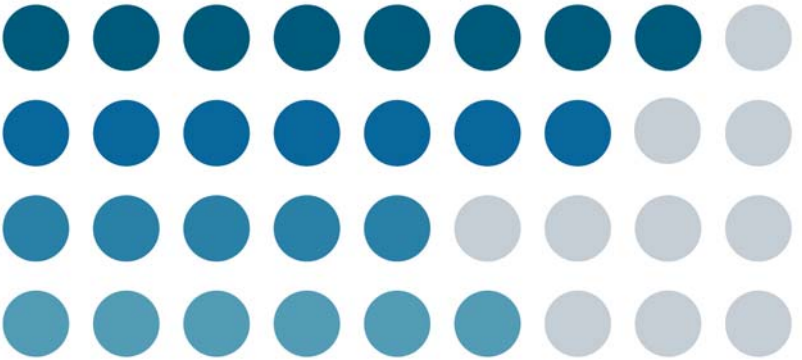
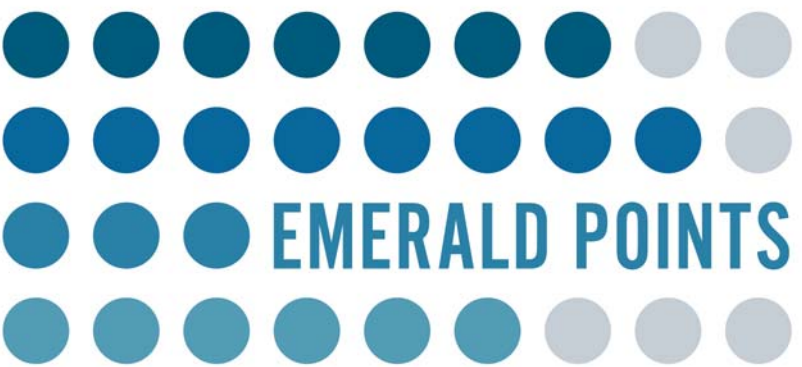


LEADING WITHIN DIGITAL WORLDS

Strategic Management for Data Science

Peter Grindrod



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INVESTOR IN PEOPLE

To my wife, Dora, and our family

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ABOUT THE AUTHOR

Pete Grindrod is an internationally renowned expert on digital transformation, strategy, leadership, mathematics, data science, and analytics across multiple customer-facing sectors. He has held senior leadership positions in industry and academia, and he has been appointed to senior advisory positions for government departments, charitable trusts, and UK research councils. He has also founded a number of successful data science and analytics companies.

Pete was awarded a CBE for services to mathematics research and development in 2005. He has honorary doctorates from two UK universities, and he is a former president of the Institute of Mathematics and its Applications. He has worked in the UK, EU, US, Japan, and China.

Pete's passion is creating hard value from disruptive applications of fundamental science within commercial, public, and academic activities; and encouraging creative and challenging thinking, from concept and development, to translation and operation.

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PREFACE

Corporate, public sector, and academic institutions increasingly operate within digital worlds, where the mass take-up of digital technologies and the "everything, everywhere, all of the time" expectation of Internet availability is enabling novel products and services, touching almost all aspects of citizens' lives. The rise of all distinct classes of the peer-to-peer activities (social media, messaging, prosumerism) and the rapid growth of online commercial, social, well-being offerings have made a space for the digital economy and digital society that simply did not exist two decades ago.

Not long ago[1] I argued that commercial, public sector, and academic activities really occupy three distinct "spheres". The "three spheres" model separates out the distinct governing forces for data science, depending on their "sphere": so, it is really a category error to treat all spheres as similar (especially in policy and regulation). Companies are governed by regulations, their legal contracts with their users/members/customers, and any risks to shareholder value; whereas academics have commitments to *responsible research in innovation* and are bound by necessary approvals from ethics

1 P. Grindrod, Beyond privacy and exposure: ethical issues within citizen-facing analytics, Philosphical Transactions of the Royal Society. Series A, 2016.

committees that constrain their activities and publications. Public sector activities are held to a higher security standard, are publicly and politically accountable, and are often focused on joining data assets together.

Despite these differences all of the actors have some obvious things in common. They are employing similar people, skills, concepts, and models; and often over similar types of customer/citizen data. Users cannot easily benchmark or audit these people, groups, processes, or activities: this represents a high-level risk. They are also at the mercy of the sheer pace of change, where the technologies and platforms, and citizens' own behaviors and expectations, make yesterday's offerings obsolete and unappealing. And there are the *lurking threats* to any present assumptions.

All of this provides a challenge for leaders within these digital worlds. Many of these are generic leadership challenges that are now writ anew in the fast-paced digital spaces; many of these are specific to leading the types of people and teams that institutions increasingly must rely on for mission-critical innovation, research, translation, and the development of distinctive, radical, customer-facing products and services.

This topic is all the more important when individuals have had to grow as leaders, having established themselves in some technical fields. Being a technical leader is one thing – having deep expertise and the respect and esteem of colleagues. Yet being a leader, and landing a strategy, is another level of challenge entirely. Those of us with technical and scientific backgrounds must also be wary of our own comfort zones, into which we love to sink, at the expense of the bigger picture. Meanwhile more and more ventures and institutions must look to their technical teams to innovate and create differentiators. So there is always pressure to perform from every direction: from the board and executives above; from

the teams below; and from the customers, competitors, new entrants, partners, and networks, alongside.

