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**OPPORTUNITIES AND BARRIERS TO EFFECTIVE
PLANNING IN HIGHER EDUCATION: DATA
SOURCES AND TECHNIQUES**

OVERVIEW

Two imperatives for better use of data confront higher education. The first is driven by external factors while the second is driven internally by continuous quality improvement. Steep declines in financial and public support have driven efforts by governments to collect data that support the proposition that institutions are accountable for the revenue they receive. Working from a defensive posture, many colleges and universities have been able to waylay undesirable changes by satisfying external requests for data. At a higher level, however, those institutions that deliberately use data to improve overall performance meet compliance-based requirements while enacting a future that is informed by data.

The proposition that higher education's approach to data use has changed very little may be disputed. At the same time, it also is clear that technology has made new conversations possible. New techniques including analytics or predictive analytics provide institutions new opportunities to use data to improve their efficiency while better serving students (see, for example, WCET, n.d., and Bichsel, 2012). Colleges and universities are entering an era in which strategic information about student learning and success, budgeting, and efficiency can be united under the umbrella of big data.

Higher education is now collecting more data than ever before. However, these efforts are most often directed at the first imperative, compliance reporting, rather than the second imperative, improving institutional strategy. Forward thinking institutions will quickly resolve this seeming dichotomy. They will seek opportunities to build capacity, remove constraints to span existing boundaries that determine data use and find ways to bring data and strategy together. The result can advance institutional mission, meeting external policy demands and improving student success.

In a time of shifting demographics and disruptive technology strategy, takes on a higher priority in planning and college operations. George Keller's landmark book *Academic Strategy* (1983) is as relevant now as when it appeared four decades ago. Among Keller's sage observations is that the "strategic planning concentrates on decisions, not on documented plans, analyses, forecasts and goals." (p. 148). While data and analysis are critical, there is always room in any planning

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process for educated guesswork. While educated opinions can drive decision-making, the power of data to drive decisions is indisputable.

Strategic thinking and the data that serve those strategies come at a price. In this chapter we review both opportunities and barriers associated with creating and using actionable strategic and operational data. We also identify successful steps for data use based on our experiences in working with higher education institutions to facilitate strategic planning and to create cultures of inquiry and evidence. We also survey emerging technologies and their promise to help institutions help their students. This chapter is intended to provide practical advice and not to provide a theoretical overview of the tenets of strategic planning. Institutions sufficiently courageous to engage in a data journey require support. Toward that end, this chapter also provides advice drawn from personal experience and new developments in management science to help navigate these new pathways.

EFFECTIVE PLANNING: OPPORTUNITIES AND BARRIERS

Two significant approaches to data use drive institutional behaviour: (1) purposeful engagement and (2) adroit leadership. The first approach is captured by Alicia Dowd (2005) who argues that “data don’t drive” higher education institutions unless faculty, staff, and administration are engaged in thoughtful interpretation of data that demonstrate results, especially in modifying instructional approaches. In our experience such exchanges have been quite rare, although now growing, throughout colleges and universities nationally. Where these conversations exist, they are most productive when their foundation is collaborative inquiry and when participants are receptive to discovery. In those cases, college and university stakeholders draw upon both quantitative and qualitative data to explore their current performance. To this end, inquiry and well-formulated questions are more important than the data at hand.

The second element, leadership, also shapes how institutions engage in the data journey. One paradox before leadership is the difficulty in marrying innovation to empirical rigor (Martin, Rivkin & Siggelkow, 2012). We believe institutions can and must pursue innovation, the use of actionable data, and foster deeper conversations about student success simultaneously. To do so requires nimble and courageous leadership as well as a willingness to nurture a culture of inquiry and high expectations for improved performance.

Institutions vary widely in their capacities to use data owing to their culture, available personnel, and financial resources. These factors can be used to assess any institution’s capacity to fully engage in using data. The authors have worked with resource-poor institutions that have just begun to grapple with using data, at one extreme, to institutions with ample resources to gather, use, and employ data, at another extreme. Regardless of institutional circumstances, a range of barriers and challenges are likely to exist that can explain the inconsistency of effective use of data. We explore these barriers and opportunities below.

