions and modern developments in those regions and their cultural origins, the fruits of which can also be read in this collection.

It was also during this adventurous period that I began my long association with the Aga Khan Award for Architecture as a nominator and participant in related events, for which I sincerely thank Suha Ozkan for involving me with that important and progressive institution. The experience greatly strengthened my knowledge and understanding of both Islamic architecture and the complex economic and cultural conditions in those parts of the developing world where most of the Awards' projects are focused – invaluable knowledge that also informed many of these essays.

My return to the UK in 1989 was followed by intense years of productive teaching and research at Nottingham University, where I rekindled my earlier investigations into advanced technologies of architectural production, culminating in the Biotech Architecture Workshop described in the first part of this collection. Created as a multi-disciplinary research and teaching experiment, the many expert technical staff involved included David Nicholson-Cole in the architecture faculty and Farhang Daemi, then Director of the Center for Medical and Industrial Informatics, as well as many others around the Nottingham campus whose names and technological resources I have cited in that essay, together with the architectural practices in London with whom we collaborated on specific projects. Not least, my warmest thanks go to the students involved for all their hard work – which far exceeded mandatory requirements – in making the Workshop a success.

Thus far my acknowledgments cover the background to the work included in the earlier editions of this collection. My next round of thanks focuses on the years following the publication of the first edition and my early retirement

from Nottingham University in 1997 to pursue my writing career from my home in Malta, where I had lived off and on since 1983. The relatively tranquil period in Malta, during which time I worked on a definitive series of monographs on the Foster practice, was followed in turn by my immigration to Australia in search of fresh opportunities and discoveries. For this I owe Harry Seidler a special debt for personally endorsing my immigration and for my introduction to Tom Heneghan, then Chair of Architecture at the University of Sydney, where I taught the first of my Vertical Architecture Studios described in this book.

Having eventually decided it was time for me to draw my Australian expedition to a close and resettle in the UK, prior to my departure in 2012 I was also able to fulfill a long-held ambition and complete a PhD at the University of Sydney, providing me with an opportunity to advance the key ideas on identity formation running throughout these essays. For this last belated achievement I owe much to my supervisor Chris Smith for his steadfast support and patience – not an easy role to take on in the case of a ‘mature’ student like myself. As explained in the Preface, an abridged version of the principle theory in that work, which was published under the original title by Manchester University Press in 2015, has also been included in this book.

In addition to all those others listed above, editors play an especially valued role in the career of any writer and I am fortunate to have been exceptionally well served in this respect. Among those who have played key parts in publishing the original essays on which this collection is based are: Monica Pidgeon and Robin Middleton, *Architectural Design*; Dennis Sharpe, *Architectural Association Quarterly*; Nigel Cross, *Design Studies*; Peter Davey, *The Architectural Review*, and Toshio Nakamura, *Architecture and Urbanism*. As editors for various academic publications my former colleagues at Portsmouth School of Architecture, Tomas Llorens and James Powell, were also instrumental in publishing some of the other theory essays I wrote in the late 1970s and early 1980s, two of which have also been republished in this collection.

As publisher at *Architectural Press*, Neil Warnock-Smith was also responsible for producing the first edition, followed by his successor Mike Cash who published the second. I am profoundly grateful to both for giving the essays in those editions a new lease of life. Their belief in the lasting value of my work has now been happily confirmed with this unexpected third edition by Routledge, who acquired *Architectural Press* and with it the rights to the previous editions. I cannot thank Fran Ford, my new publisher at Routledge, enough for her enthusiastic support for the new edition and the professionalism with which she and her colleagues, especially Trudy Varciana and Alanna Donaldson, have guided it through the production process.

There remain two more recent debts to acknowledge. Since Suha Ozkan’s retirement from the AKAA his able successor, Director Farrokh Derakhshani, has not only continued my involvement with the Award but also provided

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me with helpful support from the AKAA library and files at the Geneva headquarters during the final preparations for this book as well as for other current researches of mine, for which I am also most thankful. Finally, after several years of devoting all my time to writing, I am grateful to Peter Walker, Head of the Architecture School at Ulster University Belfast, for providing me with an academic base close to my new home and, in so doing, reminding me of the students around the world for whom it is all for and to whom this book is dedicated.

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# Introduction

The essays gathered in this volume, which include all but one of those featured in the second edition as well as six new chapters, cover a wide ground and timespan, the varied titles and contents of which may at first distract from the common ideas and themes running through the book, as outlined below. However, for all the many branches of knowledge encompassed in these pages, those branches also stem from the same tree, the fundamental unity of which presents a constant challenge to any writer like myself trying to hack his or her way through the outer limbs and deeper in search of common roots.

The research outlined here presents both a personal record of those explorations over half a century and a window into changing movements in architectural theory and criticism over the same period. Beginning with the most general idea of ‘systems’, a unifying concept and approach pervading all three sections of the book, the following overview traces the main links between the essays, highlighting those integrating ideas and themes binding them all together. Though the ‘identity’ theme also runs throughout the book I have allocated it a similar space of its own in this introduction, as warranted by its significance to relevant chapters, particularly those dealing with cultural and social issues. That said, what follows reflects the complexities as well as the consistencies of the ideas set out here. Specific themes tackled at one point in time may be temporarily displaced by other concerns, only to surface again further down the line as theoretical or empirical developments call for their renewed attention. Chronological sequence also frequently gives way to discussing whichever essay best illustrates those ideas, so that essays grouped under different headings in the rest of the book may reappear below in another order. Overriding all these varied perspectives, however, is an evolutionary narrative, the substance of which has also changed along with the ideas and technologies covered in these pages.

