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Part I

Introduction

Sustainable development and surfing

1 Sustainability and surfing in a risk society

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Introduction

This book will explore and expand the relationship between sustainability and surfing. This introductory chapter will achieve a number of goals. First, it will provide a rationale for the book as a whole, establishing principle connections between sustainability and surfing. Second, it will introduce sustainable development and sustainability, emphasising the diverse and contested nature of the concept. Third, this chapter will begin the debate by introducing a theoretical perspective that is capable of informing and reinforcing the relationship between sustainability and surfing whilst simultaneously exploring underlying normative assumptions relating to sustainability. The last section will explore surfing as an academic endeavour, outlining pertinent literature whilst reengaging with initial theoretical debates. The conclusion will reengage with this discussion, drawing on the book's contributions, which firmly establish this debate at the theoretical, policy and practical levels.

Throughout this book a number of themes and issues are evident. These include the scale and the impact of the surfing industry, the importance of the interaction between environment, society and economy, technological advancements, surfing's historical narrative, the role of surf activism and stakeholder engagement in coastal protection, issues relating to localism, overcrowding and surfing's impact on coastal environments, and the creation of artificial surfing spaces and what this means for surfing's future. This is achieved through a balance of theoretical debate, policy speculation and practical application that builds a progressive picture of the relationship between sustainability and surfing both from the impact that surfing has in the world but also the ability of surfing to provide solutions both within the surfing zone and beyond.

At the outset it is important to briefly explore a definition, or lack thereof, of surfing for the purposes of this chapter. It is tempting to describe surfing simply as a sport, and with an established world tour and a current bid for it to be in the Olympic Games, which at the time of writing has been supported by the International Olympic Committee executive board to be included in the 2020 Tokyo games, this is not surprising (IOC 2016). And of course at one level surfing is a sport. However, surfing is a lifestyle activity and as such operates from within,

across and beyond many categories. As Doug Booth explains, the notion of surfing as a sport '. . . remains a contentious subject among surfers who consider the activity a dance with a natural energy from in which the rider shares an intimate relationship with nature' (2013: 5). Anderson (2014) highlights Ford and Brown's (2006) definition that '…the core of surfing has always simply been the embodiment, raw and immediate glide or slide along the wave of energy passing through water' (2006: 149). What is crucial here in both definitions is the relationship to nature and the direct elemental contact that is the central experience of surfing. It is from this understanding that a critical relationship between surfing and sustainability extends.

This relationship between surfer and wave has been variously described as relational sensibility (Anderson 2009, 2013a, 2013b), affect (Booth 2013) or stoke (Borne and Ponting 2015). We will return to this point later in the chapter. Ultimately, it is recognised that surfing is a lose construct and that it actually has no edges or parameters from which to define it (Lazarow and Olive, this volume). This then as we will see bears a striking resemblance to the concept of sustainability and it is this acknowledgement in part, that creates an enticing and irresistible marriage between the two. Moreover, this dichotomy between sport and play will feed into core discussions in this chapter on modernity as this is '. . . seen as integral to the subculture's role as an agent of postmodernization within a postmodernizing mainstream' (Stranger 2011: 215). And further extending Stranger's observation on the role of the aesthetics of risk and reflexivity in surfing, this chapter will establish sustainability as a response to risk with a focus on the relationship between a risk society and sustainable development.

Sustainable development as a response to risk

Multiple reports and assessments in the past few years point to the following. The global population now stands at 7.4 billion, global greenhouse gas emissions are increasingly impacting on multiple facts of anthropogenic climate change. Biodiversity loss is continuing to accelerate, social inequality is growing and economic instability threatens social and political integrity on a global basis (UNEP 2012, 2016; UNDP 2015).

