

# On the paradox of 'Dichotomous' and 'Deficit-Based' thinking in medicine

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As F Scott Fitzgerald wrote in the collection of 1936 essays called 'The Crack Up',<sup>1</sup> 'The test of a first-rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain the ability to function.' Likewise, in their 2002 book 'Built to Last' regarding the features of sustainably successful organisations,<sup>2</sup> Collins and Porras extol the 'Genius of the AND' and warn against the 'Tyranny of the OR'. (For clarity here, they were not referring to the Operating Room.) Collins and Porras suggest, "The 'Tyranny of the OR' pushes people to believe things must be either A or B but *not both*." All of these authors across different times and sectors are identifying a common human way of thinking. I'll call this 'A or B but not both' approach 'dichotomous thinking'.

The first goal of this perspective is to consider two different types of thinking that are deeply ingrained in medical reasoning and clinical care—the first of these is 'dichotomous thinking' as just defined and the second is 'deficit-based thinking'. Simply put, deficit-based thinking is focusing on problems rather than on opportunities; metaphorically, the deficit-based thinker sees the hole rather than the donut.<sup>3</sup>

The second goal of this paper is to examine ways in which these two thinking paradigms help define the time-honoured, effective approaches for clinical reasoning that doctors use as they care for patients. At the same time, I want to highlight a paradox related to these two types of medically entrenched thinking. On the one hand, both dichotomous and deficit-based thinking are very well suited to and, in fact, are critically important for clinical reasoning and for physicians' clinical effectiveness. On the other hand, both types of thinking can conspire against physicians' effectiveness as leaders and as organisational citizens. Herein lies the proposed paradox of dichotomous and deficit-based thinking in medicine.

The third goal of this paper is to clarify the implications that dichotomous and deficit-based thinking have for training physicians, especially in the context of some existing insights from cognitive psychology.

First, let us consider how dichotomous thinking develops in physicians. Medicine is an action-oriented discipline; clinicians are constantly translating continuous biologic variables into dichotomous 'yes/no' decisions and actions as they care for patients. As Groopman reminds us in the book 'How Doctors Think' regarding the specific example of how a seasoned clinician diagnoses an acute aortic dissection, doctors must 'think and act' at the same time.<sup>4</sup>

As an example of dichotomous thinking, a patient whose diastolic blood pressure is consistently 86 mm Hg would likely *not* be given an antihypertensive medication whereas a patient whose diastolic blood pressure is 91 mm Hg—merely 5 mm Hg higher—would much more likely be prescribed an antihypertensive medication. Similarly, in keeping with available guidelines from the Fleischner Society,<sup>5</sup> a pulmonary physician is unlikely to order a repeat chest CT scan for a patient with a non-calcified pulmonary nodule that is less than 6 mm in diameter but is likely to schedule a follow-up scan for a patient with a 7 mm nodule. The list of contextualised 'yes/no' decisions that doctors must make based on continuous metrics (like nodule diameter or blood pressure) goes on and on. Indeed, this type of dichotomous reasoning generally serves physicians' clinical practice very well and so becomes deeply ingrained as physicians first learn and then exercise the process of clinical decision-making that has been an effective approach to clinical reasoning for centuries. In short, dichotomous thinking becomes both reflexive and habitual for doctors as they care for patients.

And yet, great thinkers like Fitzgerald and Collins and Porras remind us of the limitations of dichotomous thinking, of what they call the 'Tyranny of the OR'. While this admonition about the hazards of 'the OR' may not routinely apply to clinical decision-making for an individual patient, the risk of thinking dichotomously surfaces when we apply dichotomous thinking to organisational problem-solving and leadership. Consider Collins and Porras' comment about how to sustain organisational success: "Builders of greatness reject the 'Tyranny of the OR' and embrace the 'Genius of the AND'. Build your company so that it preserves a passionately held core ideology and simultaneously stimulates progress in everything but that ideology. Preserve the core and stimulate progress. A truly visionary company embraces both ends of a continuum: continuity and change, conservatism and progressiveness, stability and revolution, predictability and chaos, heritage and renewal, fundamentals and craziness. And, and, and."<sup>2</sup>

The appetite for dichotomous thinking in clinical care likely arises from principles of cognitive psychology and may especially affect physicians among healthcare providers. As doctors 'think and act' at the same time, they are often making time-pressured decisions driven both by the urgency of the clinical situation (eg, aortic dissection) and the volume of patient (and other) demands they face every day—what Groopman calls 'spinning



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plates'.<sup>4</sup> These pressures reinforce the importance of dichotomous thinking both as an effective strategy to reason clinically as well as a survival mechanism. When dichotomous thinking becomes dysfunctional, as it may in clinical practice as well, we may see a behaviour sometimes described as 'ready—fire—aim'. The urge to act can sometimes eclipse cognition.<sup>4</sup>

