

# How do we implement open innovation?

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## Introduction

This paper addresses the challenge of leading the change from the more traditional open innovator 'knowledge creator' business model to the more agile 'knowledge leverager' business model, with specific reference to the pharmaceutical sector.

How can we implement open innovation from a leadership perspective? Specifically, how can we help shift an organisation from one OI business model to another? We present a meta model and case stories of the inter-relationship between the critical organisational elements involved in achieving successful open innovation.

Numerous publications provide a clear and succinct exposition of the Open Innovation (OI) phenomena for the pharmaceutical industry and illustrate possible ways forward for the industry to break through the prevailing innovation deficit. Examples are given of the 'why' and 'what' of OI – why closed innovation is giving way to open innovation, and what this looks like; describing in detail both traditional and emergent forms of innovation used today. What remains is an answer to the question of 'how' open innovation can be progressed or implemented, particularly from the viewpoint of those leading organizations within the pharmaceutical sector.

This paper asks 'how can we implement OI from a leadership perspective? How do culture, mindsets and attitudes need to change and what is the role of leadership paradigm and style in achieving this? Specifically, how can we help shift an organization from one business model to another, for example, from knowledge creator to knowledge leverager? To help the reader understand what is a complex and poorly understood challenge, we present a meta-model of the inter-relationship between the critical organizational elements involved in achieving successful OI – Business Models, Strategies, Leadership, Culture and Attitudes/Mindsets/Behaviours. We show the critical and pivotal role that leadership has in bridging and synergizing between the hard elements (business models and strategies) and the so-called soft or human elements (culture, attitudes and mindsets).

Schuhmacher and Betz's chapter on 'The Pharmaceutical Industry is Opening its R&D Boundaries' (2016) provides an excellent overview of Open Innovation (OI) within the pharmaceutical industry, with a variety of interesting examples of OI in action. It makes some important distinctions in terms of types of OI, primarily between traditional and emergent forms of OI. It also explores the relationship between the business models that pharma companies adopt and the strategies they employ in support of these. The implication here is that to significantly benefit from OI, it is not enough to simply experiment with some different forms of OI.

They show that although a significant shift has already taken place from closed innovation to open innovation models and strategies, the net effect across the industry has simply been to not lose more ground in terms of innovation productivity, effectively to stand still at best. The implication is that a more radical shift towards new OI business models and strategies will be needed to actually gain ground. This review focuses on how this might be enabled from a leadership perspective.

## The two faces of leadership

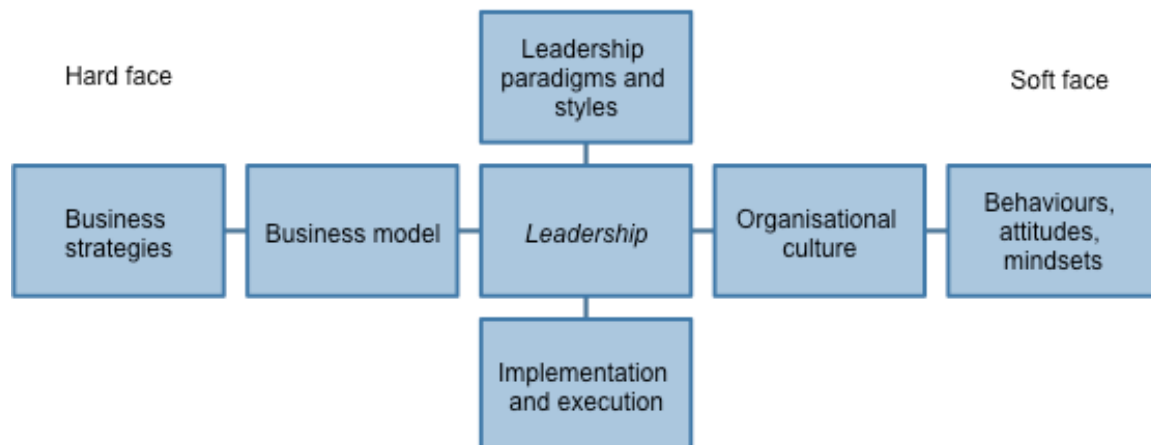
Below I will help the reader understand what is the complex and poorly understood central challenge of leadership in relationship to innovation. To do this we will build a meta-model of the inter-relationship between the critical organizational elements involved in achieving successful OI – Business Models, Strategies, Leadership, Culture and Attitudes/Mindsets/Behaviours.