The increased use of the term sustainability, which has proliferated in the past 40 years, is a direct response to the recognition of increased risks. During this period there has been a transition of the concept from one that focuses specifically on the environment and environmental policy to one that now encapsulates the full plethora of human/environment interaction. This expansion into the three pillars of sustainable development, namely environment, society and economy, has been complemented by dimensions that include power, politics and culture. This evolution of the concept is now well documented, from the early works of Rachel Carson (1962), Aldo Leopold (1970) and Barry Commoner (1971), which can be said to have initiated the early environmentalist movement. There have also been pivotal events such as the United Nations Conference on Human Environment in 1972, the World Commission on Environment and Development

(Bruntland Commission) between 1984 and 1987, the Earth Summit (1992) and the publication of Agenda 21, the World Summit on Sustainable Development through to the recent adoption of the Sustainable Development Goals (see Borne 2010, 2015; Blewitt 2015; Gupta and Vegelin 2016; Linner and Selin 2013).

In the World Commission on Environment and Development report *Our Common Future* (1987), sustainable development is defined as: 'Development that meets the needs of present populations without compromising the ability of future generations to meet their own needs' (WCED 1987: 3). Importantly, what needs to be established here is the ambiguous and contested nature of sustainable development as a concept. Within this there are two concepts. The first is the concept of needs, in particular the essential needs of the world's poor, and the second is the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs (WCED 1987:43). The report summarised that in order to achieve sustainable development the following would be crucial. A political system that secures effective citizen participation in decision making; an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis; a social system that provides solutions for the tensions arising from disharmonious development; a production system that respects obligations to preserve the ecological base for development; a technological system that can search continuously for new solutions; an international system that fosters sustainable patterns of trade and finance; and an administrative system that is flexible and has the capacity for self-correction (WCED 1987: 65)

With the above the concept has drawn considerable criticism on multiple fronts. As a concept, it has been described as an oxymoron, that no development by its very nature can be sustainable. Sustainability means so many different things to different people that ultimately it is ineffective as a concept to drive policy, implement programmes, create legislation and generally promote solutions. Perhaps the most serious accusation levelled against sustainable development is that it is a term that does nothing more than legitimise existing modes of production and consumption. This has often been termed 'green wash', where sustainable development is adopted by whatever body that might want to appear to be doing the right thing, and in different contexts these criticisms are seen to be true. But why then do we have a term like sustainable development at all and why has it now become one of the dominant concepts of the twenty-first century? I argue that there are two principle reasons for this. First, the vagueness of the concept means that it appeals to everybody. Second, whatever your opinion of the concept, there is little doubt that the direction that humanity is currently moving in is quite simply unsustainable. As a result, the idea continues to grow and embed itself in all facets of life. What is essential is to explore critically what it may mean in different contexts. Applying this understanding to sustainability in the surfing world highlights the value of exploring this relationship in multiple locales, sectors and philosophies.

As well as being a response to the risks created by human interaction with the environment, sustainability has facilitated a paradigm shift, from an

epistemological perspective of the way that we view and address these risks, '…as we explore ways of achieving a sustainable future, it is recognised that the problems faced by the world today and the risks that come with them, are themselves complex, uncertain non-linear crossing disciplinary boundaries, sectors and nations' (Borne 2015: 24). This has resulted in increased attention being paid to ideas of sustainability science, complex adaptive systems and idea of reflexivity. Authors in this volume either explicitly or implicitly allude to the need to adopt an approach that is complex and systemic. Most notably Martin and O'Brien, in the opening chapter to this book, explore the idea of a resource system boundary.

A risk society

Underpinning these discussions are tensions that define how modern societies operate and how this has altered over time, particularly since the Industrial Revolution. With this in mind in the following discussion I will begin to build the narrative of the relationship between sustainability and surfing though a lens of modernity as understood in a risk society. At the core of this narrative applicable to both sustainability and surfing is humanity's changing relationship to nature. As already indicated the rise of sustainable development on the global stage is a result of risk. This has led some commentators to argue that risk has now formed an organising principle within society. Seminal in this field is Ulrich Beck, who has evolved an understanding of risk through a number of key works: *Risk Society* (1992), *Global Risk Society* (1999) and finally *The Metamorphosis of the World* (2016). Beck argues that an older industrial society, whose basic principle was the distribution of goods, is being replaced by an emergent risk society, structured around the distribution of hazards. Within this analysis Beck distinguishes between three epochs of modernity. These are pre-modernity, industrial – or first – modernity and finally late – or second – modernity.