## Systems

Systems theory itself is deeply rooted in biological and evolutionary analogies and first influenced architectural theory in the 1960s, when the earliest essays in this book were originally published, but is now more often discussed under ‘self-producing systems’ or ‘emergence’, as I have also written in *The Extended*

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*Self*.<sup>1</sup> My personal introduction to the approach came through Melvin Webber at our meeting in 1967. Responding to my declared interest in biological analogies in architectural design,<sup>2</sup> Webber suggested that I read a paper by J. G. Miller titled ‘Living systems’,<sup>3</sup> published just two years previously. Having tracked the paper down at the British Museum Library I spent much of the remaining year of my studies beneath that august dome following one scholarly lead after another: through the pioneering work of Ludwig von Bertalanffy on general systems theory and Norbert Wiener and Ross Ashby on cybernetics and on to a whole new world of interdisciplinary thought, most of which had itself only appeared in the preceding decade.<sup>4</sup>

Those studies would eventually culminate in my final year dissertation: ‘Adaptive urban form: a biological model’,<sup>5</sup> in which I applied what I had learnt about self-organizing systems from the work of Ashby and other theorists on the subject,<sup>6</sup> to understanding the growth patterns of modern dispersed cities. My other major discoveries in those first heady months of research were the paper by Stafford Beer, ‘Towards the cybernetic factory’,<sup>7</sup> and System 24, the world’s first computer controlled, flexible manufacturing system (FMS), designed and built in a factory in the East End of London by a British engineer.<sup>8</sup> Searching for analogical evidence that increasing levels of intercommunication between system components were having a decentralizing effect on structural systems of many kinds, including urban systems, making them more responsive to change, I found in Beer’s paper and System 24 appropriate models for my theory. The first provided the cybernetic organization and the second the computer-controlled machinery required to make Beer’s vision of an adaptive production system feasible: what I have since called ‘customized automation’.

More than that, the idea of the cybernetic factory not only undermined the whole technological rational of orthodox modernism, based as it was on standardization and mass production, or ‘Fordism’ as it is generally known, but it also directly contradicted the futuristic visions of a ‘Plug-in City’ created by Peter Cook and other members of the Archigram group – all of whom were then teaching at the AA School of Architecture – inspired by the same mass-production technologies.<sup>9</sup> From providing a convenient analogy for complex systems, the model of the cybernetic factory had thus provided me with a view beyond Archigram’s mechanistic visions into the *real* future of architectural production. Extrapolating from my discovery in the closing section of my dissertation on the future impact of computer-controlled manufacturing systems like System 24, I wrote: ‘The effect is liable to be anything *but* standardization. The individualized, “tailor-made” product is likely to become the rule rather than the exception’.<sup>10</sup>

There followed the publication of several articles I wrote for *Architectural Design* over the next few years, all of which emanated from the same dissertation. Then edited by Monica Pidgeon, *AD* was the only international architectural journal of its time committed to exploring new ideas and technologies

and provided an open platform for aspiring theorists. Chapter 1, 'Evolutionary planning', was published in *AD* in 1968 just 6 months after my graduation and is republished here with minimal editing. Inspired partly by Webber's own theory of the structural factors underlying the dispersed pattern of modern cities,<sup>11</sup> together with my researches into self-organizing systems, I argued that the fragmentation of urban form accurately reflects the fragmentation of modern urban societies, in contrast to the idealistic images of compact urban form then propagated by architects and urban designers.<sup>12</sup> As evidenced in later essays in this book, the embargo by the Organization of Petroleum Exporting Countries (OPEC) in 1973–1974 and the consequent impact on fuel prices compelled me, as it did many others, to rethink the issue of urban densities and related vehicular transportation systems.<sup>13</sup> However, as explained below in this introduction, while rejecting the wasteful, 'throwaway' consumerist culture underlying the Archigram projects, in pursuing innovations in high-rise design I also found a place more recently for modified variations of the megastructure concept.<sup>14</sup> Nevertheless, my conclusions regarding the systemic effects of new communication and data systems in shifting the process of urban integration from the local to the regional scale and beyond have since been amply verified by the process of globalization itself.

## Production

In the following year *AD* featured my full-length essay, 'Ditching the dinosaur sanctuary' (Chapter 2), in which, building on my dissertation, I explained the potential consequences of the coming cybernetic revolution for architectural design and production. As in that thesis, I argued that architects' addiction to the idea of a standardized, mass-produced architecture was based more on ideological principles than any professional understanding of how things were actually made in conventional factories, let alone what emergent computer-based systems promised.

However, the world would have to wait many more years before the digital revolution was to make any impact on what has always been, and still is a mostly conservative construction industry. Beginning in the mid-1980s with the fabrication of the complex metal cladding for the Hongkong and Shanghai Bank HQ, Norman Foster and his collaborative practice showed how the new digital technologies could be used to design and fabricate complex shapes for one-off programs, that would otherwise be prohibitively costly and perhaps unrealizable.<sup>15</sup> These and related innovations in the construction industry are described here in my 1986 essay, 'Return to craft manufacture' (Chapter 4), presenting the prospect of a new level of technological craft freeing architects to create customized designs and building components for individual projects and clients.