Leadership is a broad and complex topic that features prominently in the fields of organisational theory and business management these days and is also a term that can be used in quite different ways within different contexts – so it is important to clarify how we are using it here. At the same time, we are not going to provide a full review of the leadership field and literature. A fuller overview of leadership concepts and models can be found in chapter 19 within ‘Value Creation in the Pharmaceutical Industry’ by Aubyn Howard (2016).

Imagine that there are two faces of leadership – which I will call the hard face and the soft face. The hard face of leadership is concerned with strategy and the challenges of leading organisations or businesses contextualised by their purpose and external environment. The soft face of leadership is concerned with people and the challenges of leading individuals, teams and organisations at a human level. Some leaders may focus on either face more than the other, some discussions of leadership as a topic will bias towards one side of the other (my treatment of leadership in the above mentioned chapter focuses on the soft face of leadership and leaves other chapters to pick up on the hard face). However, successful leaders (at least at the most senior level of an organisation) must not only attend to both faces but also find a way to create alignment and synergy between the two. I will offer a hypothesis (based upon my experience rather than hard data as yet) that most business failures are more likely to result from this lack of alignment rather than from either poor strategy or weak people leadership per se. I will also suggest that the central challenge of leadership is the alignment or harmonisation of the two faces or sides of leadership.

Let me expand further upon this simple view of leadership and start to develop a model. The hard face of leadership is primarily concerned with business models and strategies. The soft face of leadership is primarily concerned with organisational culture and the way that people behave as influenced by their attitudes and mindsets. The pivotal dimension of leadership which informs both the hard and soft faces and through which alignment has to be reached is the leadership paradigm(s) within which the leader is grounded (internal worldviews, value systems, action-logics, thought forms, etc.) and their leadership style (e.g. how these paradigms combine with the leaders personality and capability to be externalised through their presence and behaviour, or their *being* and *doing*). One more element of the model remains – bringing together the hard and soft sides takes place through the process of

engagement and action, often referred to implementation or execution. Below this model is summarised in graphic form:



The correctness or completeness of this model is less important than its usefulness in helping us think about all the elements that need to be aligned in order to successfully develop and implement Open Innovation within organisations.

## How do leadership paradigms and styles influence the success of business models and strategies?

*“Problems cannot be solved with the same mindset that created them.”*  
 – Albert Einstein

Each leadership paradigm is reflected or translated into an organisational culture with corresponding attitudes, mindsets and behaviours that will place a limit upon the kinds of business models and associated strategies that can be successfully implemented and executed. Equally, there are positive mindsets and attitudes that tend to be associated with each paradigm and culture which enable new business models and strategies and which can be encouraged and leveraged.

Leadership paradigm/ Leadership style/ Organisational culture	Associated limiting attitudes and mindsets	Impact on Open Innovation	Possible focus to remedy or change
Impulsive <i>Autocratic (traditional)</i> <i>Power (respect, loyalty and rewards)</i>	Egotistical thinking – if you want a job done properly you have to do it yourself	OI is anathema to autocratic leaders because they can't exert power over external partners in their usual ways	Devise tactics to circumvent or placate ego driven leaders if they can't be replaced, e.g. incubation pilot projects
Conformist <i>Hierarchical (traditional)</i> <i>Role (responsibility, control and order)</i>	Conformist thinking – to get the result you need to follow the tried and tested rules	Conformist cultures are naturally resistant to any forms of innovation but managers will comply with directives from above	Find suitable supporting or checking roles for conformist leaders in functions that benefit from professional discipline and rigour
Achievement <i>Enterprising (modern)</i> <i>Achievement (success-seeking, performance improving, potential fulfilling)</i>	Competitive thinking – we are the best and outsiders are inferior (NIH and NSH)	Competing and exploiting rather than collaborating with external parties, lacking trust needed for successful partnerships	Harness the teamwork and drive to improve performance whilst challenging narrow us-and-them attitudes and showing the benefits of multi-partner collaborations