To frame the paradox of dichotomous thinking more clearly for healthcare, the very reasoning that allows physicians to be great healers can conspire against their success as organisational thinkers and as organisational leaders. Thinking 'either/or' rather than 'AND' in healthcare can close off solutions. For example, given perennially limited resources, one of the classic dilemmas in healthcare organisations is how to allocate these limited resources. In an environment where quality and patient safety are paramount, shouldn't priority be given to clinical care? On the other hand, given the tripartite mission of academic medical centres to provide superb care, to generate new knowledge and to teach, musn't dollars go to support the research and educational missions? The 'genius of the AND' tells us that even in an era of resource limitation in healthcare, healthcare leaders must avoid choosing between the clinical and academic missions of a healthcare organisation. Both missions inform each other and wisely supporting both is critical for success. Recognising the 'AND' insight that talented physicians are often especially attracted to environments where they can also teach and do research reveals the shortcomings of an 'OR mindset', that is, that clinical excellence requires supporting clinical care at the expense of research or education. A similar perceived dialectic sometimes emerges about whether the clinical mission and the primacy of 'patients first' in healthcare organisations somehow means that caregivers must be second. Great leaders who have an 'AND mindset' recognise that 'patients first' does not mean caregivers second. Rather, we must deeply commit to caring optimally for patients AND also caring optimally for caregivers. Again, because it is clear that engaged, motivated caregivers provide better, safer care, the "dichotomous, 'OR' mindset" that seeks to support either patients OR caregivers would blind leadership and close off solutions. In sum, the 'genius of the AND' should be paramount in healthcare leadership as it is in other sectors. As a nod to a potential solution that is discussed below, the antidote to the hazards of dichotomous thinking for physician leaders is to recognise the conditions under which dichotomous thinking is generally helpful (eg, in clinical reasoning) and when it is not (eg, in organisational thinking). The antidote to the pitfall of dichotomous thinking is for healthcare providers to have both situational awareness and personal mindfulness of how they are thinking in the moment and of the advantages and pitfalls of that thinking process.

Next, consider another different thinking paradigm called 'deficit-based thinking'.<sup>3</sup> Through the deeply ingrained and effective process of differential diagnostic reasoning that was first espoused by Hippocrates, physicians become the consummate deficit-based thinkers as they evaluate their patients' symptoms and signs. Consider an example. The patient presents with dyspnoea and the astute clinician generates an exhaustive differential diagnosis of possible causes, for example, abnormalities of the airways, parenchyma, chest wall, pulmonary vasculature, heart, etc. Everything is a potential abnormality until proven otherwise. As with the review of systems (which is another deficit-based inquiry), every organ system in a differential diagnosis is guilty until proven innocent. The seasoned clinician then performs tests to narrow the list of potential abnormalities in service of finding a treatment to help the patient feel less short of breath. While this process typifies the way that doctors care for

patients every day, differential diagnostic reasoning also colours the way that doctors see the world; it has been said that physicians 'pathologize the world'. They can easily see the hole and miss the donut. Another example—driving down the road on a beautiful spring day, this doctor is more apt to see the potholes in the road and my wife will see the flowers on the roadside.

The countermeasure to deficit-based thinking is 'appreciative inquiry', defined as "a positive, strengths-based approach to change... ..Appreciative inquiry focuses on leveraging an organization's 'positive core' strengths to design and redesign the systems within an organization to achieve a more effective and sustainable future."<sup>6</sup> Appreciative thinkers see possibility, not only problems. Consider the statement 'a crisis is a terrible thing to waste'; the author recognises opportunity in the face of setback. Consider also an observation by John F Kennedy about the two Chinese characters for the word 'crisis'—wei ji or 危机. President Kennedy suggested that the first character means 'danger' and that the second means 'opportunity'. Seeing opportunity in crisis is an act of appreciative inquiry, an act of leadership.

Though still incompletely developed in organisations, appreciative inquiry is actually a time-honoured paradigm. As early as the 18th century, Voltaire remarked, 'Appreciation is a wonderful thing. It makes what is excellent in others belong to us as well.' Proponents of appreciative inquiry<sup>7</sup> argue that because 'words create worlds', the way we ask a question frames the answer that we get. When we frame questions about organisations through a deficit-based lens, we derive deficit-based solutions. In contrast, when we ask appreciative or strengths-based questions, we unleash new possibilities that deficit-based thinking can overlook. Indeed, the whole emergent field of positive psychology is buttressed by the observation that approaches that explore possibility rather than deficit or weakness generate innovative and highly impactful organisational solutions that otherwise go unnoticed. Consider an example. How might you encourage folks to use the stairs in public places? A deficit-based approach might focus on signage encouraging stair-climbing to prevent heart disease. In contrast, an appreciative approach that recognises that what gives life to exercise is fun and satisfaction might make the stairs into sound-producing piano keys and invite walkers to play a tune as they climb. Very different solutions from very different perspectives. The actual appreciative experiment of musical stairs in the Odenplan underground station in Stockholm, Sweden (and in other places around the world) has been a striking success in encouraging walking.