Developments of both a positive and negative kind in the growing use of digital techniques of design and production are also discussed from various

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perspectives in Chapter 5, 'Visible and invisible complexities', and in Chapter 6, 'The virtual studio', and latterly in Chapter 7, 'Genetic designs'. The first essay takes up the issue of the fashionable uses and misuses of digital technologies, often solely for the purpose of arbitrary form making, the justification for which is often defended (or not) by reference to theoretical arguments of an abstract and mostly dubious nature, a broader issue about which more is said in conclusion of this introduction. Similar problematic issues regarding the use of genetic algorithms in the design process are raised in 'Genetic designs'. In that essay I draw upon Richard Dawkins' concept of the meme to argue for the use of memetic algorithms in design rather than the genetic variety, the former offering a more accurate representation of how cultural artifacts evolve, including building designs, than the latter.<sup>16</sup> Significantly, at the time I wrote the original conference paper I was not aware that related research was in fact being conducted into memetic algorithms as a viable alternative to genetic models, which may be taken as support for my argument.<sup>17</sup> On a further positive note, the Biotech Architecture Workshop described in Chapter 6 embodies a program of environmental and educational principles pointing toward a more responsive and ecologically sound, progressive architecture.

While the above technological innovations all emanate from within advanced industrialized countries, production systems of a broader nature are also discussed in the context of developing world issues in Chapter 19, 'Towards a global eco-culture'. Covering a wide field, they range from the simplest 'appropriate technologies' to so-called 'hybrid technologies' involving a mixture of traditional and advanced materials and techniques, including computer-based methods of design similar to those described above.

## Identity

Both 'Evolutionary planning' and the early essays on digital techniques of architectural production present arguments for a more liberal and inclusive approach to architectural and urban values. As such they could be interpreted as sympathetic to later postmodernist movements. However, it soon became apparent to me that, in addition to other genuinely progressive developments, the universal claims of orthodox modernism were being displaced by an opposite and equally extreme relativism. Beginning with 'Architectural language games' (Chapter 10), based on the linguistic theories of Ludwig Wittgenstein and others, I have argued for a more reasoned approach to cultural differentiation, which I call 'critical relativism'. Whereas extreme relativism only allows for criticism within the limited terms of one cultural discourse or another, critical relativism actively encourages the comparison of different value systems and criteria in the search for whichever approach best approximates to realities. Taking 'classical' and 'organic' traditions and styles of architecture and related critiques as a case in point, I argue that it is possible to accept significant differences

in cultural values without partisan criticism, or worse, descending into some vacuous realm where everything is of equal or no value at all. Moreover, as many architects of all stripes have demonstrated before and since that essay was written, a sensitivity to environmental issues and values – generally referred to now as ‘sustainable design’ – is by no means exclusive to any one style of architecture, organic or otherwise.

My early explorations in digital design and production in turn opened up a great void at the heart of orthodox modernism. The universal strain in modernist theory and design was indelibly linked by the founders to modern mass-production technologies and standardization, as characteristically expressed in Le Corbusier’s claim that human society had evolved ‘standardized classes, functions and needs producing standardized products’.<sup>18</sup> However, many more years passed before modernist dogmas of standardization finally collapsed in the face of mounting evidence of social failure and industrial incompetence. When architects did finally acknowledge those failures, with few exceptions most responded by indulging themselves in surface exercises under the banner of an eclectic postmodernism, unaware of the quiet revolution overtaking the more advanced sectors of industry. The general result has been a widespread abdication by architects of any more serious social role other than providing decorative fig leaves for conventional structures and building programs, the superficial outcomes of which I have commented on in ‘The essential tension’ (Chapter 13), as well as in ‘Visible and invisible complexities’ (Chapter 5).

More importantly, the abandonment of orthodox modernism encouraged more committed architects to rediscover regional and cultural identities and their architectural expression in the immense variety of built forms around the world, a vital aspect of which has been the intimate response of indigenous builders to the local climate and landscape. Equally important, however, was the historical evidence of cultural exchanges of building forms and techniques generated by the trade in ideas and goods or the movement of peoples between regions, but also by imperial conquest over different historical periods, and especially in the latter few centuries by the impact of Western colonialism.

My first encounter with this phenomenon was during the several weeks I spent as Visiting Professor at the University of Chile at Valpariso in 1978,<sup>19</sup> where I noted the impact of Spanish colonial architecture in the towns and cities of the country and the cross-fertilization of imported and local building forms and techniques, particularly in the smaller churches and other buildings. Later that same year, after leaving the UK and moving to the USA – the first of many such foreign expeditions – while teaching in Los Angeles and then in Texas I had ample opportunity to observe the related impacts of Spanish colonialism in the American Southwest. The experience motivated me to write ‘Architecture as identity’ (Chapter 15), a paper I presented at a conference of the American Semiotic Society in 1980, in which I attempted to explain the more fundamental processes underlying the role of architecture in identity formation.