Build a culture of inquiry and evidence

Rigorous and systematic thinking about the implications of data as well as a commitment to using data to improve institutional performance is what separates colleges and universities that have developed a culture of inquiry from those who simply muddle along. Inquiry is the cornerstone of discovery. It requires the willingness and ability to ask the difficult questions to pursue change that is grounded in good data, research and collaborative conversations. This foundation can bring people together to draw upon research practices to discover how data and information can shape strategic thinking. Research and information are the *sine qua non* of inquiry but not a substitute for the purposeful engagement of faculty, staff, administrators, and students in dialogue; open minds seeking answers for breakthroughs in instructional and student service areas; improved student success with innovation and the best use of fiscal, personnel, and technological resources.

Other opportunities and barriers can be found within efforts to create a culture of inquiry and evidence. As noted earlier, the first of these are barriers of trust inherent in our discomfort with data. At the same time, this tension is one of the greatest opportunities since as it represents the potential to develop an institution's human resources through strategic professional development. In this culture, data are everyone's concern and not the domain of a few.

The means to overcoming these barriers and seizing the opportunity takes us again to leadership. Leadership at the trustee and presidential levels will need to establish policies and funding sources that are a demonstrable commitment to professional and organizational development. With policies and funding in place, presidents and executive teams will need to lead in a manner that incubates a network of leaders throughout the institution; people who are empowered to create innovation based on data.

Map out high level strategy

Colleges and universities will want to start by revisiting their mission, vision, and strategic goals. Campus wide recognition of these essential, core products of good planning help everyone to contribute through their respective roles with what Edward Deming referred to as a "constancy of purpose." Questions driven by a focus on these core elements can lead to instructional, administrative, and student service practices to set the stage for creating actionable data to foster innovative, tactical responses for improved learner outcomes and institutional results. Decisions about how these analyses will be carried out with human capital and technology should be part of high-level strategy. Nimble institutions will also provide a visible mechanism to refresh strategic issues and to introduce new thinking.

We are, in essence, proposing that strategic thinking and planning is the critical gateway to creating a culture of inquiry. Paradoxically, strategic planning is both an opportunity and a barrier for most colleges and university communities. On one hand, strategic planning provides an opportunity to invite broad engagement that can bring clarity to the things an institution ought to be doing, including using data

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to refine mission and vision. On the other hand, strategic planning processes are frequently poorly executed, resulting in quickly abandoned planning documents and mission, vision, and value statements developed only for public relations purposes. In contrast, well executed strategic planning is integrated throughout the academic community, providing a coherent and innovative plan to deliver rigorous learning opportunities. Such a plan establishes a framework for collaboration with academics, student and administrative services personnel.

Key to overcoming these barriers is acceptance by leadership that strategic planning and concomitant use of data arises from a commitment to organizational development. Organizational learning requires both time and an iterative process for organizational and professional growth, or what Senge (1997) refers to as organizational learning. Nimble institutions will also provide a means for review to refresh strategies with continuous data review and updates.

Defining roles

McLaughlin, Howard, Cunningham, Blythe, and Payne (2004) suggest three distinct professional roles are necessary to produce timely and accurate information: the custodian, broker, and manager roles. The authors have found these roles to be fragmented in many institutions. The *custodian* function focuses on the integrity of data and helps to select appropriate data for analysis. The *broker* works to transform data into [actionable] information. The *manager* takes information and applies it to the given situation. The manager is often the decision maker but may also be someone who is responsible for supporting the decision process. Institutions should clearly delineate these functions by making specific assignments for each across the entire organizations.

In most educational institutions these roles are spread unevenly across Information Technology, Institutional Research, Institutional Effectiveness, Assessment, Strategic Planning and/or a Vice President's Office. At colleges with limited human resources these roles are especially blurred and may lie entirely within the purview of one person. Unless these roles are clarified at any institution, producing credible, cogent, and value-added strategic data and information can be quickly compromised. Barriers including inadequate and outdated data management systems, heavy workloads and broad demands on IT staff resources, compliance driven IR staff, and inadequate capacity among personnel to navigate the organizational dynamics, and a limited capacity to retrieve, review, manipulate, and analyse data beyond the Institutional Research Office contribute to the confusion, turf battles, and mistrust that can emerge from poorly defined roles and relationships.

Engage teamwork

In as much as we believe that colleges and universities will profit from efforts to develop a culture of inquiry, settle on high-level strategy, and define roles, we also believe that teamwork to support these efforts is frequently a missing piece.

Establishing, fostering, and rewarding teamwork creates both synergy and new opportunities to use data effectively. Bolman and Deal (2013) advance four frames under which any organization operates, the most critical of which is the Structural Frame which speaks directly to organizing structures, groups, and teams to produce results.