Broadly, the concept of modernity has been used to describe a sweeping set of social relations and processes that typify Western societies. These include science, the nation sate, religion, the family. During this time, humanity's relationship with nature is defined through domination and separation. Exponential population growth and urbanisation alter the social networks and conventional social ties within society. Politics in the modern era is defined by the nation state and a unitary political analysis where policies are created that jostle for increasing access to, and control of, the world's resources. Moreover, there is the increasing success of a capitalist market system which is a driving force of political philosophy in the modern age. Here, the acquisition of wealth is abstracted from its environmental base through the development of a monetary system.

Extending this assessment a predominant interpretation of the nature of contemporary modernistic analysis with respect to sustainable development is ecological modernisation (Hajer 1996; Mol 2000). The concept of ecological modernisation argues that the dirty and ugly industrial caterpillar will transform into an ecological butterfly (Huber 1995: 37, cited in Mol 2000). This

interpretation maintains that sustainable development will be achieved within the present system of development, redefining the relationship between economy and environment in such a way that economic growth and environmental protection are seen as mutually reinforcing objectives (Blowers 1997; Mol 2000). Ecological modernisation operates on the underlying assumption that environmental crisis will spark innovation and technical development providing the necessary tools and solutions to avoid an environmental catastrophe. All that is needed is to '…fast forward from the polluting industrial society of the past to the new super industrialised era of the future' (Hannigan 1995: 185).

It is often the case that narratives of sustainable development and those of ecological modernity are conflated. Baker and Eckerberg (2008) outline four main elements to ecological modernisation. First, that there is a synergy between environmental protection and environmental growth. Second, that environmental policy is integrated throughout other areas of policy, particularly governmental. Third, that new instruments for achieving sustainability can be found, for example, voluntary agreements, pricing mechanisms, eco audit management systems. Fourth, as outlined above, ecological modernisation emphasises invention and the diffusion of new technologies.

What is argued here is that the discourses of sustainable development present a vastly more diverse and complex picture of the world. For Beck, increasing recognition of and response to the different forms of risks caused by scientific/technological advancement and its inappropriate application by political structures is creating space for another form of modernity. In this volume Leon Mach provides a very effective critical assessment of technological progress applying this directly to the surfing space. According to Beck modernity has turned inward and is questioning its most central tenets, creating a stage of reflexive modernity where modernity is becoming its own theme. It is a questioning of the direction that contemporary society takes at both the global institutional scale and the local and individual level. Science and technology has lost its hegemony of knowledge formation, the relationship between established science and unconventional knowledge has become blurred, and the infiltration of the political into the scientific process disturbs the boundaries of expert and lay knowledge (Beck 1999; Irwin 2001; Irwin and Michael 2003). In a reflexive modern world global institutions and individuals are competing for political space.

What is important to recognise in a Beckian analysis of risk is that it is the quality and not the quantity of risk that creates an epochal transition. In Beck's initial work he explores three icons of destruction. These include nuclear power, environmental degradation and genetic technology. During the course of Beck's work up to his final analysis, his risk focus has altered with a clearer focus on the role of global climate change in postmodern processes (Beck 2016). What is a central criteria for risk in a late/reflexive modern world is that all humanity is exposed, first through nuclear power and then through global climate change (1999, 2016). It is because of the global, unavoidable and inescapable nature of risk inflicted on all of humanity that a new layer of social organisation is created.

The proposition

I have previously argued that the increased use of sustainable development and sustainability within society provides an empirical litmus through which the epoch of modernity can be addressed (Borne 2010; see Redclift 1992). What is argued here is that sustainable development and the risk society present a mutually integrative storyline of humanity's influence on its environment and the complex and dynamic ways in which this relationship is reciprocated. It is suggested that both highlight particular aspects of modern developmental processes. Both explore the relationship between humanity and the environment; draw into question notions of progress, science and rationality; explore new forms of political and governance structures both above and below the nation state; open up the boundaries between the global and the local; are concerned with intergenerational equity and the incompatibility of geological and political timescapes.