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A year later, following my invitation to teach at the Science University of Malaysia in Penang, I had further opportunity to study the impacts of European colonialism in a quite different part of the world and the consequent adaptation of colonial builders to their new situation, who borrowed liberally from the indigenous architecture as needed to cope with the tropical climate. The outcome was another conference paper, 'Living in a hybrid world' (Chapter 16), the first of several essays presented in this book examining the extraordinary variety and fusion of building forms to be found in the developing world, wherever different cultures have left their hybrid marks in the architecture of the land. That experience was followed in 1982 by three years teaching at King Saud University in Riyadh, opening my eyes to yet another world of architectural history and cross-cultural exchanges in Islamic architecture.<sup>20</sup>

The thinking in regionalist debates at that time, however, was still coloured by Eurocentric polarities between a purely indigenous architecture and alien, i.e., Western imports.<sup>21</sup> In my 1986 essay 'Regional transformations' (Chapter 17), based on my personal studies and historical research I argued that, far from being any kind of recent phenomenon, cultural exchanges and hybrid forms of architecture were a common feature of architectural history around the world, not only through Western colonialism, but also through the much earlier circulation of ideas and ways of building through trade, conquest or the spread of religious faiths. Among the many historical and contemporary examples included in that essay is Henning Larsen's Ministry of Foreign Affairs building in Riyadh,<sup>22</sup> the plan form of which I was astonished to discover from my research was based on that of the Taj Mahal, no less (minus one quadrant, which was removed to make room for the main entrance to the Ministry). My description of the evolution of building forms in that essay as 'linked series of precedents and later variants [...] each of which in turn becomes an actual or potential model which can beget still more transformations',<sup>23</sup> also points to my later writings on self-producing types in *The Extended Self*.<sup>24</sup>

Other essays along related lines, such as 'Localization versus globalization' (Chapter 18) followed, arguing for a culturally responsive architecture born of a creative fusion of modern technologies and concepts with regional traditions, examples of which could be found in very different parts of the world. Based on these and other positive trends, in 'Towards a global eco-culture' (Chapter 19) I raise the prospect of a future melding of three emergent strands in the built environment, comprised respectively of ecologically sensitive systems of development, or 'ecodevelopment' as the movement was originally called, appropriate technology and regionalism. Similarly, in 'Asian urban futures' (Chapter 20), I present the work of four leading Asian architects and urbanists: Charles Correa; Tay Kheng Soon; Ken Yeang and Liu Thai Ker, whose projects embody like principles of design and urban development. In the concluding section on the 'Development City' I also revise the earlier views expressed in Chapter 1 regarding 'planned' versus 'unplanned' urban growth, and propose a planned

but flexible urban framework based on their work, capable of responding to unforeseen changes while ensuring sustainable goals.

More recently, in 'A fragile habitation' (Chapter 21), I have recorded my impressions of the ambiguous state of Australian residential architecture gained during the more than seven years I lived and taught in that country. While acknowledging the skill with which Australian house designers respond to the challenging landscape, the essay stresses that whatever contextual sensitivity might be displayed toward the natural surroundings is of no avail if the low-density residential typologies and way of life that Australians are wedded to are wrecking the wider natural environment.

## Empathy

Earlier researches of a different kind also taught me the significance of empathy in understanding differences in human perspectives. Chapter 3, 'Empathy in science and design' outlines related approaches in cultural theory and the sciences from the work of two continental philosophers of the eighteenth century, Giovanni Batista Vico and Gottfried Herder, as illuminated by Isaiah Berlin,<sup>25</sup> up until recent developments in the environmental sciences supporting parallel movements in architecture. Having mostly ignored the values of others or else subsumed them under a collective or ideological umbrella, the abandonment of modernist orthodoxy not only raised fundamental questions at the cultural level, but also broaches equally serious questions of a psychological and social nature at the personal level. Whether it involves identifying with a place or a form of building, as in the above discussion on identity, or another person or social group the individual capacity for empathy may depend heavily on a person's social and cultural background. In the conclusion of 'Architectural language games' I suggest that architectural students may likewise acquire a social and cultural identity in the process of being taught a specific school of architectural thought: 'Learning architecture may entail a process of cultural assimilation just as much as learning a language'.<sup>26</sup> The same personal identification with a particular design approach may in turn restrict students' ability to empathize with different approaches and viewpoints, which could affect their future professional lives – not to mention the lives of those who have to live with their designs.

At a deeper level, the process of socialization and cultural assimilation raises fundamental questions about the nature and formation of the human mind and self, and where their boundaries lie. In the closing passage of 'Architecture as identity' (Chapter 15) I refer to Gordon Pask's radical theory of mind as a *distributed* phenomenon.<sup>27</sup> Similar in spirit to fellow cybernetician Gregory Bateson's 'ecology of mind',<sup>28</sup> Pask's theory also anticipates Dawkins' concept of the meme and helped prepare the way for my own theory of the 'extended self' as presented in the aforementioned book of that title, a condensed version of which is presented here in Chapter 8, 'Technically embodied selves'. The latter

essay pulls together several other key strands in the present book. Rejecting the popular idea of the self as a unitary and autonomous being, I argue that the self is a diffuse product of the coevolution of *Homo sapiens* and technology: an existential field of being encompassing cultural artifacts as well as psychological and social elements. The essay also advances the debate in the former book on the growing immersion of individuals and groups in the virtual worlds of cyberspace, including the development of customized virtual selves such as those created in the popular online computer game, ‘Second Life’.

