

THE FUTURE OF THE PROFESSIONS

HOW TECHNOLOGY WILL
TRANSFORM THE WORK
OF HUMAN EXPERTS

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Introduction

This book is about the professions and the systems and people that will replace them. Our focus is on doctors, lawyers, teachers, accountants, tax advisers, management consultants, architects, journalists, and the clergy (amongst others), on the organizations in which they work, and the institutions that govern their conduct. Our main claim is that we are on the brink of a period of fundamental and irreversible change in the way that the expertise of these specialists is made available in society. Technology will be the main driver of this change. And, in the long run, we will neither need nor want professionals to work in the way that they did in the twentieth century and before.

There is growing evidence that a transformation is already under way. More people signed up for Harvard's online courses in a single year, for example, than have attended the actual university in its 377 years of existence. In the same spirit, there are a greater number of unique visits each month to the WebMD network, a collection of health websites, than to all the doctors working in the United States. In the legal world, three times as many disagreements each year amongst eBay traders are resolved using 'online dispute resolution' than there are lawsuits filed in the entire US court system. On its sixth birthday, the *Huffington Post* had more unique monthly visitors than the website of the *New York Times*, which is almost 164 years of age. The British tax authorities use a fraud-detection system that holds more data than the British Library (which has copies of every book ever published in the UK). In 2014 the US tax authorities received electronic tax returns from almost 48 million people who had used online tax preparation software rather than a tax professional to help them. At WikiHouse, an online community designed a house that could be 'printed' and assembled for less than £50,000 (built successfully in London during September 2014). The architectural firm Gramazio & Kohler used a group of autonomous flying robots to assemble a structure out of 1,500 bricks. The

consulting firm Accenture has 750 hospital nurses on its staff, while Deloitte, founded as an audit practice 170 years ago, now has over 200,000 professionals and its own full-scale university set in a 700,000 square-foot campus in Texas. Meanwhile, the Pope has 19.3 million followers on Twitter; the Dalai Lama has a modest 10.4 million.¹

Our broad argument

We believe that these developments are connected. They are early indicators of a transformation that we have been studying together since 2010, when we started work on this book. At that time, our main preoccupation was with the work of our current professions. However, as our research and thinking progressed, we concluded that a more basic and important question also had to be addressed—*how do we share expertise in society?* In what we term a ‘print-based industrial society’, the professions have played a central role in the sharing of expertise. They have been the main channel through which individuals and organizations have gained access to certain kinds of knowledge and experience. However, in a ‘technology-based Internet society’, we predict that increasingly capable machines, operating on their own or with non-specialist users, will take on many of the tasks that have been the historic preserve of the professions. We anticipate an ‘incremental transformation’ in the way that we produce and distribute expertise in society. This will lead eventually to a dismantling of the traditional professions.

For the current recipients and beneficiaries of the work of the professions, we bring the possibility of good tidings—of a world in which expertise is more accessible and affordable than ever before. For professional providers, although our thesis may seem threatening, we anticipate that a range of new opportunities will emerge. These are our hopes. But we also recognize that the new systems for sharing expertise could be misused, and we are troubled by this possibility. In any event, increasingly capable systems² will bring transformations to professional work that will resemble the impact of industrialization on traditional craftsmanship.

¹ See Chapters 2 and 3 for references and further details of these examples.

² We use the terms ‘increasingly capable systems’ and ‘increasingly capable machines’ interchangeably throughout the book. More generally, unless the context indicates otherwise, we also use ‘systems’ and ‘machines’ interchangeably.

To sceptics, who may already be tempted to put the book to one side, consider this: in the mid-1990s, when we predicted (in retrospect, rather unambitiously) that electronic mail would become the dominant way in which clients and lawyers would communicate, senior officials at the Law Society of England and Wales said that we should not be allowed to speak in public, that we failed to understand confidentiality, and that we were bringing the legal profession into disrepute. We recall this anecdote now in order to invite those who feel an intuitive distaste for our arguments to suspend disbelief for a short while and give serious contemplation to the notion that the future may look nothing at all like the past. Although some of the developments we anticipate in this book may seem outlandish today, none is more improbable than the idea of e-mail between lawyers and clients seemed in the mid-1990s.

