Health Care in the Information Society

Vol. 2

From Anarchy of Transition to Programme for Reform

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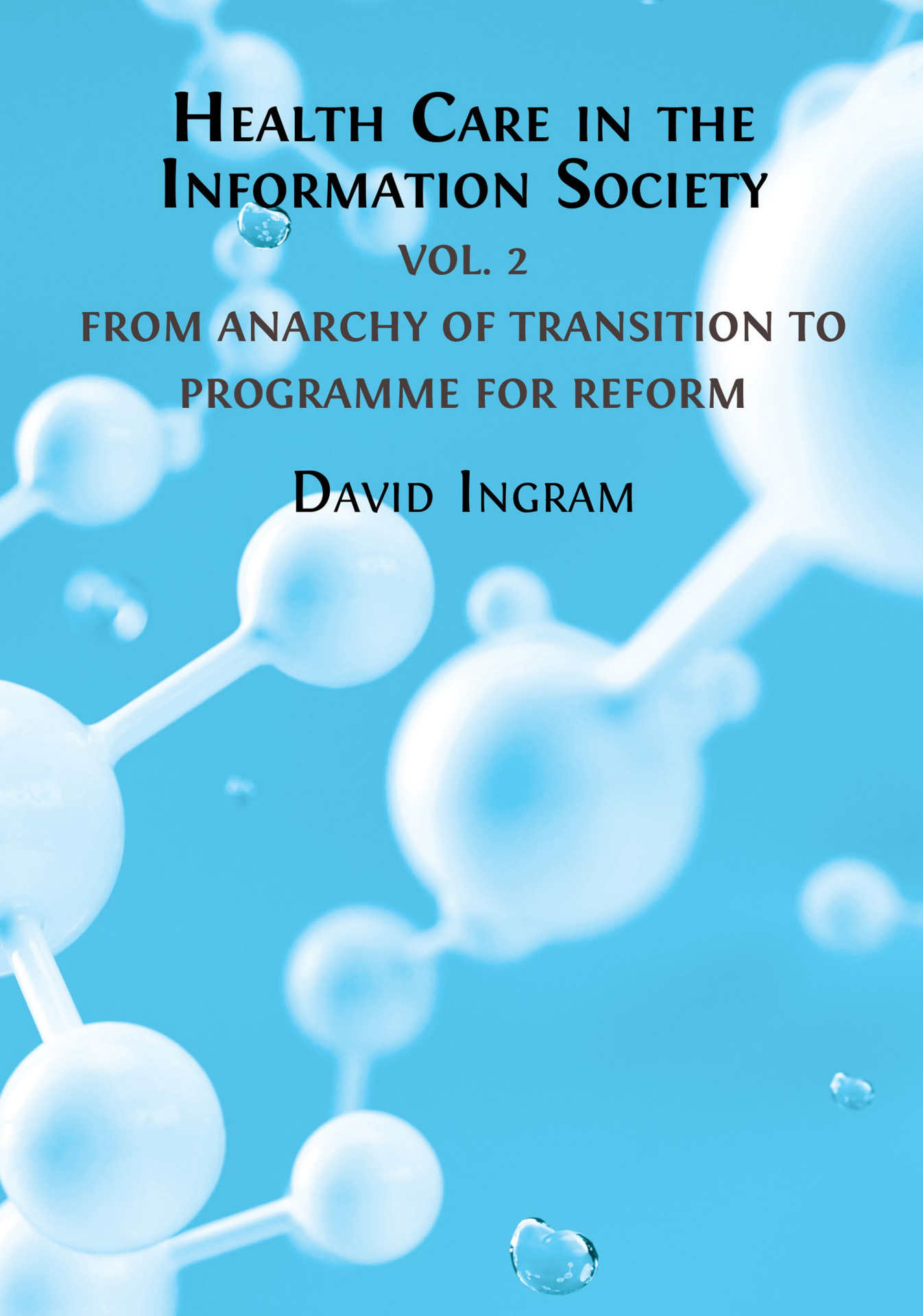

https://www.openbookpublishers.com

ISBN Paperback: 978-1-80064-803-6
ISBN Hardback: 978-1-80064-805-0
ISBN Digital (PDF): 978-1-80064-806-7
ISBN Digital ebook (EPUB): 978-1-80511-191-7
ISBN XML: 978-1-80511-192-4
ISBN HTML: 978-1-80511-193-1

DOI: 10.11647/OBP.0384

Cover image: D koi. *White H2O Molecules*, June 27, 2022, https://unsplash.com/photos/5nI9N2wNcBU
Cover design: Jeevanjot Kaur Nagpal

Postscript

What we call the beginning is often the end
And to make an end is to make a beginning.
The end is where we start from.

–T. S. Eliot (1888–1965)[1]

History says, Don't hope
On this side of the grave.
But then, once in a lifetime
The longed-for tidal wave
Of justice can rise up
And hope and history rhyme.