With these synergies in mind I have further proposed that this leads to a symbiotic relationship between sustainable development and a risk society. From one perspective perceiving sustainable development through a risk society lens provides a level of sophistication and an overarching theoretical perspective essential for understanding the intricate and dynamic nature of sustainable development. This will ultimately lead to an informed assessment of how sustainable development is being articulated in particular contexts and the consequences this has for wider social formations. Turning that relationship around I argue that through examining sustainable development, it will be possible to directly assess some of the assertions made within the risk society thesis, particularly Beck's assertion of the emergence of a reflexive modernity.

Exploring discourses of sustainable development from within the context of the United Nations at the international level and from a localised scheme to reduce carbon emissions at the local level I have argued that '. . . a complex symbiotic relationship *does* exist between sustainable development and reflexive modernity' (Borne 2010: 261). However, this complexity is evident through the assertion that at the local and individual levels there is evidence of a counter-reflexivity. Extending this logic now to surfing, what is fundamentally argued here is that examining sustainable development and sustainability within the context of surfing provides a unique opportunity to understand sustainable development and apply this to modernistic discourses. Moreover, applying this lens to the surfing world allows a sophisticated understanding of the dynamics that exist in the surfing zone but also that these are transferable to broader social, environment and economic structures. Table 1.1 identifies each symbiotic element and suggests possible surfing dynamics that can be explored.

The previous discussion has addressed a number of issues. It has introduced sustainable development and surfing through the lens of a risk society, drawing out key themes and underlying normative assumptions. In so doing it has elaborated on foundational discourses relating to sustainable development through epochs of modernity. It has established the relationship between sustainable

Table 1.1 Applying surfing to sustainable development and a risk society

Risk society and sustainable development	*Surfing*
Explore the relationship between humanity and the environment	Surfing as an activity is innately connected to nature through engagement with the ocean
	Historical narrative of exploitation, domination, imperialism
	Potential reintegration of sustainability discourse and practice
Draw into question notions of progress, science and rationality	Embedded knowledge, loss of spirituality, cultural and subcultural dynamics
	Hybridity
Open up the boundaries between the global and the local	Wave knowledge – local knowledges
	Surfing's proliferation globally has impacts on multiple level scales economically, environmentally, socially, politically, culturally
	Surfing as community
	Impact of Web 2.0 on global–local boundaries
Explore new forms of political and governance structures both above and below the nation state	Multiple and expanding surf organisations that sit outside and inside the conventional political system
	The interaction of multiple organisations on a cross-sectoral basis
	Cross-sector governance dynamic
Inter-generational equity and the incompatibility of geological and political time-scapes	Protecting waves for future generations
	Surf sites

development and a risk society and provided a link to surfing. This is not by any means a complete analysis; it is not exhaustive or definitive. It is more a sketch of the relationship that offers initial insights into the potential relationship between surfing and sustainability for future scrutiny. Throughout this volume multiple issues and perspective are presented that could expand and augment this framework. Equally important, there are those that could contest and contradict this assessment in order to create an informed debate. The following discussion will move to discuss more directly themes within surfing that can be said to relate to sustainability, grounding the above discussion in existing academic work

Surfing research

Surfing as an academic pursuit is a relatively new endeavour. Each chapter in this volume explores surfing and sustainability from its own unique perspective and in so doing compiles a literature base that relates directly to surfing and sustainability as well as drawing on relevant literatures in order to augment and

support respective discussions. With that said, because of the nascent nature of this field, clear crossovers amongst authors are visible. With this in mind, it is not the aim of this chapter to expand on this in any significant detail. It is, however, instructive to explore the range of issues that are addressed within the surfing literature and how these relate to sustainability.