Institutional leadership is most challenged at the onset of a journey to effectively produce data and information. We have heard from faculty, staff and administrators that they are eager to use data to embrace a culture of evidence and equally frustrated by inadequate access, retrieval and help with analysis. We would observe that once data is produced, it is imperative that leaders demonstrate and model their commitment to using data and setting the expectation that data offered in evidence will be used when making decisions, allocating resources, and assessing institutional, department, and student success.

Create actionable data

Voorhees (2007) introduces the term “wallpaper data” to label data that may be interesting to look at but do little to address an institution’s future. Colleges and universities should focus on producing data that would help the entire organization and its components take action. In this vein, institutional fact books, while helpful because they provide a common and official set of institutional data, seldom point to action.

The wallpaper data phenomenon suggests other factors that demand our attention to advance our data and strategy driven educational institutions. First, it is apparent that data have not been the currency of higher education. Only recently have we observed the call for and reluctant embrace of data, data analysis, and a culture of evidence in colleges and universities. Second, as stated above, what data that have been produced in our institutions often have been held in the purview of presidents and a go-to individual or office (most often Institutional Research) generating compliance reports. Institutions may have little experience in separating data that are truly helpful (actionable data) from passive data (wallpaper data).

Expand comfort zones

The opportunity to use data to make decisions takes many in education out of their comfort zone. There is a certain attraction in any organization toward the status quo, especially in maintaining the decision-making process that perhaps only few can access. New insights into the daily teaching and organizational life, including how learners are impacted by decisions, can be revealing and threatening at the same time. New knowledge casts a wide shadow but also shines new light on avenues for institutional performance.

Institutions that view data as a means mostly to satisfy external bureaucracies will find it easier to maintain data comfort zones, simply because these data likely will remain in silos throughout the organization. These institutions miss important opportunities to take ownership of their data to become the masters of their own

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destiny. From this vantage point, leaders and all members of the college and university community will be well served to think and act internally and externally. Foremost in this work is the internal imperative to clearly and coherently state the institutions' shared mission, visions and goals as well as to track progress with data. By so doing, we can renew efforts to set the agenda with a universally held focus on strategies to preserve and reimagine education in the 21st Century. Of equal importance to our institutions is the external task of reaching out to legislative and community leaders to better inform them and shape public policy to serve; diverse student populations, economic development, and citizen participation.

Waiting for perfection

There is neither perfect data nor is there a single auspicious time to introduce data to institutional dialog. Hoping for near-certainty in data and information or even waiting for institutional culture to change can only continue inaction and data paralysis. The successful launch of data initiatives must start somewhere and, in our opinion, the sooner the better since the very act of sharing and discussing data will identify data quality issues while advancing a culture of inquiry. Reaching for new ground can be discouraged by culture, tradition, and practice. Waiting for perfection, however, is to surrender to forces that prevent institutions from engaging with their own data to chart an actionable future.

SUCCESSFUL PRACTICE IN USING DATA TO PLAN

Given an overview of barriers and opportunities to more effective use of data, we now turn to examples of successful practice that can help to overcome those barriers. The practices we offer below are drawn from practical experiences as well as our aspirations for institutions to better use data in the planning processes.

Strategic planning and data

It is one thing to create the high-level set of strategic issues we mention above and quite another to frame those issues in a strategic plan. While many institutions have developed strategic plans to counter their uncertain future, many strategic plans are little more than slick, aspirational documents intended to convey the image of rational decision-making. We observe that there is an upside to making external stakeholders feel good and many institutions do not want to bother them with the details of how strategic goals are to be carried out and measured. Most strategic plans are lacking in five key areas: (1) using actionable data, (2) assigning responsibility to individuals, (3) tying operational plans to strategic goals, (4) embedding measurable goals that can, in turn, lead midstream corrections, and (5) most importantly, tying the entire planning process to the institution's budget.

Oakland Community College, in Southfield, Michigan, has developed a comprehensive planning process to address each of these key areas noted (Showers and Wright, 2013). The Office of Institutional Research, Quality, and Planning provides research and data to support college decision making. In this capacity the office works with college stakeholders with a comprehensive process and practices to help those requesting assistance to identify the questions being asked and data required. Data are generated and reported using institutional standards and templates that serve to align the research and data products with institutional strategic priorities. The office works with each research request to determine how the data will be used to address strategic priorities and provides assistance with presentation of data.