–Seamus Heaney (1939–2013)[2]

A preface starts a songline and a postscript, at its end, becomes a preface to new songlines, as life moves on. A postscript frames the start gate of a new circle of endeavour, with new horses for new courses, equipped and re-equipped with what has been learned on the previous circuit. There has been a great deal of invention and learning ongoing throughout the Information Age, and there is much relearning and reinvention yet to come, not least in the context of health care and its encounter with the computer. New devices, information systems and networks will lead to radical innovation in who does what, when, where, how and why, in furtherance of every citizen's health and health care. Not just in wealthy countries but everywhere, from the centre of cities to the most remote of outback communities. Low-level satellites can now provide the most remote of communities with solar and battery-powered one-hundred-and-twenty-megabit broadband connections to the Internet. My long-term clinical colleague, Sam Heard, uses this in his frequent visits as a doctor for Aboriginal communities living many hundreds of kilometres from Alice

1 'Little Gidding', *Four Quartets*, ll. 213–15.
2 *The Cure at Troy*, ll. 1597–1602.

 https://doi.org/10.11647/OBP.0384.07

Springs. He attests to the transforming potential this will bring to the range of medical services that will increasingly prove possible there.

The aftermath of war was an optimistic preface to my life. And what now flows in the aftermath of the first half of transition through the Information Age towards the Information Society, as recorded in the now historical songline and storyline of this book, should, likewise, be an optimistic and creative one, where Seamus Heaney's hope and history do, and are made, to rhyme. One in which Robert Putnam's and Thomas Piketty's optimism about upswing in society proves well-placed.[3] Making and doing are about imagination and creativity. Realism resonates somewhere between hope and pessimism; imagination and creativity somewhere alongside audacity. My book seeks to encourage an imaginative and creative realism, as a complement to Barack Obama-style audacious hope, and Mervyn King-style audacious pessimism.

As with Erwin Schrödinger (1887–1961), I have connected at a considerable distance with Edward Gibbon (1737–94) and Seamus Heaney, through shared affiliation with Magdalen College, University of Oxford. Gibbon hated the place–I imagine few who have experienced its community and beauty would hate it today! Gibbon said he spent the most fruitless time of his life there–at aged fifteen, before departing to Lausanne, funded by his father, to start on his journey of literary and historical scholarship that informed my Chapter Two. Heaney had a better time in his regular visits, being a guest of the College President and welcomed and cared for most warmly. His poem *Postscript* has informed my Postscript, here. It is an emotional picture, evoking themes of nature, experience and time. He presents images that he says can only be experienced once, which cannot be repeated. Alfred North Whitehead's (1861–1947) more apocalyptic warning about major transitions in society, which I quoted at the outset of the book, has resonated with the uncertainty of transition through the Information Age. This, too, is not repeatable, but its damage is repairable and its good things sustainable.

The special times that have overlapped before and after the coming of the Information Age have seen events pivotal to human evolution that cannot be repeated. There is no way back. We are like Julius Caesar crossing a bridge over the Rubicon River. The Information Society on the other side of our crossing remains half seen, and half made. Personal songlines, like mine capturing an experience of the crossing, are unique assemblies from

3 R. D. Putnam, *The Upswing: How America Came Together a Century Ago and How We Can Do It Again* (London: Simon and Schuster, 2020); T. Piketty, *A Brief History of Equality* (Cambridge, MA: Harvard University Press, 2022).

selections of sources, and also not repeatable. They cannot be retraced and discovered anew.

In *Zen and the Art of Motorcycle Maintenance*, Richard Pirsig (1928–2017) describes a motor cyclist on a journey across the States.[4] He takes in the scenery and muses about his life and its breakdowns and failures. He reflects on the motorbike and its breakdowns and failures. He connects his experience of life with the nature and behaviour of the machine. He had a more human appreciation of the good qualities and potential of machinery than did E. M. Forster (1879–1970) in the *The Machine Stops*, that led off this book's Introduction. What is a good machine, what are its qualities? How was it made, how does it work, how is it maintained? What is its quality? How is it characterized, created and sustained? Pirsig's motorbike, as a metaphor here for information engine, can be polished and adored and its devotees love to maintain and repair it–for them, the maintenance is a meaningful activity, akin to the enjoyment of art. But for the user who has a motorbike solely as a means of transport, the important meanings are elsewhere. The utility of the machine for them is captured in one question: is it working as I need and wish it to? For Pirsig, the motorbike took him on a journey through a panorama of personal meanings in his life and relationships. The care information utility of the Information Society will connect everyone in a similar potential depth and variety of ways–good ways and bad ways, and everyone will play a part in creating the difference.

Machinery is imagined, prototyped, improved, refined and produced at scale, over many years. Users of the machinery, working ahead of the curve that leads to a dependable machine that does not frequently break down, pay the price of all pioneers, and often gladly so. They tune, service, repair and replace components that are still unreliable, and quickly dysfunctional. Machinery is loved and revered by those who accompany it through its growing pains, even when it breaks down. Tending to these breakdowns is a lot of their fun. But for most others, the breakdown and malfunction of machinery is an inconvenience and annoyance. They have no interest or capability in the computer equivalents of carburettors, starter motors, radiators, brake pads and discs and spark plugs. These have no meaning for them, save in the absence of the machinery that they constitute, and on which their life, to a greater or lesser extent, depends. They do not see the connections.