Few significant attempts have been made to comprehensively explore or categorise the range of issues present within the surfing literature. Notably, Scarfe *et al.* (2009a) explore research-based literature for coastal management and the science of surfing, outlining categories and associated sub-categories that relate to this and quantifying the number of studies that relate to each. This is a very useful and comprehensive categorisation for the issues involved and with little adaptation can be modified to represent sustainability related themes.

These categories are not static or definitive – criteria in reality cross multiple boundaries and will and should evolve over time. They do, however, illustrate the breadth of issues that are present, all of which are relevant to the study of sustainability. Many of the issues illustrated in Table 1.2 are evident throughout this volume in varying degrees and in different contexts. Whilst it is not my intention here to review comprehensively the categories outlined above, or duplicate those that are explored in the following chapters, I will outline the following pertinent categories to further demonstrate a relationship between sustainability and surfing as well as risk and modernity. This predominantly focuses on surfers and wave, history, tourism, economics, sport management and sociology. In so doing areas relating to industry and coastal management are also explored.

Surfers and the wave

The discussion begins with surfers and waves, which is perhaps the most important starting point for a discussion on sustainability and surfing. This was touched upon at the beginning of this chapter, highlighting ideas of relational sensibility (Anderson 2014), affect (Booth 2013) or stoke (Borne and Ponting 2015). It has been variously argued and contested, as is the case in this volume, that the potential for surfers to act as environmental stewards and leaders for environmental awareness and sustainability-related issues is a natural instinct because of the direct contact with the ocean. As Whilden and Stewart maintain:

> If surfers can start to live a low carbon lifestyle and if the surf industry can develop low carbon products and practices it may be able to engineer a transformation in society itself to more rapidly engage with the CO2 problems itself and its solutions.
>
> (Whilden and Stewart 2015: 131)

The relationship between environmental contact, how we understand nature, internalise knowledge and subsequent action is complex, at both the individual and institutional levels (Macnaghten and Urry 2000; Hulme 2009; Stranger 2011). This is evident within the pages of this book, where there are different

Table 1.2 Surfing and sustainability sub categories

Category	*Criteria*
Surfers and the wave	Stoke and affect
	Describing waves, relating surfers to waves including skill levels, surfboard types, manoeuvres performed, surfability
Surf history	Co-evolving historical narrative
Tourism	Impacts of surf tourism on local communities
	The character or value of surf tourism
	Transportation – carbon footprint
Economics	Economic value of surfbreaks
	The blue economy
	The circular economy
Sociology	Sociological aspects of surfing including surfing culture, social protocols at surfing breaks, gender and surfing, localism
Industry	Governance, industry growth and transition, surfing equipment, technology, merchandise, marketing, clothing, surfing films and magazines and clothing
Coastal management	Coastal management theory, protecting surf breaks, recreational coastal amenities, environmental impact assessments, surfers and coastal use conflict, examples of impacts on surfing breaks
Sport management	Theories of sport management, governance and practice
Physical processes	Oceanographic and sedimentary conditions; surfing breaks including artificial breaks, hydrography, measurements
Numerical and physical modelling	Modelling of theoretical and real surfing breaks
Artificial surfing reefs (ASR) – sediment dynamics, design and monitoring, constriction	Sediment and morphological responses to an ASR, design of ASR
	Monitoring of effects to surfing amenities, coastal stability, habitat, swimming safety
	Construction techniques and monitoring
Biomechanics	Fitness, surfing techniques, sporting injuries

Source: adapted from Scarfe *et al.* (2009a).

perspectives on how these variables interact. What is germane to this debate perhaps more directly is what this focus on affect means for the research agenda for sustainability and surfing. Booth suggests that the

> recent turn to affect in the social sciences and humanities among scholars which believe we should take bodies and feelings more seriously opens the door to affect as a context for surfing narratives: Indeed some authors have employed stoke as a context.
>
> (Booth 2013: 8)

Booth's comments are timely, as stoke as a context has formed the foundation for a significant assessment of narratives specifically related to sustainability and surfing (Borne and Ponting 2015). This work drew on over 40 prominent members of the surfing community on a cross-sectoral basis. This included academia, industry, not for profits, media, celebrity and government. The work

highlighted the diversity and ambiguity of sustainability as a concept. It displayed a plethora of perspectives about how sustainability can be achieved from a surfing perspective but also where surfing had failed and departed from its perceived holistic, spiritual origins.