Pluralistic <i>Social (modern)</i> <i>Relationship (consensual, collaborative, human)</i>	Consensual thinking – everyone’s voice is equally important and needs to be heard before we can proceed	True partnerships can be formed which makes many forms of traditional OI possible but initiatives may lack creative spark or drive	Draw upon the collaborative and humanistic culture to get people working well together, whilst introducing flexible project structures and decision making processes
Evolutionary <i>Systemic (post-modern)</i> <i>Evolutionary (adaptive, responsive, shared purpose)</i>	Complexity thinking – find roles and channel resources within flexible teams based upon competence and need	Purpose driven projects and initiatives can transcend internal and external boundaries and allow resources to follow creativity	Deploy evolutionary thinkers strategically to lead projects and catalyse change, making sure they are supported and don't become isolated

Below are some examples, for each of the most common leadership paradigms/organisational cultures:

<b>Leadership paradigm/ Leadership style/ Organisational culture</b>	<b>Associated enabling attitudes and mindsets</b>	<b>Impact on Open Innovation</b>	<b>How to encourage or leverage</b>
Impulsive <i>Autocratic (traditional)</i> <i>Power (respect, loyalty and rewards)</i>	Ego drive – I can do it! I will do it!	Strong egos and power drives often provide the energy to get things going, although they can become limiting at later stages	Prizes and other rewards to get new ideas going, to encourage
Conformist <i>Hierarchical (traditional)</i> <i>Role (responsibility, control and order)</i>	Role and process orientation – clearly defined roles make for clear responsibilities and rigorous professional procedures and standards	Conformist and role oriented mindsets can bring structure and rigour to new initiatives and projects, providing they don't stifle creativity	Supporting traditional professional role development and apprenticeship as part of the career path options for new talent
Achievement <i>Enterprising (modern)</i> <i>Achievement (success-seeking, performance improving, potential fulfilling)</i>	Possibility thinking – to win the game anything is possible and we can try new ideas and options with a view to finding better ways of doing things	Achievement attitudes support experimentation to find new and better ways, openness to new ideas and a shift from function structures to flexible projects	Use social media and other digital technologies to involve people widely and continuously in the game of achievement
Pluralistic <i>Social (modern)</i> <i>Relationship (consensual, collaborative, human)</i>	Collaborative thinking – good human relationships are at the heart of successful partnerships – we can trust each other	Pluralistic attitudes enable the critical breakthrough to working collaboratively and creatively with external partners.	Create forums, regular sessions, places and times when people can come to together and connect without task agenda/content
Evolutionary <i>Systemic (post-modern)</i> <i>Evolutionary (adaptive, responsive, shared purpose)</i>	Systemic thinking - engaging with whole systems and emergent needs to think outside the limits of prevailing paradigms	Systemic attitudes support making connections and building networks across old boundaries and between disciplines to create synergy	Support leadership development with systemic coaches who can help create perspective from outside the system

Obviously reality is more complex than this. Mostly because any actual organisational culture will be a complex expression of a mix of organisational paradigms and leadership styles, reflecting the history of the organisation and the uniqueness and variety of its people. However, the principles still apply, just the analysis becomes more complex with actual situations. We can also look now at the limiting and enabling attitudes and mindsets in relationship to specific traditional and emergent OI strategies.