Science has explored life from the human body to the cell, inside the cell and to the processes that link energy and the machinery of life, with integration of cell and organ within body and mind, and within natural

4 R. M. Pirsig, *Zen and the Art of Motorcycle Maintenance: An Inquiry into Values* (London: Bodley Head, 1974).

and virtual environment, and over time. In the currently ascendent era of life science and medicine, enabled by computer and machine intelligence, our understanding of cellular function is bridging from the physics of energy, charge and membrane transport to the circuits and networks of chemical reactions, and the abstract information networks integrating biological components within circuits and networks of bodily function. A similar transforming trajectory beckons for genomics, machine intelligence and robotics in the support of health care. The disciplines of mathematics, physics, chemistry, computer science, biology, medicine, health and social care all peer in, at different levels, through research, education and practice. As understanding evolves and the focus of attention changes, these intermediate levels of study disappear, melting into background. They may likely re-emerge, from time to time, in new forms, to reconnect across new levels, in new and unexpected ways. They remain important areas of focus and study in themselves. But in everyday life, the body and mind are also focused elsewhere–on community, work, value and reward, and health and care in living.

Worlds move on and pages turn. Uncertain futures take shape and play out. A new environment and new balance arrive–new sickness, new health care. Care information utility will be located somewhere at the centre of illness and wellness services, in their quest for coherent balance, continuity and governance. That centre will be a David Goodhart 'somewhere', anchored in head, hand and heart.[5] We all share responsibility for creating the somewhere that we seek and for carrying the workload that is necessary to be carried to that end. Information utility created without meaning anchored somewhere and somehow, can quickly degenerate into noise and bias, anywhere, anyhow.[6] Science has learned how to use information technology to tame and keep a handle on somewhere signal and noise. Society at large has not yet come to terms with information–it has created and unleashed a legacy of anywhere, anyhow noise and bias, that must and will, somehow and in some way, become more tame. We have to work to ensure that this is achieved in ways that serve health care well.

Information utility for health care has involved computer machinery born in a wayward early era of new technology, just as early cars had wayward engines and transmissions. Early pioneers engaged fully with the circuits

5 D. Goodhart, *Head Hand Heart: The Struggle for Dignity and Status in the 21st Century* (London: Penguin Books, 2020).

6 D. Kahneman, O. Sibony and C. R. Sunstein, *Noise: A Flaw in Human Judgment* (New York: Little, Brown Spark, 2021), published during the writing of the second draft of this book, was great to read and draw on, and I have added it to the list of my cited inukbooks.

and operations of their computers. I have watched the demonstrators of the earliest Pegasus machine at the Science Museum in London, joyfully threading paper tapes through tape readers and pressing buttons, to make lights dance on consoles and printers clatter, to print the results coming from a program that made the machine add up the first one hundred integers. *Parturient montes, nascetur ridiculus mus* [the mountains will go into labour, and a tiny little mouse will be born],[7] some might say, but one needs to know about the connections to understand that it was a mighty mouse, once! Maybe some future historian will opine that Big Data heaved and Little Data was born!

Users of an information utility will have neither an interest in nor understanding of the semiconductor junctions, where physics is enacted inside the information appliances they use. Nor in the electrical circuits which condition and route the signals and the software that organizes these circuits, for the machine to enact the functions and roles its users require and expect. The users of the information utility will have little sense of the information infrastructure that underpins it, but they will need a sense of the utility's meaning and how it is created and sustained, if they are to trust it. The artificial intelligence (AI) employed there should be able to explain itself to us, otherwise perhaps we shouldn't listen to it!

Information utility is continuously reinvented and there is no electricity, water, gas or telecommunications company to do that reinventing. This role falls to the creators of the utility–citizens and professionals, hosts and providers of systems and services, communities of users. That means everyone. Just as good environment is not a luxury, but a necessity, so collaboration is a necessity. And sharing of common ground is not a luxury; it, too, is a necessity. Sharing of value and contribution is a necessity.

There is a lot that needs to change. Finding common ground on which to implement change may be daunting and otherworldly as a goal, but that does not make it a bad or wrong-minded goal and it does not render it unachievable. The future can, and will, be different. Rigour, engagement and trust; people, environment and community; head, hand and heart; balance, continuity and governance; purpose, goal and method; leadership, governance and regulation–all these are tripods of endeavour. Careful attention to implementation, implementation, implementation is essential. We must create the future–not enclose, predict and manage it. We must make and do it, share it and own it, along with everyone else. And we should listen to and enjoy the music and the dance–keeping upright and balanced, imaginative and creative, in time, in step, trusting and together, and on common ground, of course!

7 Horace (65 BCE–8 BCE), *Ars Poetica*, l. 138.