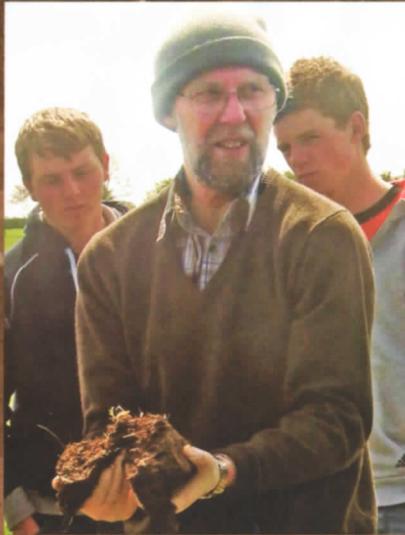


Humanity is trashing the world's soils by the billion tonne, though all terrestrial life depends on it. Bruce Ball shows that we have the techniques to restore what's left – but that most of all we need a spiritual shift: to recover our sense of empathy with the biosphere. We need to dig deep – not into the soil but into our own psyche.

Colin Tudge, biologist, author and co-founder of The Campaign for Real Farming

AIMED at all concerned about the environment, this book presents a radical vision of the future of farming and community life, based on hidden insights from the life and spirit of the soil and on the author's experiences of growing up in the small agricultural community of Clatt in North-East Scotland.



Bruce Ball is a soils specialist with a research and consultancy career spanning 35 years. His regular contact with soil in the field and with farmers has led to a deep understanding of the critical importance of soil to our future survival.

Alastair McIntosh, author of *Soil and Soul*, describes this book as 'lyrical' and 'an autobiography of the soil written autobiographically by a son of the soil'.



wild goose publications
the iona community
www.ionabooks.com

ISBN 978-1-84952-321-9



with a Foreword by Alastair McIntosh, author of *Soil and Soul*

The LANDSCAPE BELOW

Soil, soul and agriculture

Bruce C Ball

CONTENTS

© Bruce Clive Ball 2013

First published 2015 by
Wild Goose Publications, Fourth Floor, Savoy House,
140 Sauchiehall Street, Glasgow G2 3DH, UK,
the publishing division of the Iona Community.
Scottish Charity No. SC003794. Limited Company Reg. No. SC096243.

ISBN 978-1-84952-321-9

All rights reserved.

No part of this publication may be reproduced in any form or by any means, including photocopying or any information storage or retrieval system, without written permission from the publisher.

Bruce C Ball has asserted his right in accordance with the Copyright, Designs and Patents Act, 1988, to be identified as the author of this work.

Overseas distribution

Australia: Willow Connection Pty Ltd, Unit 4A, 3-9 Kenneth Road,
Manly Vale, NSW 2093

New Zealand: Pleroma, Higginson Street, Otane 4170,
Central Hawkes Bay

Canada: Bayard Distribution, 10 Lower Spadina Ave., Suite 400,
Toronto, Ontario M5V 2Z

Printed by Bell & Bain, Thornliebank, Glasgow



Acknowledgements	8
Foreword, by Alastair McIntosh	9
Introduction	13
<i>Chapter 1</i> Molehills and Poems	19
<i>Chapter 2</i> Holy Ground	31
<i>Chapter 3</i> Water of Life	45
<i>Chapter 4</i> Gases and Spirits	55
<i>Chapter 5</i> Under the Surface	65
<i>Chapter 6</i> Getting Connected	75
<i>Chapter 7</i> Going Organic	89
<i>Chapter 8</i> Restoration and Conservation	101
<i>Chapter 9</i> A Peaceful Struggle	121
Notes	143
Further Reading	147

ACKNOWLEDGEMENTS

Thanks to my daughter for persuading me to write this book. Elaine Walker guided me on the path of creative writing and writing poetry. Mary Norton gave invaluable advice in straightening out my ideas. I am thankful to my colleagues Bob Rees, Tom Batey, Per Schjønning, Mike O'Sullivan, David McKenzie, Willie Towers and Rattan Lal for reading material and/or providing encouragement. Many others also provided comments, advice and support, particularly colleagues from Scotland's Rural College. Alastair McIntosh wrote the Foreword and also provided advice and ideas. Research and development work on soil was supported by several projects sponsored by the Scottish Office, the Scottish Government and the UK Department for Environment, Food and Rural Affairs.