<b>Traditional Open Innovation strategies</b>	<b>Example limiting attitudes and mindsets</b>	<b>Example enabling attitudes and mindsets</b>
Target scouting	Why involve others in finding new targets? Its not their job.	Anyone inside or outside the company can be involved in target scouting, the wider we spread the net the better!
Research collaborations	Academics don't understand commercial imperatives and waste your time with theoretical	Scientists outside of pharma bring different perspectives which can synergise with ours
Drug licensing	In-licensing: why should a biotech be any better than us at finding candidates?	In-licensing: lets bring our strengths and skills to projects which nimble players have got started

	Out licensing: if it doesn't fit our portfolio we might as well kill it	Out licensing: others might be better at taking some projects to market
Outsourcing	Outsourcers, e.g. CRO's, are essentially greedy suppliers and we must tie them down with very tight contracts	Outsourcers will be better partners if we work to understand their strengths and needs and they work to understand ours
Joint Ventures	Joint ventures are mostly a waste of time because the partners don't think like us and have their own agendas	Joint ventures are a source of synergy because our partners look at the world differently to us

<b>Emergent Open Innovation strategies</b>	<b>Example limiting attitudes and mindsets</b>	<b>Example enabling attitudes and mindsets</b>
New Frontier Science	It all seems too risky to rely upon breakthroughs in unknown areas, we should stick to proven areas	Intelligent focusing on high risk activities is part of a balanced approach within the bigger picture of pharma innovation
Drug Discovery Alliances	Better to increase investment through normal channels, then we will be in control	Choosing partners for long term alliances that bring diverse capabilities together is a vital skill
Private-Public Partnerships	The public sector isn't interested in profit so they will distrust us and we will distrust them	Many areas of unmet medical needs cannot be addressed alone by public or private initiatives. We need exchange and synergy to find new types of solution.
Innovation Incubators and outcubators	Why open up our resources to outsiders, they will just want to steal them for their own ends	Mixed teams that form around shared areas of interest with specific medical purposes is the way forward to finding breakthroughs
Virtual R&D	What's the point of R&D if we're not doing it ourselves?	Leveraging resources according to the needs of projects driven by purpose and opportunity optimises our value and skills
Crowdsourcing	We're the best at what we do so why do we need the help of others? Competitors will just come looking to see what we are doing.	Open networks and communities benefit everyone involved and can bring surprising solutions
Open Source Innovation	This is madness! The whole business model of pharma is about long term returns protected by patent	OS radically challenges us to find new value models that delivers medical benefits
Innovation camps	Why waste resources on events where we aren't the only beneficiaries and we give away expertise	Events that bring external and internal people together can serve multiple purposes and deliver exciting business plans

How does this analysis of limiting and enabling attitudes in relationship to OI business models and strategies inform the challenge of leadership? First and most importantly, that a leader needs to understand their own make-up in terms of their leadership paradigm and styles, and secondly they need to be aware of the leadership and organisational culture around them in the organisation. (Ironically, unless the leader has at least some activation of the evolutionary paradigm and systemic style within their own make up, they may have little interest in doing this). This kind of organisational diagnostic analysis is an absolutely critical step within any deliberate approach to move towards a different kind of OI business model or introduce new OI strategies. It will reveal what 'degrees of freedom' are possible given the current leadership paradigm and organisational culture as well as identifying what change is needed in terms of attitudes, mindsets and behaviours in order to enable a proposed OI strategy. It should also clarify whether the proposed strategies are too ambitious given the prevailing culture and attitudes within the organisation.

For example, any organisation where the leadership paradigm is still centred in 'Conformist' and/or the culture is predominantly hierarchical and role oriented, will struggle to make a success of any OI strategies. The prevailing attitude is caution and conformity to a higher authority, to stick with the tried and tested, to maintain the status quo, to distrust new ways and to be cautious about experiments. In order to break out from the restraints of conformist attitudes, a sense of individuality and a desire to experiment and explore possibilities and

realise potential needs to be nurtured. This might be encouraged in young people where the desire is latent but suppressed (e.g. due to presence of old style fear inducing hierarchical management) providing the management style is changed, but in cultures where the roots are deeper and the attitudes persist despite the introduction of a modern empowering management style, in practice it may be easier to change the people than change the attitude. For the purposes of our review here, we will at least assume that the prevailing organisational culture has progressed beyond traditional fear driven hierarchical cultures, although there are likely to be remnants of the traditional culture in any large pharma organisation.