The merits of appreciative inquiry clearly apply in healthcare as well.<sup>8</sup> For example, by looking for strengths and talent in a team and by leveraging these, an appreciative perspective will find value in every member of a healthcare team. As such, an appreciative mindset is more likely to harness the group's talents than a deficit-based approach, which might look for fault and for whom 'to throw off the island'. In this context, an appreciative perspective naturally contributes to stronger teams and to better teamwork. And volumes of evidence show that more effective teamwork in healthcare confers benefit for important patient outcomes, for example, lower error rates in the emergency room, lower surgical mortality rates, enhanced radiographic diagnosis, lower intensive care unit mortality rates, etc.<sup>9</sup>

Again, the root of physicians' appetite for deficit-based thinking lies in cognitive psychology. Clinical medicine is a problem-based discipline; patients generally bring symptoms of things that are not working properly to their doctors' attention so doctors generally must focus on these deficits, not celebrate the unrelated things that are working well. As a preposterous example, when the patient presents to the pulmonologist with a

complaint of dyspnoea, the physician's response is not to point out that the patients' kidneys or thyroid are working just fine.

As another example of the benefits of an appreciative mindset in healthcare, consider the concept of 'relational coordination'.<sup>10 11</sup> Relational coordination is defined as 'the coordination of work through relationships of shared goals, shared knowledge, and mutual respect.' Simply put, relational coordination is grounded in appreciating colleagues and their strengths and contributions to mission, in communicating with colleagues and in valuing working with colleagues on a team. Enhanced relational coordination has been shown to correlate with improved clinical outcomes.<sup>11</sup> For example, in a study regarding 878 patients undergoing hip and knee arthroplasty in nine hospitals,<sup>11</sup> better relational coordination correlated strongly with better quality of care, including decreased postoperative pain, improved postoperative function and decreased length of stay. Valuing one's colleagues and working as a team represent an appreciative mindset and radically depart from the deficit-based mindset of clinicians who may see themselves as 'heroic lone healers'.<sup>12</sup>

So, given F Scott Fitzgerald's invitation to 'hold two opposed ideas in mind at the same time and still retain the ability to function,' how should clinicians manage this paradoxical trap of 'dichotomous' and 'deficit-based thinking'? I submit that the answer is mindfulness. Mindfulness is defined as 'a state of active, open attention on the present'.<sup>13</sup> As Groopman points out, mindfulness is needed both in clinical diagnosis—for example, to avoid diagnostic errors that might arise from confirmation bias or the impact of 'availability' thinking—and in organisational leadership. In the emergency room, Groopman<sup>4</sup> observes that effective physicians actively 'slow their thinking' to a 'studied calm' in order to avoid cognitive biases that can undermine effective diagnosis. In a similar way, as physician leaders pivot from their clinical practice to administrative contexts, they must take a 'time out' to reflect on the potential pitfalls of applying dichotomous and deficit-based thinking to their leadership roles. Instead, in organisational contexts, they must pivot to an appreciative, inclusive 'AND-based mindset'.

Of course, the challenge is that physicians transition between clinical and organisational roles frequently and rapidly; for example, in leading a team on rounds, physicians ideally think appreciatively and then, when entering the patient's hospital room, must pivot to clinical thinking with differential diagnostic reasoning and a deficit-based approach. The frequency and rapidity of transitions that physicians must navigate makes mindfulness and nimbleness both especially important and especially challenging for physicians. Developing these requires patience, persistence,<sup>14</sup> deliberate practice,<sup>15</sup> a growth mindset<sup>16</sup> and time. Simply put, it is really important for doctors to be self-aware and to pivot nimbly between different thinking paradigms as they transition from clinical to organisational roles. To accomplish this, we must teach and practise emotional intelligence,<sup>17–19</sup> of which self-awareness is a key component.

This requirement for nimbleness and mindfulness has important implications for how we should train doctors. As with using a spiral curriculum to teach emotional intelligence,<sup>19</sup> mindfulness and self-reflection should be taught early and should be included as one of the cornerstones of medical school curricula.<sup>20</sup> Indeed, in many progressive medical school curricula, self-reflection about one's strengths and 'targeted areas for improvement'<sup>19</sup> are considered

critical competencies and are part of the learning culture. Both in clinical practice and in leadership, achieving mastery requires a 'growth mindset',<sup>14</sup> a commitment to deliberate practice<sup>16 20 21</sup> and a deep awareness of both the 'ideal self' and the 'real self',<sup>22</sup> so that one can progress from the current state to a new, future state of enhanced performance. The desirable future state of yet better physician leadership in healthcare requires awareness and attention to both dichotomous and deficit-based thinking and the pitfalls they pose in pivoting from clinical practice to organisational thinking.

In summary, just as with the Heisenberg uncertainty principle, my hope is that by shining a light on the virtues and risks of these thinking paradigms - dichotomous and deficit-based thinking - the paradox they pose will change.

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