Most of all, I am grateful to the farmers of Clatt for sharing their thoughts, ideas, wisdom and stories, particularly Brian and Duncan Muirden and James Petrie. I am indebted to Brian Muirden for providing access to soils and to community events. I hope that I have been accurate and faithful in my recollections and reporting. I am greatly indebted to my wife Louise for putting up with my endless editing and demands to read and re-read drafts.

For permission to reproduce copyright material the publisher gratefully acknowledges the following: Hope Publishing for the epigraph verse, Sheena Blackhall for 'The Spik o' the Lan!' and Richard Bly for 'The Earthworm' by Harry Edmund Martinson originally published in *Friends, you drank some darkness*.

For permission to reproduce photographs, the publisher gratefully acknowledges: Dr Hubert Boizard, INRA Estrées-Mons, France for Figure 6; Dr Marinus Brouwers, Clapiers, France for Figure 9; Dr Gabriela Brändle, Agroscope, Zurich, Switzerland for Figures 8 and 12, Dr Everton Blainski for Figure 14 and Dr Neyde Fabíola, Ponta Grossa, Brazil for Figure 16.

Thanks to the staff of Wild Goose Publications for their support, particularly to Sandra Kramer for helping to clarify the meaning of the text.

FOREWORD

by Alastair McIntosh

This book is an autobiography of the soil. It is written autobiographically by a son of the soil, an Aberdeenshire ploughman who became a soil scientist and who now finds himself reflecting on the parish soil out of which human beings grow.

Bruce Ball was raised amongst the farmers of Clatt near Huntly in central Aberdeenshire. He grew up in an era when most farms were modernising, but there remained enough of the old ethos for him to have known farmers who worried that nitrogen fertilisers would 'suck the ground' of its goodness, and for whom job satisfaction was a field immaculately ploughed.

His early experience of soil science was through the senses. The crumble and smell of a soil – some would even add its taste – that determines real quality as distinct from the narrow utilitarianism of intensive farming that treats soil merely as a sand and clay medium for hydroponics.

The longer that Bruce meditated on the nature of ground, the more he came to see that we, too, are like the earthworm. We, too, are organisms of the soil, creatures of the parish that is our place on Earth. As I read through this lyrical book, my mind kept going back to Genesis 27:27 where the elderly Isaac says, 'Ah, the smell of my son is like the smell of a field that the Lord has blessed.'

It is true that Isaac was being tricked at the time. In the same way, we have tricked ourselves (or been tricked) into thinking that chemical technology, based on plentiful cheap oil, has done away with the need to cherish soil quality. But Isaac's central point remains deeply valid. As every traditional farmer and many a gardener can testify, the smell of a wholesome human being and the smell of the goodness of the Earth have much in common. If we fail to care for the soil, then what will become of us?

Such is the deeper question that Bruce's writing poses as this book advances towards its spiritual conclusion. To abuse the soil in the way that so much of our modern agriculture is doing is to foreclose on the options and food-supply resilience of future generations. As has been prophetically said: 'Those who destroy their soils ultimately destroy themselves.'

And the resolution? Bruce emphasises the various farming options for reaching food security, but as he sees it, we need nothing less than a transfiguration of our relationship to the soil that makes up the parish. Transfiguration, he says:

'... recognises the importance of people, their motivation and their spirituality. It demands a permanent spiritual step-change and a renewal of mind that I believe will allow more of us to become people of the soil, whose inner life or inner soil is grounded in the earth, who know it as their ally, and whose actions reveal their connections with the earth, with others and with the environment. Such people have inner awareness and are often called the salt of the earth.'

It was not just the metaphor of salt that came to my mind as I read this. I also thought of how Jesus healed the blind man, mixing the spittle from his own body with the soil that he scraped from the ground. That man was, perhaps, physically blind, but the power of the gospel story is how it awakens us to our spiritual blindness, and in such a visceral manner.

Bruce's vision of a transfigured world is one where we might 'live more simply, but with inner richness, like soils dark with organic matter.' A world in which, 'like high-quality soil, we grow deeper and closer together, promoting "us" rather than "me".'