Inviting constructive conversations

Dowd's (2006) observation is that before data can drive, they must be shared and explored with an openness to discovery. This is especially true in areas of instruction and student services where there is direct student contact. Faculty, staff, administrators, and students are well served when constructive conversations occur that are carefully structured. The authors have relied on Brown and Isaacs's World Café (2005) as a guide to shape meaningful and systematic conversations with a broad range of institutional stakeholders. Inviting conversations that harvest and share collective discoveries and which also use an institution's collective intelligence is a critical and achievable goal. The methodology for such conversations is straightforward (Brown and Isaac, 2005) and includes six principles. These are: (1) create hospitable space, (2) explore questions that matter, (3) encourage everyone to contribute, (4) connect diverse people and ideas, (5) listen together for insights, patterns, and deeper questions, and (6) make collective knowledge visible.

Institutions embarking on hosting conversations that matter will face several challenges. The first challenge is not to become bogged down in the minutia of that data. Groups themselves should not be engaged in data capture. Rather, at higher ground, the process is intended to focus on collaborative learning, especially creating collective intelligence that is developed by paying close attention to the levels of meaning and insight within those data. A second challenge is the assumption that the knowledge and wisdom needed to have conversations that matter is already present and accessible within the institution. Honoring this assumption means that the ensuing conversations will be informed by data brought to the table but that data should not dictate the course of conversations. The overall goal is to provide an environment for emergent intelligence, requiring specific skills of the facilitator, not just to produce data, but to guide the group to connect ideas, take stock of deeper patterns and themes in the data, and, above all, to be deep and effective listeners.

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Assessing institutional data readiness

Voorhees (2007) created the Institutional Data Readiness Assessment (IDRA) that institutions can use to assess their current functioning in three areas identified by McLaughlin and Howard (2004). These factors are data management, processes, and people. The inventory helps institutions locate their capacities to develop actionable data at a granular level. The IDRA can also be used to document the receptivity, and commitment to using data among administrators, faculty, and staff. The IDRA intends to assist institutions with the development and implementation of a strategic data plan, building from the ground up comprehensive policies, practices, and capacity to create and sustain a culture of evidence. A review of the assessment can provide a conceptual and pragmatic resource to integrate data and information through effective use of technology, people, and processes that facilitate communication of data for inquiry and decision-making. The authors have worked closely with 14 Texas colleges who committed to starting their student success work by investing in the creation of a solid data foundation. The IDRA has been used to create deep conversations about people capability, capacity building in information technology, institutional research units, and data management issues.

The IDRA is one embarkation point for the data journey. The importance of developing a realistic understanding of current institutional data resources and personnel capacity to use data to inform decisions is an essential building block for advancing a culture of inquiry and evidence. As Glover (2009) observes, "... colleges that make the investment necessary to collect data, and to effectively interpret and present it, are far better positioned to deepen their understanding of student progression and outcomes, and identify strategies for improving student success" (p.1).

Approach software acquisition cautiously

Entering data into software systems, extracting, editing, and preparing those data for analyses are basic processes that have been largely unchanged for more than fifty years. In the intervening time, technology has speeded these processes, relational databases have made storing complex data more manageable, and new interfaces have brought data closer to end-users. Meanwhile, the processes for creating actionable data have remained static. The authors have observed that small, under-resourced colleges make use of old software to create actionable data while better-resourced colleges neglect the possibilities in their more advanced software systems. In our experience, it is more important to invest in committed and talented people than the latest tools.

Analytics

Analytics has become a buzzword in higher education in recent years. It has been defined as "the use of data, statistical analysis, and explanatory and predictive

models to gain insights and act on complex issues.” (Bichsel, 2012, p. 6). Propelled by the use of technology to match existing institutional data with new data that trace student interaction inside and outside the classroom, analytics can help identify places in the student experience where an institution can intervene to improve success rates. Precision in analytics is only as good as the institutional data that support it, however. Local student-level data systems, for example, seldom contain the number and quality of interactions that students have with the institution, necessitating alternative data gathering and storage steps before a full understanding of where students are succeeding in and outside of classrooms can be performed.

Colleges and universities will need to explore both quantitative data to learn what is happening and concurrently develop qualitative data to probe the deeper issues that explain what may be lurking behind the numbers. Working with the support of Educause’s Next Generation Learning Challenges collaborative multi-year initiative, colleges like those participating in the Iowa Community College Online Consortium are learning how to develop, use and discuss analytics to advance student success and scale their work.