We will return to the greater challenge of changing or shifting the core value generating model of the business later, but let us first consider the most common challenges for introducing traditional or emergent OI strategies first. As Schuhmacher and Betz point out, the most common attitudinal barriers to OI take the form of NIH and NSH attitudes. At the core of this attitude is the (usually) immature and simplistic belief that *we* (members of our company) are special, different or better and that they (outsiders, competitors) are inferior, less talented or creative.

Let us first consider traditional OI strategies. Ideally we should see an organisational culture that is predominantly a mix of Achievement and Pluralistic/Relationship orientations. Traditional strategies such as research collaborations, drug licensing, outsourcing and Joint Ventures can all be ways to enhance existing internally oriented business models and organisational structures but to be successful they also require a change in the way that external parties are perceived and relationships managed.

Now consider the emergent OI strategies, such as New Frontier Science, Drug Discovery Alliances, Private-Public Partnerships, Innovation Incubators, Virtual R&D, Crowdsourcing, Open Source Innovation, Innovation camps. Although these are generally feasible within an organisational culture that is still predominantly a mix of Achievement and Pluralistic/Relationship orientations, there also needs to be a significant element of the Evolutionary culture taking hold within the organisation, and the availability of second tier leadership activated in the evolutionary paradigm who can lead projects, pilots, events or other forms of collaboration. It is not enough to simply be able to collaborate with external parties rather than treat them as suppliers (as with traditional forms of OI), it is also important that the people involved can work in creative and flexible ways that transcend the old competitive and internally-oriented limiting mindsets. For emergent OI, the guiding principle of the project needs to change from seeking to gain competitive advantage in service of the organisation (and ultimately to make profits for its owners), to responsive agility in service of a broader or higher purpose that is shared with the external partners.

The complexity here is that many of these emergent OI strategies in practice will take place in the form of special projects which are in some way isolated or incubated from the rest of the organisation in order to allow a focus on an shared external purpose, supported by a new culture and associated attitudes, mindsets and behaviours. This is usually the strategy most likely to succeed, but there are always likely to come points in time (e.g. key investment decisions) when the project must engage with the existing prevailing organisational or senior leadership culture. At these junctures, the leaders or sponsors of such projects must learn how to show how the project can satisfy the needs of the senior leadership culture (e.g. in

service to the profit principle) as well as follow its own principles. There are then those emergent OI strategies (e.g. Virtual R&D or Open Source Innovation) which the organisation chooses to pursue as central to their business strategy, effectively involving a change in business model and usually requiring a shift in the prevailing organisational culture and attitudes. We will return to this below.

So far this review has been largely abstract or illustrative in its treatment of OI. How does this all work in practice? Let us explore these themes in relation to the case story of Nycomed between 2007 and 2012. This follows a story that starts with the acquisition of what was Altana in Germany by Nycomed, and ends with the acquisition of Nycomed by the Japanese Takeda. I am going to paint the picture with very broad brush strokes and gross simplifications that may not please everyone that took part in this story. So it is important to emphasise that I am telling the story both from my perspective and through the lens of OI and leadership paradigms.

### **The Nycomed story – from a systemic change perspective**

The joining of two very different pharma organisations, the largely Danish Nycomed and the largely German Altana (although with both US and Indian operations) offered an opportunity to create a new R&D organisation which synergised the best aspects of two quite different cultures and ways of working. In broad terms, the Existing Nycomed business model was already predicated on some forms of OI (e.g. a knowledge integrator with most candidates coming from In-licensing, with internally led projects that may involve some external resources, e.g. outsourcing to CROs), whereas the Altana organisation was a more closed and self-sufficient model (knowledge creator, with some forms of OI in terms of alliances and partnerships). As the new leaner and more focused organisation took shape, traditional OI strategies were increasingly deployed within a hybrid business model, with an opportunistic strategy to be more nimble and flexible than the larger pharma competitors. Target scouting strategies opened up the breadth of sources for new discovery projects, outsourcing with strategic CROs was established to increase flexibility of resources and reduce overheads, and in-licensing was invested in with a view to providing up to 50% of new projects as well as to balance the portfolio with later stage projects where needed. A range of partnerships and joint ventures were explored and an alliance management centre of expertise was established to develop partnering skills throughout the organisation. The organisational structure shifted towards a more flexible and responsive matrix of functional expertise and project leadership and an extended leadership team was established that brought emerging talent closer to strategic decision making. Ultimately the strategy could be seen as transitioning towards a more virtual R&D organisation following a knowledge leverager business model, although this was never openly communicated.