Surf history

A chronological history of the origins, decline and then rise of surfing that begins in Hawai'i has been well documented (Endo 2015; Irwin 1973; Laderman 2014; Lawler 2011; Stranger 2011; Warshaw 2010). More recently specific lenses of surfing's history have been applied. Scott Laderman (2014) explores a political history of surfing which traverses a number of issues from the imperial roots of modern surf culture, the role of surfing in South Africa and how key surfing figures responded to the political landscape from the unique surfing narrative. Later Laderman has applied this thinking to sustainability where he critically discusses the role of the surfing industry (Laderman 2015). Focusing on surfing industry dynamics Warren and Gibson (2014) explore cultural production for the surfing industry in Australia and in this volume these authors update this assessment presenting fresh insights into surfboard manufacturing and relate this directly to sustainability.

What is evident is an innate narrative associated with surfing's history that explores the separation of surfing from the simple naiveté of the early days to the more complex structures of a modern and the postmodern world. What I suggest is that these narratives run in parallel with debates on sustainable development and the broader separation of humanity from nature through processes of industrialisation and modernisation. Drawing again on Booth as an overall historical perspective on surfing that directly feeds into the contemporary debate on sustainability the following is instructive.

> The critical questions for historians of surfing are why have surfers lost their 'sense of wonder' at the majesty of waves, and why do they no longer respect waves, or marvel at their beauty? The immediate physical environment of surfing provides part of the answer. Today the overwhelming majority of surfers live in conurbations. Instead of escaping into nature they immerse themselves in greasy, foul-smelling waters that assault and jolt their senses. The ocean is the built environment's sewer and, like the dirty ashen skies above and the pallid concrete ribbons and blocks which abut urban beaches, it is a constant reminder of human degradation and contamination.
>
> (Booth 1999: 52)

Booth goes further than this to emphasise that at the epistemological level there are multiple and fractured narratives that may exist at the nexus between modernity and postmodernity (2009; also see Booth 2015). This sees postmodern and reflexive modern themes of paradox, uncertainty, subjectivity and the dissolution

of causality come into play and offer a further justification for viewing surfing from a risk society perspective.

Surf tourism

This departure from the naturalistic base has been predominantly accredited to the rapid rise in and commodification of surfing in the past five decades. The most visible manifestation of this, and certainly a topic that has received the most attention in the academic surfing literature, is surf tourism (Buckley 2002; Ponting *et al.* 2005; Ponting 2009; Towner 2016).

Initially, and whilst not exploring surfing tourism specifically, Buckley offers a very valuable review of the evolution and integration of sustainability into the tourism literature. Importantly it is observed that '…the key issues in sustainable tourism are defined by the fundamentals of sustainability external to the literature on sustainable tourism' (2012: 529). As such, Buckley's review applies some key components of sustainability generated externally to the sustainable tourism literature, including population, prosperity, pollution and protection. This observation applies across the themes identified here for sustainability and surfing.

With the above in mind, Ponting's work in this field has been seminal and continues to extend research within this area. This work is explored in a number of contributions, and by Ponting himself in this volume, so will not be elaborated on here. Significantly, Martin and Assenov (2012) provide a systematic review of over 5,000 pieces of literature between 1997 and 2011 related to this sub-field of surfing academia. The authors found two consistent themes within the surf tourism literature. The first is the impacts that surf tourism is having within the developing world. These studies are '…mainly directed toward capacity management in relation to social, economic and cultural interaction with host communities' (2012: 107). The second explores the central theme of urbanisation in developed countries on established surfing locations that have seen increasing numbers and echoes Booth's earlier statement. Drawing on these insights and those of Danny O'Brien, Martin and O'Brien in this volume explore the complex and integrated nature of surf systems.