Focus first on diagnosis

Institutions that have made a commitment to increasing student success through data frequently want to leap to solving all known issues unearthed by data. While that zeal is understandable, it can also cause future problems if the premises underlying interventions is not fully developed. Moving quickly to solutions without understanding the shape of the problem is ill advised. González (2009) recommends four sequential steps for institutions grappling with issues of student success: (1) find out “what’s wrong?”, (2) use data to answer the “why” question, (3) address the underlying factors impeding student success through new and revised interventions or policy changes, and (4) assessing impact through evaluation. Obviously, institutions would be well served by fully understanding “why” a particular behaviour or set of behaviours is manifest.

To answer the “why” will cause institutions to collect and analyze a second set of data. For example, in open access institutions, a central question is why certain groups of students are succeeding better than others. These insights are unlikely to be found solely in student unit record data systems and are much more likely to be found in rigorous qualitative research, i.e., focus groups, that can uncover how students are interacting with the institution. This is to say that analyses of grade-point average, cohort survival rates, and other quantitative data that can be generated by student unit record software systems are valuable as a starting point but serve only as a partial answer to underlying student behaviour.

Create data allies

Colleges and universities seldom **make familiarity** with their own data systems and the imperative to produce actionable information criteria for hiring decisions. Only

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a limited number of individuals are employed to perform these tasks. The result is that data work becomes specialized work that frequently becomes isolated as a matter of course unless deliberate steps are made to share and discuss institutional data widely.

Those in institutional research capacities would do well to create appetites for data as well as to make intentional training available to make data actionable. Remembering that while some individuals may be interested in how data are gathered and prepared, a main focus will be on how data can be used in their work environment. Learning curves likely will be steep, yet another reason to create a culture of inquiry in which faculty, staff, and administrators gain an understanding of where data arise and how they can best be used. One key partnership that should be formed early is that between institutional research and information technology units. Symbiotically, one cannot exist without the other. While these two offices provide the infrastructure and data access for this work, an institutional research and planning office or the equivalent must forge effective relationships with stakeholders that include faculty leaders, department chairs, student services, and administrative personnel. It is incumbent on IR leadership to help colleagues identify pertinent data, develop researchable questions, and facilitate analysis. In doing so, they will create trusting allies to assure that reliable data are a valued asset in making data informed decisions.

Connecting bottom-up planning to data

Too often planning data are gathered only from a handful of units that are thought to affect strategy. It is counterintuitive that detailed plans from academic units would be neglected in strategic planning processes since instruction constitutes the largest share of expenses at most institutions. Most institutions in the United States are now required to generate assessment of learning plans by their regional accreditors, but in our experience assessment planning at the academic unit level seldom appears in strategic planning.

Too often we have seen institutional plans that are a product of gathering departmental plans in one place, editing them somewhat, and binding them together without analysis or synthesis. Unless provided a template and supported by outcome data for transfer and employment, as well as an environmental scan of developments in a given field, departmental level plans may lapse into only a description of the status quo without evidence-based consideration of future opportunities and how those opportunities align with the overall institutional mission.¹

¹ Hollowell, Middaugh, and Sibolski (2006, pp. 106, 107) offer a template for leaders to collect department-level teaching workload and fiscal data for institutional planning. Data from this template can be aggregated at the institutional level to form an institution-wide picture of academic activity.

Create early data victories

We noted above the dearth of data in most strategic planning exercises. Institutions undertaking comprehensive strategic planning in which a public commitment to data use is made often find themselves on new ground and facing skeptical individuals. Making clear the institution's expectation that any strategies will be based on actionable data, and that the success of subsequent operational planning will be determined on evidence and data, will provide a visible transition point from data-free, aspirational planning to a rational model. One might anticipate that future data requests from units will become more focused once a sound strategic plan is in place. Before that happens, and ideally in the strategic planning process, institutional leaders should spend time in discussing data availability and what those data say about an institution's future.

Settle on approaches to benchmarking

The attraction to making comparisons between institutions is an escapable part of life in higher education. Rankings of institutions abound and these data frequently are used to drive strategic planning. In the extreme, redesigning whole programs and services to climb higher in ranking schemes is a potential response. The authors' experience is that institutions are better served by not pursuing external validation through third-party ranking but by determining their current performance on activities they consider critical and using those data to set realistic benchmarks and milestones. Embedding those benchmarks within strategic planning processes also carries the advantage of educating the institutional community about an institution's own data and how they are used to internally-rank priorities and strategies.