What happened at Nycomed? Although there were many dynamic developments and isolated project successes during this period, the attempt to shift business model and employ more emergent OI strategies ultimately stalled and was eventually overtaken by events (the private equity investors sold the company for a considerable profit, primarily on the back of their emerging market presence rather than their R&D portfolio or capability). The OI business model and strategy was being driven by the head of R&D and many of the next two levels of leadership, but it was never adequately supported by other C-suite leaders who's

eyes were firmly on the financial dashboard, despite what might be communicated. For example, decision making for in-licensing investment took too long and was over cautious, so opportunities were missed out to faster acting specialist units within bigger pharma companies who had less to lose. This was a typical example of how an Achievement-oriented leadership paradigm can act as the brake for the engagement of OI strategies by focusing too intently on short term profit. At the same time, the prevailing organisational culture (centred in Achievement, but with strong elements of both Conformist and Pluralistic) acted as a limiting influence on the success of the OI strategies implementation. The Conformist elements were always distrustful of any replacement of internal resources with external resources or partner capability and the alliance management function was itself too anchored in the competitive game-winning achievement mode to understand how to transform attitudes in support of collaborative and creative working with multiple partners.

## How do you change attitudes?

*“The greatest revolution of our generation is the discovery that human beings, by changing the inner attitudes of their minds, can change the outer aspects of their lives.”*

– William James

This quote by William James comes from words he wrote late in the 19<sup>th</sup> century. Compared to other fields of human endeavour, after a casual inspection of the evidence, one might conclude that remarkably little progress has been made since then in our individual or collective ability to capitalise on this discovery. In any case, changing attitudes and behaviours, your own or other people's, is not an easy undertaking. Different branches of psychology offer different approaches to this challenge and over the last forty years a myriad of different approaches, schools, tools, models and techniques have been brought into the organisational and business domain by academics, consultants and other practitioners to help leaders with the challenge of changing behaviours (including, just to give some examples; NLP, CBT and other cognitive-behavioural approaches; Maslow, Gestalt, TA and other humanistic psychologies; Appreciative Inquiry and positive psychology; and more recently brain science and neuro-psychology).

Let me offer three different perspectives on how to change attitudes and behaviours, but there are many more.

Firstly, it helps to realise that people change attitudes through their relationship and engagement with other people. Leaders can bring about changes in attitudes of those around them both through how they are (their being) and the way they behave (their doing) in relationship to others. It may seem obvious, but leaders must role model the attitudes and behaviours that they want to see their people adopt.

Secondly, we can work quite specifically on changing particular behaviours and associated attitudes or mindsets, at both an individual or team level, by creating awareness of how the mindset came about, what holds it in place and what could replace it. This takes place best through coaching relationships with psychologically trained coaches able to work with individuals and teams to identify and transform any limiting mindsets.



Thirdly, we can take a dialogical approach to the different perspectives (expressed as collective attitudes, positions, voices or needs) that can be held throughout an organisation. The application of family constellations methodology and other social systems methods is becoming increasingly popular in organisational practice, because they recognise the complex tensions, hidden messages and competing narratives taking place at different levels of the social systems within organisations. External expert facilitation of large leadership teams can be used to demonstrate how the different voices are subconsciously interacting within the organisation. This can also be an output from a company-wide listening exercise involving a cross-section of interviews at all levels.