From such depth of grounding the churches themselves might 'start afresh', as Bruce cites one of the Clatt farmers as suggesting, and so while conceding his uncertainty as to what the future will

look like, he feels sure 'that when we make the transfigured world, we will be standing on soil that is resilient, dark and porous, rich and deep with organic matter, wisdom and love.'

As such, our communities, our membership one of another on the Vine of Life, will be nothing less than 'beauty that is soil deep', and if Bruce Ball's prescription is followed, that will be a depth that grows as the Earth itself ages, and the human spiritual journey melts progressively into the fullness of divine experience.

Alastair McIntosh was appointed Scotland's first Visiting Professor of Human Ecology at the University of Strathclyde and is a Fellow of the Centre for Human Ecology, now based in Govan. His books include *Soil and Soul* (Aurum), *Rekindling Community* (Schumacher Briefings), *Hell and High Water: Climate Change, Hope and the Human Community* (Birlinn) and *Parables of Northern Seed* (Wild Goose). His writing has been described by the Bishop of Liverpool as 'life-changing', by the Archbishop of Canterbury as 'inspirational', and by Thom Yorke, the lead singer of *Radiohead*, as 'truly mental'. Like Bruce Ball, he is a graduate of the University of Aberdeen.

INTRODUCTION

Man – despite his artistic pretensions, his sophistication and his many accomplishments – owes his existence to a 15cm layer of topsoil and the fact that it rains.

Anon.

I have appreciated the beauty of the natural world all my life. Growing up in a rural environment, the way I saw the world was shaped by the hills and rivers and the cycles of flowers, trees and animals. However, it wasn't until middle age that I recognised the hidden beauty, in people, voices, eyes, gestures, poetry. That we often obscure beauty beneath ugliness and the materialism of the modern world is something I have come to see as a coping strategy for our loss of connection to the unseen value of all around us. The challenges society faces today suggest an addiction that has led to shortages of resources like oil, food and water and to reliance on things we have come to see as essential, while we ignore the elements of life that have real value. The inequalities evident between rich and poor can load relationships with guilt and resentment, causing us to overlook the fact that we are all – in essence – the same.

I grew up with shortages because my folks didn't have much money and we lived in a house without a reliable water supply. I came with economy built in. Our house was isolated but we had some land, a few hens, cows next door and plenty of wildlife, so what I lacked in toys and company I made up for by spending time outside learning the language of the hens, the animals, the birds, the trees, the vegetables, the stars and the soil.

Recently, I have begun to get impatient with our society which uses too much of everything, including other people, and which seems to be so angry and unhappy. Our destructive way of living, which burns up our last reserves of oil instead of conserving them

for the next generation and which throws away so many things, is plain stupid. Sucking so much water out of the ground and fighting each other is plain stupid, as is our continued degradation of the environment.

I became a soil scientist mainly to learn how crops grew and to discover how to get them to grow better. We rely on the soil to feed us, despite our high-tech society, and we use crops and cultivation techniques that have changed little over the years. Only about 11% of the earth's surface is covered by soil. Yet I soon realised that, even when we think we're caring for it, we often treat that soil like dirt. We chuck fertiliser or water at it, churn it up and squash it back together with bigger and bigger machines. Our soils are losing their quality, becoming exhausted, so that over one third of the areas of productive soils are degraded. The soil is literally and figuratively the foundation of the environment, albeit hidden most of the time. Moreover, our soils are actually disappearing. As you read this, soils are being lost worldwide at an average rate of 300 tons per minute. If this continues, our remaining topsoil might not survive much beyond fifty years.

Shortages of soil, fertiliser and water will make it more and more difficult to feed our increasing population, leading to the very real prospect of food scarcity. Even if we're not greatly concerned about global warming and peak oil, we can't do without food. Nor can we deny that it is happening as some do with global warming. The evidence is clear in the lost soil, in problems with excessive nitrogen fertiliser use, in disappearing freshwater resources, destroyed forests, extinct animal species and desertification. There is no room for 'abused land' sceptics. We have already seen food riots and protests as a result of high prices. We need to learn the lesson from previous civilisations like that of the Maya. We tend to associate them with magnificent temples rising from the jungle. But they lost most of their soil due to erosion under their intensive agriculture. Those who destroy their soils ultimately destroy themselves.