Managing change processes

In this section we have discussed specific techniques for using data in planning. We now turn to a broader look at the institutional change processes associated with data use and how those processes can be managed to help institutions along the pathway to creating a culture of inquiry. Where not supported by culture or recent history, the institutional commitment to use data for planning is likely to surface opposition. Improvement always entitles change and people react to change in different ways.

Recent advances in management science, in particular what is now known as "sense-making" and the Cynefin model, can be a useful tool in understanding change processes (Snowden & Boone, 2007). Cynefin is a framework of four domains in which the responses by adroit managers to organizational challenges vary from: (1) simple, (2) complicated, (3) complex, and (4) chaotic. The authors have used this framework to help institutions understand the challenges they face in using data and increasing their capacities to create a culture of inquiry. In the *simple* Cynefin domain, standard operating procedures exist and the accent is on consistency. The critical decisions are for the manager to sense incoming data,

categorize those data, and then respond according to accepted practice. The focus is on efficiency. A traditional view of higher education would encompass the simple domain where there is a sense of order and the variables to be manipulated are few. Cause and effect relationships are predictable and repeatable and the result is on maintaining the status quo. Best practices tested elsewhere can be implemented. The simple domain may be the starting point for institutions new to the data journey, especially the requirement to create highly structured learning experiences. At the same time, our experience is that there is considerable and quick overlap with the other domains, especially given an institutional commitment to create a culture of inquiry.

The *complicated* Cynefin domain is also an orderly domain but is distinguished from the simple domain by its embrace of a spirit of inquiry including experiments, fact-finding, and scenario development. The emphasis here is on the knowable, not the known. Something that is known can be found, for example, policies for reporting enrollments, faculty workload, or course transfer, if one knows the right questions to ask. Cause and effect relationships may not be immediately obvious to everyone engaged in the data journey or they may be known only to a limited number of people. For example, the intricacies of accreditation or quality assurance reporting may be vested in only one or more individuals, making this key responsibility the exclusive domain of expert staffers and not shared across an institution. Kurtz and Snowden (2003, p. 478) suggest that organizational experts are often the most conservative when it comes to new thinking. Savvy managers will want to be aware of a potential gulf between those who have the data and those working with the data to create a culture of inquiry. There is always a potential that experts can stifle with their wider knowledge of the field and beliefs that their opinions should prevail. Another common misstep in sense making occurs when one assumes that complicated actions are simple when, in fact, considerable gaps may exist between the two.

The next two Cynefin domains deal not with ordered events as much as with patterns and spotting new patterns in data. In the *complex* domain the task is to spot cause and effect relationships among a number of entities and relationships. The underlying sources of these patterns, however, are not predictable and hence the need to engage in multiple probing. *That is, an interval of time after initial attempts to create a culture of inquiry it may be evident that not all key stakeholders understand the dimensions of the work.* The implications for institutions are to continue efforts to inform all stakeholders and to search for new patterns in data that can guide discussions. *The World Café approach we discuss above seems ideally matched to the responses organizations can make in the complex domain.* At the same time not all organizational phenomena are complex and, accordingly, not all institutional events require multiple probing which, left unchecked, can lead to “paralysis by analysis.”

The last Cynefin domain, *chaos*, is also unordered and arises when there is no perceivable relationship between cause and effect. The environment is turbulent and there is little time available to deal with change. Rarely have we seen chaos as an underlying factor among institutions engaging in a data journey. This is not to

say that to an occasional observer institutional systems may not appear chaotic and lack of systems may play a large role in whether an institution is able to retrieve, edit, and use data. However, in a larger picture it is unlikely that an entire institution is engaged in chaotic behaviour unless some large-scale and disruptive event threatens its survival.

SUMMARY

Using planning as a metaphor, this chapter explores the pathways to creating a culture of inquiry that can increase the use of data and data capacity at committed institutions. Barriers and opportunities to creating a culture of inquiry are many but chief among them is institutional inertia. Data generated for external compliance can aid internal strategy but to maximize their use as well as to create new data require steady institutional leadership. The techniques reviewed by the authors here are presented so as to save time and energy but are not the only avenues to creating a culture of inquiry.

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