## The implementation challenge

Management case studies and anecdotal stories of business failures are littered with statements which boil down to something like 'implementation was the problem' or 'we failed to execute'. Today there are dozens of HBR articles and books on the business shelves with the word 'execution' in the title. I would suggest these are more symptomatic of the problem than evidence of a solution, and that we need to look more systemically and holistically at why strategic initiatives fail. Part of the problem is the overly sequential, rational and mechanistic approaches that most leaders follow. Whichever three or five step approach is followed (e.g. research, design, planning, implementation, review), most strategic planning fails because of partial perspectives, disconnects, discontinuities and omissions at and between each step. It clearly helps to use a staged or phased approach to making something happen, but in any complex situation such as developing the business strategy for a large organisation, we need to add two additional elements; (i) taking a holistic or systemic perspective at each stage and (ii) using feedback from reality through cycling back iteratively through the stages, piloting and testing ideas before investing heavily in them, etc. (there is now plenty of business literature on this kind of approaches). Another way to look at this is to realise that engagement and implementation start at the beginning of any project and continues the whole way through.

In addition to this, the essential ingredient to making something happen, from a depth psychology perspective, that needs critical attention and is often missed by leaders, is the engagement of individual and collective will. On the face of it this may sound simple, but in most cases it is far from trivial and enhancing the capacity to connect with and engage your *will* is something many leaders would benefit from through coaching or other forms of development. Will is both distinct from and more encompassing than motivation, which is what most leadership programmes focus on. Will has at least three core aspects (strong will, skilful will and good will), several important qualities (including energy, mastery, focus, determination, persistence, initiative, synthesis) and the act of will involves six stages (e.g. Purpose, Deliberation, Choice, Affirmation, Planning, Action). Learning about the anatomy and functioning of will is helpful, but more important is for leaders to realise how they as human beings might have become cut off from their essential will through processes of socialisation, conformity and control that start at school and are continued through the functioning of most large organisations. We start to confuse will with desires, impulses or compulsions and either end up suppressing all of these in our attempt to fit in or give vent to an egotistical mix of wants and needs. In leadership archetypes this can be seen in terms of typical ego-driven expressions of autocratic or charismatic leadership. Good leaders should

understand not just how to give expression to their own will, but help others in their organisation connect with theirs. This is where the interplay between individual and collective purpose becomes important as the first step towards activating the will. We will return to this topic of purpose and its importance in making the transition to more sophisticated OI business models later.

## **Business model transitions**

In the book 'Value Creation in the Pharmaceutical Industry', different chapters tend to deal with these different elements of Open Innovation: Schuhmacher and Ulrich's chapter focuses on Open Innovation Strategies, another goes into more detail on Open Innovation Business Models and my chapter on The Influence of Leadership Paradigms and Styles provides the Leadership perspective and touches on culture. This review is intended to help to weave these elements together.

An organisation's business model is essentially the way that it generates or creates value as a business. Every organisation or business has a business model, whether the leaders of the organisation are aware of what it is or have made any deliberate attempt to shape or influence it or not. It is quite common for the senior leaders of an organisation not to have a good understanding of the business model that they have or to disagree between themselves about what it is or should be. A relatively new approach to business model description and design (Business Model Generation, Osterwalder and Pigneur, 2010) can be very useful to leadership team by helping them get on the same page about what their business model is, in other words how they create value as a business. Business models are core to the business, often hard wired in the DNA or culture of its people and the way the organisation works, and cannot be easily or quickly changed or adapted in the way that OI strategies touched upon above might be. Changing or evolving your business model takes time and a great deal of work and effort. Sometimes it is easier to start a new organisation with a new business model than transition an existing business model. The central recurring theme or message of this review is that a successful change of business model will involve understanding how leadership paradigms and styles create alignment between business model and strategies on one hand and organisational culture and peoples mindsets and behaviours on the other. The biggest single reason business model transitions fail is that this principle is not understood. Most commonly, a new business model and strategy is formed from the Achievement paradigm, but which requires significant elements of both or either the Pluralistic or Evolutionary paradigm in order to work. Intellectually bright and entrepreneurially clever leaders realise what business model is needed in order to compete most effectively in the current environment and attempt to implement the model through a rational strategic planning and conventional change management approach.

Let us look at how different OI business models can be associated with different leadership paradigms and organisational cultures.