## Consciousness

Any investigation into the nature and workings of the human mind implicitly raises complex and difficult issues of consciousness, which I first addressed in my 1972 essay, ‘Cultures as complex wholes’ (Chapter 9). It was also my first exploration of the vital cognitive dimension in cultural evolution, to which I have returned in many later essays, leading eventually to my theory of the extended self. A particular bone of contention in that essay was the dualistic picture of consciousness painted by Christopher Alexander,<sup>29</sup> of unselfconscious traditional societies versus self-conscious modern societies. In the former case he argues that the ‘natural’ self-organizing structure of traditional societies enabled them to achieve an ecological balance with their environments. By contrast, he contends that the higher educational levels and self-consciousness of modern societies intervene between society and environment, preventing the achievement of any kind of enduring equilibrium. The solution to this dilemma proposed by Alexander is to discount ‘arbitrary’ modern concepts and impose a supposedly objective system of environmental decision-making on contemporary societies, using computer-based techniques of analysis similar to those he supports his arguments with.

Having found my own way to the theory of self-organizing systems by a different route, Alexander’s identification of self-organization exclusively with traditional societies struck me as contrary to the original theories postulated by Ashby *et al.*, which have far wider applications, as subsequent developments have shown.<sup>30</sup> Similarly, Alexander’s dualistic and simplified characterization of wholly unselfconscious versus wholly self-conscious societies was equally contentious; they’re being all too plentiful evidence of a *lack* of self-conscious thought and action in modern societies.

Taking a different approach, in my essay I offer the relevant work of anthropologists as well as Jean Piaget’s studies of human development at both individual and cultural levels as evidence of self-conscious and unselfconscious behaviour in *both* modern and traditional societies, with no clear-cut division of the kind Alexander claims. In conclusion I suggest that what is needed is not *less* self-consciousness but *more* self-conscious and reflective thinking if we are to solve the environmental problems we have undoubtedly created for ourselves.



Similar ruminations on the lack of clear dividing lines between conscious and unconscious realms of thought and behaviour found a later and deeper expression in my 1981 essay, ‘Tacit knowing in learning to design’ (Chapter 11). Inspired by Michael Polanyi’s philosophy – a major influence on my writing since 1978 when a copy of his seminal work, *The Tacit Dimension*<sup>31</sup> caught my eye in a Los Angeles bookstore – the essay focuses on Polanyi’s theory of cognitive extension and its implications for understanding architectural education and related issues of place identity. Adopting Polanyi’s dictum, ‘we know more than we can tell’, I argue that the principle applies as much to the process by which architecture students acquire their knowledge as it does to the work of scientists or anyone else struggling with complex concepts and skills; an argument I suggest is supported by Thomas Kuhn,<sup>32</sup> who makes much the same case as Polanyi in stressing the importance of learning science from concrete *exemplars* of key experiments rather than abstract rules.

What distinguishes Polanyi’s theory of tacit knowing from other theories of cognition, however, is his fusion of mind and body together in the same process of ‘indwelling’, by which a person immerses himself or herself in the task at hand, only part of which they may be conscious of.<sup>33</sup> In the same way, Polanyi explains how we absorb the tools we use most in a similar manner, to the extent that they literally become extensions of ourselves – bountiful evidence for which we see everywhere in all manner of sports and other human skills involving the joining of mind, body and object into one seamless action. In ‘Technically embodied selves’ I also record the growing research in the neurosciences into the unconscious symbiosis between mind, body and its extensions, much of which supports Polanyi’s theory. My conclusion to the earlier essay in Chapter 11 also anticipates key arguments in the latter exposition:

It may be surmised that *place identity* itself is a function of tacit knowing, by which individuals come to dwell in a place not only physically but also by analogical extension of their own bodies. By implication, people communicate and interact with each other in large part by making use of their architecture, much in the same way that they make use of their own bodies, as the proximal term of tacit knowing.

## Innovation

Coming to the last of my integrating ideas, in the opening passages of ‘Architectural language games’ I draw upon the work of Arthur Koestler and several other writers on the subject to explain the more general role of analogical thinking in innovation. Consciously or unconsciously, a metaphorical relation is established between two different ideas whereby a key aspect of one idea – usually the more familiar concept – is ‘borrowed’ to explain something about the other, more opaque idea, offering fresh insights often leading to a new concept in itself. In the case of the language analogy in architecture I drew specifically upon Wittgenstein’s thought on human linguistic behaviour to explain

how different architectural styles, like Wittgenstein's 'language games' embody cultural values shaping architects' views of reality; the outcome of which, as I suggested above with regard to architecture students' education, can lead to unconscious critical and professional biases of one kind or another.

My later essay, 'Metaphor in architectural creativity' (Chapter 12), explains the creative aspects of analogical thinking at greater length, covering different uses of metaphor in literature as well as in architectural criticism, but most importantly in generating new architectural and urban concepts – including Archigram's Plug-in City, which comprises images borrowed from automobiles and disposable consumer goods. What these essays reveal is that the process of cultural innovation and development is a great deal subtler than it was generally thought to be, and closer to the gradual and accumulative evolution of new biological species than the radical break with the past painted by modernist historians. In 'Tradition, innovation and linked solutions' (Chapter 14), drawing on George Kubler's evolutionary theory of 'linked solutions' and Kuhn's related theory of scientific discoveries, I further argue that, far from rejecting past traditions, new ideas generally emerge out of combinations and re-combinations of existing ideas in a creative process marked as much, if not more by *continuities* than *discontinuities* between past and present modes of thought: 'Far from creating a break with the past, what an innovator does is to reveal an emergent new order, which is at least partially rooted in prevailing traditions'.<sup>34</sup>