Whilst intimately connected to the surf tourism literature, the economics of surfing has received increased attention. This has predominantly been articulated using the term surfonomics, which moves into areas relating environmental economics attempting to incorporate broader social and environmental issues into the economic analysis (Nelson 2015). This volume sees some exciting extensions to this work where different perspectives for incorporating value into the surfing space are discussed. Foundational and continued work by Lazarow *et al.* (2008) explores the value of recreational surfing and associated cultural impacts. Lazarow is prominent in this volume, leading on one and co-authoring two subsequent chapters from authors that have formed a cluster for surfing research at Griffith University.

Sport management

With introductory comments on the edgeless nature of surfing in the introduction to this chapter there is emerging and relevant literature in the increasingly coalesced field of sport management. There are relevant debates reacting to theory (Cunningham *et al.* 2015) and sport governance (O'Boyle and Bradbury 2014). There is an emerging body of literature that is now exploring sport and surfing more specifically within development contexts with an emphasis on community capacity (Edwards 2015; Ponting and O'Brien 2015; Able and O'Brien 2015). Also, there has been a proliferation of surfing related NGOs in the surfing space that are specifically related to community capacity but also, more broadly, sustainability-related issues. These organisations have been termed Surfing Development Organisations and relate to multiple areas of relevance to sustainability (Borne and Ponting 2015). These include social issues, inclusion, gender, and environmental protection (Britton 2015; Schumacher 2015; also see Roy 2014), market and culture transformation (Whilden and Stewart 2015), and coastal land protection (Dedina *et al.* 2015).

Sociology and an age of sustainability

The final category I want to explore is sociology, which forms a prominent perspective on surfing, particularly when applied to discussions relating to culture and subculture. Ford and Brown (2006) have drawn together social theory and surfing in an effective framework that weaves a number of traditional sociological approaches with a broad range of surf literature. This work has gone a great distance to taking a serious academic approach to the nature of surfing. Using a combination of popular surf culture, academic literature and social theory, the book is the first to discuss the contemporary social and cultural meaning of surfing. Pertinent areas include mind and body, emotions and identity, aesthetics, style and sensory experience. Key themes include evolving perceptions of the sea and the beach, the globalization of surfing as a subculture and lifestyle and the embodiment and gendering of surfing. Lawler (2011), extrapolates the narrative of surfing as subculture or radical culture, exploring the relationship this has with capitalism, with an emphasis on the United States.

Risk, modernity and a space for sustainability

Mark Stranger's (2011) work represents arguably one of the most comprehensive, analytical and thought-provoking assessments of surfing culture, its relationship to industry as well as a discussion on the future of surfing, which is addressed though the context of risk and the aesthetics of surfing. As such, in a limited way, with what follows I want to highlight the relevance of Stranger's analysis for the relationship between sustainability and surfing and the risk society which represents a synthesis of his work and my own. For Stranger there is no doubt that surfing culture has been appropriated for popular consumption.

However, what Stranger highlights is that the progression of surfing culture does not exist in the polemic of culture and subculture. Instead there was a counter-cultural movement that developed in a co-emergent way where the surfing culture industry led to a post-Fordist incarnation and not into the idea of big capitalism.

What Stranger explains is that the dominant industry players remain insiders to the foundational experience of surfing, which has '. . . made them bulwarks of resistance to surfing's subsumption within the dominant culture' (Stranger 2011: 190). This complex co-evolution of the big business commodification of surfing culture (and in tandem nature) present important lessons for how the surfing world may not only be informed to be more sustainable from an impact perspective but also how it can utilise this co-evolution of sub- and mainstream culture to project sustainability to a broader global community on a cross-sectoral basis. At this point in the chapter we see a convergence on multiple fronts.

First, synergies are now evident with the broader discussion on the state of modernity as understood in a risk society. Stranger explains that the surfing industry connection to its subculture is the result of an internal reflexivity which acknowledges the 'need' for subcultural maintenance for its own survival. For Stranger this is oppositional postmodernism created by the shared foundational experience of surfing that underpins the subculture. 'However, this postmodern form is in conflict with a concurrent mainstream postmodernism which favours market governance and individual distinction and through which the surfing culture industry is also linked through the arena of competition surfing' (2011: 214).