<b>Business model</b>	<b>Leadership paradigm/ Leadership style and cultural orientation: likely 'mixes'</b>	<b>Critical attitude shift needed to make this business model work</b>
Knowledge creator (strong internal orientation with some external resources)	Conformist- Achievement <i>Hierarchical- Enterprising Role-Achievement</i>	From doing everything ourselves to focusing on our core competencies and doing what we do best
Knowledge integrator (externally generated innovation combined with internal resources)	Achievement- Pluralistic <i>Enterprising- Social Achievement- Relationship</i>	From 'can we trust them, maybe they're taking us for a ride?' to 'how can we build trust and get the most from the relationship?'
Knowledge translator (internally generated innovation combined with external resources)	Achievement- Pluralistic <i>Enterprising- Social Achievement- Relationship</i>	From supplier mindsets to partner mindsets, from extracting value from partners to inspiring performance
Knowledge leverager (externally generated innovation leveraged with external resources)	Evolutionary <i>Systemic Evolutionary</i>	From adding value by what we do to adding value by how we think. From competing to make profit to engaging with a collective purpose

In practice, the Knowledge leverager business model is a very big step away from the other models, as the core identity of the organisation is likely to be tied up with being a translator (i.e. taking projects to market) or an integrator (generating innovation for others to take to market) or both. Shifting an existing organisation to this new model is also likely to involve much fewer internal people and therefore job losses. Leaders seeking to develop a knowledge leverager model might employ one of three approaches or strategies (i) incubate a new project, separate and protected from the rest of the organisation. If the project grows and succeeds, investment funds can gradually be redirected towards it and away from the traditional operations (ii) recruit an elite team from within the old organisation and from outside alongside closure or downsizing of the existing operations or (iii) start a new organisation predicated on the new business model and focused by a powerful shared purpose as the organising principle. The new organisation can be more virtual, flexible and responsive to the direction of projects from the start, e.g. it can use flexible contracts to engage people directly on projects and can involve drawing people together to collaborate from different organisations without the encumbrance of a legacy organisational culture. The new leadership style and organisational culture will be shaped directly by of the people working together and can be more easily aligned with the purpose of organisation. In some cases, this may sound a little like how some small bio-tech's get started, although few of them manage to remain virtual – the challenge for large pharma could be to see whether this can be achieved at greater scale, which must also involve innovative approaches to ownership and control. Many large pharma (e.g. GSK) have experimented with smaller more autonomous units, but ignore the underlying influence of old ownership and control models, leading to mixed results.

## Conclusions

Leadership has a pivotal role in bridging and synergizing between the hard elements (business models and strategies) and the so-called soft or human elements (culture, attitudes and mindsets). Unless there is alignment or congruence between all these elements, the organisation is likely to remain sub-optimal in its innovation effectiveness. There is often a mismatch between the leadership paradigm (e.g. as embodied by the CEO and C-suite leaders of an organisation), the prevailing leadership style (e.g. as demonstrated by the senior leadership team within the R&D function) and the prevailing organisational culture in the rest of the organisation. Before embarking upon new OI strategies, leaders must first carry out

the kind of analysis demonstrated in this review. Reading Frederic Laloux's 'Reinventing Organisations' is also a good starting point for any leader embarking upon this journey.

Once the organisation's psychological landscape has been assessed, the challenge in terms of changing attitudes, mindsets and behaviours to bring about the desired alignment with OI strategies or business models can be engaged. Attitudes can be changed but need to be role modelled from the top and will require deep commitment from all leaders and support from external coaches and facilitators, for there to be any chance of success.

A shift needs to take place from *profit* to *purpose* as the driving principle within an organisation, or at least in relationship to an OI strategy or project, for Open Innovation to successfully take hold. Short term needs (e.g. to see quarterly increases in profit) of city institutions or other investors can undermine the possibility of establishing the conditions needed for an open innovation project to be successful.

In order to release the next wave of innovation in biotech-pharma by drawing upon both traditional and emergent OI strategies, leaders first need to be innovative in the way they design, evolve or create new organisations that are fit for purpose. This isn't just about new business models (e.g. the knowledge leverager) but about new virtual, flexible and dynamic structures and ways of working, as well as new forms of ownership and control that can support the longer term purposes of these organisations.

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