The remaining essay, 'Reimagining the Vertical Garden City' (Chapter 22),<sup>35</sup> reflects my revised thoughts on the issue of urban density mentioned above with respect to the impact of the OPEC embargo, which first exposed the vulnerability of low density, automobile dependent patterns of urban growth. It follows recent radical innovations in high-rise architecture and records the work of my own Vertical Architecture Studio (VAST), which I ran for several years from 2006 at universities in Australia and the USA. The first studio at the University of Sydney experimented with alternative designs for a semi-public 'secondary ground level', in which the horizontal spatial dimension competes with the vertical dimension to create new, multi-dimensional spatial and topological configurations, expanding the social realm upwards along with it. Later studios explored the integration of 'vertical farms' using water and energy efficient production technologies within mixed-use developments of a like kind, driven by the future prospect of increasing water and food shortages as the growing environmental crisis in Australia and the US impacts on urban populations.

## Reality

Finally, we come to the vexed issue of the relevance of architectural theory to the complex and problem-plagued world in which we live, now increasingly overshadowed by the growing environmental crisis linked to global warming. Spread over a half century during which the information age, globalization and climate

change have all radically affected the way we think about the natural and built environment, the essays collected in this book are as much motivated by the need to respond and to *act* in order to change things for the better and avert possible disaster, as by any more academic interests. Hence also my related publications over the years in support of selected practices around the world proffering workable models of sustainable design and planning, together with my own experimental design studios, only a small part of which is documented here.

Similarly, readers may detect a marked change of tone from the uncritical approach in the earliest essays regarding the potential power of new technologies to create a more responsive architecture, to an increasing awareness from the 1980s onwards of the need for a broader social and ecological framework in keeping with the complex world we inhabit. In ‘Return to craft manufacture’ acknowledging the possible negative effects on human employment raised by the increasing use of robotics in the construction industry as in others, I wrote what turned out to be an understated note of caution:

We should be careful to distinguish, for example, between cases where there is a genuine shortage of skilled labour, or the work involves unacceptable levels of danger or other severe human conditions, from those where the social costs of automation outweigh the economic gains.

Much else in this book is also aimed at striking a reasonable balance between the general and the particular and the insights those different levels of perspective can offer – issues that can only be resolved, if at all, at a philosophical level. As readers will have already noted from my comments on the subject in this introduction, while I have been critical myself of orthodox modernism and its universal aspirations I also take issue with the extreme relativism propagated by many postmodern architects, writers and critics, not only for the nihilistic position taken towards reality but also for the willfully obscure manner in which many write, as if to underscore their view of the supposed meaninglessness of it all. Strongly influenced by Jacques Derrida and other continental philosophers and critical theorists, aside from other reservations the opaque manner of expression favoured by this group defeats the whole purpose of interdisciplinary thought in that more barriers to communicating new ideas are erected in this fashion than are actually taken down. Though now thankfully on the wane, as the distinguished planner and author Peter Hall has written, the approach is still influential among certain circles:

Postmodernists seem to think that reality is no longer very real [...] So these new-style radical intelligentsia engaged in endless debates on the significance of postmodernism: in architecture, in the cinema, in television, in anything that would support a paper or a conference contribution. The contributions themselves were written as if by central *Diktat* in a strange, hermetically sealed style, clearly directed at a small coterie of fellow cognoscenti, and characterized by odd private linguistic tricks like the placement of qualifying syllables in brackets, as in (un)inspiring or (un)original [...]. It did not produce much insight or enlightenment.<sup>36</sup>

Looked at one way, the cliquish character of such groups and the introverted style of language described by Hall are simply manifestations of what I describe

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in ‘Architectural language games’ as the expressions of a social sub-group with their own linguistic rules. A similar explanation for this kind of tribal behaviour may be found in the work of Basil Bernstein, a social linguist whose research I also cited in the same essay. Bernstein describes the use of linguistic ‘codes’ within the same general language culture by specific social groups and classes, the expression of which serves to identify who belongs to a group and who does not.<sup>37</sup> In other words, as far as Hall’s postmodernists are concerned, the game is mainly about confirming their *own* identity and academic status among their chosen peers, rather than any more mundane matters like trying to solve the world’s problems, condemning them, as Hall suggests, to irrelevance.<sup>38</sup>

As also described in ‘Architectural language games’, critical relativism offers a potentially more fruitful way of exploring the diversity of human experience and perceptions while avoiding the dangers of extreme relativism that Hall alludes to.<sup>39</sup> In the postscript to this new edition, ‘Notes on a field theory of identity’, I outline shared roots with the philosophy of ‘internal relations’ and the principle that everything is ultimately interconnected with everything else, the complexity of which we are only ever partially conscious. Reaching back as far as the early 1980s and my first explorations into the extended self, those thoughts would eventually lead to the theory summarized in Chapter 8.

Lastly, in the conclusion of ‘The essential tension’ I proffer an alternative interpretation of modernity that embraces elements of both modern and post-modern movements while rejecting their more superficial expressions:

There exists another kind of ambiguity, however; not the surface tension that arises out of a narrow concern with form but the essential tension that has always existed and will continue to exist between tradition and modernity in all its complementary facets. The social, cultural and environmental issues that arise out of this endless give and take between the past, present and future are unlikely to be resolved by the kind of siege mentality which dictates postmodern architecture. For all its faults, modern architecture was created out of an open-minded belief in both the necessity and virtue of experimentation and making the most out of the available knowledge of the day, from whatever source. At its best it was a profoundly liberating movement. Where orthodox modernists went wrong was not just in their platonic choice of standard forms but also in the limited interpretations of modern science and technology, which they used to justify what were all along mostly aesthetic prejudices. Real modern science and technology, as opposed to the simple myths that still govern most architects’ conceptions, is both more responsive to the complex human condition and a great deal more interesting than either orthodox modernists or postmodernists ever dreamt it to be.<sup>40</sup>

## Notes

1 Abel, C. (2015). *The Extended Self: Architecture, Memes and Minds*. Manchester University Press, Manchester. Especially Chapter 5, ‘Rethinking evolution’.