Here I attempt to draw together some experience, issues, and advice for those wishing to lead within digital worlds. I have had a variety of career experiences within all three spheres, including founding some successful start-ups within a number of novel (science and data science heavy) commercial sectors; working in R&D with some major corporates; in leading research at the University of Oxford; and in advising some government departments and quangos. Here, we will have a look at a rather wide range of issues to be addressed where rapidly evolving technologies, science, and analytics must intersect with huge shifts within commercial, public, and research visions, missions, demands, and opportunities.

These notes are intended for people with quantitative and scientific backgrounds who find themselves taking on new career leadership positions, and for nontechnical people who seek to create, land, and lead strategies for research, development, and translation, within sectors that are underpinned by scientific, technical, and digital knowledge and innovation.

Peter Grindrod CBE
Oxford, October 2019

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1

THE WAY WE LIVE NOW

The digital world is developing with such force and such a pace that you simply can't ban or control it. People want to be globally connected. (Elif Safak)

In every part of the world with which I am familiar, young people are completely immersed in the digital world – so much so, that it is inconceivable to them that they can, for long, be separated from their devices. (Howard Gardner)

To a man not accustomed to thinking there is nothing in the world so difficult as to think. (Anthony Trollope, *The Way We Live Now*, 1875)

LEADING TRANSFORMATION – DRIVING CHANGE

Many corporations will seek to undergo transformations, from their old *mode* to some new *mode* that is more appropriate to their present **vision** (how the world will become or evolve, and their company's future role within it)

and, as a consequence, to their revised **mission** (what must be done, who and how they must serve to achieve their vision). The mission may be driven by opportunity, key strengths, or by prevailing external forces. The conception and development of transforming activities with technical spheres usually require some reflection and some radical R&D.

Fifteen years or so ago I was at a US corporate internal presentation in Florida where General Stormin' Norman Schwarzkopf (of Desert Storm fame) told us all that the "real challenge of leadership is to inspire people to willingly do things that they would not normally do".[2] The key word is "willingly". This idea has stuck with me. It is all about people. Managers manage processes and assets, but leaders lead people. This simple fact often gets lost. Say it to yourself before you tinker with processes, facilities, IT, or hardware. You should put your effort into leading people.

Leading any type of transformation requires people to perform and sacrifice in ways they would not have otherwise chosen for themselves. Yet, within digital, technical, or scientific fields leadership is especially difficult because the background is not malleable, subjective, or a matter of opinion. It is there for all to see. Instead there will be some immutable, objective, facts of science and logic: these are very hard masters. Furthermore, the ultrafast tempo of external changes (digital technologies and mass customer/citizen behavior) means that the timescales are very compressed, and any transformation must take place equally rapidly, anticipating the external evolution. So, a leader has to develop as a "leader of people" whilst remaining authoritative and credibly aligned with the underlying objective science, the novel technologies, and the given

2 https://en.wikipedia.org/wiki/Gulf_War.

strategic vision and mission: *the leader must have both feet on the ground, while looking over the horizon.*

Driving any change that involves a change in culture requires leadership from the top. Many people in middle management will resist change – as it introduces a new environment, and a new set of rules, distinct from the ones with which they have succeeded. They can consciously or subconsciously undermine change, either explicitly by taking actions and erecting barriers, or delaying things through process drag or through passive-aggressive behavior. The leader must emphasize and re-emphasize the transformational goals, at every opportunity. Turning back cannot ever be an option.

Yet listening is also essential, on an individual level, to drive change. You need to be empathetic and ask how people feel about the transformation in general, beyond their own sphere of activity, and not merely ask for their factual observations and local issues. This empathy and openness is essential in order to encourage and esteem the sacrifices that the individual team member can make. It also allows members to *own* some of the challenges themselves. If they do not do so, then they have no chance to shine.

PARADIGM CHANGE OR INCREMENTAL IMPROVEMENT?

R&D programmes need very careful managing: both internally, within a firm or institution, and externally, in terms of the market/customer expectations that they set. An acid test for any novel development project/program is to see whether and how it offers incremental improvements within the present paradigm or anticipates a radical change of paradigm.

For example, a company or institution (even a university) might set up events in order to listen to its present customers/users and then use such interactions to design and prioritize transformational and R&D projects. Whilst valuable in terms of using up your customers' time and respecting them (so they are not available to talk with your potential competitors), this type of process rarely offers any radical challenges or game changers (disruptions). Present users tend to focus within the current paradigm, and they request changes that are incremental. Perhaps they seek to make certain features and functionality more efficient, with time savings producing a relatively low return on investment, or more bespoke (reformatting) developments. Perhaps customers seek to have their own process workflow better reflected. While obviously good customer relationship management, this is not a route to conceiving next-generation products/services. It merely accepts the present paradigm.

And while your team is thus focused on the "better mouse trap", somebody else comes into your sector and changes the whole paradigm. You will be playing catch-up.

These latter events are the *black swans* (since are they deemed as obviously possible once they have taken place, even though they were previously ignored as being so unlikely), or they were previously, perhaps, part of the *unknown unknowns* (lurking out there).[3,4] "We didn't see it coming". The only thing we can ever know about the unknown unknowns is that they exist.

Some business opportunities are predicated by certain paradigm changes, and sometimes more than one. Other

3 N.N. Taleb (2007). The Black Swan: The impact of the highly improbable. New York: Random House.

4 Defense.gov News Transcript: DoD News Briefing – Secretary Rumsfeld, United States Department of Defense.