I've spent time in my career developing simple methods to observe soil and to learn from it. When I handle the soil, it says good things to me. It speaks of its willingness to suck up water, to take in fertiliser, to become warm and to feed me. But like everything it has its breaking point, although it also responds to kindness. There is a parallel between caring for the soil and caring for others. I believe that achievement of this caring involves a search for beauty, not as an abstract concept but as a recognition of value.

My search began back in the community where I grew up. The people there loved the soil and conserved the environment instinctively. Most had successfully assimilated modern ways, yet had kept a traditional approach in their relationship with the land and with each other.

As a child, I recognised beauty in the yellow and brown colours of the local soil. As an adult, I discovered the strange purple soils derived from lava-like pumice stone in the nearby village of Gartly. The differences in colour alone remind us of the hidden complexity in the earth we walk on. Soil was described by Hildegard of Bingen four hundred years ago as 'afire with the light of God'. This light comes from below as a crop germinates and emerges – she calls it 'the greening power of the soil'. But the action of this light for growth depends upon the health of the soil and, because of its hidden nature, when its quality diminishes, we may not notice until it is too late.

In a similar way, our mental and spiritual health is being eroded from the foundations of our communities and our wider society. Globally we are facing an economic recession. In the northern hemisphere we are also facing a social recession. Despite the accumulation of material wealth, which we believed would bring us security, there is growing violence, pressure on the environment and widespread social inequality which makes us feel increasingly unhappy and isolated.

My career as a soil scientist began as a search for ways to improve

yields for economic growth. My work with church groups began as a means of re-creating community. Both have brought unexpected results. Through recognising the beauty of the soil and the bonds between people, I have a greater appreciation of both and have found that the original aims of economy and community can be achieved in more holistic ways, by reconnection with the land and tuning in to the urge of the spiritual. We need to get back to our roots in the soil and delve within us to access the stored knowledge of past generations. There are close links between how the soil works, and how we manage it, and how we cope with others and manage our lives. This was well illustrated in the community of Clatt where I grew up. The people of the soil – those who not only work the land but also feel for it – were those who fostered community developments. There was a tangible link between caring for the soil and caring for people.

Good soil management is not easy and our quick-fix approaches often lead to long-term damage. We could possibly feed ourselves without environmental damage if we all behaved rationally. But we have never behaved rationally before, so it's unlikely that we will now. We claim to be ecological in fighting pollution and resource depletion. Yet this is often with the objective of preserving the health and affluence of people in developed countries – 'shallow ecology' in other words. In contrast, deep ecology¹ sees the world as a network of phenomena that are all fundamentally linked and interdependent. This approach values all people, animals, plants and minerals equally. To move towards this deep ecological approach I think we need some help from the spiritual. We need to become aware of the sacredness of our environment, to listen and learn and become conscious of our connection to the spiritual within all things, so that we treat everything with reverence. In this book I look to the inner space both of soil and of humanity. I show the urgent importance of soil life for the future of humankind. The management of soils and farming can integrate with the spiritual and the social to

point us towards the creation of sustainable communities based on beauty, justice and transformation. In this way we will be able to satisfy our needs and desires without robbing future generations.

To maintain my connection with the real world, I wrote this book on trains, boats, planes and, with some difficulty, on buses. This brought me into some interesting conversations with comments like:

'You might change soil but you won't change people.'

'Ah you're one of those who think all men are your brothers, then?'

'You need to stop those immigrants from ripping us off and taking our jobs.'

'Do you really believe in global warming?'

'Why should we work when others can't be bothered to get out and find a job?'

'The economy has to grow for us to survive.'