2 Like most architecture students, my first encounter with biological analogies was through the ‘organic architecture’ of Frank Lloyd Wright and others, which at that time was slimly supported by any theory other than those of a prescriptive kind.

- 3 Miller, J. G. (1965). 'Living systems: basic concepts'. *Behavioural Science*, Vol. 10, No. 3, pp. 193–237.
- 4 For systems theory see Bertalanffy, L. von (1950). 'The theory of open systems in physics and biology'. *Science*, Vol. 111, No. 13, January, pp. 23–29. Also Bertalanffy, L. von (1968). *General System Theory: Foundations, Development, Applications*. George Braziller, New York. For cybernetics see Wiener, N. (1961, 2nd edn). *Cybernetics: or Control and Communication in the Animal and the Machine*. The MIT Press, Cambridge, MA. Also Wiener, N. (1968). *The Human Use of Human Beings: Cybernetics and Society*. Sphere Books, London. Also Ashby, W. R. (1964). *An Introduction to Cybernetics*. Methuen, London.
- 5 Abel, C. (1968a). *Adaptive Urban Form: A Biological Model*. Unpublished thesis, AA School of Architecture.
- 6 Ashby, W. R. (1962). 'Principles of the self-organizing system'. In *Principles of Self-Organization* (Von Foerster, H. and Zopf, Jr., G. W. eds), pp. 255–278, Pergamon Press, London.
- 7 Beer, S. (1962). 'Toward the cybernetic factory'. In *Principles of Self-organization* (Von Foerster, H. and Zopf, Jr., G. W. eds), pp. 25–89.
- 8 Williamson, D. T. N. (1967). 'New wave in manufacturing'. *American Machinist*, 11 September, pp. 143–154.
- 9 It may come as a surprise to younger readers and admirers of the AA School of today with its cutting edge studios and digital laboratories, but not only were systems theory and cybernetics little understood at the AA in the 1960s, but also any rigorous research or scholarship outside of conventional history studies was scarce. What the school and its regular teachers *did* offer instead was a less tangible but invaluable freedom to explore new ideas and approaches – always of course subject to the tortuous inquisition of the famous AA 'juries', as studio reviews with their guest critics were then aptly called. For a celebration of the AA culture and the work of some of its teachers and recent graduates in those years see, Conway, D., guest ed. (1969). 'What did they do for their theses? What are they doing now?' *Architectural Design*, Vol. XXXIX, March, pp. 129–164. The selection of AA students' work from 1967 includes my own project of that year for 'Mobile Learning Stations' (see Chapter 5) along with a brief explanation of my later thesis and related ideas.
- 10 Abel, C. (1968a). *Adaptive Urban Form*, p. 24.
- 11 Webber, M. M. (1964). 'The urban place and the nonplace urban realm'. In *Explorations into Urban Structure* (Webber M. M. *et al.*, eds), pp. 79–153, University of Pennsylvania Press, Philadelphia.
- 12 The essay also anticipates the argument against conventional urban planning advanced by Reyner Banham *et al.*, published the following year: Banham, R., Price, C., Hall, P. and Barker, R. (1969). 'Non-plan.' *New Society*, 21 March 20, pp. 435–443.
- 13 My position on appropriate housing forms at that time was more nuanced than that polemical essay on urban dispersal suggests, having previously published my own designs for low-rise, high-density courtyard housing systems. See Abel, C. (1965). 'Expanding house system'. *Arena: The Architectural Association Journal*, Vol. 81, December, pp. 140–141.
- 14 See my work with the Vertical Architecture Studio (VAST), Chapter 22.
- 15 Abel, C. (1986a). 'A building for the Pacific century'. *The Architectural Review*, Vol. CLXXIX, April, pp. 54–61.
- 16 The concept of the meme as the cultural equivalent of the gene was first outlined in Dawkins, R. (1989). *The Selfish Gene*. Oxford University Press, Oxford.
- 17 For example, see Smith, J. (2007). 'Coevolving memetic algorithms: a review and progress report'. In *IEEE Transactions on Systems Management and Cybernetics: Part B*, Vol. 37, pp. 6–17.
- 18 Corbusier, Le (1927). *Towards a New Architecture*. The Architectural Press, London, p. 126. Corbusier himself famously changed course in the post-war years, finally releasing his artistic impulses with radical works like the Chapel at Ronchamp, much to the dismay of his more dogmatic followers.
- 19 The appointment, which came as a direct invitation from staff at the University of Chile at Valpariso who were familiar with my work, was generously supported by the British Council.

20 For a discussion of the different meanings and characteristics of Islamic architecture, see Grube, E. J. (1978). 'What is Islamic architecture?' In *Architecture of the Islamic World: Its History and Social Meaning* (Mitchell, G. ed.), pp. 10–14, William Morrow, New York. The description as used in this volume is generally taken to refer to a tradition of formal and spatial characteristics associated with Islamic culture, in the sense that 'Roman architecture' is also associated with an historical culture and tradition.