If we now insert sustainability into this analysis as understood in a risk society we can directly overlay the discussion on ecological and reflexive modernity onto oppositional postmodernism and mainstream postmodernism. In an era of sustainability the internal reflexivity once again creates a situation of survival as threats such as climate change impose directly (perceived or actual) on the foundational experience of surfers, which ultimately distorts the maintenance of a subculture. This then is the space that the relationship between sustainability and surfing now occupies.

Structure of the book

This book is divided into six parts including this introduction and the conclusion. In Part II Steven Martin and Danny O'Brien introduce and develop the concept of system boundaries. This is a theoretical concept in environmental science that represents intersecting, interrelated human and physical elements at a given site. This is a natural opening chapter as it explodes the rubric of what constitutes a surf site, highlighting the interrelated nature of multiple variables.

Part III introduces three chapters that focus on the relationship between, technology, industry, surfing and sustainability. The section opens with a broad-based chapter by Leon Mach that explores the technological epoch of

surfing. This chapter builds a sophisticated understanding of the role of technological advance. It establishes a better understanding of the ways in which the changing technological parameters facilitate and/or detract from efforts to usher in more sustainable surfing-related practices. The chapter focuses on four technological dimensions impacting surf tourism, including the physical, climatology, Internet communication technologies and artificial surfing. Anna Gerke deals with the local development of the French surf industry in the Aquitaine region and its impacts on the local economy. Tendencies towards more sustainable business practices are outlined using practical examples from the region. Chris Gibson and Andrew Warren conclude this section by discussing environmental sustainability issues in the surfboard-making industry, and dilemmas that arise as a consequence of the industry's combination of structural economic features and subcultural origins. The authors highlight issues such as the dependence on petroleum products, harmful chemicals and poor waste management practices.

Part IV focuses on the inclusion of surf activism and non-traditional economic accounting in the policy domain. Dan Ware *et al.* highlight the inauguration of the world's first ever surf council on Australis's Gold Coast. Exploring power dynamics the authors emphasise that well educated, connected communities have the greatest success in maintaining their local environments and are generally avoided by development interests.

Rob Hales *et al.* explore the literature on surfing and public sphere resistance to development. Again focusing on Australia's Gold Coast, the authors theoretically position surfers' resistance to development as the unique feature of the 'surfing common' as the sphere of action for the pursuit of sustainability governed by public interest. The final chapter in this section by Jason Scorse compliments the previous chapters by highlighting the non-market value of surfing and its policy implications through the Hedonic Price Method.

The common theme in Part V is the reconceptualisation of surf spaces. Lindsay Usher opens the section by discussing the implications of localism for the sustainability of surfing and surf travel. This chapter outlines sustainability and surfing and explores the positive and negative impacts localism can have on achieving sustainability. Mark Orams draws into question the sustainability of surf tourism, emphasising that managing growth to ensure that a range of surfing experiences remain available, from high-use multi-sport venues to wilderness solo surfing venues, is an important challenge for the future of surfing as its popularity continues to grow worldwide. Jon Anderson looks to reframe the sustainability of a surfing utopia. The chapter introduces the place of the tube, outlining the cultural and social costs many places suffer through the influx of surfers into an area. The chapter examines the carbon footprints involved in travel and their significance for the ecological world. The chapter suggests how lessons from environmentalism, including new transitional politics of pragmatism, could be usefully adopted by surfers to better frame the surfing dream as inevitably tied into the representations and structures of a currently unsustainable world.

Neil Lazarow and Rebecca Olive explore key aspects of the contemporary surfing world, including culture, meaning, place and sustainability. The chapter presents primary data and highlights the complex dynamics in relation to surfers engaging with environmental issues. In the final chapter of this section Jess Ponting discusses the relationship between surf parks, surfing spaces and sustainability.

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