Professionals play such a central role in our lives that we can barely imagine different ways of tackling the problems that they sort out for us. But the professions are not immutable. They are an artefact that we have built to meet a particular set of needs in a print-based industrial society. As we progress into a technology-based Internet society, however, we claim that the professions in their current form will no longer be the best answer to those needs. To pick out a few of their shortcomings—we cannot afford them, they are often antiquated, the expertise of the best is enjoyed only by a few, and their workings are not transparent. For these and other reasons, we believe today's professions should and will be displaced by feasible alternatives.

The professions as one object of study

Why study the professions as one phenomenon? Although they draw on different bodies of knowledge, their jargon varies, and their working practices can be quite diverse, we suggest that the professions have many features in common. Chief amongst these is that all professions, in analogous ways, are a solution to the same problem—that none of us has sufficient specialist knowledge to cope with all of our daily challenges. Human beings have limited understanding, and so we look to doctors, teachers, lawyers, and other professionals because they have expertise that we need to make progress in life. Professionals have knowledge, experience, skills, and know-how that those they help do not.

There are also practical reasons for considering a collection of professions together in one sweep. First of all, we believe that professions have much to learn from one another. Many have become increasingly introspective, driven into greater specialization, so that practitioners within a given profession often have a limited view of the work and achievements of their own colleagues, still less of the activities and progress in other disciplines. Our discussions with a wide range of professionals suggest that they find it enlightening and exciting to learn of advances in other fields, even if they are not immediate neighbours. They can draw analogies from the work of others and carry lessons learned into their own areas. More than this, professionals frequently see the potential and need for fundamental change in others more clearly than in themselves. Very often, after we give talks on our ideas, we are approached by individuals who argue that what we say applies right across the professions except in one field—their own. Lawyers, for example, tend to be quick to argue for a shake-up in our health and education services, but find it less apparent that legal services would benefit from major overhaul. In tackling a range of professions, our intention is to encourage practitioners from many fields to think more widely and strategically, and to be tolerant of the possibility of change in their own disciplines—a view of widened horizons elsewhere should broaden their perspective at home.

The structure of the book

Although our book is fairly ambitious in scope, there are many important issues that we have placed beyond its remit. We do not, for example, address questions of privacy, confidentiality, security, and liability. Nor do we consider the dark side of the Internet and the many nefarious uses to which, regrettably, our systems are being put. We regard these as vital issues that we hope others can pursue in the context of the professions.

We should also stress that our case studies and experience are largely Anglo-American, and to that extent our theories and predictions may be limited in their reach. That said, informal discussions and client work in India, China, and Australia suggest that our thinking about the future could be applied in most countries with little adaptation.

The book is organized in three main parts. In the first, we explore *change* in the professions. In Chapter 1 we consider the place of professionals in

society, the problems with the current set-up, and a variety of theories of the professions. Then we call for a new mindset. Drawing on our own research, in Chapter 2 we bring evidence from the frontiers of striking changes that are already observable across a wide range of professions. In Chapter 3 we capture these changes alongside our experiences from consulting and policy work as a set of patterns and trends across the professions.

In the second part of the book our focus is on *theory*. In systematic and general terms, we try to make sense of the shifts we are seeing and anticipating. In Chapter 4 we show that shifts in the way we store and communicate information have a direct impact on how we share expertise in society, and we anticipate four sets of remarkable developments in technology. We analyse knowledge in economic terms in Chapter 5, which leads us to show how professional work is evolving and to propose six new models for the production and distribution of expertise.

Finally, in the third part, we discuss the *implications* of our research and theoretical work. In Chapter 6 we lay out and respond to a wide range of objections to the future we anticipate. And, in Chapter 7, we address several major topics—the potential and limitations of increasingly capable machines, the impact of technology on employment, and whether emerging models of sharing expertise are in fact feasible. We conclude by asking and answering the question—what future should we want?