21 For example, in his first writings on critical regionalism, Kenneth Frampton framed the relations between modern architecture and regional traditions in purely Eurocentric terms, illustrated with exemplars of European regionalism. See Frampton, K. (1983). 'Towards a critical regionalism: six points for an architecture of resistance'. In *The Anti-Aesthetic: Essays on Postmodern Culture* (Foster, H. ed.), pp. 16–30, Bay Press, Washington. Only much later did Frampton concede that 'all cultures, both ancient and modern, seem to have depended for their intrinsic development on a certain cross-fertilization with other cultures'. Frampton, K. (1992, 3rd edn). *Modern Architecture: A Critical History*. Thames and Hudson, London, pp. 314–315. As Frampton also acknowledges, the original concept of critical regionalism itself is due to two other critics writing earlier on developments in Greek architecture. See Tzonis, A. and Lefaivre, L. (1981). 'The grid and the pathway: an introduction to the work of Dimitris and Susana Antonakakis'. *Architecture in Greece*, 15, pp. 164–178.

22 Abel, C. (1985). 'Henning Larsen's hybrid masterpiece'. *The Architectural Review*, Vol. CLXXVIII, July, pp. 30–39.

23 Chapter 17.

24 Especially Chapter 7 in that book.

25 Berlin, I. (1976). *Vico and Herder*. Random House, London.

26 Chapter 10.

27 According to Pask's theory, a mental 'individual' might be spread among several physical individuals, i.e., several persons, indicating a dispersed group mind rather than the conventional singular entities identified with individual human brains. See Pask, G. (1976). *Conversation Theory*. Elsevier, Amsterdam.

28 Bateson, G. (1972). *Steps Towards an Ecology of Mind*. Ballantine Books, New York.

29 Alexander, C. (1964). *Notes on the Synthesis of Form*. Harvard University Press, Cambridge.

30 For example, see Mingers, J. (1995). *Self-producing Systems: Implications and Applications of Autopoiesis*. Plenum Press, New York.

31 Polanyi, M. (1966). *The Tacit Dimension*. Doubleday, New York.

32 Kuhn, T. S. (1977). *The Essential Tension*. University of Chicago Press, Chicago.

33 As explained in the essay, Kuhn makes a similar argument for duplicating crucial experiments in teaching science, by which students acquire insights they would not otherwise gain from explicit rules alone.

34 Chapter 14.

35 See also Abel, C. (2003b). *Sky High: Vertical Architecture*. Royal Academy of Arts, London.

36 Hall, P. (2014, 4th edn). *Cities of Tomorrow: An Intellectual History of Urban Planning and Design Since 1880*. Wiley-Blackwell, Oxford, pp. 408–409. Writing on related issues with postmodernism, the philosopher John Gray offers his own succinct criticism:

Postmodernists parade their relativism as a superior kind of humility – the modest acceptance that we cannot claim to have the truth. In fact, the postmodern denial of truth is the worst kind of arrogance. In denying that the natural world exists independently of our beliefs about it, postmodernists are implicitly rejecting any limit on human ambitions [...] Postmodernism is just the latest fad in anthropocentrism.

Gray, J. (2002). *Straw Dogs: Thoughts on Humans and Other Animals*. Granta Books, London, pp. 54–55

37 Bernstein, B. (1970). *Class, Codes, and Control: Vol. 1*. Routledge & Kegan Paul, London.

38 The cliquish nature of much academic critical discourse would also seem to be born out by Edward Said's comments on the closed circle of early postmodern critics and their readers, who turn out to be mostly their own kind. Curious to learn who were the readers of the 'highly specialized books of advanced literary criticism', which Said himself describes in general as 'difficult to read', he addressed the question to a representative of a major university publisher at a literary convention. The representative explained to him that the people who write such criticism 'faithfully read each other's books', thus guaranteeing minimum sales sufficient to sustain a niche market. Said, E. W. (1983). 'Opponents, audiences, constituencies'. In *The Anti-Aesthetic: Essays on Postmodern Culture* (Foster, H. ed.), pp. 137–138, Bay Press, Seattle. The irony is, as Said explains, that while proponents of the so-called French and American New Criticism originally set out to remove 'the specialized rubbish' getting in the way between readers and the work itself, they wound up doing just the opposite: 'How strangely perverse, then, that the legacy of both types of New Criticism is the private-clique consciousness embodied in a kind of critical writing that has virtually abandoned any attempt at reaching a large, if not, mass audience'. Said, *ibid.*, pp. 139–140.

39 Elsewhere, in the postscript to *The Extended Self*, I draw upon Jerry Gill's 'deep postmodernism' in support of a more positive and open postmodernist philosophy. See Gill, J. H. (2010). *Deep Postmodernism: Whitehead, Wittgenstein, Merlau-Ponty, and Polanyi*. Humanity Books, New York. Based upon the work of the four philosophers named in the title together with that of J. L. Austin, Gill contends that, while rejecting modernism's naïve objectivism the group all share many key ideas in presenting an alternative, more constructive philosophy in their search for 'truth,' no matter how changeable and elusive that truth might be; to which list I personally added Bateson and George Herbert Mead for good measure, who have much to offer in the same vein.

40 Chapter 13.