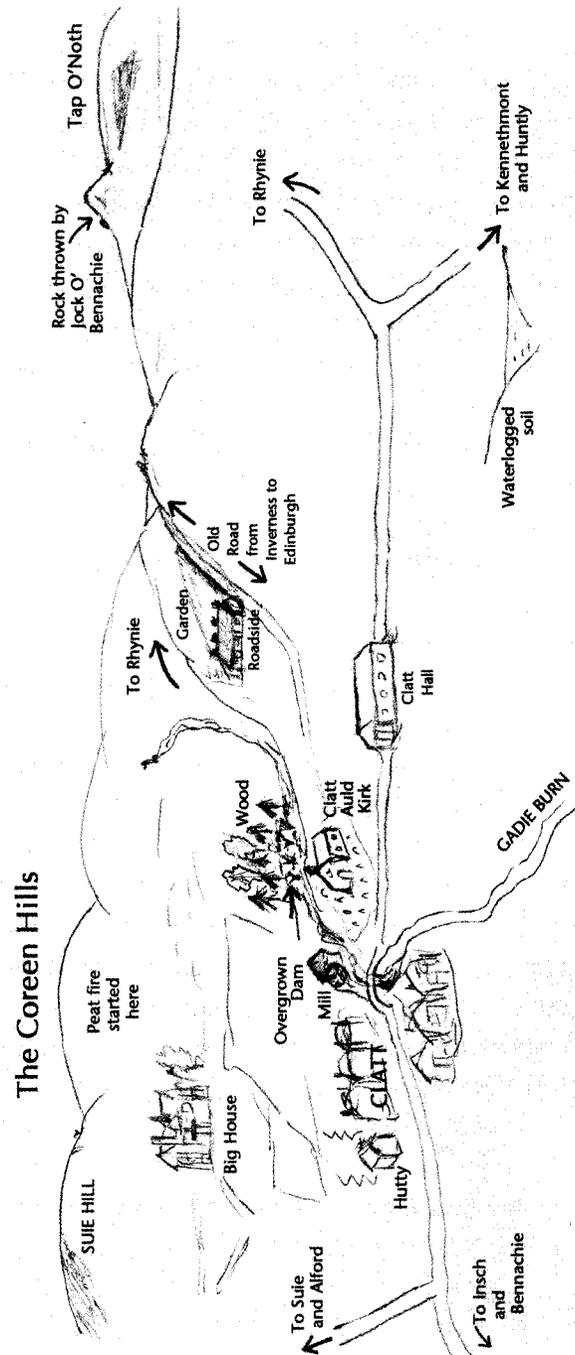
'We have always managed to adapt to problems in the past.'

'OK, so what are you, personally, doing about it?'

The result is a book about the hidden life of the soil and about the hidden forces that drive you and me. Developing an awareness of hidden problems and opportunities, and acting on them by searching for beauty, offers some pointers for improving our lives. Beauty ultimately comes from our inner landscape and often appears when we are waiting on the spiritual. The searching itself brings awareness of our every action, our environment and our resources and has a natural outcome in a desire for the good of others.

Note:

- 1 The concept of deep ecology was attributed originally to Naess 1973 and an example of its development is given in Capra 1997.



The Parish of Clatt

Figure 1: Map of the parish of Clatt

Chapter 1

MOLEHILLS AND POEMS

There it stands, the dear old house
 Up on the grassy hill
 It knows my joys and sorrows
 And holds them secret still
Henry Ball

We all need somewhere decent to live, to put down roots, to belong. Thus I was overjoyed when my father announced that he had bought a house with a big garden in the village of Clatt. Two years of living in cramped conditions in a caravan stuck in the middle of nowhere would be coming to an end. I still remember the first time that we came to Roadside Croft. We took the bus to Kennethmont and then set off on the two-mile walk to Clatt (Figure 1). As we walked, I looked round every corner for the house. Eventually, it came into view, on its own on the horizon. Once we got to Clatt, I discovered that Roadside was not actually in the village. We had to walk another quarter of a mile uphill through the surrounding fields to reach the house. The track was lined with telegraph poles. This was truly exciting. Not only electricity, but also the phone! But while my father spoke about getting it connected throughout our time at Roadside, there was never any money, so the poles and wires remained mute, carrying only the chill hum of the winter wind.

The house had an interesting history. The land in the parish of Clatt originally belonged to two lairds. A laird is a member of the Scottish gentry with a heritable estate who usually owns most of the land round his large house or castle. Most of the land of Clatt was owned by the Knockespoth estate, with a small strip to the north owned by the Leithhall estate. The land on which Roadside was built was bought from the Leithhall estate by a souter, as a shoemaker was known. Previously, he had rented a croft from the Knockespoth